Annual Groundwater Monitoring Report

Southwestern Electric Power Company

Welsh Power Plant

Bottom Ash Storage Pond

CN 602843245; RN100213370

Registration No: CCR 110

1187 Country Road 4865

Titus County

Pittsburg, Texas

January 31, 2025

Prepared by:
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1 Riverside Plaza
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SOUTHWESTERN ELECTRIC POWER COMPANY℠

An AEP Company

BOUNDLESS ENERGY℠

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Abbreviations:
ASD - Alternate Source Demonstration
BASP – Bottom Ash Storage Pond
CCR – Coal Combustion Residual
GWPS - Groundwater protection standards
SSI - Statistically Significant Increase
SSL - Statistically Significant Level
TCEQ – Texas Commission on Environmental Quality

I. Overview

This *Annual Groundwater Monitoring Report* (Report) has been prepared to report the status of activities for the preceding year for an existing Coal Combustion Residual (CCR) unit at Southwestern Electric Power Company's (SWEPCO's), a wholly owned subsidiary of American Electric Power Company (AEP), Welsh Power Plant (CCR No.: 110). 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 BASP was operating under the Detection Monitoring program;
- At the end of the current annual reporting period, the BASP was operating under the Detection Monitoring program;
- Groundwater samples and elevations were collected from the certified groundwater network and analyzed for Appendix III constituents, as specified in 30 TAC §352.941 and AEP's *Groundwater Sampling and Analysis Plan (2021)*.
- The 1st semi-annual groundwater sampling event was conducted in April 2024 with confirmation sampling conducted in June 2024:
    - Potential Statistically Significant increases (SSIs) were identified for:
        - Boron in AD-4C
        - Calcium in AD-4C
        - Chloride in AD-3
- The 2nd semi-annual groundwater sampling event was conducted in September 2024 with confirmation sampling conducted in November 2024:
    - Potential Statistically Significant increases (SSIs) were identified for:
        - Boron in AD-4C
        - Chloride in AD-3
        - TDS in AD-4C
- ASD for the 1st semi-annual 2023 potential SSIs was certified February 12, 2024, and submitted to TCEQ for approval.
- ASD for the 2nd semi-annual 2023 potential SSIs was certified April 22, 2024, and submitted to TCEQ for approval.
- ASD for the 1st semi-annual 2024 potential SSIs was certified December 31, 2024, and submitted to TCEQ for approval.

- An ASD for the 2nd semi-annual 2024 potential SSIs is being perused

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 BASP CCR unit, all groundwater monitoring wells and monitoring well identification numbers (Attached as **Appendix 1**, where applicable);
- Statistical comparison of monitoring data to determine if there have been SSI(s) or SSL(s) (Attached as **Appendix 2**, where applicable);
- A discussion of whether any alternate source demonstrations (ASDs) were performed, and the conclusions (Attached as **Appendix 3**, where applicable);
- 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, in addition to identifying the constituents detected at a SSI over background concentrations (Notices Attached as **Appendix 4**, where applicable);
- Identification of any monitoring wells that were installed, or decommissioned during the preceding year, along with a statement as to why that happened (Attached as **Appendix 5**, where applicable); and
- Other information required to be included in the annual report, field sheets, analytical reports, etc. (Attached as **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 for the Bottom Ash Storage Pond (BASP), the monitoring well locations, and their corresponding identification numbers is provided below.

BASP Monitoring Wells	
Background	Down Gradient
AD-1	AD-3
AD-5	AD-4C
AD-17	AD-16R

Note: AD-2 is used for gauging purposes

III. Monitoring Wells Installed or Decommissioned

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

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

Groundwater samples and elevations were collected for AD-1, AD-5, AD-17, AD-3, AD-4C, and AD-16R and analyzed for Appendix III constituents, as specified in 30 TAC §352.941 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 the groundwater quality data collected under 30 TAC 352.941.

The groundwater flow rate and direction for the confirmatory sampling events reflect that seen during the semi-annual sampling events.

V. Groundwater Quality Data Statistical Analysis

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

- Data and statistical analysis completed for the 1st semi-annual groundwater sampling event, held April 1, 2024, with confirmatory sampling June 10, 2024, was certified September 27, 2024, and indicated:

  A potential SSI was identified for:
  - Boron in AD-4C
  - Calcium in AD-4C
  - Chloride in AD-3

- Data and statistical analysis completed for the 2nd semi-annual groundwater sampling event, held September 10, 2024, with confirmatory sampling November 4, 2024, was certified December 30, 2024, and indicated:

  A potential SSI was identified for:
  - Boron in AD-4C
  - Chloride in AD-3
  - TDS in AD-4C

VI. Alternate Source Demonstrations Completed

Appendix 3 contains the alternate source demonstrations (ASD):

- ASD for the 1st semi-annual 2023 potential SSIs was certified February 12, 2024, and submitted to TCEQ for approval.
- ASD for the 2nd semi-annual 2023 potential SSIs was certified April 22, 2024, and submitted to TCEQ for approval.
- ASDs for the 1st semi-annual 2024 potential SSIs was certified December 23, 2024, and submitted to TCEQ for approval.
- An ASD for the 2nd semi-annual 2024 potential SSIs is being perused

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

Since an ASD is being completed for the potential SSI(s), no transition was made during the reporting period and the CCR Unit remained in detection monitoring.

VIII. Other Information Required

Field sheets and laboratory reports for this reporting period 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

- Detection monitoring on a semi-annual schedule for 30 TAC 352 Appendix III constituents;
- Evaluation of the detection monitoring results from a statistical analysis viewpoint, looking for SSIs;
- Conduct ASDs, if needed;
- Responding to any new data received in light of TCEQ's CCR rule requirements;
- 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 April 1 and 2, 2024) provided by AEP.
2. AD-6 was not gauged during the April 2024 event
3. Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis 2022).
4. Groundwater elevation units are feet above mean sea level (ft amsl).
5. Satellite imagery provided by ESRI (updated February 19, 2024).

500 250 0 500 Feet

Beth Ann Gross

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

STATE OF TEXAS
BETH ANN GROSS
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LICENSED
PROFESSIONAL ENGINEER

Groundwater Potentiometric Map
April 2024

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2024/06/14

Figure 2

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2024\AEP-Welsh_GW_2024-04Apr.mxd. Okiemute.Commander. 6/14/2024. CHA8423/14/08.

Legend

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

Notes

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

500 250 0 500 Feet

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December 23, 2024

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
September 2024

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2024/12/04

Figure 3

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2024\AEP-Welsh_GW_2024-09Sep.mxd. Okiemute.Commander. 10/4/2024. CHA8423/14/08.

Table 1. Groundwater Elevation Data Summary
Welsh Power Plant

Geosyntec Consultants

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

Notes:
1. Groundwater elevation measured in feet above mean sea level.
*AD-16 prior to February 2017.

Table 1: Residence Time Calculation Summary
Welsh Bottom Ash Storage Pond

Geosyntec Consultants, Inc.

			2024-02		2024-04		2024-06[3]		2024-09		2024-11[3]	
CCR Management Unit	Monitoring Well	Well Diameter (inches)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)
Bottom Ash Storage Pond	AD-1 [1]	2.0	3.2	18.9	2.8	21.9	NC	NC	2.7	22.4	NC	NC
	AD-3 [2]	2.0	4.3	14.3	4.6	13.3	4.6	13.2	5.9	10.3	5.8	10.5
	AD-4C [2]	2.0	3.2	18.9	3.6	17.0	3.5	17.3	3.4	17.8	2.9	20.8
	AD-5 [1]	2.0	2.0	30.0	2.2	27.2	NC	NC	1.7	35.9	NC	NC
	AD-16R [2]	2.0	2.3	25.9	2.4	25.1	2.6	23.8	2.0	30.6	2.0	30.3
	AD-17 [1]	2.0	8.8	6.9	9.0	6.7	NC	NC	7.6	8.0	NC	NC

Notes:
[1] - Upgradient Well
[2] - Downgradient Well
[3] - Two-of-two verification sampling
NC - Not Calculated

Table 1. Groundwater Data Summary: AD-1
Welsh - BASP
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	Detection	0.345	10.2	4	< 0.083 U1	5.2	43	150
8/14/2018	Detection	0.443	5.95	5	< 0.083 U1	5.2	44	160
2/20/2019	Detection	0.504	142	2.82	0.24	7.3	49.2	522
5/30/2019	**	0.689	138	1.59	0.29	6.7	43.3	588
7/24/2019	Detection	0.644	62.7	2	0.106 J1	6.0	58	180
2/17/2020	**	0.626	115	3.41	0.31	5.8	56.3	488
5/20/2020	Detection	0.801	126	1.83	0.20	7.2	51.4	508
10/14/2020	Detection	0.670	3.88	2.16	0.25	4.5	66.9	183
2/23/2021	**	0.617	113	--	0.31	6.6	--	--
6/2/2021	Detection	0.786	97.1	2.26	0.30	6.2	61.4	400
10/20/2021	Detection	0.732	4.8	2.21	0.22	4.4	72.4	190
6/28/2022	Detection	0.768	6.76	2.32	0.22	4.9	74.7	180
11/1/2022	Detection	0.586	7.87	2.70	0.14	4.8	61.3	170
6/6/2023	Detection	0.729	6.59	3.03	0.24	4.9	91.1	210
10/4/2023	Detection	0.901	6.56	3.03	0.20	5.3	80.7	200
4/1/2024	Detection	0.781	44.9 M1	3.33	0.23	5.7	104	310
9/10/2024	Detection	0.973	7.75	3.98	0.43	5.7	126	260

Table 1. Groundwater Data Summary: AD-1
Welsh - BASP
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	pCi/L	mg/L	µg/L	mg/L	µg/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	1.380	< 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	**	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	**	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	**	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	**	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	**	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	**	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	**	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	**	< 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	**	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	*	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	*	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	*	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	*	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	*	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	*	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-3
Welsh - BASP
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	0.02	1.41	9	< 0.083 U1	6.6	4	106
7/27/2016	Background	0.02	0.706	8	< 0.083 U1	6.7	5	118
9/30/2016	Background	0.02	0.5	9	< 0.083 U1	4.8	6	127
10/19/2016	Background	0.06	0.794	8	< 0.083 U1	3.7	9	112
12/12/2016	Background	0.02	1.05	8	< 0.083 U1	4.7	11	138
1/19/2017	Background	0.02	0.746	9	< 0.083 U1	4.6	4	76
2/23/2017	Background	0.02	0.573	9	< 0.083 U1	4.7	5	104
6/7/2017	Background	0.03326	0.543	9	0.2625 J1	4.5	5	104
10/6/2017	Detection	0.02055	0.908	9	< 0.083 U1	5.2	7	114
5/24/2018	Detection	0.0069 J1	0.545	8	< 0.083 U1	4.4	3	98
11/13/2018	Detection	0.009 J1	0.684	8	< 0.083 U1	5.2	4.05	114
2/20/2019	Detection	0.01 J1	0.817	9.4	0.13	4.8	1.9	110
4/30/2019	Detection	0.007	--	9.34	--	4.1	--	--
5/30/2019	**	< 0.02 U1	3.02	9.03	0.18	4.3	2.3	110
7/24/2019	Detection	< 0.02 U1	1.35	7	0.09 J1	4.6	6	116
11/25/2019	Detection	--	0.734	--	--	--	--	--
5/20/2020	Detection	< 0.02 U1	0.724	7.99	0.11	4.6	2.7	236
7/22/2020	Detection	--	--	--	--	4.7	--	114
10/14/2020	Detection	< 0.02 U1	0.705	7.31	0.16	4.6	3.5	116
6/2/2021	Detection	0.036 J1	0.7	7.98	0.18	4.4	3.38	110
10/20/2021	Detection	< 0.009 U1	0.9	7.16	0.15	4.2	6.02	130
6/28/2022	Detection	0.016 J1	0.68	8.01	0.14	3.9	2.55	120
11/1/2022	Detection	< 0.009 U1	1.57	8.04	0.14	4.4	13.0	110
2/7/2023	Detection	--	0.57	--	--	4.7	3.39	--
6/6/2023	Detection	0.007 J1	0.65	9.14	0.11	4.3	2.4	100
10/4/2023	Detection	0.019 J1	1.16	8.65	0.12	4.5	9.5	100
12/14/2023	Detection	--	--	--	--	4.6	--	--
4/1/2024	Detection	0.027 J1	0.65	10.3	0.12	3.7	2.4	100
6/10/2024	Detection	--	--	10.1	--	4.4	--	--
9/10/2024	Detection	0.010 J1	0.78	9.89	0.09	3.2	4.0	120
11/4/2024	Detection	--	--	10.9	--	4.5	--	--

Table 1. Groundwater Data Summary: AD-3
Welsh - BASP
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	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
5/31/2016	Background	< 0.93 U1	1.56793 J1	53	0.286352 J1	< 0.07 U1	0.464721 J1	1.49214 J1	1.018	< 0.083 U1	< 0.68 U1	0.01	0.85	< 0.29 U1	0.995807 J1	1.31537 J1
7/27/2016	Background	3.21106 J1	< 1.05 U1	36	0.349485 J1	< 0.07 U1	0.515023 J1	1.19046 J1	0.183	< 0.083 U1	< 0.68 U1	0.024	0.589	1.43134 J1	2.40188 J1	< 0.86 U1
9/30/2016	Background	2.70729 J1	2.61987 J1	43	0.188596 J1	0.0802799 J1	0.659763 J1	1.44845 J1	0.552	< 0.083 U1	< 0.68 U1	0.019	0.39	< 0.29 U1	1.79734 J1	< 0.86 U1
10/19/2016	Background	2.47184 J1	1.97572 J1	41	0.451723 J1	0.277085 J1	0.818782 J1	1.53187 J1	1.589	< 0.083 U1	< 0.68 U1	0.018	0.351	6	< 0.99 U1	< 0.86 U1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	45	0.262387 J1	< 0.07 U1	0.627352 J1	1.34901 J1	0.546	< 0.083 U1	< 0.68 U1	0.017	0.321	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	2.13113 J1	41	0.235263 J1	< 0.07 U1	0.647294 J1	1.6345 J1	0.350	< 0.083 U1	< 0.68 U1	0.014	0.504	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	37	0.209151 J1	< 0.07 U1	< 0.23 U1	1.1537 J1	0.4592	< 0.083 U1	< 0.68 U1	0.014	0.501	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/7/2017	Background	< 0.93 U1	1.91 J1	38	0.24 J1	0.08 J1	0.75 J1	1.28 J1	0.459	0.2625 J1	< 0.68 U1	0.01503	0.365	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/30/2019	**	0.06 J1	1.03	63.2	0.158	0.05 J1	0.316	1.71	1.213	0.18	0.382	0.03 J1	0.245	< 0.4 U1	0.3	< 0.1 U1
6/2/2021	*	< 0.02 U1	0.32	32.9	0.137	0.035	0.49	1.07	6.32	0.18	0.34	0.00803	0.220	0.6	0.13 J1	< 0.04 U1
10/20/2021	*	< 0.02 U1	0.36	41.8	0.181	0.041	0.46	1.23	0.54	0.15	0.18 J1	0.0118	0.095	< 0.1 U1	0.21 J1	< 0.04 U1
6/28/2022	*	< 0.02 U1	0.53	33.9	0.177	0.036	0.51	1.14	0.81	0.14	0.17 J1	0.0113	< 0.200 U1	< 0.1 U1	0.21 J1	< 0.04 U1
11/1/2022	*	< 0.02 U1	0.20	45.8	0.244	0.038	0.48	1.40	1.80	0.14	0.23	0.0173 M1	0.100	< 0.1 U1	0.16 J1	< 0.04 U1
6/6/2023	*	0.022 J1	0.51	34.5	0.173	0.034	0.52	1.12	0.64	0.11	0.61	0.0103	0.560	< 0.1 U1	0.20 J1	0.02 J1
10/4/2023	*	0.023 J1	0.56	48.0	0.234	0.048	0.64	1.46	0.68	0.12	0.29	0.0165	0.080	< 0.1 U1	0.23 J1	0.04 J1
12/14/2023	*	--	--	--	--	--	--	--	2.30	--	--	--	--	--	--	--
4/1/2024	*/Assessment	0.013 J1	0.24	38.3	0.22 J1	0.041	0.75	1.24	1.35	0.12	0.10 J1	0.0133	0.240	0.2 J1	0.11 J1	< 0.02 U1
9/10/2024	*/Assessment	< 0.008 U1	0.17	41.1	0.26 J1	0.052	0.34	1.46	2.08	0.09	0.11 J1	0.0156	0.097	< 0.1 U1	0.13 J1	0.03 J1

Table 1. Groundwater Data Summary: AD-4C
Welsh - BASP
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	0.05	0.798	10	< 0.083 U1	5.4	32	204
7/27/2016	Background	0.03	0.666	12	< 0.083 U1	5.5	35	208
9/30/2016	Background	0.02	0.5	11	< 0.083 U1	5.0	45	212
10/19/2016	Background	0.04	0.578	10	< 0.083 U1	4.3	35	212
12/12/2016	Background	0.02	0.341	11	< 0.083 U1	4.6	36	252
1/19/2017	Background	0.02	0.761	10	< 0.083 U1	4.7	43	184
2/23/2017	Background	0.02	0.467	9	< 0.083 U1	5.1	40	196
6/7/2017	Background	0.03331	0.573	10	< 0.083 U1	4.9	39	228
10/6/2017	Detection	0.02565	0.654	11	< 0.083 U1	5.4	44	226
5/24/2018	Detection	0.02505	0.434	14	< 0.083 U1	5.2	42	224
8/14/2018	Detection	--	--	15	--	5.0	--	--
11/13/2018	Detection	0.01 J1	0.609	7.5	< 0.083 U1	5.8	56	220
12/18/2018	Detection	--	--	--	--	4.9	58	--
2/20/2019	Detection	0.01 J1	0.931	9.18	0.1 J1	5.2	60.1	242
4/30/2019	Detection	0.014	--	--	--	4.8	56.2	--
5/30/2019	**	< 0.02 U1	0.564	14.8	0.16	4.6	52.8	208
7/24/2019	Detection	< 0.02 U1	0.586	13	< 0.083 U1	3.9	52	284
12/19/2019	Detection	--	--	--	--	--	--	226
5/20/2020	Detection	< 0.02 U1	0.679	15.1	0.11	5.1	69.0	268
7/22/2020	Detection	--	--	--	--	4.7	71.8	280
10/13/2020	Detection	< 0.02 U1	0.613	13.1	0.18	4.9	76.1	278
12/10/2020	Detection	--	--	--	--	4.9	78.2	288
6/2/2021	Detection	0.038 J1	1.1	13.3	0.16	4.6	82.4	280
7/26/2021	Detection	--	1.4	--	--	4.6	71.9	280
10/20/2021	Detection	0.021 J1	0.8	14.3	0.15	4.3	76.8	280
6/28/2022	Detection	0.043 J1	1.08	14.1	0.12	4.8	83.6	280
8/26/2022	Detection	--	--	--	--	3.6	160	--
11/1/2022	Detection	0.068	1.42	19.1	0.1	4.9	142	370
2/7/2023	Detection	0.120	1.65	10.9	--	4.9	111	320
6/5/2023	Detection	0.061	0.93	18.7	0.13	5.1	87.9	290
7/27/2023	Detection	0.099	--	19.2	--	5.1	77.4	--
10/4/2023	Detection	0.207	1.67	13.0	0.13	5.0	115	320
12/14/2023	Detection	0.137	1.08	--	--	4.6	106	330
2/26/2024	Detection	--	--	--	--	5.1	--	--
4/1/2024	Detection	0.217	1.83	14.0	0.12	4.6	120	320
6/10/2024	Detection	0.176	1.56	--	--	4.2	--	--
9/10/2024	Detection	0.251	1.74	15.9	0.10	4.9	123	360 S7
11/4/2024	Detection	0.205	1.30	--	--	4.8	--	390

Table 1. Groundwater Data Summary: AD-4C
Welsh - BASP
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	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
5/31/2016	Background	< 0.93 U1	< 1.05 U1	88	0.407928 J1	< 0.07 U1	9	1.19093 J1	1.289	< 0.083 U1	< 0.68 U1	0.004	0.191	< 0.29 U1	1.12526 J1	< 0.86 U1
7/27/2016	Background	< 0.93 U1	< 1.05 U1	59	0.335947 J1	< 0.07 U1	4	0.852951 J1	0.571	< 0.083 U1	< 0.68 U1	0.015	0.185	1.09296 J1	2.52271 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	1.51249 J1	74	0.274296 J1	< 0.07 U1	8	0.986752 J1	2.572	< 0.083 U1	< 0.68 U1	0.006	0.16	< 0.29 U1	1.95938 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	1.74748 J1	69	0.347477 J1	0.0809157 J1	9	1.08565 J1	1.657	< 0.083 U1	< 0.68 U1	0.006	0.141	3.20217 J1	1.18291 J1	< 0.86 U1
12/12/2016	Background	< 0.93 U1	2.24683 J1	21	0.133622 J1	< 0.07 U1	0.944028 J1	0.305391 J1	0.685	< 0.083 U1	< 0.68 U1	0.004	0.143	< 0.29 U1	1.27423 J1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	1.85604 J1	75	0.221609 J1	< 0.07 U1	4	1.02773 J1	2.045	< 0.083 U1	< 0.68 U1	0.005	0.125	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	30	0.102645 J1	< 0.07 U1	0.421354 J1	0.364739 J1	0.517	< 0.083 U1	< 0.68 U1	0.004	0.098	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/7/2017	Background	< 0.93 U1	1.19 J1	51.42	0.19 J1	0.08 J1	4.03	0.75 J1	0.953	< 0.083 U1	< 0.68 U1	0.00482	0.147	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/30/2019	**	< 0.02 U1	0.55	31.1	< 0.4 U1	0.02 J1	0.386	0.484	0.2	0.16	0.09 J1	< 0.009 U1	0.206	< 0.4 U1	0.3	< 0.1 U1
6/2/2021	*	< 0.02 U1	0.37	55.8	0.14	0.025	0.37	0.508	0.48	0.16	< 0.05 U1	0.0045	0.150	0.2 J1	0.14 J1	< 0.04 U1
10/20/2021	*	0.03 J1	0.65	45.4	0.13	0.136	0.52	0.390	1.32	0.15	0.09 J1	0.0048	0.089	< 0.1 U1	0.59	< 0.04 U1
6/28/2022	*	< 0.02 U1	0.44	52.9	0.125	0.080	0.82	0.556	1.62	0.12	0.16 J1	0.00506	< 0.200 U1	< 0.1 U1	0.39 J1	< 0.04 U1
11/1/2022	*	0.02 J1	0.95	66.5	0.27	0.204	1.03	0.757	2.11	0.1	0.25	0.0085	0.120	< 0.1 U1	0.37 J1	0.06 J1
6/5/2023	*	0.010 J1	0.59	48.2	0.15 J1	< 0.004 U1	0.51	0.476	0.59	0.13	< 0.05 U1	0.0051	0.130	< 0.1 U1	0.27 J1	< 0.02 U1
10/4/2023	*	0.034 J1	0.61	88.8	0.208	0.999	0.81	0.841	1.73	0.13	0.30	0.00644	0.047	< 0.1 U1	0.78	0.04 J1
12/14/2023	*	--	--	--	--	--	--	--	3.07	--	--	--	--	--	--	--
4/1/2024	*/Assessment	0.016 J1	0.49	92.0	0.24 J1	0.018 J1	0.46	0.887	1.42	0.12	< 0.05 U1	0.0079	0.130	< 0.1 U1	0.29 J1	0.03 J1
9/10/2024	*/Assessment	0.014 J1	0.55	87.6	< 0.4 U1	0.132	0.71	0.864	3.21	0.10	0.16 J1	0.010 J1	0.065	< 0.1 U1	0.37 J1	0.02 J1

Table 1. Groundwater Data Summary: AD-5
Welsh - BASP
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	Detection	0.05007	28.1	22	< 0.083 U1	6.2	60	242
8/15/2018	Detection	0.050	40.5	19	< 0.083 U1	6.2	240	428
2/21/2019	Detection	0.033	33.9	24.7	0.21	5.4	46.5	220
5/30/2019	**	0.03 J1	30.0	22.3	0.29	6.3	51.3	238
7/24/2019	Detection	0.04 J1	41.1	18	0.112 J1	6.3	90	354
2/17/2020	**	0.03 J1	39.8	19.8	0.22	5.5	43.7	248
5/20/2020	Detection	0.03 J1	40.2	22.3	0.18	6.8	55.5	264
10/14/2020	Detection	0.04 J1	36.6	18.8	0.18	6.5	148	338
2/23/2021	**	0.03 J1	30.9	--	0.23	6.0	--	--
6/2/2021	Detection	0.027 J1	24.4	19.6	0.21	5.8	53.8	220
10/20/2021	Detection	0.038 J1	38.4	17.4	0.17	5.6	155	370
6/28/2022	Detection	0.048 J1	32.9	15.3	0.15	5.9	146	310
11/1/2022	Detection	0.041 J1	38.6	16.9	0.16	5.9	185	380
6/6/2023	Detection	0.030 J1	26.5	16.1	0.15	5.8	114	280
10/4/2023	Detection	0.042 J1	35.2	17.5	0.17	6.6	132	290
4/2/2024	Detection	0.039 J1	26.0	32.9	0.18	5.7	41.4	210
9/10/2024	Detection	0.039 J1	33.2	22.5	0.16	6.3	114	310

Table 1. Groundwater Data Summary: AD-5
Welsh - BASP
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	pCi/L	mg/L	µg/L	mg/L	µg/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	**	< 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	**	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	**	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	**	< 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	**	< 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	**	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	**	< 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	**	< 0.02 U1	6.28	71.7	0.09 J1	< 0.01 U1	0.09 J1	14.9	2.7	0.18	0.05 J1	0.134	< 0.002 U1	< 0.4 U1	0.1 J1	< 0.1 U1
2/23/2021	**	< 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	*	< 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	*	< 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	*	< 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	*	< 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	*	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	*	< 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-16R
Welsh - BASP
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
6/6/2017	Background	0.04198	2.75	7	0.3438 J1	3.7	54	204
6/28/2017	Background	0.06398	1.24	6	0.2512 J1	3.9	55	200
7/7/2017	Background	0.02699	2.07	36	< 0.083 U1	3.4	52	184
7/14/2017	Background	0.04415	2.39	6	0.2516 J1	3.5	44	160
7/21/2017	Background	0.03237	2.5	7	0.2615 J1	3.5	54	180
7/28/2017	Background	0.02841	1.92	7	< 0.083 U1	2.8	48	162
8/2/2017	Background	0.03177	1.86	7	< 0.083 U1	3.0	49	174
8/11/2017	Background	0.06192	1.83	8	< 0.083 U1	4.1	44	164
8/18/2017	Background	0.0304	1.44	7	< 0.083 U1	3.4	46	160
8/31/2017	Background	0.02841	1.33	7	< 0.083 U1	3.9	63	152
10/6/2017	Detection	0.04672	0.896	7	< 0.083 U1	3.3	82	152
1/18/2018	Detection	--	--	--	--	4.0	58.6	--
5/23/2018	Detection	0.03202	2.53	6	< 0.083 U1	3.8	67	204
8/14/2018	Detection	--	--	--	--	3.9	44	--
11/13/2018	Detection	0.02 J1	0.467	6.5	< 0.083 U1	5.6	54	186
2/20/2019	Detection	0.03 J1	2	6.78	0.2	4.7	52.8	200
4/30/2019	Detection	0.015	--	--	--	3.9	--	--
5/29/2019	**	< 0.02 U1	1.36	5.43	0.19	3.9	41.6	80
7/24/2019	Detection	0.03 J1	1.50	7	0.13 J1	3.6	70	250
12/19/2019	Detection	--	--	--	--	--	--	134
5/20/2020	Detection	0.02 J1	1.54	7.09	0.16	3.4	71.4	242
7/22/2020	Detection	--	--	--	--	3.2	--	224
10/14/2020	Detection	0.02 J1	0.550	6.50	0.14	3.3	53.1	183
6/2/2021	Detection	0.028 J1	1.0	7.02	0.28	3.7	65.4	190
10/20/2021	Detection	0.019 J1	0.4	7.12	0.11	3.6	39.0	170
6/27/2022	Detection	0.026 J1	0.34	7.21	0.10	3.2	46.5	170
11/1/2022	Detection	0.019 J1	0.32	7.96	0.10	3.4	48.1	150
2/7/2023	Detection	--	--	6.85	--	3.7	--	--
6/6/2023	Detection	0.019 J1	0.35	6.90	0.06	3.4	50.4	170
10/4/2023	Detection	0.021 J1	0.29	6.85	0.08	3.6	50.6	170
12/14/2023	Detection	--	--	--	--	3.7	--	--
4/2/2024	Detection	0.033 J1	0.54	6.68	0.10	2.7	66.5	170
6/10/2024	Detection	--	--	--	--	3.6	--	--
9/10/2024	Detection	0.020 J1	0.32	7.30	0.05 J1	2.5	44.7	180
11/4/2024	Detection	--	--	--	--	3.7	--	--

Table 1. Groundwater Data Summary: AD-16R
Welsh - BASP
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	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
6/6/2017	Background	< 0.93 U1	7.07	46.4	2.21	1.03	1.76	41.74	6.66	0.3438 J1	< 0.68 U1	0.0293	< 0.005 U1	< 0.29 U1	1.98 J1	< 0.86 U1
6/28/2017	Background	< 0.93 U1	5.28	41.43	2.16	0.92 J1	0.95 J1	40.87	12.11	0.2512 J1	< 0.68 U1	0.02932	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
7/7/2017	Background	< 0.93 U1	4.13 J1	44.56	2.08	0.97 J1	1.44	41.75	25.16	< 0.083 U1	< 0.68 U1	0.02846	< 0.005 U1	< 0.29 U1	2.09 J1	1.2 J1
7/14/2017	Background	< 0.93 U1	6.31	54.35	2.01	1.09	0.84 J1	37.88	9.12	0.2516 J1	< 0.68 U1	0.02391	0.009 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
7/21/2017	Background	< 0.93 U1	3.88 J1	51.06	2.09	1.02	1.43	40.86	9.81	0.2615 J1	< 0.68 U1	0.02653	< 0.005 U1	< 0.29 U1	1 J1	< 0.86 U1
7/28/2017	Background	< 0.93 U1	3.7	48.51	2.17	1.28	1.07	45.33	8.52	< 0.083 U1	< 0.68 U1	0.02617	0.006 J1	< 0.29 U1	1.27 J1	1.43 J1
8/2/2017	Background	< 0.93 U1	4.46 J1	49.61	2.06	1.22	0.95 J1	43.11	5.45	< 0.083 U1	< 0.68 U1	0.02498	< 0.005 U1	< 0.29 U1	1.74	2.02
8/11/2017	Background	< 0.93 U1	4.93 J1	47.52	1.89	1.13	0.96 J1	40.37	--	< 0.083 U1	< 0.68 U1	0.02347	0.008 J1	< 0.29 U1	1.36 J1	< 0.86 U1
8/18/2017	Background	< 0.93 U1	2.35 J1	43.85	1.91	1.08	0.8 J1	40.05	5.56	< 0.083 U1	< 0.68 U1	0.02466	0.009 J1	< 0.29 U1	< 0.99 U1	0.92 J1
8/31/2017	Background	< 0.93 U1	2.12 J1	44.14	1.75	1.04	1.18	37.56	6.68	< 0.083 U1	< 0.68 U1	0.02429	0.006 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/29/2019	**	0.02 J1	1.76	72.4	0.424	0.08	0.334	4.38	4.41	0.19	0.06 J1	0.01 J1	0.296	< 0.4 U1	0.6	0.2 J1
6/2/2021	*	< 0.02 U1	1.70	40.3	1.49	0.667	0.89	33.9	2.98	0.28	0.10 J1	0.0202	0.021	< 0.1 U1	1.63	0.47
10/20/2021	*	< 0.02 U1	2.00	46.6	0.812	0.773	0.91	28.4	6.33	0.11	0.24	0.0139	0.014	< 0.1 U1	0.64	0.54
6/27/2022	*	< 0.02 U1	0.47	42.4	0.911	0.723	0.74	29.4	14.77	0.10	0.17 J1	0.0187	0.033	< 0.1 U1	0.83	0.50
11/1/2022	*	0.04 J1	0.67	48.8	1.03	0.737	0.92	27.2	7.57	0.10	0.34	0.0179	0.058	< 0.1 U1	0.74	0.53
6/6/2023	*	0.011 J1	0.81	39.7	1.10	0.681	0.64	27.1	6.89	0.06	0.29	0.0197	0.016	< 0.1 U1	1.07	0.48
10/4/2023	*	< 0.008 U1	0.47	45.3	0.873	0.709	0.56	24.8	7.61	0.08	0.20	0.0159	0.017	< 0.1 U1	0.71	0.46
12/14/2023	*	--	--	--	--	--	--	--	33.73	--	--	--	--	--	--	--
4/2/2024	*/Assessment	< 0.008 U1	0.72	35.5	1.66	0.834	0.79	37.3	9.43	0.10	0.19 J1	0.0268	0.010	< 0.1 U1	1.52	0.55
9/10/2024	*/Assessment	< 0.008 U1	0.67	47.5	1.2 J1	0.713	0.78	29.7	13.39	0.05 J1	0.36	0.022	0.006	< 0.1 U1	0.82	0.54

Table 1. Groundwater Data Summary: AD-17
Welsh - BASP
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
10/5/2017	Detection	0.183	183	31	< 0.083 U1	5.9	1,090	1,548
5/24/2018	Detection	0.239	193	39	< 0.083 U1	6.3	1,067	1,836
8/15/2018	Detection	0.118	187	40	< 0.083 U1	5.6	1,168	1,748
2/21/2019	Detection	0.151	207	43.2	0.18	6.9	1,060	1,722
5/30/2019	**	0.158	202	41.7	< 0.04 U1	6.1	1,120	1,546
7/24/2019	Detection	0.113	216	37	0.085 J1	6.0	1,127	1,864
2/17/2020	**	0.104	184	36.0	0.16	5.9	1,070	1,750
5/20/2020	Detection	0.115	250	47.7	0.15	5.7	1,190	1,890
10/14/2020	Detection	0.100	185	35.7	0.17	5.4	1,060	1,720
2/23/2021	**	0.098	168	--	0.17	5.6	--	--
6/2/2021	Detection	0.124	233	44.9	0.31	5.7	1,210	1,890
10/20/2021	Detection	0.104	164	37.3	0.16	5.1	1,040	1,710
6/28/2022	Detection	0.112	167	37.0	0.09 J1	5.2	1,050	1,740
11/1/2022	Detection	0.097	165	40.3	0.09 J1	5.7	1,110	1,690
6/6/2023	Detection	0.10 J1	150	35.6	< 0.05 U1	5.3	1,190	1,510
10/4/2023	Detection	0.14 J1	176 M1	37.9	0.06 J1	5.8	1,180	1,520
4/1/2024	Detection	0.096	131	31.8	0.13 J1	5.4	950	1,280
9/10/2024	Detection	0.106	172	38.4	< 0.05 U1	5.4	1,110	1,580 S7

Table 1. Groundwater Data Summary: AD-17
Welsh - BASP
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	pCi/L	mg/L	µg/L	mg/L	µg/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	**	< 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	**	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	**	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	**	< 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	**	< 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	**	< 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	**	< 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	**	< 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	**	< 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	*	< 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	*	< 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	*	< 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	*	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	*	< 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	*	< 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

Notes:
*: Sample was collected for Appendix IV constituents to update the background dataset prior to closure determination under 40 CFR 257.102(c).
**: Sample is not associated with a specific monitoring program.
--: 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.
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.
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
pCi/L: picocuries per liter
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.

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Memorandum

Date:	September 25, 2024
To:	David Miller (AEP)
Copies to:	Pryce Warren (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Evaluation of Detection Monitoring Data at Welsh Plant's Bottom Ash Storage Pond (BASP)

In accordance with the Texas Commission on Environmental Quality (TCEQ) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (30 TAC 352, "CCR rule"), the first semiannual detection monitoring event of 2024 at the Bottom Ash Storage Pond (BASP), an existing CCR unit at the Welsh Power Plant in Pittsburg, Texas, was completed on April 1-2, 2024. Based on the results, a two-of-two verification sampling was completed on June 10, 2024.

A data quality review was completed to assess if the data collected for this semiannual detection monitoring event met the objectives outlined in TCEQ Draft Technical Guidance No. 32 related to groundwater sampling and analysis[1]. The data were determined usable for supporting project objectives, as documented in the review memoranda provided in Attachment A.

Background values for the BASP were originally calculated in January 2018 and have been periodically updated as sufficient data becomes available. After a minimum of four additional detection monitoring events, the results of those events were compared to the existing background and the dataset was updated as appropriate. Revised upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Lower prediction limits (LPLs) were also calculated for pH. Details on the most recent calculation of the revised background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 15, 2024.

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

To achieve an acceptably high statistical power while maintaining a site-wide false-positive rate (SWFPR) of 10% per year or less, prediction limits were calculated based on a one-of-two retesting procedure. With this procedure, a statistically significant increase (SSI) is only concluded if both samples in a series of two exceeds the UPL (or are below the LPL for pH). In practice, if the initial result did not exceed the UPL, a second sample was not collected or analyzed.

Detection monitoring results and the relevant background values are compared in Table 1 and noted exceedances are described in the list below.

- Boron concentrations were above the intrawell UPL of 0.0882 milligrams per liter (mg/L) in both the initial (0.217 mg/L) and second (0.176 mg/L) samples collected at AD-4C. Thus, an SSI over background is concluded for boron at AD-4C.

- Calcium concentrations were above the intrawell UPL of 1.44 mg/L in both the initial (1.83 mg/L) and second (1.56 mg/L) samples collected at AD-4C. Thus, an SSI over background is concluded for calcium at AD-4C.

- Chloride concentrations were above the intrawell UPL of 9.40 mg/L in both the initial (10.3 mg/L) and second (10.1 mg/L) samples collected at AD-3. Thus, an SSI over background is concluded for chloride at AD-3.

In response to the exceedances noted above, the Welsh BASP CCR unit will either transition to assessment monitoring or an alternative source demonstration (ASD) for boron, calcium, and chloride will be conducted in accordance with 30 TAC 352.941(c). If the ASD is successful, the Welsh BASP will remain in detection monitoring.

The statistical analysis was conducted in accordance with 30 TAC 352.931 and completed within 90 days of sampling and analysis. A certification of these statistics by a qualified professional engineer is provided in Attachment B.

Table 1. Detection Monitoring Data Evaluation
Detection Summary Memorandum
Welsh Plant, Bottom Ash Storage Pond

Analyte	Unit	Description	AD-3		AD-4C		AD-16R	
			4/1/2024	6/10/2024	4/1/2024	6/10/2024	4/2/2024	6/10/2024
Boron	mg/L	Intrawell Background Value (UPL)	0.0407		0.0882		0.0577	
		Analytical Result	0.027	--	**0.217**	**0.176**	0.033	--
Calcium	mg/L	Intrawell Background Value (UPL)	1.38		1.44		2.90	
		Analytical Result	0.65	--	**1.83**	**1.56**	0.54	--
Chloride	mg/L	Intrawell Background Value (UPL)	9.40		18.6		8.00	
		Analytical Result	**10.3**	**10.1**	14.0	--	6.68	--
Fluoride	mg/L	Intrawell Background Value (UPL)	0.263		0.180		0.296	
		Analytical Result	0.12	--	0.12	--	0.10	--
pH	SU	Intrawell Background Value (UPL)	5.2		5.7		4.6	
		Intrawell Background Value (LPL)	3.8		4.0		2.8	
		Analytical Result	**3.7**	4.4	4.6	--	**2.7**	3.6
Sulfate	mg/L	Intrawell Background Value (UPL)	10.6		123		73.4	
		Analytical Result	2.4	--	120	--	66.5	--
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	136		332		242	
		Analytical Result	100	--	320	--	170	--

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
Data Quality Review Memoranda

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Memorandum

Date:	July 11, 2024
To:	David Miller (AEP)
Copies to:	Rebecca Jones (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Data Quality Review – Welsh Power Plant Bottom Ash Storage Pond 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 from the Bottom Ash Storage Pond groundwater monitoring network 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"). These samples were analyzed for select 40 CFR 257 Appendix III and Appendix IV constituents.

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

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241146
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241168

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32[1] prior to submittal of this data to TCEQ.

The following data quality issues were identified:

- As reported in SDG 241168, boron, chromium, and cobalt were detected in the field blank sample "Field Blank-BASP" collected on 4/1/2024. The estimated detected boron concentration in the field blank (0.01 mg/L) was more than 10% of the detected values for

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

boron in the "AD-3" (0.027 mg/), "AD-16R" (0.033 mg/L), and "Duplicate-BASP" (0.016 mg/L) groundwater samples, which could result in high bias for AD-3, AD-16R, and Duplicate-BASP groundwater boron results. The estimated detected chromium concentration in the field blank (0.2 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 241168, barium, boron, chromium, and cobalt were detected in the equipment blank sample "Equipment Blank-BASP" collected on 4/1/2024. The estimated detected boron concentration in the equipment blank (0.013 mg/L) was more than 10% of the detected values for boron in the "AD-3" (0.027 mg/), "AD-16R" (0.033 mg/L), and "Duplicate-BASP" (0.016 mg/L) groundwater samples, which could result in high bias for AD-3, AD-16R, and Duplicate-BASP groundwater boron results. The estimated detected chromium concentration in the equipment blank (0.39 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 241168, the relative percent differences (RPD) for boron (51%), lithium (22%), beryllium (22%), and chromium (75%) concentrations from parent sample "AD-3" and duplicate sample "DUPLICATE" were above 20%. The AD-3 boron, lithium, beryllium, and chromium results should be considered estimated.

- As reported in SDG 241168, the molybdenum result for parent sample "AD-3" was a detection (0.2 µg/L) and the molybdenum result for duplicate sample "DUPLICATE" was nondetect (<0.1 µg/L); therefore, RPD could not be calculated. The AD-3 molybdenum 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.

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Memorandum

Date:	September 4, 2024
To:	David Miller (AEP)
Copies to:	Rebecca Jones (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Data Quality Review – Welsh Power Plant June 2024 Verification Resampling 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 June 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"). The samples were analyzed for select 40 CFR 257 Appendix III and Appendix IV constituents.

The following sample data group (SDG) was associated with the groundwater samples collected during the June 2024 sampling event and is reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241804

The data included in this SDG was reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32[1] prior to submittal of this data to TCEQ.

No data quality issue was identified. Based on these findings, the data reported in this SDG are considered accurate and complete.

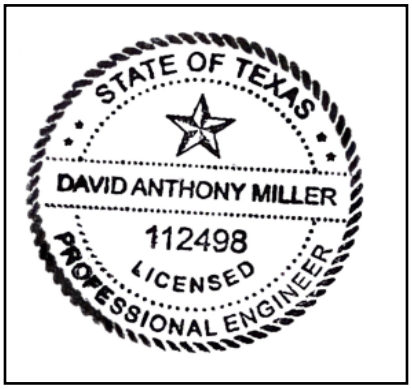
[1] TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

ATTACHMENT B

Certification by a Qualified Professional Engineer

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected statistical method, described above and in the January 15, 2024 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Welsh BASP CCR management area and that the requirements of 30 TAC 352.931(a) have been met.



David Anthony Miller

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature

112498	Texas	09.27.2024
License Number	Licensing State	Date

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Memorandum

Date:	December 27, 2024
To:	David Miller (AEP)
Copies to:	Pryce Warren (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Evaluation of Detection Monitoring Data at Welsh Plant's Bottom Ash Storage Pond (BASP)

In accordance with the Texas Commission on Environmental Quality (TCEQ) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (30 TAC 352, "CCR rule"), the second semiannual detection monitoring event of 2024 at the Bottom Ash Storage Pond (BASP), an existing CCR unit at the Welsh Power Plant in Pittsburg, Texas, was completed on September 10, 2024. Based on the results, a two-of-two verification sampling was completed on November 11, 2024.

A data quality review was completed to assess if the data collected for this semiannual detection monitoring event met the objectives outlined in TCEQ Draft Technical Guidance No. 32 related to groundwater sampling and analysis[1]. The data were determined usable for supporting project objectives, as documented in the review memoranda provided in Attachment A.

Background values for the BASP were originally calculated in January 2018 and have been periodically updated as sufficient data becomes available. After a minimum of four additional detection monitoring events, the results of those events were compared to the existing background and the dataset was updated as appropriate. Revised upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Lower prediction limits (LPLs) were also calculated for pH. Details on the most recent calculation of the revised background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 15, 2024.

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

To achieve an acceptably high statistical power while maintaining a site-wide false-positive rate (SWFPR) of 10% per year or less, prediction limits were calculated based on a one-of-two retesting procedure. With this procedure, a statistically significant increase (SSI) is only concluded if both samples in a series of two exceeds the UPL (or are below the LPL for pH). In practice, if the initial result did not exceed the UPL, a second sample was not collected or analyzed.

Detection monitoring results and the relevant background values are compared in Table 1 and noted exceedances are described in the list below.

- Boron concentrations were above the intrawell UPL of 0.0882 milligrams per liter (mg/L) in both the initial (0.251 mg/L) and second (0.205 mg/L) samples collected at AD-4C. Thus, an SSI over background is concluded for boron at AD-4C.

- Chloride concentrations were above the intrawell UPL of 9.40 mg/L in both the initial (10.3 mg/L) and second (10.1 mg/L) samples collected at AD-3. Thus, an SSI over background is concluded for chloride at AD-3.

- Total dissolved solids (TDS) concentrations were above the intrawell UPL of 332 mg/L in both the initial (360 mg/L) and second (390 mg/L) samples collected at AD-4C. Thus, an SSI over background is concluded for TDS at AD-4C.

In response to the exceedances noted above, the Welsh BASP CCR unit will either transition to assessment monitoring or an alternative source demonstration (ASD) for boron, chloride, and TDS will be conducted in accordance with 30 TAC 352.941(c). If the ASD is successful, the Welsh BASP will remain in detection monitoring.

The statistical analysis was conducted in accordance with 30 TAC 352.931 and completed within 90 days of sampling and analysis. A certification of these statistics by a qualified professional engineer is provided in Attachment B.

Table 1. Detection Monitoring Data Evaluation
Detection Summary Memorandum
Welsh Plant - Bottom Ash Storage Pond

Analyte	Unit	Description	AD-3	AD-3	AD-4C	AD-4C	AD-16R	AD-16R
			9/10/2024	11/4/2024	9/10/2024	11/4/2024	9/10/2024	11/4/2024
Boron	mg/L	Intrawell Background Value (UPL)	0.0407		0.0882		0.0577	
		Analytical Result	0.010	--	**0.251**	**0.205**	0.020	--
Calcium	mg/L	Intrawell Background Value (UPL)	1.38		1.44		2.90	
		Analytical Result	0.78	--	**1.74**	1.30	0.32	--
Chloride	mg/L	Intrawell Background Value (UPL)	9.40		18.6		8.00	
		Analytical Result	**9.89**	**10.9**	15.9	--	7.30	--
Fluoride	mg/L	Intrawell Background Value (UPL)	0.263		0.180		0.296	
		Analytical Result	0.09	--	0.10	--	0.05	--
pH	SU	Intrawell Background Value (UPL)	5.2		5.7		4.6	
		Intrawell Background Value (LPL)	3.8		4.0		2.8	
		Analytical Result	**3.2**	4.5	4.9	4.8	**2.5**	3.7
Sulfate	mg/L	Intrawell Background Value (UPL)	10.6		123		73.4	
		Analytical Result	4.0	--	123	--	44.7	--
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	136		332		242	
		Analytical Result	120	--	**360**	**390**	180	--

Notes:
1. Bold values exceed the background value.
2. Background values are shaded gray.
--: not measured
LPL: Lower prediction limit
mg/L: milligrams per liter
SU: standard units
UPL: Upper prediction limit

ATTACHMENT A
Data Quality Review Memoranda

Geosyntec consultants

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Memorandum

Date:	December 20, 2024
To:	David Miller (AEP)
Copies to:	Pryce Warren (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Data Quality Review – Welsh Power Plant Bottom Ash Storage Pond September 2024 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Welsh Power Plant, located in Pittsburg, Texas in September 2024. The groundwater samples were collected from the Bottom Ash Storage Pond groundwater monitoring network 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"). These samples were analyzed for select 40 CFR 257 Appendix III and Appendix IV constituents.

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

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242751
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242777

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32[1] prior to submittal of this data to TCEQ.

The following data quality issues were identified:

- As reported in SDG 242777, chromium was detected in the field blank sample "Field Blank-BASP" 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

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

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

- As reported in SDG 242777, chromium was detected in the equipment blank sample "Equipment Blank-BASP" collected on 9/10/2024. 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 242777, the antimony result for parent sample "AD-3" was nondetect (<0.008 µg/L) and the antimony result for duplicate sample "Duplicate - BASP" was a detection (0.010 µg/L); therefore, the relative percent difference (RPD) could not be calculated. The beryllium result for AD-3 was a detection (0.26 µg/L) and the beryllium result for "Duplicate – BASP" was nondetect (<0.4 µg/L); therefore, the RPD could not be calculated. The AD-3 antimony and beryllium results should be considered estimated.

- As reported in SDG 242777, the matrix spike duplicate (MSD) recovery for radium-228 (55.5%) was below the acceptable limit of 60%. The associated sample (AD-3) was flagged M1: the associated matrix spike (MS) or MSD recovery was outside acceptance limits. The RPD for the radium-228 MS/MSD pair associated with this sample (28.8%) was above the acceptable limit of 25%. The associated sample (AD-3) was flagged P3: the precision on the matrix spike duplicate (MSD) was above acceptance limits. The AD-3 radium-228 result should be considered estimated.

- As reported in SDG 242751, the AD-4C sample collected on 9/10/2024 for total dissolved solids (TDS) was flagged S7: sample did not achieve constant weight. The AD-4C 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.

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Memorandum

Date:	December 24, 2024
To:	David Miller (AEP)
Copies to:	Pryce Warren (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Data Quality Review – Welsh Power Plant November 2024 Verification Resampling 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 November 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"). The samples were analyzed for select 40 CFR 257 Appendix III constituents.

The following sample data group (SDG) was associated with the groundwater samples collected during the June 2024 sampling event and is reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 243293

The data included in this SDG was reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32[1] prior to submittal of this data to TCEQ.

No data quality issue was identified. Based on these findings, the data reported in this SDG are considered accurate and complete.

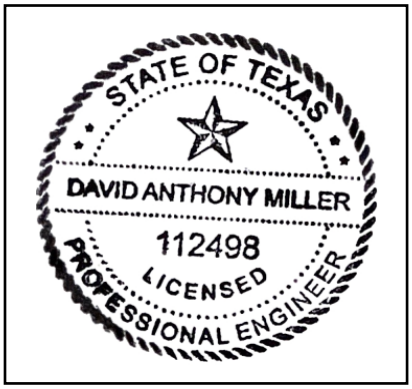
[1] TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

ATTACHMENT B

Certification by a Qualified Professional Engineer

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected statistical method, described above and in the January 15, 2024 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Welsh BASP CCR management area and that the requirements of 30 TAC 352.931(a) have been met.



David Anthony Miller

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature

112498	Texas	12.30.2024
License Number	Licensing State	Date

APPENDIX 3

Alternative Source Demonstrations

Geosyntec consultants

engineers | scientists | innovators

AMERICAN ELECTRIC POWER

BOUNDLESS ENERGY

ALTERNATIVE SOURCE DEMONSTRATION REPORT TEXAS STATE CCR RULE

Welsh Power Plant

Registration No. CCR 110

Pittsburg, Texas

Prepared for

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

Prepared by

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

Project CHA8495

February 2024

Geosyntec consultants

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ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	alternative source demonstration
BASP	Bottom Ash Storage Pond
CCR	coal combustion residuals
EPRI	Electric Power Research Institute
HDPE	high-density polyethylene
LPL	lower prediction limit
meq/kg	milliequivalents per kilogram
mg/L	milligrams per liter
PBAP	Primary Bottom Ash Pond
SSI	statistically significant increase
SU	standard units
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
UPL	upper prediction limit

1. INTRODUCTION AND SUMMARY

This Alternative Source Demonstration (ASD) report has been prepared to address statistically significant increases (SSIs) for boron and chloride in the groundwater monitoring network at the Welsh Power Plant (Welsh Plant) Bottom Ash Storage Pond (BASP) in Pittsburg, Texas, following the first semiannual detection monitoring event of 2023. The Welsh Plant has three coal combustion residuals (CCR) storage units regulated by the Texas Commission on Environmental Quality (TCEQ) under Registration No. CCR 110, including the BASP (**Figure 1**).

Background groundwater values for the BASP were originally calculated in January 2018 and have been updated intermittently in accordance with the *Statistical Analysis Plan* prepared for the Welsh Plant (Geosyntec 2021a). For background values used in the first semiannual event of 2023, revised upper prediction limits (UPLs) were calculated in December 2021 for each Appendix III parameter (Geosyntec 2021b). Revised lower prediction limits (LPLs) were also calculated for pH. Prediction limits were calculated based on a one-of-two retesting procedure to maintain an appropriate site-wide false positive rate. With this procedure, an SSI is concluded only if both samples in a series of two have reported results above the UPL or, in the case of pH, are below the LPL. In practice, if the initial result was not above the UPL or was not below the LPL, a second sample was not collected or analyzed.

The first semiannual detection monitoring event of 2023 was performed in June 2023 (initial sampling event), and the results were compared to the calculated prediction limits. Where initial values were identified above the UPL or below the LPL, verification resampling was completed in July 2023. Following verification resampling, intrawell comparisons were used to identify SSIs for boron and chloride at monitoring well AD-4C. A summary of the detection monitoring analytical results for the downgradient compliance wells and the calculated prediction limits to which they were compared is provided in **Table 1**.

1.1 CCR Rule Requirements

TCEQ regulations regarding detection monitoring programs for CCR landfills and surface impoundments provide owners and operators with the option to make an ASD when an SSI is identified (Texas Administrative Code [TAC], Title 30, §352.941(c)(2)):

> In making a demonstration under this section, the owner or operator must . . . within 90 days of making a determination of an SSI over the background value for any Appendix III constituent adopted by reference in §352.1421 of this title, submit a report prepared and certified in accordance with §352.4 of this title (relating to Engineering and Geoscientific Information), to the executive director, and any local pollution agency with jurisdiction that has requested to be notified, demonstration that a source other than a coal combustion residuals unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Pursuant to this regulation, Geosyntec Consultants, Inc. (Geosyntec) has prepared this ASD report on behalf of American Electric Power (AEP) to document that the SSIs identified for boron and chloride at well AD-4C are from sources other than a release from the BASP at the Welsh Plant.

1.2 Demonstration of Alternative Sources

An evaluation was completed to assess possible alternative sources to which each identified SSI could be attributed. Alternative sources were categorized into the following five types, based on methods provided by the Electric Power Research Institute (EPRI 2017):

- ASD Type I: Sampling Causes
- ASD Type II: Laboratory Causes
- ASD Type III: Statistical Evaluation Causes
- ASD Type IV: Natural Variation
- ASD Type V: Alternative Sources

A demonstration was conducted to show that the identified SSIs at AD-4C were based on Type IV (natural variation) causes and not by a release from the BASP.

2. SUMMARY OF SITE CONDITIONS

The site background summary included in this section was primarily taken from Arcadis (2022), unless otherwise noted.

2.1 BASP Location and Design

The BASP is a 22-acre CCR surface impoundment located in the southern portion of the Welsh Plant, immediately south of the Landfill and Primary Bottom Ash Pond (PBAP) (**Figure 1**). It was designed with approximately 20-foot-high compacted-clay perimeter embankments and a 60-mil-thick high-density polyethylene (HDPE) liner placed over the base of the pond and the interior embankment slopes. The BASP was constructed and placed into operation in 2000 to receive bottom ash and economizer ash dredged and sluiced from the PBAP.

Closure of the BASP was initiated in April 2021 (AEP 2022a). Closure activities are ongoing and involve removal of CCR from the unit. In November 2021, removal of the CCR material from the BASP began, with the CCR material stockpiled in the northern portion of the BASP. The BASP no longer receives CCR material or transport waters and no longer receives non-CCR wastewaters such as stormwater runoff from the landfill and surrounding areas. Dewatering activities began in early 2022 and included installation of dewatering pumps and trenches. As a result of the closure activities, the BASP no longer contained impounded water as of November 3, 2022 (AEP 2022b). Ongoing closure activities include the transport of stockpiled CCR material from the northern portion of the BASP to the Landfill.

2.2 Regional Geology / Site Hydrogeology

The Welsh Plant is located within the West Gulf Coastal Plain. The BASP is immediately underlain by the Eocene-age Recklaw Formation, which consists of very-fine- to fine-grained sand and clay (Flawn 1966). The Recklaw Formation ranges in thickness from approximately 10 to 110 feet in Titus County, where the Welsh Plant is located. This formation is underlain by the Eocene-age Carrizo Sand, consisting of fine to coarse sand, silt, and clay.

The uppermost aquifer in the vicinity of the BASP consists of an interval of the Recklaw Formation that is approximately 12-feet thick and composed of very-fine- to fine-grained silty sand and sandy silt. This aquifer is first encountered approximately 8 feet below the base of the BASP (Arcadis 2022). It is recharged primarily through infiltration of regional precipitation. Groundwater flow velocities in the uppermost aquifer in the vicinity of the BASP have been reported as approximately 1–20 feet per year (AEP 2022a).

Monitoring well AD-4C is screened from 5-15 feet below ground surface, within the Recklaw Formation. Subsurface lithology at and near monitoring well AD-4C is shown on geologic cross sections from Arcadis (2022) (**Attachment A**).

2.3 BASP Monitoring Well Network and Flow Conditions

The BASP monitoring well sampling network consists of background monitoring wells AD-1, AD-5, and AD-17 and downgradient compliance monitoring wells AD-3, AD-4C, and AD-16R (**Figure 1**). The groundwater flow direction near the BASP is generally to the southeast (**Figure 2**). Potentiometric groundwater flow maps from sampling events completed within the past year

are provided as **Attachment B**. Seasonal variability in groundwater flow direction has not been observed in the immediate vicinity of the BASP.

3. ALTERNATIVE SOURCE DEMONSTRATION

3.1 Proposed Alternative Sources

An initial review of groundwater sampling field forms did not identify alternative sources due to a Type I (sampling) issue. A review of the laboratory quality assurance and quality control data and the statistical analyses did not identify any Type II (laboratory) or Type III (statistical evaluation) issues. Groundwater sampling, laboratory analysis, and statistical evaluations were generally completed in accordance with 30 TAC §352.941(a) and draft TCEQ guidance for groundwater monitoring (TCEQ 2020).

A review of site geochemistry data and historical groundwater data identified variability of boron and chloride concentrations in the BASP monitoring well network. Therefore, the SSIs of boron and chloride observed at monitoring well AD-4C are attributed to natural variability, a Type IV issue.

3.1.1 Comparison to Background Concentrations - Boron

Aqueous boron concentrations at downgradient well AD-4C have remained generally consistent since monitoring began in 2016, with the exception of some recent sampling events that have demonstrated variability (**Figure 3**). These recent concentration fluctuations are attributed to natural variability of boron in the uppermost aquifer. The maximum boron concentration observed at AD-4C of 0.120 milligrams per liter (mg/L) falls within the range of boron concentrations observed in wells screened within the Recklaw Formation and located upgradient of the BASP (**Figure 3; Attachment A**). Upgradient monitoring well AD-1 has consistently contained boron concentrations greater than the AD-4C maximum reported value of 0.120 mg/L. Upgradient monitoring well AD-17 has typically contained reported boron concentrations greater than the AD-4C maximum as well. Historical data indicate that the recent boron concentrations observed at AD-4C are still within the expected range associated with site background conditions.

3.1.2 Comparison to Background Concentrations - Chloride

Chloride concentrations in AD-4C groundwater are within the range of values observed at monitoring wells located upgradient of the BASP (**Figure 4**). Chloride concentrations at AD-4C, the well of concern, are comparable to those observed at upgradient well AD-5, and lower than those observed at upgradient well AD-17. This observation indicates that chloride exists naturally in the groundwater of the uppermost aquifer at concentrations which exceed the UPL for AD-4C.

Historical data from AD-4C indicate that chloride concentrations can range from 7.5 to 19.1 mg/L. Regional scale sampling data from shallow wells located in Titus County (**Attachment C**; Texas Water Commission 1965) further support the existence of naturally occurring chloride concentrations exceeding the UPL of 16.0 mg/L. At the time of publication in 1965, chloride concentrations were reported for 44 samples from 27 monitoring wells within Titus County screened at shallow (60 feet or less) depths. Of these 44 samples, only 10 contained reported chloride concentrations below the UPL of 16.0 mg/L (**Figure 5**). This dataset contained an average chloride concentration of 130.4 mg/L, a median concentration of 39.5 mg/L, and a maximum of 450 mg/L. Both the average and the median values exceed the chloride UPL at well of interest AD-4C. These data indicate that chloride concentrations vary within groundwater at comparable depths at the regional scale.

3.1.3 AD-4C Aqueous Geochemical Stability

A CCR unit release would be expected to impact the major ion chemical signature of downgradient groundwater. A Piper diagram, which represents the relative proportions of major cations and anions in water samples, was created to visualize major ion chemistry of AD-4C groundwater and BASP surface water (**Figure 6**). The BASP sample included on **Figure 6** is the most recently collected sample from the unit and represents the final geochemical signature prior to the initiation of closure activities. No additional BASP samples are able to be collected due to closure activities. The BASP no longer receives waste material so no significant geochemical changes are expected to have occurred since the collection of the final BASP sample in June 2020.

The geochemical signature of AD-4C groundwater has remained similar throughout the monitoring period, as illustrated by the clustering of sample results on the Piper diagram. The minor component of anion proportion variability observed in the lower right portion of the Piper diagram does not display a clear temporal trend, suggesting that the slight anion proportion fluctuations are a result of natural variability. In the event of a BASP release, AD-4C groundwater chemistry would be expected to shift to reflect the major ion signature of the BASP sample. The general stability of groundwater samples and lack of a clear temporal shift towards the BASP sample suggest a lack of influence from the BASP on the groundwater chemistry. This conclusion reinforces the determination that recently observed chemical concentrations at AD-4C are associated with natural variability in groundwater composition of the uppermost aquifer.

3.2 Sampling Requirements

The ASD described above supports the determination that the identified SSIs at AD-4C are due to natural variability within the uppermost aquifer, and not due to a release from the Welsh BASP. Therefore, the unit will remain in the detection monitoring program. Groundwater at the unit will continue to be sampled semiannually for Appendix III parameters.

4. CONCLUSIONS AND RECOMMENDATIONS

The preceding information serves as the ASD prepared in accordance with 30 TAC §352.941(c)(2) and supports the position that the boron and chloride SSIs at AD-4C identified during the first semiannual detection monitoring event of 2023 should be attributed to natural variation and not to a release from the Welsh BASP. Therefore, no further action is warranted, and the Welsh BASP will remain in the detection monitoring program. Certification of this ASD by a qualified professional engineer is provided in **Attachment D**.

5. REFERENCES

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Flawn, P. T. 1966. *Geologic Atlas of Texas, Texarkana Sheet*. The University of Texas at Austin Bureau of Economic Geology. July.

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Texas Water Commission. 1965. *Ground-Water Resources of Camp, Franklin, Morris and Titus Counties, Texas*. Texas Water Commission Bulletin 6517. July.

TABLES

Table 1. Detection Monitoring Data Evaluation
Alternative Source Demonstration Report
Welsh Plant - Bottom Ash Storage Pond

Analyte	Unit	Description	AD-3	AD-4C		AD-16R
			6/6/2023	6/5/2023	7/27/2023	6/6/2023
Boron	mg/L	Intrawell Background Value (UPL)	0.0444	0.0481		0.0595
		Analytical Result	0.007	**0.061**	**0.099**	0.019
Calcium	mg/L	Intrawell Background Value (UPL)	1.31	1.19		2.95
		Analytical Result	0.65	0.93	--	0.35
Chloride	mg/L	Intrawell Background Value (UPL)	9.83	16.0		7.79
		Analytical Result	9.14	**18.7**	**19.2**	6.90
Fluoride	mg/L	Intrawell Background Value (UPL)	1.00	1.00		1.00
		Analytical Result	0.11	0.13	--	0.06
pH	SU	Intrawell Background Value (UPL)	5.3	5.7		4.8
		Intrawell Background Value (LPL)	3.9	4.1		2.7
		Analytical Result	4.3	5.1	--	3.4
Sulfate	mg/L	Intrawell Background Value (UPL)	9.54	82.8		75.7
		Analytical Result	2.4	**87.9**	77.4	50.4
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	136	301		251
		Analytical Result	100	290	--	170

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
--: not measured

FIGURES

Legend

- Downgradient Sampling Location
- Background Sampling Location
- CCR Units

Notes

- Monitoring well coordinates provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
- Satellite imagery provided by ESRI and dated 1/19/2024.
- AEP: American Electric Power
- CCR: Coal combustion residual

500 250 0 500
Feet

Site Layout
Bottom Ash Storage Pond

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | February 2024

Figure **1**

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\AEP-Welsh_Updated_BASP_Site_Layout.mxd. Okiemute.Commander. 2/9/2024. CHA8423/14/08.

AD-5
336.58

AD-6
333.20

AD-7
333.59

AD-8
325.51

AD-15
321.42

AD-18
342.25

Primary
Bottom
Ash Pond

335

340

330

325

Clear
Water Pond

AD-9
328.86

AD-13
330.98

AD-10
323.40

AD-12

AD-17
333.87

AD-11
327.20

Landfill

AD-14
330.04

Welsh
Reservoir

AD-1
339.19

AD-16R
327.51

Bottom Ash
Storage Pond

AD-4C
324.44

AD-2
331.15

AD-3
324.06

N

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 June 6, 2023) provided by AEP.
2. AD-12 was not gauged during the June 2023 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.
5 Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
June 2023

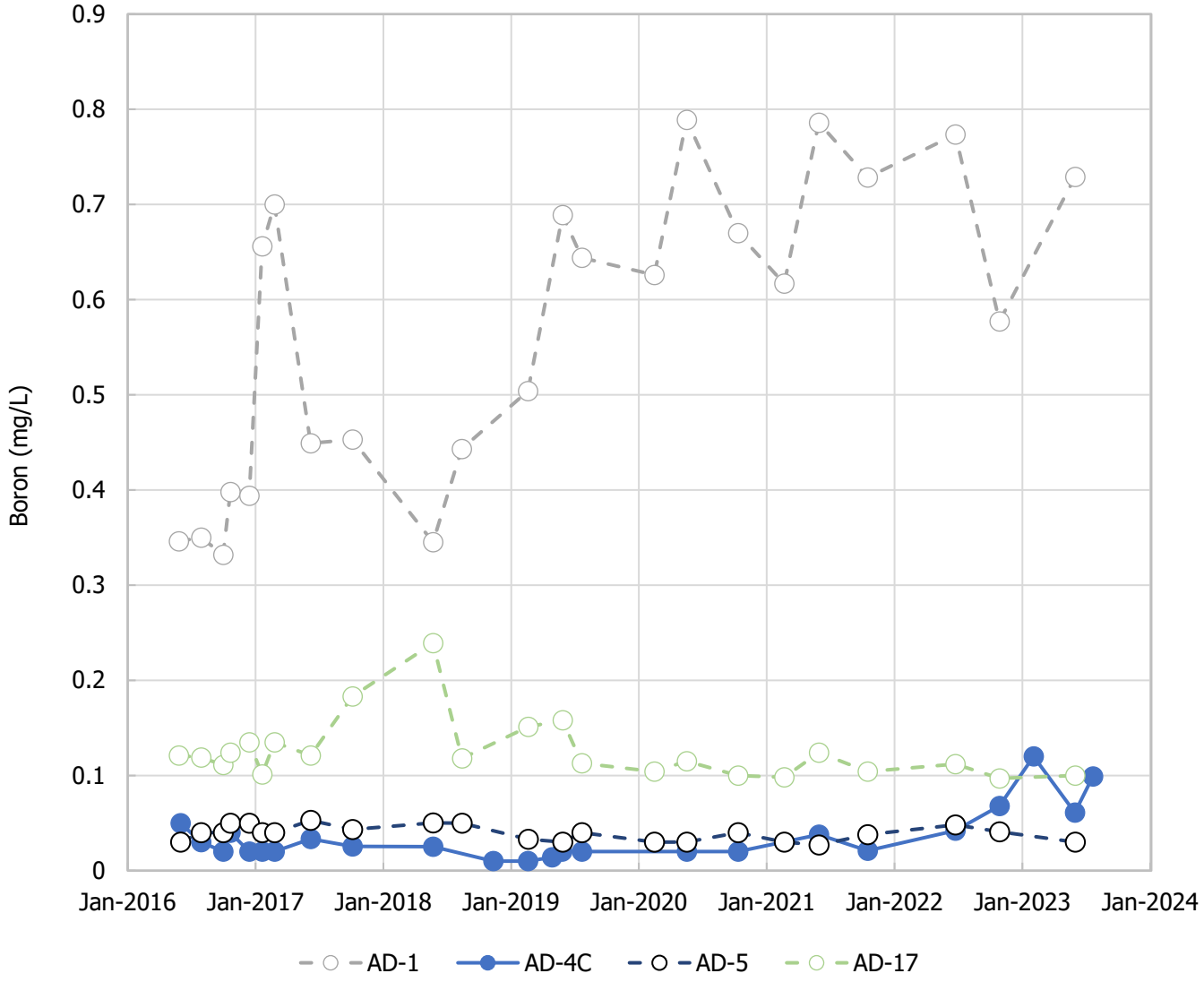
AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | February 2024

Figure
2

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-06June.mxd. ASoltero. 11/30/2023. CHA8423/14/08.



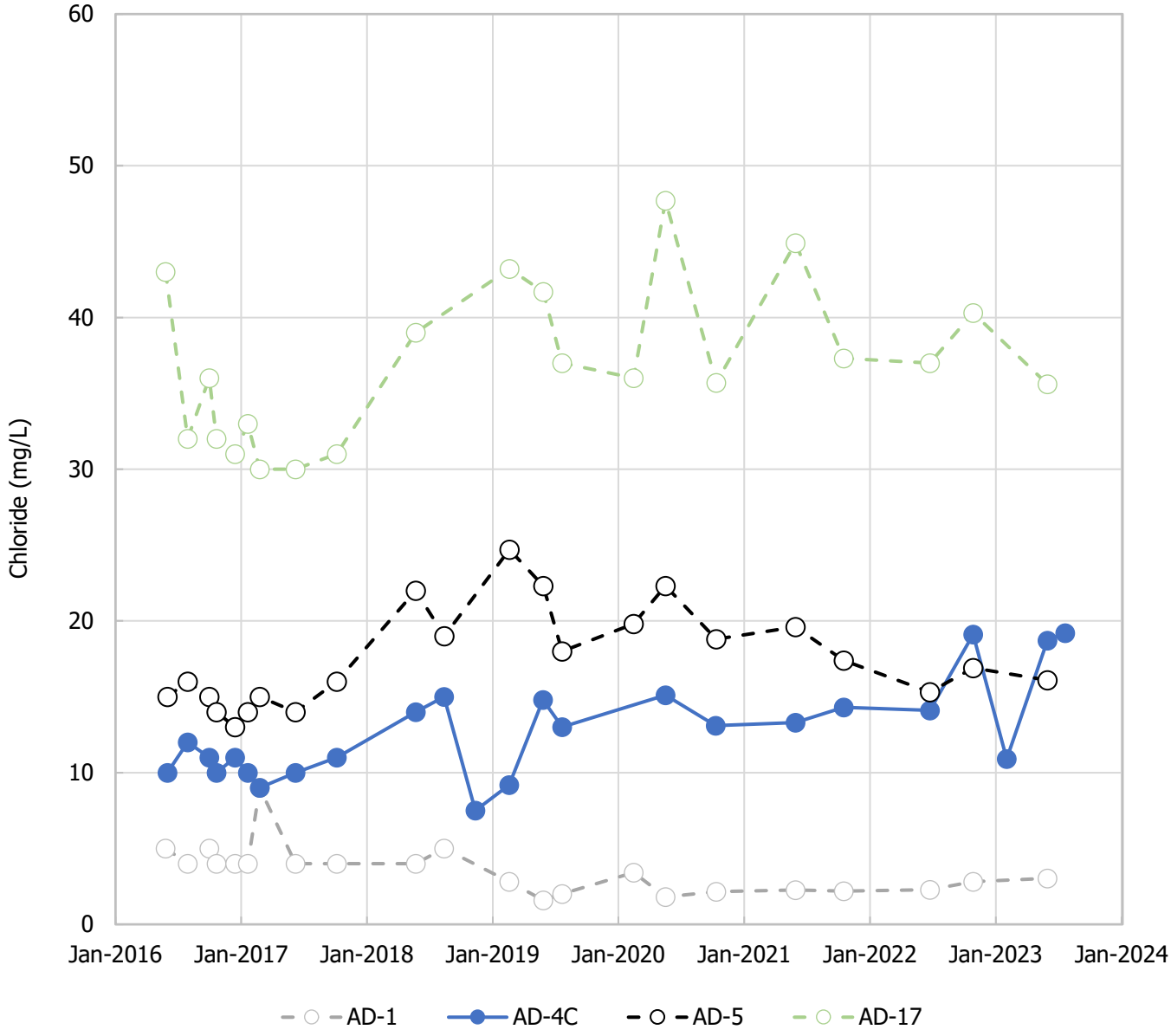
Notes: Boron time series diagram for BASP background wells AD-1, AD-5, and AD-17 (dashed lines) and downgradient well AD-4C (solid line). Data collected as part of the federal coal combustion residuals (CCR) program. Results are shown in milligrams per liter (mg/L).

Boron Time Series Graph
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | February 2024

Figure **3**



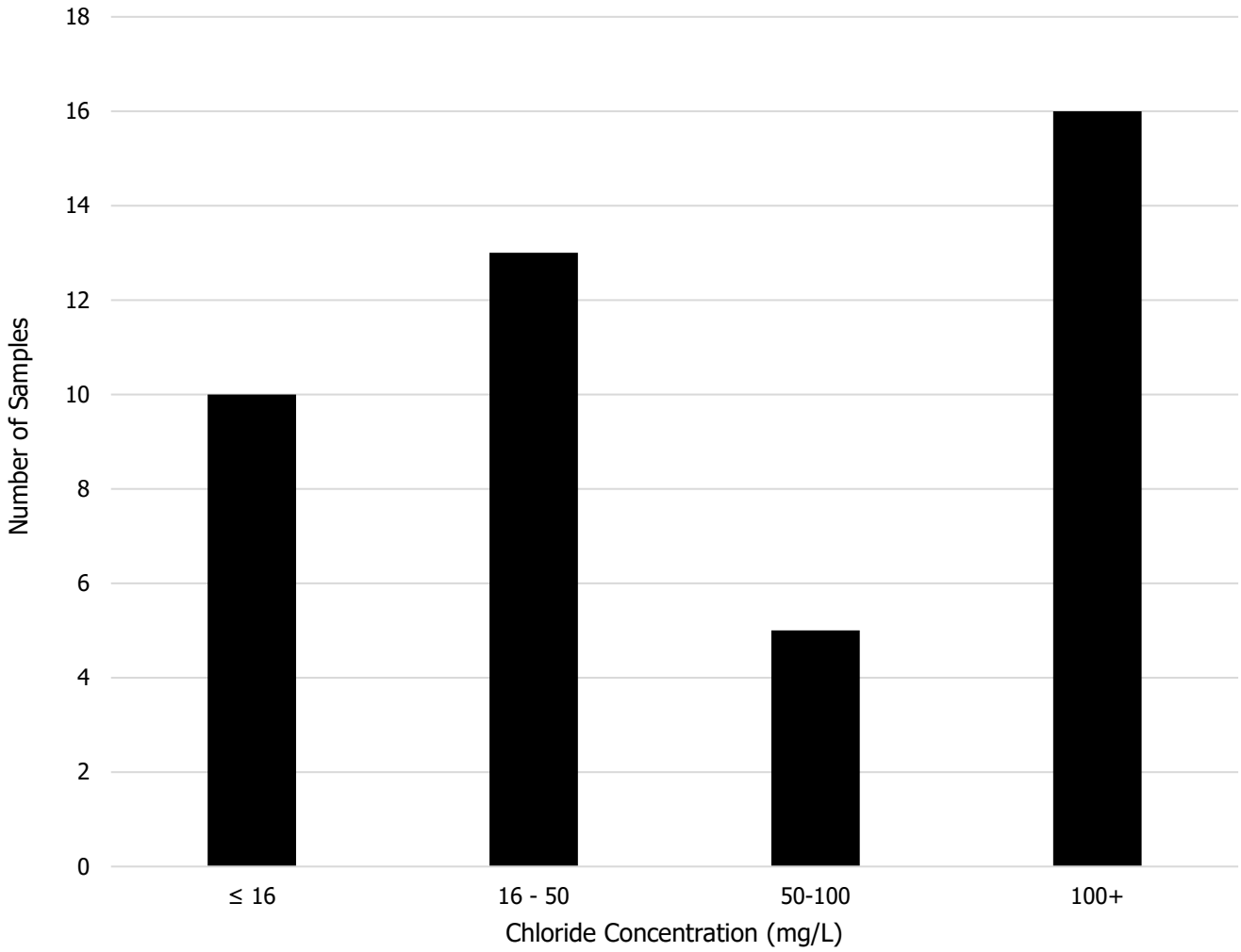
Notes: Chloride time series diagram for BASP background wells AD-1, AD-5, and AD-17 (dashed lines) and downgradient well AD-4C (solid line). Data collected as part of the federal coal combustion residuals (CCR) program. Results are shown in milligrams per liter (mg/L).

Chloride Time Series Graph
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | February 2024

Figure **4**



Notes: Chloride analytical data is shown for 44 groundwater samples collected from 27 groundwater wells screened at a depth of less than 60 feet below ground surface (bgs). Results are grouped in bins in units of milligrams per liter (mg/L). From Texas Water Commission 1965 (provided as **Attachment D**).

Titus County Chloride Concentrations in Shallow (<60' Depth) Monitoring Wells

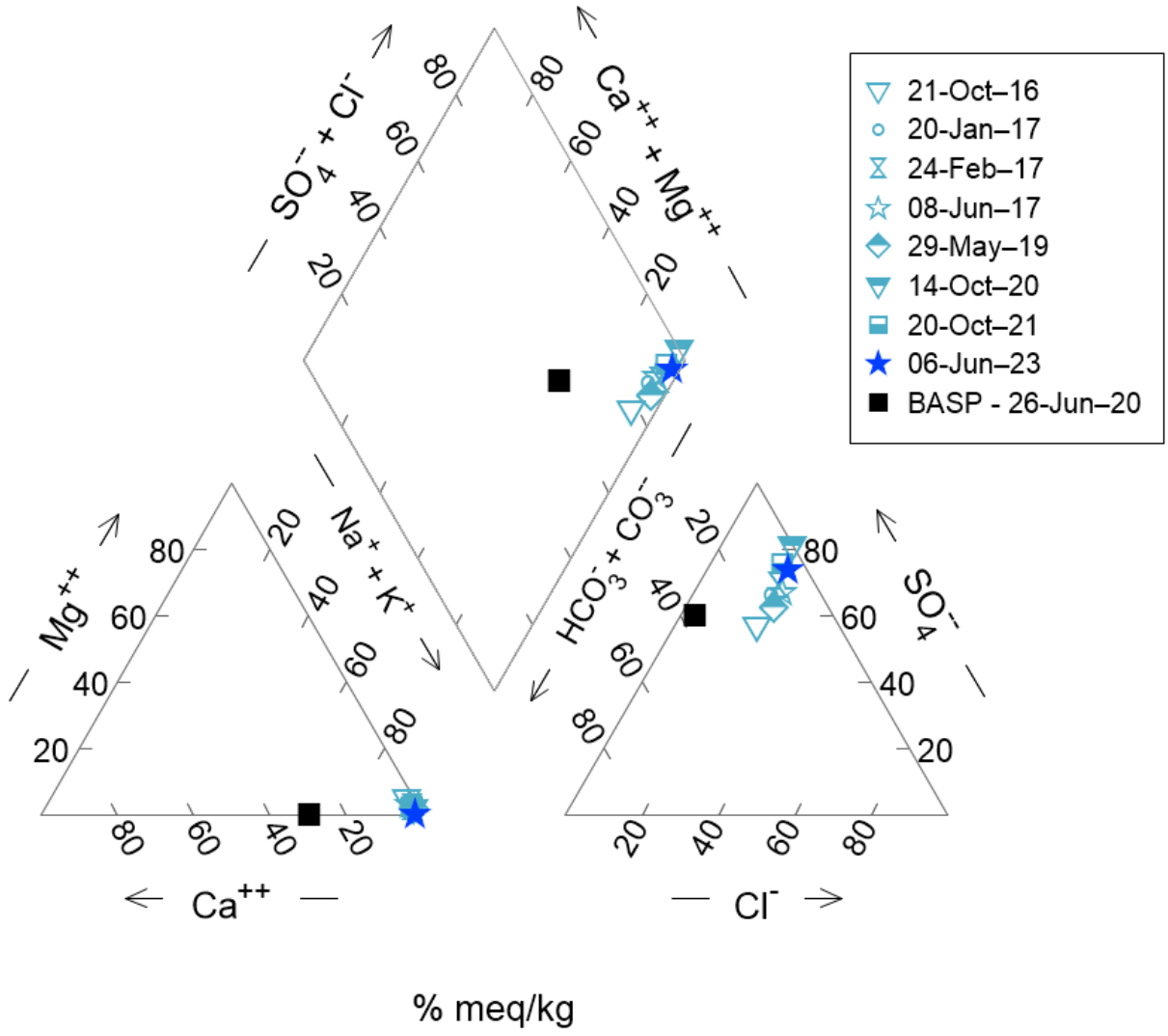
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | February 2024

Figure **5**

\\cmanbos-01\Data\Projects\AEP\Legal Department - ASD Review\Welsh\BASP\2021-10 1st Event 2021\Figures



Notes: Groundwater samples from monitoring well AD-4C which contain analytical results for all major ions are plotted on the Piper diagram with the most recent BASP sample collected. Results are shown in milliequivalents per kilogram (meq/kg).

AD-4C Piper Diagram
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | February 2024

Figure **6**

ATTACHMENT A
Geologic Cross Sections

Document Path: Z:\GISProjects_ENV\AEP\Welsh Plant\MXD\Landfill report\September 2019\Fig2-3-Cross Section LocationsREV.mxd

A
AD-23
AD-22
FM 1735
SB-4 (background)
AD5
AD6
AD-18
SB-3
SB-2
AD-17
B
AD12
Temp-1
C
AD1
D
AD7
A
Ash-3
E
AD8
SB-5
A'
AD-15
B1
B2
Ash-2
Primary Bottom Ash Pond
Ash-1
Weir Box
Drainage Canal
AD9
G-1
B3
SB-6
B4
Clear Water Pond
B5
Welsh Reservoir
AD13
SB-7
AD10
B'
B6
G-2
AD11
TPDES Outfall
Landfill
AD14
AD-19
AD-16
G-3
AD-16R
AD-21
C'
AD-20
Bottom Ash Storage Pond
AD4a
AD4b
1/4-acre Clear Water Pond
D4
AD4c
Ash-4
Weir Box
SB-8
AD2
AD3
D'
E'
GB2
GB6
GB7
GB5
GB4
MW9
MW10

Legend

- Existing CCR Unit Upgradient Monitoring Well
- Existing CCR Unit Downgradient Monitoring Well
- Monitoring Well Location
- Piezometer/Temporary Monitoring Well Location
- Plugged Monitoring Well/Piezometer
- Soil Boring (May 2018)
- Geotechnical Soil Boring (October 2018)
- Ash Pore Water Sample Location (May 2018)
- Site Features
- A-A' LINE OF GEOLOGIC CROSS SECTION

0 800 1,600
SCALE IN FEET

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

SITE LAYOUT AND WELL LOCATIONS (UPDATED SEPTEMBER 2022)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

WEST

A

EAST

A'

STATE OF TEXAS
Kenneth J. Brandner
Geology
1787
LICENSED
PROFESSIONAL GEOSCIENTIST
9-29-22

AD-23 AD-22 AD-5 AD-6 AD-7 AD-8

PRIMARY BOTTOM ASH POND

WELSH RESERVOIR

370'
360'
350'
340'
330'
320'
310'
300'

ELEVATION (FEET MSL)

CLAYEY SAND, BROWN, UNSATURATED

SILTY CLAY, GRAY WITH RED MOTTLING.

CLAYEY SAND, REDDISH BROWN TO GRAY.

QUEEN CITY FORMATION

FILL (ASH)

CLAY, SANDY CLAY AND SILT, ORANGE, RED, GRAY AND BROWN.

SILTY SAND AND CLAYEY SAND, BROWN TO GRAY.

SILTY CLAY, GRAY TO BLACK.
(CONFINING UNIT)

CLAY

WELSH RESERVOIR

RECKLAW FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.95 ft/day)
(EFFECTIVE POROSITY = 0.21)

NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN EVALUATION (6/19/19)
- PROJECTED BASE OF PRIMARY BOTTOM ASH POND (SEE NOTE)

0 600'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
A - A'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
4

WEST

B

EAST

B'

LANDFILL

B-2 B-10

AD-12

AD-17

AD-13

AD-10

FILL
(W/ASH-COAL PIECES)

SILTY SAND, DRY

CLAY AND SANDY CLAY, GRAY TO TAN.

5'

CLAYEY/SILTY SAND AND SANDY SILT,
BROWN TO GRAY, FINE GRAINED.

SILTY AND SANDY CLAY, GRAY TO BROWN.
(CONFINING UNIT)

380'
370'
360'
350'
340'
330'
320'
310'
300'

ELEVATION (FEET MSL)

RECKLAW
FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.21
0.95 ft/day)
(EFFECTIVE POROSITY =

STATE OF TEXAS
Kenneth J. Brammer
Geology
1780
LICENSED
PROFESSIONAL GEOSCIENTIST

9-29-22

NOTES:
1. BASE OF LANDFILL ELEVATION TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I" DRAWING ID WEPX-88, DATED 12/3/76.
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-21-17; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (3/4/16)
- BASE OF LANDFILL (SEE NOTE)

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
B - B'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
5

WEST

C

EAST

C'

BOTTOM ASH STORAGE POND

WELSH RESERVOIR

370'
360'
350'
340'
330'
320'
310'
300'

PERIMETER ROAD (EL. 360')

PERIMETER ROAD (EL. 360')

B-12

B-13

AD-1

AD-4A

AD-4B

AD-4C

AD-20

AD-21

SILTY CLAY AND SANDY CLAY, BROWN TO GRAY.

CLAYEY SAND, DRY

BOTTOM ASH STORAGE 60-ML. HDPE LINER (PROJECTED)

SANDY SILT AND SILTY SAND, VERY FINE TO FINE GRAINED, GRAY TO TAN.

SANDY CLAY

REDDISH BROWN TO GRAY, SILTY CLAY.

DARK GRAY SILTY, SANDY CLAY.
(confining unit)

RECLAIM FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.95 ft/day)
(EFFECTIVE POROSITY = 0.21)

ELEVATION (FEET MSL)

ELEVATION (FEET MSL)

NOTES:
1. BASE OF BOTTOM ASH STORAGE HAS A 60-MIL. HDPE LINER AT ELEVATION 340.0', TAKEN FROM FREESE AND NICHOLS "HYDRAULIC ANALYSIS OF WELSH POWER PLANT ASH PONDS, AMERICAN ELECTRIC POWER COMPANY", DATED DECEMBER 2010.
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

STATE OF TEXAS
Kenneth J. Brandner
Geology
1787
LICENSED PROFESSIONAL GEOSCIENTIST

9-29-22

LEGEND

MONITORING WELL SCREENED INTERVAL

WATER LEVEL IN MONITORING WELL (10/29/18)

PROJECTED BASE OF ASH STORAGE (SEE NOTE)

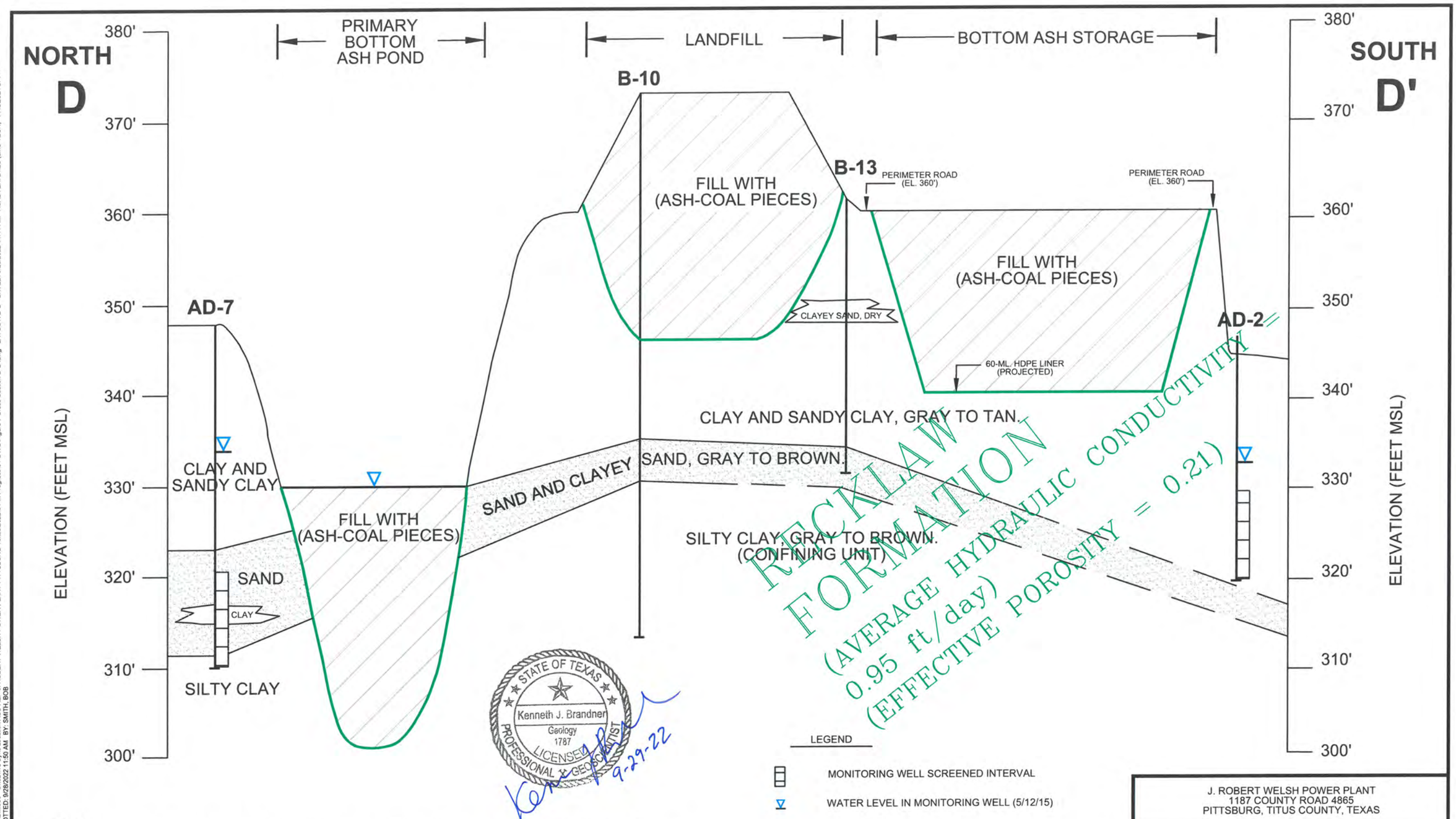
0 200'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
C - C'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
6



NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (5/12/15)
- BASE OF CCR UNIT

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION D - D' (UPDATED SEPTEMBER 2022)

ARCADIS

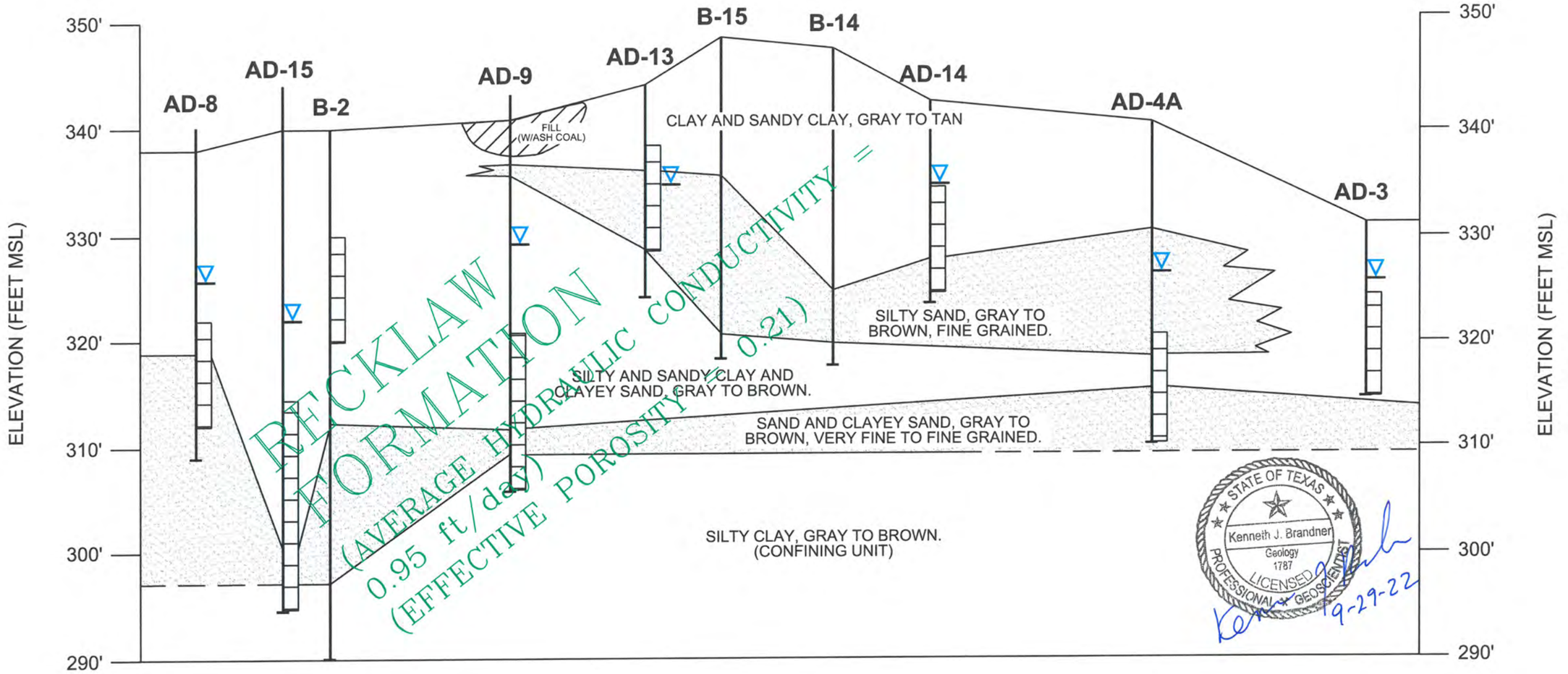
FIGURE 7

NORTH

E

SOUTH

E'



NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
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LEGEND

MONITORING WELL SCREENED INTERVAL

WATER LEVEL IN MONITORING WELL (3/4/16)

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
E - E'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
8

ATTACHMENT B
Historical Potentiometric Maps

Legend

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

Notes

- Monitoring well coordinates and water level data (collected on June 27 and 28, 2022) provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
- Groundwater elevation units are feet above mean sea level.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

Dec 7, 2022

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
June 2022

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2022/10/31

Figure

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2022\AEP-Welsh_GW_2022-06June.mxd. ASoltero. 10/31/2022. CHA8423/14/08.

Legend

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

Notes

- Monitoring well coordinates and water level data (collected on November 1, 2022) provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
- Groundwater elevation units are feet above mean sea level.
- Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

January 5, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
November 2022

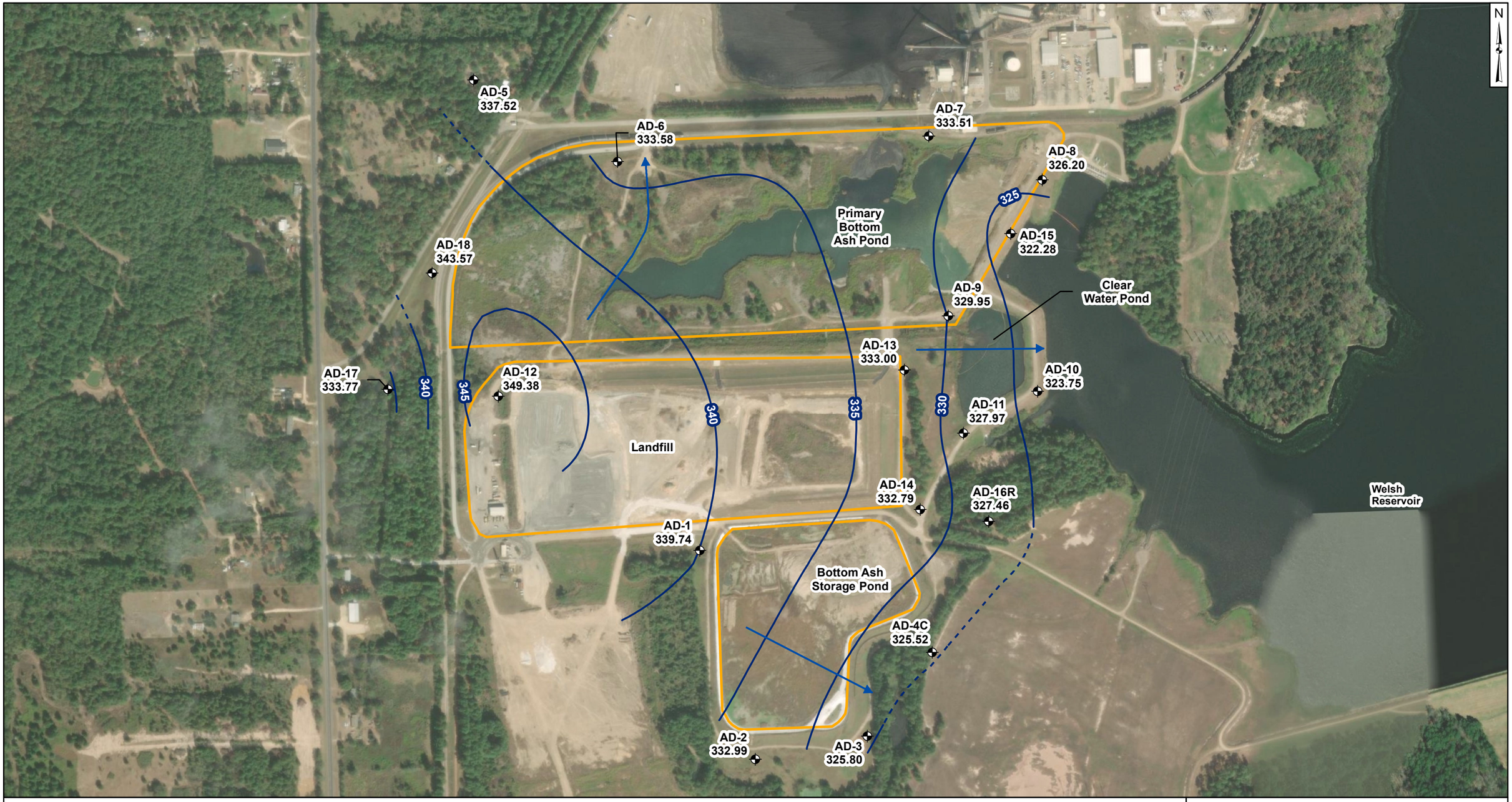
AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2022/11/16

Figure

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2022\AEP-Welsh_GW_2022-11Nov.mxd. ASoltero. 11/16/2022. CHA8423/14/08.



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 6 and 7, 2023) 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.
4. Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
February 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/30

Figure
1

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-02Feb.mxd. ASoltero. 11/30/2023. CHA8423/14/08.

ATTACHMENT C
Chemical Analysis of Wells in Titus County

Table 11.--Chemical analyses of water from wells and springs in Camp, Franklin, Morris, Titus, and adjoining counties--Continued

Titus County

Well	Depth of well (ft)	Date of collection	Silica (SiO_2)	Iron (Fe) (total)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
YA-16-41-101	22	Aug. 20, 1963	--	--	--	--	--	*17		7	0.0	18	--	40	--	--	--	27	57	1.4	0.00	149	5.1
102	34	do	--	--	--	--	--	--		34	--	358	--	--	--	--	--	324	--	--	--	1,250	5.8
201	30	May 26, 1942	--	--	--	12	1.2	*32		55	15	24	--	15	--	--	127	36	--	--	--	--	--
301	60	do	--	--	--	179	126	*126		12	1,025	115	0	3.0	--	--	1,580	968	--	--	--	--	--
302	60	do	--	--	--	134	39	*152		116	211	361	--	1.0	--	--	955	494	--	--	--	--	--
801	200	Feb. 25, 1963	13	0.13	--	6.8	2.0	*147		308	.0	65	.4	.0	--	--	385	25	93	13	4.55	703	7.3
802	31	do	--	--	--	--	--	--		22	4.0	238	--	44	--	--	--	181	--	--	.00	955	5.2
902	470	July 30, 1963	11	.13	--	3.2	.7	*326		406	.0	272	.9	1.5	--	--	815	11	98	43	6.43	1,410	7.5
903	27	May 26, 1942	--	--	--	82	63	*155		268	296	191	0	3.0	--	--	922	464	--	--	--	--	--
42-401	48	June 3, 1942	--	--	--	226	63	*421		549	33	890	--	0	--	--	1,903	824	--	--	--	--	--
702	22	do	--	--	--	12	5.8	*58		55	18	77	--	10	--	--	208	54	--	--	--	--	--
49-103	20	May 22, 1942	--	--	--	.8	1.0	*12		18	11	3.0	--	1.5	--	--	38	6	--	--	--	--	--
202	315	Feb. 20, 1963	51	22	--	9.8	3.2	*24		91	.0	11	.1	.0	--	--	144	38	58	1.7	.74	215	5.8
203	30	do	--	--	--	--	--	*275		64	1,420	700	--	--	--	--	--	1,920	24	2.7	.00	4,090	5.5
206	485	Feb. 25, 1963	14	.68	--	20	.7	*58		122	13	13	.2	1.0	--	--	162	8	94	8.9	1.84	284	7.3
301	24	May 26, 1942	--	--	--	2.4	1.2	*28		31	7	22	--	10	--	--	86	11	--	--	--	--	--
401	24	May 22, 1942	--	--	--	21	3.6	*13		43	26	20	--	7.0	--	--	112	67	--	--	--	--	--
402	395	Mar. 12, 1963	50	11	--	9.0	3.9	16	2.6	64	3.4	14	.2	0	--	0.00	130	38	45	1.1	.28	156	5.9
503	360	Feb. 20, 1963	54	12	--	9	3.2	*26		78	4.6	16	.1	.0	--	--	151	36	61	1.9	.57	218	5.8
601	22	May 25, 1942	--	--	--	49	19	*109		171	74	138	.2	33	--	--	506	202	--	--	--	--	--
603	350	July 30, 1963	11	.12	--	1.5	.1	*86		204	.0	16	.2	1.8	--	--	217	4	98	19	3.26	353	7.4
701	437	May 27, 1942	20	.07	--	3.7	1.2	*231		370	2	149	.2	2.0	--	--	594	14	--	--	--	--	8.2
701	437	June 22, 1949	15	.14	--	1.6	.7	196	1.6	a337	1.6	109	.1	2.2	--	.79	509	--	--	--	--	869	8.5
701	437	Feb. 19, 1963	12	2.8	--	1.5	.5	170	1.1	322	3.2	74	.2	.0	--	.20	421	6	98	30	5.17	758	7.4
702	597	May 27, 1942	20	.05	--	3.8	1.0	224	--	380	2	132	0	.0	--	--	567	14	--	--	--	--	8.4
702	597	Feb. 19, 1963	12	1.4	--	2.5	.7	218	1.2	368	.0	126	.3	.0	--	.27	542	9	98	32	5.85	991	7.7
706	430	May 14, 1942	39	5.6	--	14	6.6	30	--	126	2	15	.1	.5	--	--	176	62	--	--	--	--	--

See footnotes at end of table.

Table 11.--Chemical analyses of water from wells and springs in Camp, Franklin, Morris, Titus, and adjoining counties--Continued

Titus County

Well	Depth of well (ft)	Date of collection	Silica (SiO_2)	Iron (Fe) (total)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
YA-16-49-708	460	Mar. 14, 1963	13	0.13	--	1.5	0.2	152	.8	298	3.2	62	0.2	0.0	--	0.10	380	5	98	30	4.78	651	8.0
804	18	May 14, 1942	--	--	--	10	1.2		*7.4	24	18	6.0	--	0	--	--	55	31	--	--	--	--	--
924	300	Apr. 25, 1963	33	2.7	--	20	4.0		*55	156	13	31	.5	.0	--	--	234	66	64	2.9	1.23	352	7.1
50-101	35	June 3, 1942	--	--	--	13	2.4		*46	49	12	14	--	86	--	--	197	42	--	--	--	--	--
102	31	do	--	--	--	79	35		*44	110	11	141	--	169	--	--	533	342	--	--	--	--	--
202	48	do	--	--	--	47	12		*38	49	2	125	--	39	--	--	287	168	--	--	--	--	--
403	310	July 30, 1963	18	.09	--	27	6.9		*107	284	57	26	.2	.0	--	--	382	96	71	4.8	2.73	601	7.2
404	10	May 25, 1942	--	--	--	31	28		*6.4	18	74	78	--	5.0	--	--	231	192	--	--	--	--	--
409	300	July 30, 1963	12	.05	--	4.2	.9		*116	270	23	13	.2	2.0	--	--	304	14	95	13	4.15	485	7.3
501	37	May 25, 1942	--	--	--	308	97		*76	488	274	460	0	2.0	--	--	1,457	1,170	--	--	--	--	--
703	18	June 3, 1942	--	--	--	1.6	3.2		*2.3	12	4	4.0	.3	2.0	--	--	23	17	--	--	--	--	--
57-102	246	Aug. 22, 1963	34	2.9	--	45	9.7		*34	130	75	29	.2	.2	--	--	291	152	33	1.2	.00	452	6.6
110	700	June 3, 1963	12	.09	--	4.5	1.2		*420	396	0	425	.5	.7	--	--	1,060	16	98	46	6.17	1,890	7.6
114	475	Aug. 22, 1963	13	.06	--	6.0	.7		*56	155	.0	8.5	.2	.5	--	--	161	18	87	5.7	2.18	272	7.2
301	20	May 13, 1942	--	--	--	4.8	3.6		*10	12	26	7.0	.2	2.0	--	--	60	27	--	--	--	--	--
302	420	July 31, 1963	13	.22	--	3.5	.5		*104	266	.2	15	.2	2.2	--	.06	271	11	95	14	4.14	440	7.3
401	300	Aug. 22, 1963	13	--	--	4.8	1.0		*157	286	.0	86	.6	.0	--	--	403	16	96	17	4.37	688	7.7
402	300	May 1, 1963	13	1.1	0.00	5.0	1.1	157	1.6	296	.2	88	.5	.0	0.94	.28	414	17	95	17	4.51	708	7.5
601	18	May 13, 1942	--	--	--	8.8	2.4		*11	18	5	18	.2	12	--	--	67	32	--	--	--	--	--
58-101	9	May 14, 1942	--	--	--	12	6.1		*31	12	63	29	.2	6.0	--	--	153	54	--	--	--	--	--
103	24	do	--	--	--	8.8	3.6		*13	6	12	20	--	25	--	--	85	37	--	--	--	--	--
203	21	do	--	--	--	13	2.4		*29	61	5	28	--	12	--	--	119	42	--	--	--	--	--
401	13	May 13, 1942	--	--	--	4.8	2.4		*8.1	18	2	10	.1	10	--	--	47	22	--	--	--	--	--
701	25	May 14, 1942	--	--	--	13	12		*38	12	2	35	--	130	--	--	236	83	--	--	--	--	--
17-48-102	26	Aug. 21, 1963	--	--	--	--	--		--	53	--	38	--	--	--	--	--	53	--	--	.00	299	5.6
202	18	Mar. 22, 1942	--	--	--	11	1.0		*104	12	30	84	--	120	--	--	356	31	--	--	--	--	--
202	18	Aug. 21, 1963	--	--	--	--	--		--	22	--	89	--	--	--	--	--	86	--	--	.00	696	5.6

See footnotes at end of table.

Table 11.--Chemical analyses of water from wells and springs in Camp, Franklin, Morris, Titus, and adjoining counties--Continued

Titus County

Well	Depth of well (ft)	Date of collection	Silica (SiO_2)	Iron (Fe) (total)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
YA-17-48-801	13	May 22, 1942	--	--	--	11	4.9	*37		43	12	40	--	29	--	--	155	48	--	--	--	--	--
802	18	May 20, 1942	--	--	--	5.6	6.1	*17		31	7	12	--	33	--	--	96	39	--	--	--	--	--
901	25	May 22, 1942	--	--	--	13	4.9	*37		12	22	39	--	55	--	--	177	53	--	--	--	--	--
56-201	40	May 27, 1942	--	--	--	22	15	*17		12	2	18	--	141	--	--	221	114	--	--	--	--	--
303	20	May 20, 1942	--	--	--	26	4.6	*34		55	11	65	--	10	--	--	178	83	--	--	--	--	--
304	310	Aug. 13, 1963	18	1.8	--	7.5	2.6	*117		190	74	35	0.2	.0	--	--	347	29	90	9.4	2.53	560	7.2
401	11	May 27, 1942	--	--	--	16	7.3	*134		31	122	102	--	82	--	--	478	70	--	--	--	--	--
402	30	do	--	--	--	4.4	1.2	*19		18	30	4.0	.2	6.0	--	--	74	16	--	--	--	--	--
415	225	Jan. 17, 1963	12	.37	--	3.5	1.2	*132		248	71	15	.1	2.8	--	--	360	14	96	15	3.79	526	7.5
601	28	May 20, 1942	--	--	--	98	55	*67		171	185	199	.1	1.5	--	--	690	469	--	--	--	--	--
701	38	May 15, 1942	--	--	--	6.0	0	*5.1		18	4	5.0	0	0	--	--	29	15	--	--	--	--	--
† 707	260	Oct. 15, 1962	22	.1	--	6.7	2.5	*191.1		201.3	198	50.0	--	--	--	--	--	27	--	--	--	892	8.02
707	260	July 27, 1963	7.8	1.7	0.00	8.2	2.3	182	2.4	184	202	50	.1	2.8	0.24	0.09	548	30	92	14	2.42	866	7.0
801	Spring	May 15, 1942	--	--	--	8.8	2.4	*1.2		37	2	1.0	--	1.5	--	--	35	32	--	--	--	--	--
901	502	May 29, 1942	--	--	--	5.2	4.9	*297		323	2	288	.2	7.0	--	--	764	33	--	--	--	--	--
64-101	380	July 31, 1963	14	.09	--	3.8	.9	*82		187	1.8	24	.2	1.2	--	--	220	13	93	9.9	2.80	356	7.5
102	17	May 15, 1942	--	--	--	4.8	2.4	*22		49	3	15	.1	6.0	--	--	77	22	--	--	--	--	--
201	48	do	--	--	--	48	22	*124		43	30	254	--	66	--	--	565	208	--	--	--	--	--
301	40	do	--	--	--	205	126	*239		580	418	450	0	9.0	--	--	1,732	1,033	--	--	--	--	--
401	32	do	--	--	--	24	18	*127		98	30	195	--	32	--	--	474	136	--	--	--	--	--

* Sodium and potassium calculated as sodium (Na).
† Analyses by Curtis Laboratories.
a/ Includes the equivalent of 5 ppm as carbonate (CO_3).

ATTACHMENT D
Certification by a Qualified Professional Engineer

CERTIFICATION BY A QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected and above described alternative source demonstration is appropriate for evaluating the groundwater monitoring data for the Welsh Bottom Ash Storage Pond CCR management area and that the requirements of §352.941(c) have been met.

Beth Ann Gross
Printed Name of Licensed Professional Engineer

Beth Ann Gross
Signature

Geosyntec Consultants
2039 Centre Pointe Blvd, Suite 103
Tallahassee, Florida 32308

Texas Registered Engineering Firm
No. F-1182

79864	Texas	February 12, 2024
License Number	Licensing State	Date

CORRESPONDENCE COVER SHEET
WASTE PERMITS DIVISION
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Date: 4/22/2024
Facility Name: Welsh Power Plant
Permit or Registration No.: CCR110

Nature of Correspondence:
☒ Initial/New
☐ Response/Revision*

*If Response/Revision, please provide previous TCEQ Tracking No.:
(Previous TCEQ Tracking No. can be found in the Subject line of the TCEQ's response letter to your original submittal.)

This cover sheet should accompany all correspondences submitted to the Waste Permits Division and should be affixed to the front of your submittal as a cover page. Please check the appropriate box for the type of correspondence being submitted. For questions regarding this form, please contact the Waste Permits Division at (512) 239-2335.

Table 1 - Municipal Solid Waste

APPLICATIONS	REPORTS and RESPONSES
☐ New Notification	☐ Closure Report
☐ New Permit (including Subchapter T)	☐ Groundwater Alternate SRC Demonstration
☐ New Registration (including Subchapter T)	☐ Groundwater Corrective Action
☐ Major Amendment	☐ Groundwater Monitoring Report
☐ Minor Amendment	☐ Groundwater Statistical Evaluation
☐ Limited Scope Major Amendment	☐ Landfill Gas Corrective Action
☐ Notice Modification	☐ Landfill Gas Monitoring
☐ Non-Notice Modification	☐ Liner Evaluation Report
☐ Transfer/Name Change Modification	☐ Soil Boring Plan
☐ Temporary Authorization	☐ Special Waste Request
☐ Voluntary Revocation	☐ Other:
☐ Subchapter T Workplan	
☐ Other:	

Table 2 - Industrial & Hazardous Waste

APPLICATIONS	REPORTS and RESPONSES
☐ New	☐ Annual/Biennial Site Activity Report
☐ Renewal	☐ CfPT Plan/Result
☐ Post-Closure Order	☐ Closure Certification/Report
☐ Major Amendment	☐ Construction Certification/Report
☐ Minor Amendment	☐ CPT Plan/Result
☐ Class 3 Modification	☐ Extension Request
☐ Class 2 Modification	☐ Groundwater Monitoring Report
☐ Class 1 ED Modification	☐ Interim Status Change
☐ Class 1 Modification	☐ Interim Status Closure Plan
☐ Endorsement	☐ Soil Core Monitoring Report
☐ Temporary Authorization	☐ Treatability Study
☐ Voluntary Revocation	☐ Trial Burn Plan/Result
☐ 335.6 Notification	☐ Unsaturated Zone Monitoring Report
☐ Other:	☐ Waste Minimization Report
	☒ Other: Al**ternative Source Demo - BASP**

Geosyntec consultants

engineers | scientists | innovators

AMERICAN ELECTRIC POWER

BOUNDLESS ENERGY

ALTERNATIVE SOURCE DEMONSTRATION REPORT – 2023 SECOND SEMIANNUAL EVENT

TEXAS STATE CCR RULE

Welsh Power Plant

Registration No. CCR 110

Pittsburg, Texas

Prepared for

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

Prepared by

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

Project CHA8495

April 2024

Geosyntec consultants

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ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	alternative source demonstration
BASP	Bottom Ash Storage Pond
CCR	coal combustion residuals
EPRI	Electric Power Research Institute
HDPE	high-density polyethylene
LPL	lower prediction limit
meq/kg	milliequivalents per kilogram
mg/L	milligrams per liter
PBAP	Primary Bottom Ash Pond
SSI	statistically significant increase
SU	standard units
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
UPL	upper prediction limit

1. INTRODUCTION AND SUMMARY

This Alternative Source Demonstration (ASD) report has been prepared to address a statistically significant increase (SSI) for boron in the groundwater monitoring network at the Welsh Power Plant (Welsh Plant) Bottom Ash Storage Pond (BASP) in Pittsburg, Texas, following the second semiannual detection monitoring event of 2023. The Welsh Plant has three coal combustion residuals (CCR) storage units regulated by the Texas Commission on Environmental Quality (TCEQ) under Registration No. CCR 110, including the BASP (**Figure 1**).

Background groundwater values for the BASP were originally calculated in January 2018 and have been updated intermittently in accordance with the *Statistical Analysis Plan* prepared for the Welsh Plant (Geosyntec 2021a). For background values used in the second semiannual event of 2023, revised upper prediction limits (UPLs) were calculated in January 2024 for each Appendix III parameter (Geosyntec 2024). Revised lower prediction limits (LPLs) were also calculated for pH. Prediction limits were calculated based on a one-of-two retesting procedure to maintain an appropriate site-wide false positive rate. With this procedure, an SSI is concluded only if both samples in a series of two have reported results above the UPL or, in the case of pH, are below the LPL. In practice, if the initial result was not above the UPL or was not below the LPL, a second sample was not collected or analyzed.

The second semiannual detection monitoring event of 2023 was performed in October 2023 (initial sampling event), and the results were compared to the calculated prediction limits. Where initial values were identified above the UPL or below the LPL, verification resampling was completed in December 2023. Following verification resampling, intrawell comparisons were used to identify an SSI for boron at monitoring well AD-4C. A summary of the detection monitoring analytical results for the downgradient compliance wells and the calculated prediction limits to which they were compared is provided in **Table 1**.

1.1 CCR Rule Requirements

TCEQ regulations regarding detection monitoring programs for CCR landfills and surface impoundments provide owners and operators with the option to make an ASD when an SSI is identified (Texas Administrative Code [TAC], Title 30, §352.941(c)(2)):

> In making a demonstration under this section, the owner or operator must . . . within 90 days of making a determination of an SSI over the background value for any Appendix III constituent adopted by reference in §352.1421 of this title, submit a report prepared and certified in accordance with §352.4 of this title (relating to Engineering and Geoscientific Information), to the executive director, and any local pollution agency with jurisdiction that has requested to be notified, demonstration that a source other than a coal combustion residuals unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Pursuant to this regulation, Geosyntec Consultants, Inc. (Geosyntec) has prepared this ASD report on behalf of American Electric Power (AEP) to document that the SSI identified for boron at well AD-4C is from a source other than a release from the BASP at the Welsh Plant.

1.2 Demonstration of Alternative Sources

An evaluation was completed to assess possible alternative sources to which each identified SSI could be attributed. Alternative sources were categorized into the following five types, based on methods provided by the Electric Power Research Institute (EPRI 2017):

- ASD Type I: Sampling Causes
- ASD Type II: Laboratory Causes
- ASD Type III: Statistical Evaluation Causes
- ASD Type IV: Natural Variation
- ASD Type V: Alternative Sources

A demonstration was conducted to show that the identified SSI at AD-4C was based on Type IV (natural variation) cause and not by a release from the BASP.

2. SUMMARY OF SITE CONDITIONS

The site background summary included in this section was primarily taken from Arcadis (2022), unless otherwise noted.

2.1 BASP Location and Design

The BASP is a 22-acre CCR surface impoundment located in the southern portion of the Welsh Plant, immediately south of the Landfill and Primary Bottom Ash Pond (PBAP) (**Figure 1**). It was designed with approximately 20-foot-high compacted-clay perimeter embankments and a 60-mil-thick high-density polyethylene (HDPE) liner placed over the base of the pond and the interior embankment slopes. The BASP was constructed and placed into operation in 2000 to receive bottom ash and economizer ash dredged and sluiced from the PBAP.

Closure of the BASP was initiated in April 2021 (AEP 2022a). Closure activities are ongoing and involve removal of CCR from the unit. In November 2021, removal of the CCR material from the BASP began with the CCR material stockpiled in the northern portion of the BASP. The BASP no longer receives CCR material or transport waters and no longer receives non-CCR wastewaters such as stormwater runoff from the landfill and surrounding areas. Dewatering activities began in early 2022 and included installation of dewatering pumps and trenches. As a result of the closure activities, the BASP no longer contained impounded water as of November 3, 2022 (AEP 2022b). All CCR material has been removed from the southern portion of the BASP and any remaining CCR materials are stockpiled in the northern portion. Ongoing closure activities include the transport of stockpiled CCR material from the northern portion of the BASP to the Landfill. Planned final removal of all CCR materials from the northern portion is anticipated to be completed by the end of 2024.

2.2 Regional Geology / Site Hydrogeology

The Welsh Plant is located within the West Gulf Coastal Plain. The BASP is immediately underlain by the Eocene-age Recklaw Formation, which consists of very-fine- to fine-grained sand and clay (Flawn 1966). The Recklaw Formation ranges in thickness from approximately 10 to 110 feet in Titus County, where the Welsh Plant is located. This formation is underlain by the Eocene-age Carrizo Sand, consisting of fine to coarse sand, silt, and clay.

The uppermost aquifer in the vicinity of the BASP consists of an interval of the Recklaw Formation that is approximately 12-feet thick and composed of very-fine- to fine-grained silty sand and sandy silt. This aquifer is first encountered approximately 8 feet below the base of the BASP (Arcadis 2022). It is recharged primarily through infiltration of regional precipitation. Groundwater flow velocities in the uppermost aquifer in the vicinity of the BASP have been reported as approximately 1–20 feet per year (AEP 2022a).

Monitoring well AD-4C is screened from 5-15 feet below ground surface, within the Recklaw Formation. Subsurface lithology at and near monitoring well AD-4C is shown on geologic cross sections from Arcadis (2022) (**Attachment A**).

2.3 BASP Monitoring Well Network and Flow Conditions

The BASP monitoring well sampling network consists of background monitoring wells AD-1, AD-5, and AD-17 and downgradient compliance monitoring wells AD-3, AD-4C, and AD-16R

(**Figure 1**). The groundwater flow direction near the BASP is generally to the southeast (**Figure 2**). Potentiometric groundwater flow maps from sampling events completed within the past year are provided as **Attachment B**. Seasonal variability in groundwater flow direction has not been observed in the immediate vicinity of the BASP.

3. ALTERNATIVE SOURCE DEMONSTRATION

3.1 Proposed Alternative Sources

An initial review of groundwater sampling field forms did not identify alternative sources due to a Type I (sampling) issue. A review of the laboratory quality assurance and quality control data and the statistical analyses did not identify any Type II (laboratory) or Type III (statistical evaluation) issues. Groundwater sampling, laboratory analysis, and statistical evaluations were generally completed in accordance with 30 TAC §352.941(a) and draft TCEQ guidance for groundwater monitoring (TCEQ 2020).

A review of site geochemistry data and historical groundwater data identified variability of boron concentrations in the BASP monitoring well network. Therefore, the SSI of boron observed at monitoring well AD-4C is attributed to natural variability, a Type IV issue.

3.1.1 Comparison to Background Concentrations - Boron

Aqueous boron concentrations at downgradient well AD-4C have remained generally consistent since monitoring began in 2016, with the exception of some recent sampling events that have demonstrated variability (**Figure 3**). These recent concentration fluctuations are attributed to natural variability of boron in the uppermost aquifer. The maximum boron concentration observed at AD-4C of 0.207 milligrams per liter (mg/L) falls within the range of boron concentrations observed in wells screened within the Recklaw Formation and located upgradient of the BASP (**Figure 3; Attachment A**). Upgradient monitoring well AD-1 has consistently contained boron concentrations greater than the AD-4C maximum reported value of 0.207 mg/L. Upgradient monitoring well AD-17 has reported boron concentrations greater than or comparable to the AD-4C maximum as well. Groundwater boron concentrations at all locations discussed are an order of magnitude lower than the Texas Risk Reduction Program (TRRP) Class I residential ingestion pathway limit ($^{GW}GW_{Ing}$) of 4.9 mg/L (TCEQ 2009; updated TCEQ 2023a). Historical data indicate that the recent boron concentrations observed at AD-4C are still within the expected range associated with site background conditions. TCEQ established a Texas-specific soil background concentration of 30 milligrams per kilogram of boron in TAC Title 30 §350.51(m). Given the abundance of boron in Texas soils, some contribution of boron to groundwater from the aquifer is anticipated.

3.1.2 AD-4C Aqueous Geochemical Stability

A CCR unit release would be expected to impact the major ion chemical signature of downgradient groundwater. A Piper diagram, which represents the relative proportions of major cations and anions in water samples, was created to visualize major ion chemistry of AD-4C groundwater (**Figure 4**). The BASP sample included on **Figure 4** is the most recently collected sample from the unit and represents the final geochemical signature prior to the initiation of closure activities. No additional BASP samples are able to be collected due to closure activities. The BASP no longer receives waste material so no significant geochemical changes are expected to have occurred since the collection of the final BASP sample in August 2020.

The geochemical signature of AD-4C groundwater has remained similar throughout the monitoring period, as illustrated by the clustering of sample results on the Piper diagram. The minor component of anion proportion variability observed in the lower right portion of the Piper

diagram does not display a clear temporal trend, suggesting that the slight anion proportion fluctuations are a result of natural variability. In the event of a BASP release, AD-4C groundwater chemistry would be expected to shift to reflect the major ion signature of the BASP sample. The general stability of groundwater samples and lack of a clear temporal shift towards the BASP sample suggests a lack of influence from the BASP on the groundwater chemistry. This conclusion reinforces the determination that recently observed chemical concentrations at AD-4C are associated with natural variability in groundwater composition of the uppermost aquifer.

3.2 Sampling Requirements

The ASD described above supports the determination that the identified SSI at AD-4C is due to natural variability within the uppermost aquifer, and not due to a release from the Welsh BASP. Therefore, the unit will remain in the detection monitoring program. Groundwater at the unit will continue to be sampled semiannually for Appendix III parameters.

4. CONCLUSIONS AND RECOMMENDATIONS

The preceding information serves as the ASD prepared in accordance with 30 TAC §352.941(c)(2) and supports the position that the boron SSI at AD-4C identified during the second semiannual detection monitoring event of 2023 should be attributed to natural variation and not to a release from the Welsh BASP. Therefore, no further action is warranted, and the Welsh BASP will remain in the detection monitoring program. Certification of this ASD by a qualified professional engineer is provided in **Attachment C**.

5. REFERENCES

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TCEQ. 2009. *Toxicity Factors and Chemical/Physical Properties*. Texas Commission on Environmental Quality, Remediation Division. RG-366/TRRP-19. March.

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TABLES

Table 1. Detection Monitoring Data Summary
Detection Summary Memorandum
Welsh Plant - Bottom Ash Storage Pond

Analyte	Unit	Description	AD-3	AD-4C		AD-16R
			10/4/2023	10/4/2023	12/14/2023	10/4/2023
Boron	mg/L	Intrawell Background Value (UPL)	0.0407	0.0882		0.0577
		Analytical Result	0.019	**0.207**	**0.137**	0.021
Calcium	mg/L	Intrawell Background Value (UPL)	1.38	1.44		2.90
		Analytical Result	1.16	**1.67**	1.08	0.29
Chloride	mg/L	Intrawell Background Value (UPL)	9.40	18.6		8.00
		Analytical Result	8.65	13.0	--	6.85
Fluoride	mg/L	Intrawell Background Value (UPL)	0.263	0.180		0.296
		Analytical Result	0.12	0.13	--	0.08
pH	SU	Intrawell Background Value (UPL)	5.2	5.7		4.6
		Intrawell Background Value (LPL)	3.8	4.0		2.8
		Analytical Result	4.5	5.0	4.6	3.6
Sulfate	mg/L	Intrawell Background Value (UPL)	10.6	123		73.4
		Analytical Result	9.5	115	106	50.6
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	136	332		242
		Analytical Result	100	320	330	170

Notes:
1. Bold values exceed the background value.
2. Background values are shaded gray.
--: not measured
LPL: Lower prediction limit
mg/L: milligrams per liter
SU: standard units
UPL: Upper prediction limit

FIGURES

Legend

- Downgradient Sampling Location
- Background Sampling Location
- CCR Units

Notes

- Monitoring well coordinates provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
- Satellite imagery provided by ESRI and dated 1/19/2024.
- AEP: American Electric Power
- CCR: Coal combustion residual

500 250 0 500
Feet

Site Layout
Bottom Ash Storage Pond

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | April 2024

Figure **1**

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\AEP-Welsh_Updated_BASP_Site_Layout.mxd. Okiemute.Commander. 2/9/2024. CHA8423/14/08.

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 October 3 and 4, 2023) 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.
4. Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
October 2023

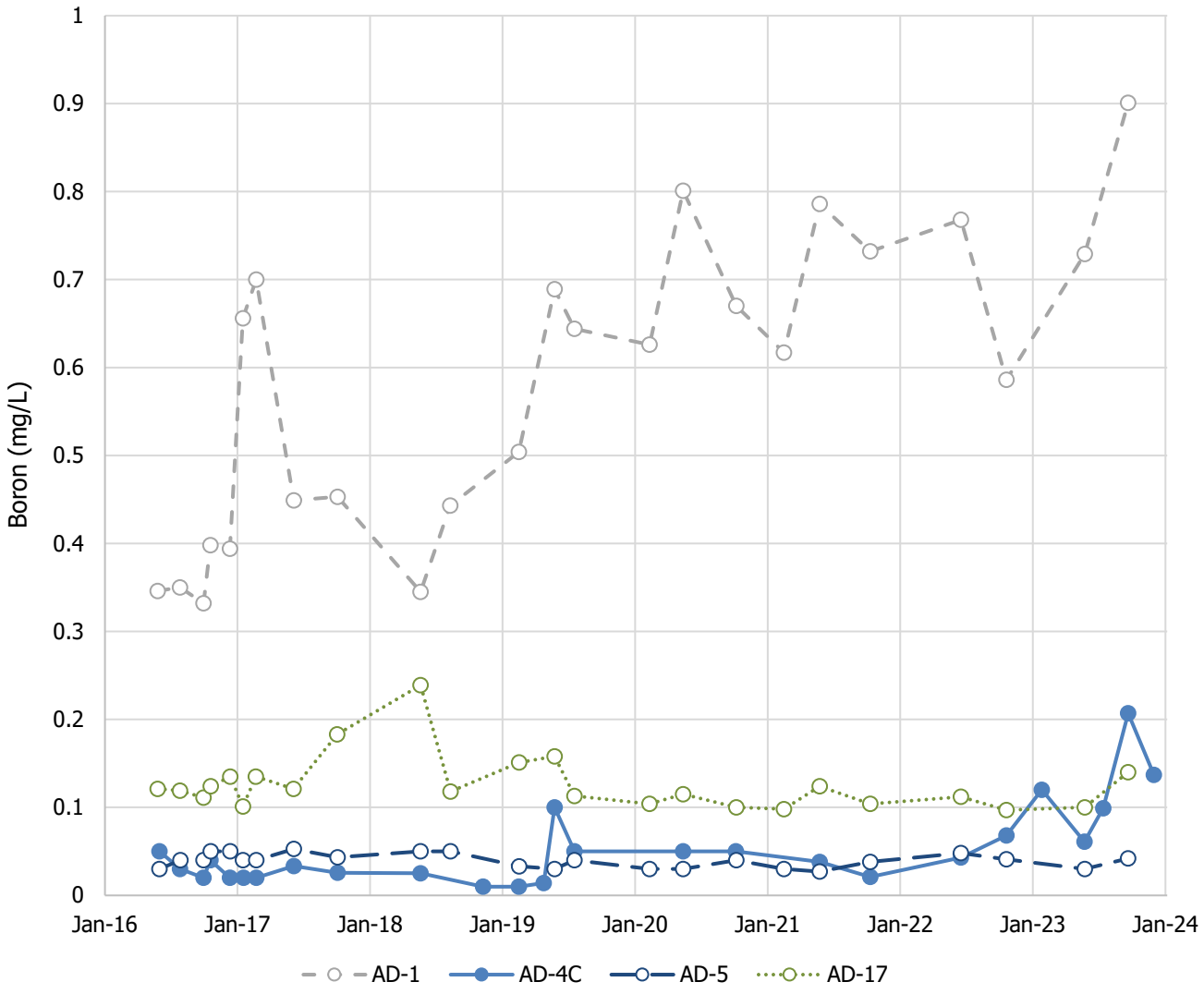
AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | April 2024

Figure **2**

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-10Oct.mxd. ASoltero. 11/30/2023. CHA8423/14/08.



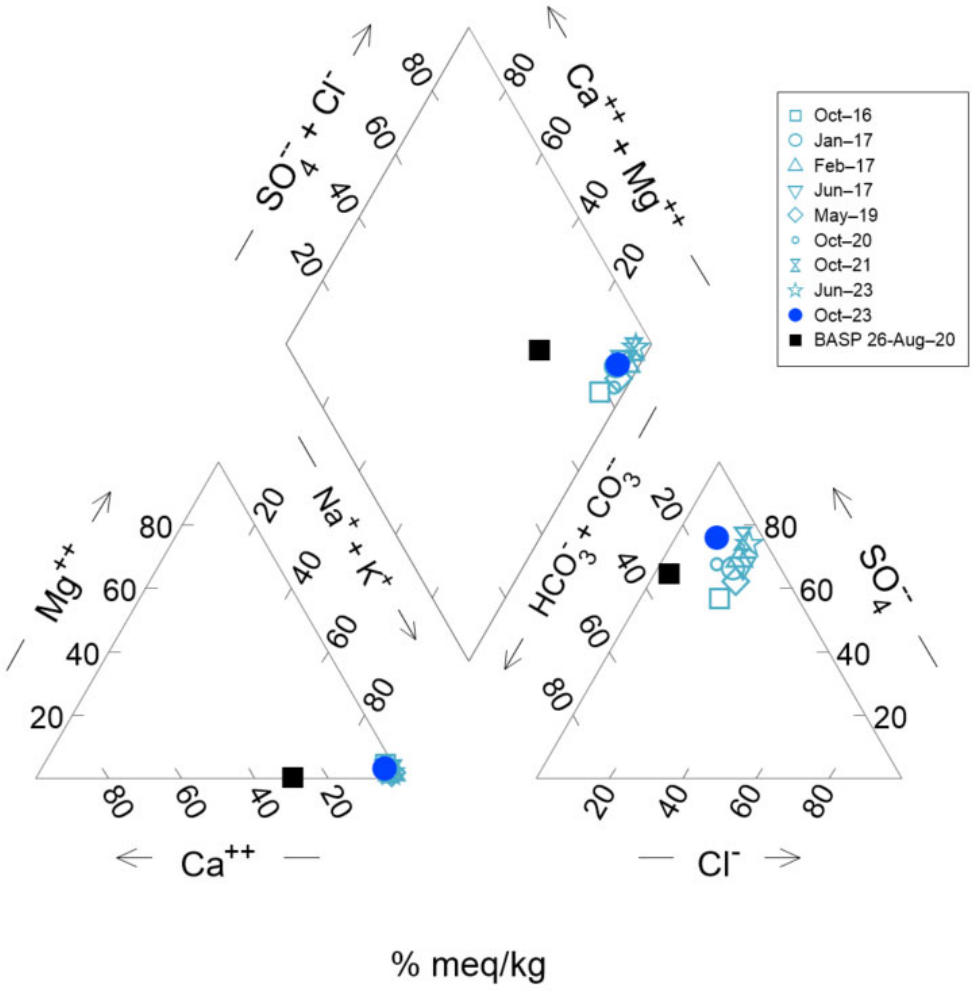
Notes: Boron time series diagram for BASP background wells AD-1, AD-5, and AD-17 (dashed lines) and downgradient well AD-4C (solid line). Data collected as part of the federal coal combustion residuals (CCR) program. Results are shown in milligrams per liter (mg/L).

Boron Time Series Graph
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | April 2024

Figure **3**



Notes: Groundwater samples from monitoring well AD-4C which contain analytical results for all major ions are plotted on the Piper diagram. Results are shown in milliequivalents per kilogram (meq/kg).

AD-4C Piper Diagram
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | April 2024

Figure **4**

ATTACHMENT A
Geologic Cross Sections

Document Path: Z:\GISProjects_ENV\AEP\Welsh Plant\MXD\Landfill report\September 2019\Fig2-3-Cross Section LocationsREV.mxd

A
AD-23
AD-22
FM 1735
SB-4 (background)
AD5
AD6
AD-18
SB-3
SB-2
AD-17
B
AD12
Temp-1
C
AD1
D
AD7
A
Ash-3
E
AD8
SB-5
A'
AD-15
B1
B2
Ash-2
Primary Bottom Ash Pond
Ash-1
Weir Box
Drainage Canal
AD9
G-1
B3
SB-6
B4
Clear Water Pond
B5
Welsh Reservoir
AD13
SB-7
AD10
B'
B6
G-2
AD11
TPDES Outfall
Landfill
AD14
AD-19
AD-16
G-3
AD-16R
AD-21
C'
AD-20
Bottom Ash Storage Pond
AD4a
AD4b
1/4-acre Clear Water Pond
D4
AD4c
Ash-4
Weir Box
SB-8
AD2
AD3
D'
E'
GB2
GB6
GB7
GB5
GB4
MW9
MW10

Legend

- Existing CCR Unit Upgradient Monitoring Well
- Existing CCR Unit Downgradient Monitoring Well
- Monitoring Well Location
- Piezometer/Temporary Monitoring Well Location
- Plugged Monitoring Well/Piezometer
- Soil Boring (May 2018)
- Geotechnical Soil Boring (October 2018)
- Ash Pore Water Sample Location (May 2018)
- Site Features
- A-A' LINE OF GEOLOGIC CROSS SECTION

0 800 1,600
SCALE IN FEET

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

SITE LAYOUT AND WELL LOCATIONS (UPDATED SEPTEMBER 2022)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

WEST

A

EAST

A'

STATE OF TEXAS
Kenneth J. Brandner
Geology
1787
LICENSED
PROFESSIONAL GEOSCIENTIST
9-29-22

AD-23 AD-22 AD-5 AD-6 AD-7 AD-8

PRIMARY BOTTOM ASH POND

WELSH RESERVOIR

370'
360'
350'
340'
330'
320'
310'
300'

ELEVATION (FEET MSL)

CLAYEY SAND, BROWN, UNSATURATED

SILTY CLAY, GRAY WITH RED MOTTLING.

CLAYEY SAND, REDDISH BROWN TO GRAY.

QUEEN CITY FORMATION

FILL (ASH)

CLAY, SANDY CLAY AND SILT, ORANGE, RED, GRAY AND BROWN.

SILTY SAND AND CLAYEY SAND, BROWN TO GRAY.

SILTY CLAY, GRAY TO BLACK.
(CONFINING UNIT)

CLAY

WELSH RESERVOIR

RECKLAW FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.95 ft/day)
(EFFECTIVE POROSITY = 0.21)

NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN EVALUATION (6/19/19)
- PROJECTED BASE OF PRIMARY BOTTOM ASH POND (SEE NOTE)

0 600'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
A - A'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
4

WEST

B

EAST

B'

LANDFILL

B-2 B-10

AD-12

AD-17

AD-13

AD-10

FILL
(W/ASH-COAL PIECES)

SILTY SAND, DRY

CLAY AND SANDY CLAY, GRAY TO TAN.

5'

CLAYEY/SILTY SAND AND SANDY SILT,
BROWN TO GRAY, FINE GRAINED.

SILTY AND SANDY CLAY, GRAY TO BROWN.
(CONFINING UNIT)

380'
370'
360'
350'
340'
330'
320'
310'
300'

ELEVATION (FEET MSL)

RECKLAW
FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.21
0.95 ft/day)
(EFFECTIVE POROSITY =

STATE OF TEXAS
Kenneth J. Brammer
Geology
1780
LICENSED
PROFESSIONAL GEOSCIENTIST

9-29-22

NOTES:
1. BASE OF LANDFILL ELEVATION TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I" DRAWING ID WEPX-88, DATED 12/3/76.
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-21-17; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (3/4/16)
- BASE OF LANDFILL (SEE NOTE)

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
B - B'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
5

WEST

C

EAST

C'

BOTTOM ASH STORAGE POND

WELSH RESERVOIR

370'
360'
350'
340'
330'
320'
310'
300'

PERIMETER ROAD (EL. 360')

PERIMETER ROAD (EL. 360')

B-12

B-13

AD-1

AD-4A

AD-4B

AD-4C

AD-20

AD-21

SILTY CLAY AND SANDY CLAY, BROWN TO GRAY.

CLAYEY SAND, DRY

BOTTOM ASH STORAGE 60-ML. HDPE LINER (PROJECTED)

SANDY SILT AND SILTY SAND, VERY FINE TO FINE GRAINED, GRAY TO TAN.

SANDY CLAY

REDDISH BROWN TO GRAY, SILTY CLAY.

DARK GRAY SILTY, SANDY CLAY.
(confining unit)

RECLAIM FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.95 ft/day)
(EFFECTIVE POROSITY = 0.21)

ELEVATION (FEET MSL)

ELEVATION (FEET MSL)

NOTES:
1. BASE OF BOTTOM ASH STORAGE HAS A 60-MIL. HDPE LINER AT ELEVATION 340.0', TAKEN FROM FREESE AND NICHOLS "HYDRAULIC ANALYSIS OF WELSH POWER PLANT ASH PONDS, AMERICAN ELECTRIC POWER COMPANY", DATED DECEMBER 2010.
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

STATE OF TEXAS
Kenneth J. Brandner
Geology
1787
LICENSED PROFESSIONAL GEOSCIENTIST

9-29-22

LEGEND

MONITORING WELL SCREENED INTERVAL

WATER LEVEL IN MONITORING WELL (10/29/18)

PROJECTED BASE OF ASH STORAGE (SEE NOTE)

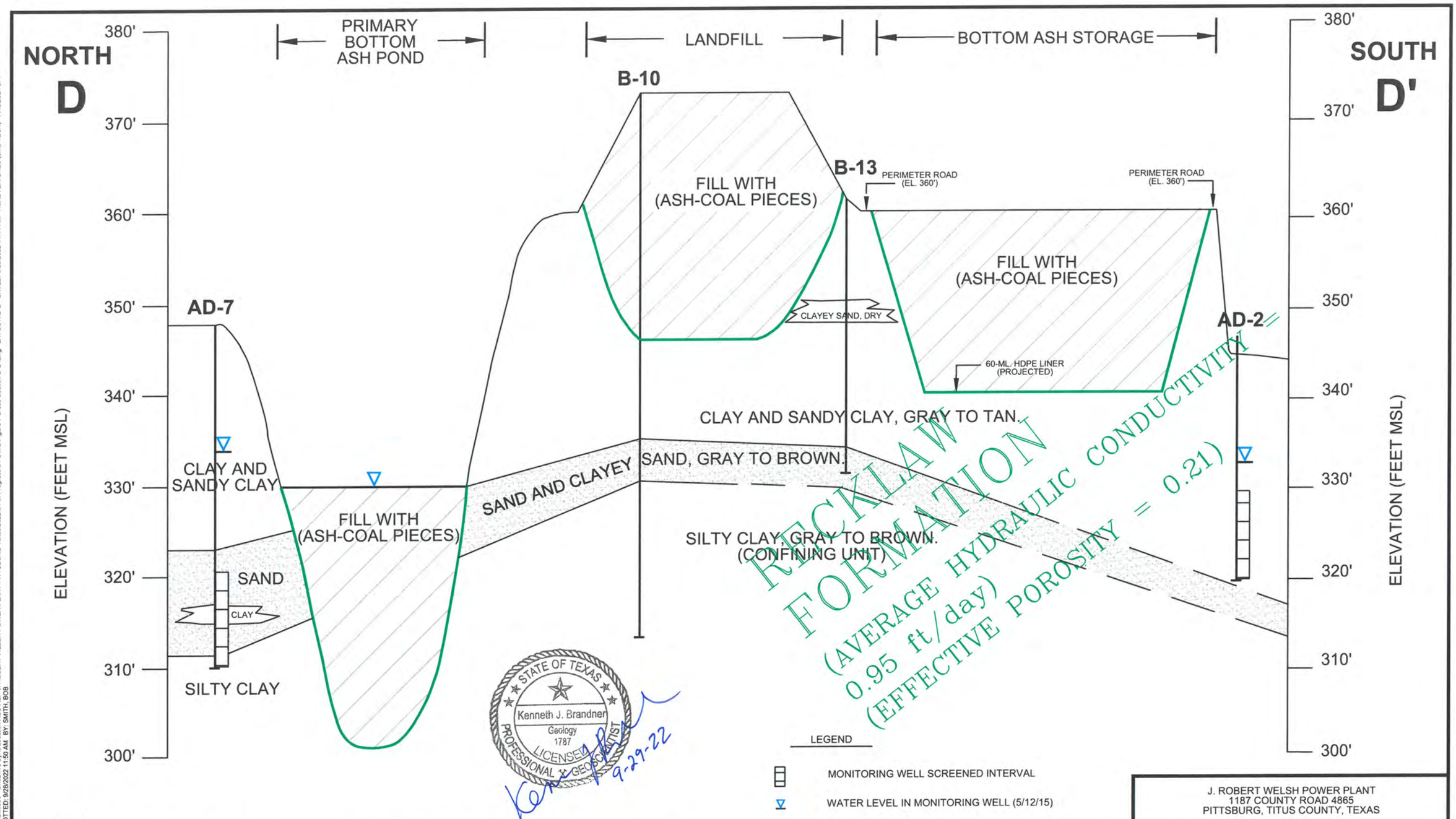
0 200'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
C - C'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
6



NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (5/12/15)
- BASE OF CCR UNIT

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION D - D' (UPDATED SEPTEMBER 2022)

ARCADIS

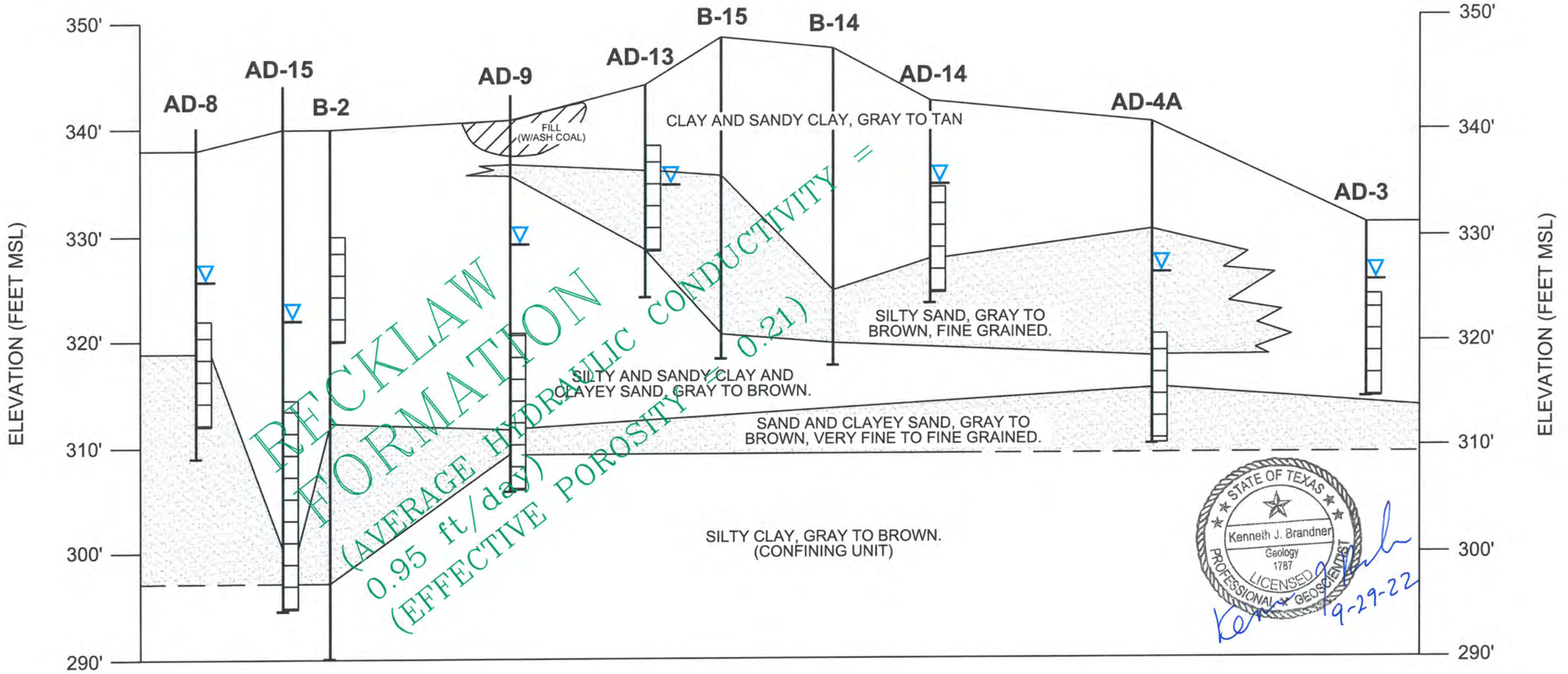
FIGURE 7

NORTH

E

SOUTH

E'



NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

MONITORING WELL SCREENED INTERVAL

WATER LEVEL IN MONITORING WELL (3/4/16)

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
E - E'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
8

ATTACHMENT B
Historical Potentiometric Maps

Legend

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

Notes

- Monitoring well coordinates and water level data (collected on June 27 and 28, 2022) provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
- Groundwater elevation units are feet above mean sea level.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

Dec 7, 2022

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
June 2022

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2022/10/31

Figure
B-1

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2022\AEP-Welsh_GW_2022-06June.mxd. ASoltero. 10/31/2022. CHA8423/14/08.

Legend

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

Notes

- Monitoring well coordinates and water level data (collected on November 1, 2022) provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
- Groundwater elevation units are feet above mean sea level.
- Satellite imagery provided by ESRI.

500 250 0 500 Feet

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Beth Ann Gross

January 5, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
November 2022

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2022/11/16

Figure **B-2**

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2022\AEP-Welsh_GW_2022-11Nov.mxd. ASoltero. 11/16/2022. CHA8423/14/08.

AD-5
337.52

AD-6
333.58

AD-7
333.51

AD-8
326.20

AD-18
343.57

Primary
Bottom
Ash Pond

AD-15
322.28

AD-9
329.95

Clear
Water Pond

AD-17
333.77

AD-12
349.38

AD-13
333.00

AD-10
323.75

AD-11
327.97

Landfill

AD-14
332.79

AD-16R
327.46

Welsh
Reservoir

AD-1
339.74

Bottom Ash
Storage Pond

AD-4C
325.52

AD-2
332.99

AD-3
325.80

340
345
340
335
330
325

N

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 6 and 7, 2023) 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.
4. Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross
November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
February 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/30

Figure
B-3

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-02Feb.mxd. ASoltero. 11/30/2023. CHA8423/14/08.

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 June 6, 2023) provided by AEP.
2. AD-12 was not gauged during the June 2023 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.
5 Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
June 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/30

Figure **B-4**

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-06June.mxd. ASoltero. 11/30/2023. CHA8423/14/08.

ATTACHMENT C
Certification by a Qualified Professional Engineer

CERTIFICATION BY A QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected and above described alternative source demonstration is appropriate for evaluating the groundwater monitoring data for the Welsh Bottom Ash Storage Pond CCR management area and that the requirements of §352.941(c) have been met.

Beth Ann Gross
Printed Name of Licensed Professional Engineer

Beth Ann Gross
Signature

Geosyntec Consultants
2039 Centre Pointe Blvd, Suite 103
Tallahassee, Florida 32308

Texas Registered Engineering Firm
No. F-1182

79864	Texas	April 22, 2024
License Number	Licensing State	Date

Geosyntec consultants

engineers | scientists | innovators

AMERICAN ELECTRIC POWER

BOUNDLESS ENERGY™

ALTERNATIVE SOURCE DEMONSTRATION REPORT

2024 FIRST SEMIANNUAL EVENT
TEXAS STATE CCR RULE

Welsh Power Plant
Bottom Ash Storage Pond
Registration No. CCR 110
Pittsburg, Texas

Prepared for

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

Prepared by

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

Project CHA8495

December 2024

TABLE OF CONTENTS

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LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	alternative source demonstration
BASP	Bottom Ash Storage Pond
CCR	coal combustion residuals
EPRI	Electric Power Research Institute
HDPE	high-density polyethylene
LPL	lower prediction limit
meq/kg	milliequivalents per kilogram
mg/L	milligrams per liter
PBAP	Primary Bottom Ash Pond
SSI	statistically significant increase
SU	standard units
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
UPL	upper prediction limit

1. INTRODUCTION AND SUMMARY

This alternative source demonstration (ASD) report has been prepared to address statistically significant increases (SSIs) for boron, calcium, and chloride in the groundwater monitoring network at the Bottom Ash Storage Pond (BASP) located at the Welsh Power Plant (Welsh Plant) in Pittsburg, Texas, following the first semiannual detection monitoring event of 2024. The Welsh Plant has three coal combustion residuals (CCR) storage units regulated by the Texas Commission on Environmental Quality (TCEQ) under Registration No. CCR 110, including the BASP (**Figure 1**). The BASP was being closed by CCR removal at the time of the detection monitoring event, and the other two CCR units were still active.

Background groundwater values for the BASP were originally calculated in January 2018 and have been updated periodically in accordance with the *Statistical Analysis Plan* prepared for the Welsh Plant (Geosyntec 2021). Under this plan, prediction limits were calculated for each well using intrawell comparisons. Applicable background values for the first semiannual event of 2024 are the revised upper prediction limits (UPLs) calculated in January 2024 for each Appendix III parameter (Geosyntec 2024). Revised lower prediction limits (LPLs) were also calculated for pH. Prediction limits were calculated based on a one-of-two retesting procedure to maintain an appropriate site-wide false positive rate. With this procedure, an SSI is concluded only if both samples in a series of two have reported results above the UPL or, in the case of pH, are below the LPL. In practice, if the initial result was not above the UPL or was not below the LPL, a second sample was not collected or analyzed.

The first semiannual detection monitoring event of 2024 was performed in April 2024 (initial sampling event), and the results were compared to the calculated prediction limits. Where initial values were identified above the UPL or below the LPL, verification resampling was completed in June 2024. Following verification resampling, intrawell comparisons identified SSIs for boron and calcium at monitoring well AD-4C and chloride at monitoring well AD-3. A summary of the detection monitoring analytical results for the downgradient compliance wells and the calculated prediction limits to which they were compared is provided in **Table 1**.

1.1 CCR Rule Requirements

TCEQ regulations regarding detection monitoring programs for CCR landfills and surface impoundments provide owners and operators with the option to make an ASD when an SSI is identified (Title 30 §352.941(c)(2) of the Texas Administrative Code (TAC) [30 TAC §352.941(c)(2)]):

> In making a demonstration under this section, the owner or operator must . . . within 90 days of making a determination of an SSI over the background value for any Appendix III constituent adopted by reference in §352.1421 of this title, submit a report prepared and certified in accordance with §352.4 of this title (relating to Engineering and Geoscientific Information), to the executive director, and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a coal combustion residuals unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Pursuant to this regulation, Geosyntec Consultants, Inc. (Geosyntec) has prepared this ASD report on behalf of American Electric Power (AEP) to document that the SSIs identified for boron and calcium at well AD-4C and chloride at well AD-3 are from sources other than a release from the BASP at the Welsh Plant.

1.2 Demonstration of Alternative Sources

An evaluation was completed to assess possible alternative sources to which each identified SSI could be attributed. Alternative sources were categorized into the following five types, based on methods provided by the Electric Power Research Institute (EPRI 2017):

- ASD Type I: Sampling Causes
- ASD Type II: Laboratory Causes
- ASD Type III: Statistical Evaluation Causes
- ASD Type IV: Natural Variation
- ASD Type V: Anthropogenic Sources

A demonstration was conducted to show that the identified SSIs at AD-3 and AD-4C were based on Type IV (natural variation) causes and not by a release from the BASP.

2. SUMMARY OF SITE CONDITIONS

The site background summary included in this section was primarily taken from Arcadis (2022), unless otherwise noted.

2.1 BASP Location and Design

The BASP was a 22-acre CCR surface impoundment located in the southern portion of the Welsh Plant, immediately south of the Landfill and Primary Bottom Ash Pond (PBAP) (**Figure 1**). It was designed with approximately 20-foot-high compacted-clay perimeter embankments and a 60-mil-thick high-density polyethylene (HDPE) liner placed over the base of the pond and the interior embankment slopes. The BASP was constructed and placed into operation in 2000 to receive bottom ash and economizer ash dredged and sluiced from the PBAP.

A Closure Plan for the BASP was developed in October 2016 and revised in February 2021 (AEP 2021a). This document details the closure activities which are to take place throughout the closure of the BASP. AEP submitted a certified notification that as of April 6, 2021, the BASP ceased receipt of CCR and non-CCR waste streams and closure activities had been initiated in accordance with the certified Closure Plan (AEP 2021b). Thus, the BASP no longer received CCR material or transport waters and no longer received non-CCR wastewaters such as stormwater runoff from the landfill and surrounding areas. In November 2021, removal of the CCR material from the BASP began with the CCR material stockpiled in the northern portion of the BASP (AEP 2022a). Dewatering activities began in early 2022 and included installation of dewatering pumps and trenches. As a result of the closure activities, the BASP no longer contained impounded water as of November 3, 2022 (AEP 2022b). The removal of all CCR materials from the BASP as part of closure activities was completed in September 2024.

2.2 Regional Geology and Site Hydrogeology

The Welsh Plant is located within the West Gulf Coastal Plain. The BASP is immediately underlain by the Eocene-age Recklaw Formation, which consists of very-fine- to fine-grained sand and clay (Flawn 1966). The Recklaw Formation ranges in thickness from approximately 10 to 110 feet in Titus County, where the Welsh Plant is located. This formation is underlain by the Eocene-age Carrizo Sand, consisting of fine to coarse sand, silt, and clay.

The uppermost aquifer in the vicinity of the BASP consists of an interval of the Recklaw Formation that is approximately 12-feet thick and composed of very-fine- to fine-grained silty sand and sandy silt. This aquifer is first encountered approximately 8 feet below the base of the BASP (Arcadis 2022). It is recharged primarily through infiltration of regional precipitation. Groundwater flow velocities in the uppermost aquifer in the vicinity of the BASP have been reported as approximately 1–20 feet per year (AEP 2022a).

Monitoring well AD-3 is screened from 7-17 feet below ground surface and monitoring well AD-4C is screened from 5-15 feet below ground surface. Both monitoring wells AD-3 and AD-4C are screened within the Recklaw Formation. Subsurface lithology at and near monitoring wells AD-3 and AD-4C are shown on geologic cross sections from Arcadis (2022) (**Attachment A**).

2.3 BASP Monitoring Well Network and Flow Conditions

The BASP monitoring well sampling network consists of background monitoring wells AD-1, AD-5, and AD-17 and downgradient compliance monitoring wells AD-3, AD-4C, and AD-16R (**Figure 1**). The groundwater flow direction near the BASP is generally to the southeast (**Figure 2**). Potentiometric groundwater flow maps from sampling events completed within the past year are provided as **Attachment B**. Seasonal variability in groundwater flow direction has not been observed in the immediate vicinity of the BASP.

3. ALTERNATIVE SOURCE DEMONSTRATION

The ASD evaluation method and proposed alternative source of boron and calcium at well AD-4C and chloride at well AD-3 are described below.

3.1 Proposed Alternative Sources

An initial review of groundwater sampling field forms did not identify alternative sources due to a Type I (sampling) issue. A review of the laboratory quality assurance and quality control data and the statistical analyses did not identify any Type II (laboratory) or Type III (statistical evaluation) issues. Groundwater sampling, laboratory analysis, and statistical evaluations were generally completed in accordance with 30 TAC §352.941(a) and draft TCEQ guidance for groundwater monitoring (TCEQ 2020).

As described below, the SSIs for boron, calcium, and chloride have been attributed to natural variation, which is a Type IV issue.

3.1.1 Comparison to Background Concentrations - Boron

Recent fluctuations of aqueous boron concentrations at downgradient well AD-4C are attributed to natural variability of boron in the uppermost aquifer. The maximum boron concentration observed at AD-4C of 0.217 milligrams per liter (mg/L) falls within the range of boron concentrations observed in the background wells also screened within the Recklaw Formation and located upgradient or cross-gradient of the BASP (**Figure 3; Attachment A**). Background monitoring well AD-1 has consistently contained boron concentrations greater than the AD-4C maximum reported value of 0.217 mg/L. Background monitoring well AD-17 has reported boron concentrations greater than or comparable to the AD-4C maximum as well. Groundwater boron concentrations at all locations discussed are lower than the Texas Risk Reduction Program (TRRP) Class I residential ingestion pathway limit ($^{GW}GW_{Ing}$) of 4.9 mg/L (TCEQ 2009; updated TCEQ 2023), and groundwater boron concentrations at AD-4C are more than 50 times less than the TRPP limit. Historical data indicate that the recent boron concentrations observed at AD-4C are still within the expected range associated with site background conditions. TCEQ established a Texas-specific soil background concentration of 30 milligrams per kilogram of boron in 30 TAC §350.51(m). Given the abundance of boron in Texas soils, some contribution of boron to groundwater from the aquifer is anticipated. Variable boron concentrations observed in recently collected samples are greater than historical tendencies, but concentrations in these samples fluctuate between increasing and decreasing over the previous five events and do not display a definitive increasing trend.

3.1.2 Comparison to Background Concentrations - Calcium

Calcium concentrations at background wells AD-1, AD-5, and AD-17, which are located upgradient or cross-gradient of the BASP and AD-4C, have historically been much higher than those observed at AD-4C (**Figure 4**). Since background monitoring was initiated in 2016, calcium concentrations at AD-1, which is the closest background well as well as an upgradient well, have been subject to significant variability, with a peak concentration of 147 mg/L in June 2017 and a minimum of 3.88 mg/L in October 2020. In contrast, calcium concentrations at AD-4C have ranged between 0.341 in December 2020 and 1.83 mg/L in April 2024. Calcium concentrations at background cross-gradient wells AD-5 and AD-17 have also been consistently above those

observed at AD-4C. Protective concentration levels have not been established for calcium in groundwater through the TRRP program (TCEQ 2023). Given that the concentrations of calcium at AD-4C have consistently been one to two orders of magnitude lower than those of the background wells, the recently observed higher calcium concentrations at AD-4C may represent the migration of groundwater from upgradient locations such as AD-1 within the uppermost aquifer which contain geogenic calcium at concentrations exceeding the UPL for AD-4C.

Regional scale sampling data from shallow wells located in Titus County (**Attachment C**; Texas Water Commission 1965) further support the existence of naturally occurring calcium concentrations exceeding the UPL of 1.44 mg/L. At the time of publication in 1965, calcium concentrations were reported for 38 samples from 27 wells within Titus County screened at shallow (60 feet or less) depths. Of these 38 samples, only 1 contained reported calcium concentrations below the UPL of 1.44 mg/L (**Figure 5**). This dataset contained an average calcium concentration of 46.73 mg/L, a median concentration of 13 mg/L, and a maximum of 308 mg/L. Both the average and the median values exceed the calcium UPL of 1.44 mg/L at well AD-4C. These data demonstrate the common natural calcium concentrations in regional groundwater and contextualize the calcium SSI relative to what would be expected within the surrounding region.

3.1.3 Comparison to Background Concentrations - Chloride

Chloride concentrations at downgradient well AD-3 have remained generally consistent since monitoring began in 2016 and are within the range of values observed at monitoring wells located upgradient of the BASP (**Figure 6**). The maximum chloride concentration observed at AD-3 of 10.3 mg/L falls within the range of chloride concentrations observed in background wells screened within the Recklaw Formation and located cross-gradient or upgradient of the BASP (**Figure 3; Attachment A**). Cross-gradient monitoring wells AD-5 and AD-17 have consistently contained chloride concentrations greater than the AD-3 maximum reported value of 10.3 mg/L. Protective concentration levels have not been established for chloride in groundwater through the TRRP program (TCEQ 2023). Chloride concentrations at AD-3, the well of concern, are comparable to and often lower than those observed at the downgradient monitoring well AD-4C. This indicates that the recent chloride concentration exists naturally in the groundwater of the uppermost aquifer at concentrations which exceed the UPL for AD-3.

Historical data from AD-3 indicate that chloride concentrations can range from 7.0 to 10.3 mg/L. Regional scale sampling data from shallow wells located in Titus County (**Attachment C**; Texas Water Commission 1965) further support the existence of naturally occurring chloride concentrations exceeding the UPL of 9.40 mg/L. At the time of publication in 1965, chloride concentrations were reported for 44 samples from 27 wells within Titus County screened at shallow (60 feet or less) depths. Of these 44 samples, only 6 contained reported chloride concentrations below the UPL of 9.40 mg/L (**Figure 7**). This dataset contained an average chloride concentration of 130.4 mg/L, a median concentration of 39.5 mg/L, and a maximum of 450 mg/L. Both the average and the median values exceed the chloride UPL of 9.40 mg/L at well AD-3. These data indicate that chloride concentrations vary within groundwater at comparable depths at the regional scale.

3.1.4 AD-3 and AD-4C Aqueous Geochemical Stability

A CCR unit release would be expected to impact the major ion chemical signature of downgradient groundwater. A Piper diagram was created to visualize major ion chemistry of AD-3 and AD-4C

groundwater (**Figure 8**). Piper diagrams represent the relative proportions of major cations and anions in water samples in the lower left and right triangles respectively and provide a combined view in the middle diamond which is created by projecting each triangle's axes onto a singular plot. Placement of data on the diamond therefore does not incorporate the full extent of the data plotted in individual triangles (i.e., movement along one axis in each triangle is not reflected in the diamond). The BASP sample included on **Figure 8**, which was collected in August 2020, is the most recently collected water sample from the unit and represents the final geochemical composition prior to the initiation of closure activities. No additional BASP samples can be collected due to closure activities.

The geochemical signature of AD-4C groundwater has displayed some variability (particularly among anion proportions) but has remained generally similar throughout the monitoring period, as illustrated by the clustering of sample results on the Piper diagram. In the event of a BASP release, AD-4C groundwater chemistry would be expected to shift to reflect the major ion signature of the BASP sample. The cation signature of AD-4C groundwater has remained consistent, and the anion signature has diverged further from the BAP sample since installation. The lack of a temporal shift towards the BASP sample suggests a lack of influence from the BASP on the groundwater chemistry. This conclusion reinforces the determination that recently observed chemical concentrations at AD-4C are associated with natural variability in groundwater composition of the uppermost aquifer.

AD-3 groundwater has also displayed some variability (particularly among anion proportions) throughout the monitoring period but has remained generally consistent. In the event of a BASP release, AD-3 groundwater chemistry would be expected to shift to reflect the major ion signature of the BASP sample. The cation signature of AD-3 has remained consistent except for one sample collected in 2019, and the anion signature does not display a clear temporal trend among the minor variability. This observation reinforces the determination that chloride concentrations at AD-3 are not associated with a BASP release, but rather due to natural variability in groundwater composition of the uppermost aquifer.

4. CONCLUSIONS AND RECOMMENDATIONS

The preceding information serves as the ASD prepared in accordance with 30 TAC §352.941(c)(2) and supports the position that the boron and calcium SSIs at AD-4C and the chloride SSI at AD-3 identified during the first semiannual detection monitoring event of 2024 should be attributed to natural variation and not to a release from the Welsh BASP. Therefore, no further action is warranted. Certification of this ASD by a qualified professional engineer is provided in **Attachment D**.

5. REFERENCES

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TABLES

Table 1. Detection Monitoring Data Summary
Alternative Source Demonstration Report - 2024 First Semiannual Event
Welsh Plant, Bottom Ash Storage Pond

Analyte	Unit	Description	AD-3		AD-4C		AD-16R	
			4/1/2024	6/10/2024	4/1/2024	6/10/2024	4/2/2024	6/10/2024
Boron	mg/L	Intrawell Background Value (UPL)	0.0407		0.0882		0.0577	
		Analytical Result	0.027	--	**0.217**	**0.176**	0.033	--
Calcium	mg/L	Intrawell Background Value (UPL)	1.38		1.44		2.90	
		Analytical Result	0.65	--	**1.83**	**1.56**	0.54	--
Chloride	mg/L	Intrawell Background Value (UPL)	9.40		18.6		8.00	
		Analytical Result	**10.3**	**10.1**	14.0	--	6.68	--
Fluoride	mg/L	Intrawell Background Value (UPL)	0.263		0.180		0.296	
		Analytical Result	0.12	--	0.12	--	0.10	--
pH	SU	Intrawell Background Value (UPL)	5.2		5.7		4.6	
		Intrawell Background Value (LPL)	3.8		4.0		2.8	
		Analytical Result	**3.7**	4.4	4.6	4.2	**2.7**	3.6
Sulfate	mg/L	Intrawell Background Value (UPL)	10.6		123		73.4	
		Analytical Result	2.4	--	120	--	66.5	--
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	136		332		242	
		Analytical Result	100	--	320	--	170	--

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

FIGURES

Legend

- Downgradient Sampling Location
- Background Sampling Location
- CCR Units

Notes

- Monitoring well coordinates provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2022).
- Satellite imagery provided by ESRI (Updated on December 19, 2024).
- AEP: American Electric Power
- CCR: Coal combustion residuals

500 250 0 500 Feet

Site Layout
Bottom Ash Storage Pond

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | December 2024

Figure **1**

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\AEP-Welsh_Updated_BASP_Site_Layout.mxd. Okiemute.Commander. 12/19/2024. CHA8423/14/08.

AD-5
337.75

AD-7
333.79

AD-8
326.13

AD-6

Primary
Bottom
Ash Pond

325

AD-18
344.44

AD-15
322.70

Clear
Water Pond

AD-9
329.93

AD-12
350.10

AD-13
333.30

AD-10
323.90

AD-17
334.50

340

345

Landfill

AD-11
327.79

Welsh
Reservoir

AD-1
340.18

AD-14
333.03

AD-16R
328.90

Bottom Ash
Storage Pond

335

330

AD-4C
326.16

AD-2
332.61

AD-3
325.31

N

Legend

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

Notes

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

500 250 0 500
Feet

Beth Ann Gross

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

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Groundwater Potentiometric Map
April 2024

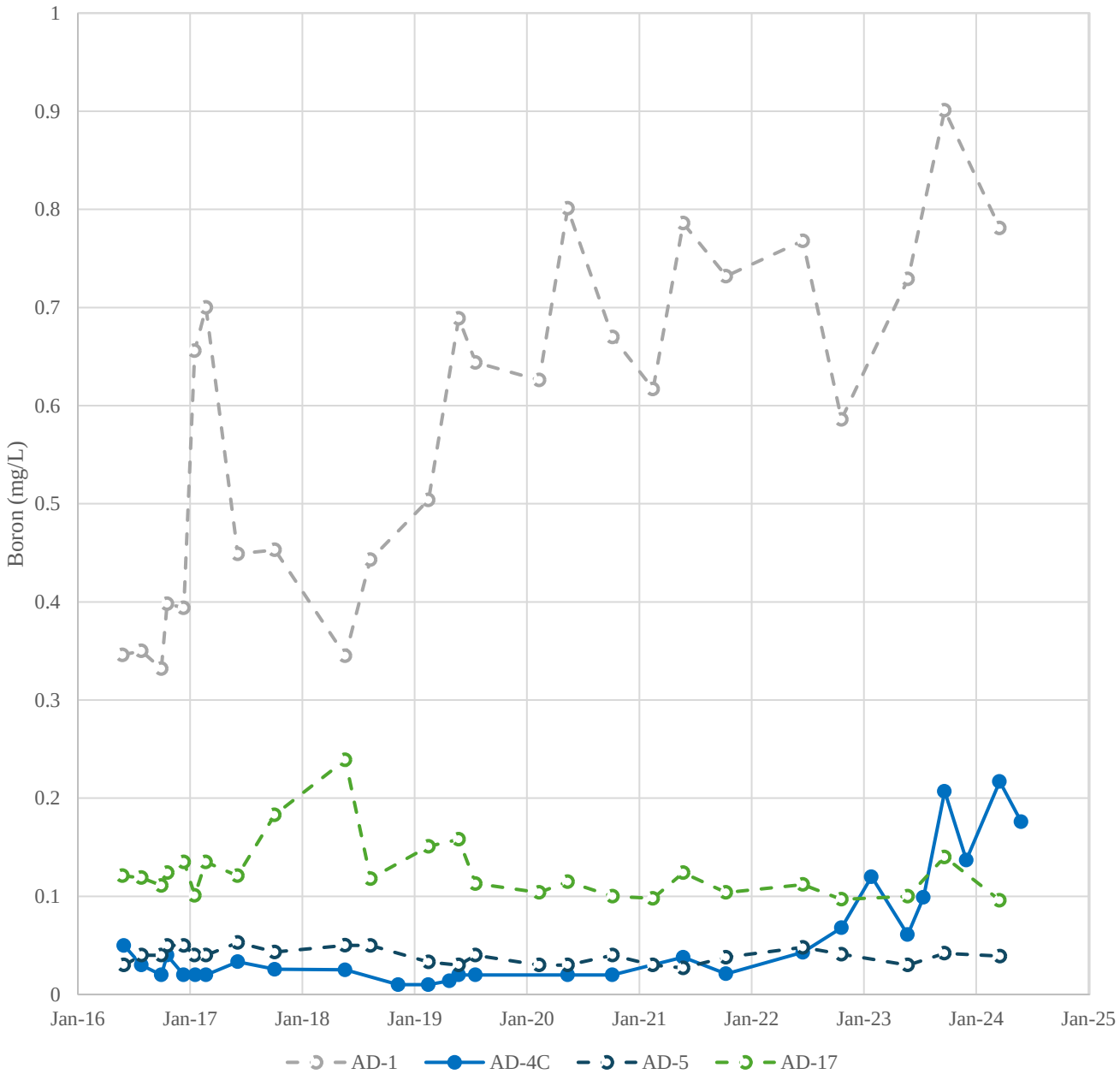
AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2024/06/14

Figure
2

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2024\AEP-Welsh_GW_2024-04Apr.mxd. Okiemute.Commander. 6/14/2024. CHA8423/14/08.



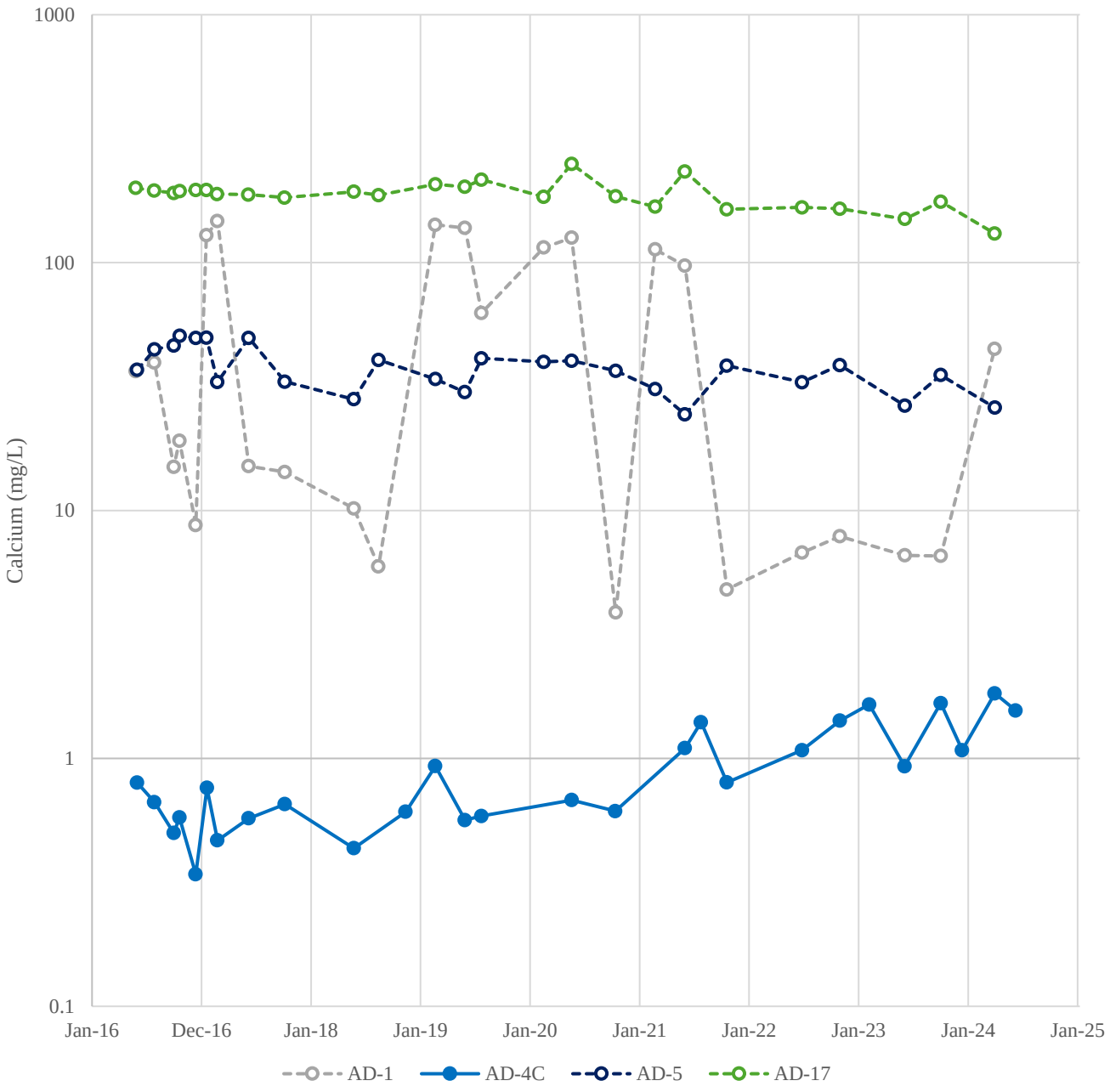
Notes: Boron time series diagram for BASP background wells AD-1, AD-5, and AD-17 (dashed lines) and downgradient well AD-4C (solid line). Data collected as part of the federal coal combustion residuals (CCR) program. Results are shown in milligrams per liter (mg/L).

Boron Time Series Graph
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | December 2024

Figure **3**



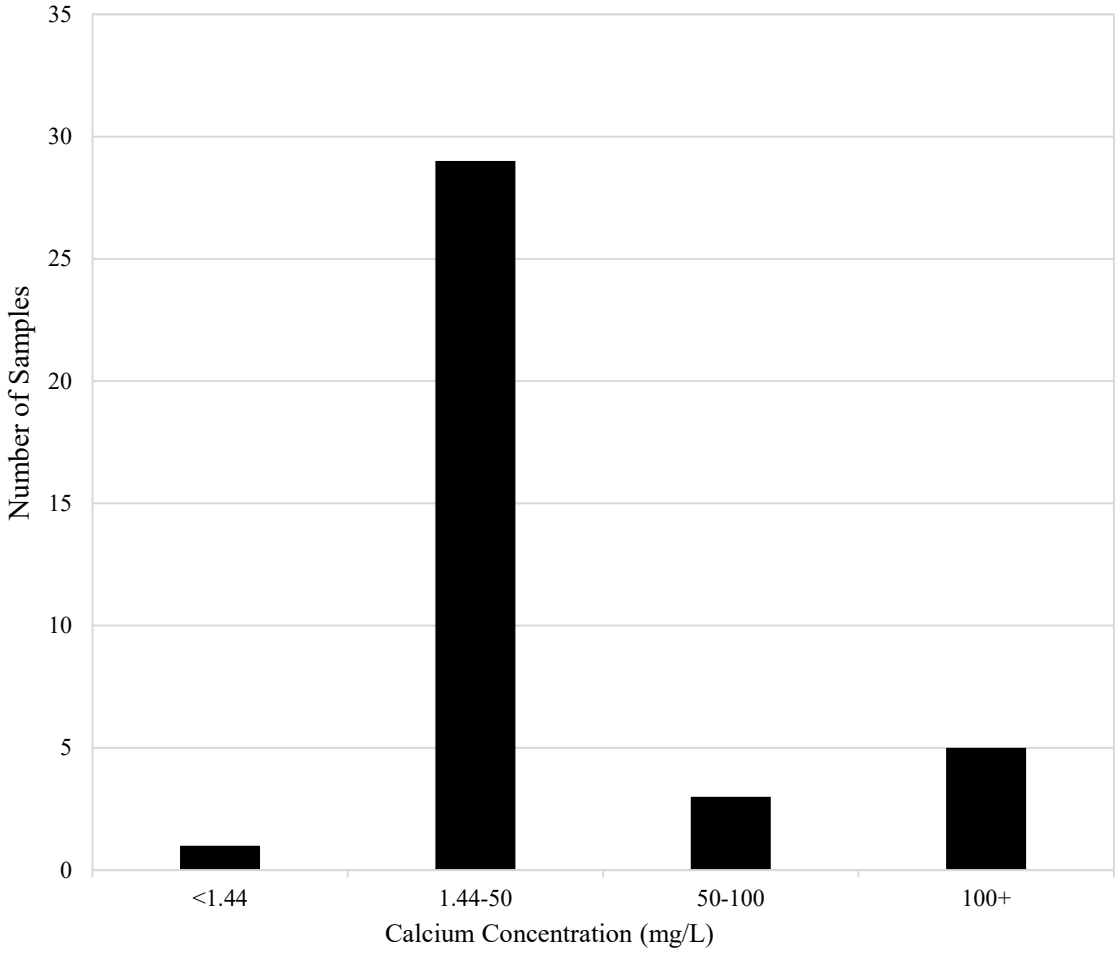
Notes: Calcium time series diagram for BASP background wells AD-1, AD-5, and AD-17 (dashed lines) and downgradient well AD-4C (solid line). Data collected as part of the federal coal combustion residuals (CCR) program. Results are shown in milligrams per liter (mg/L).

Calcium Time Series Graph
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | December 2024

Figure **4**



Notes: Calcium analytical data is shown for 38 groundwater samples collected from 27 groundwater wells screened at a depth of less than 60 feet below ground surface (bgs). Results are grouped in bins in units of milligrams per liter (mg/L). From Texas Water Commission 1965 (provided as **Attachment C**).

Titus County Calcium Concentrations in Shallow (<60' Depth) Wells

Welsh Bottom Ash Storage Pond

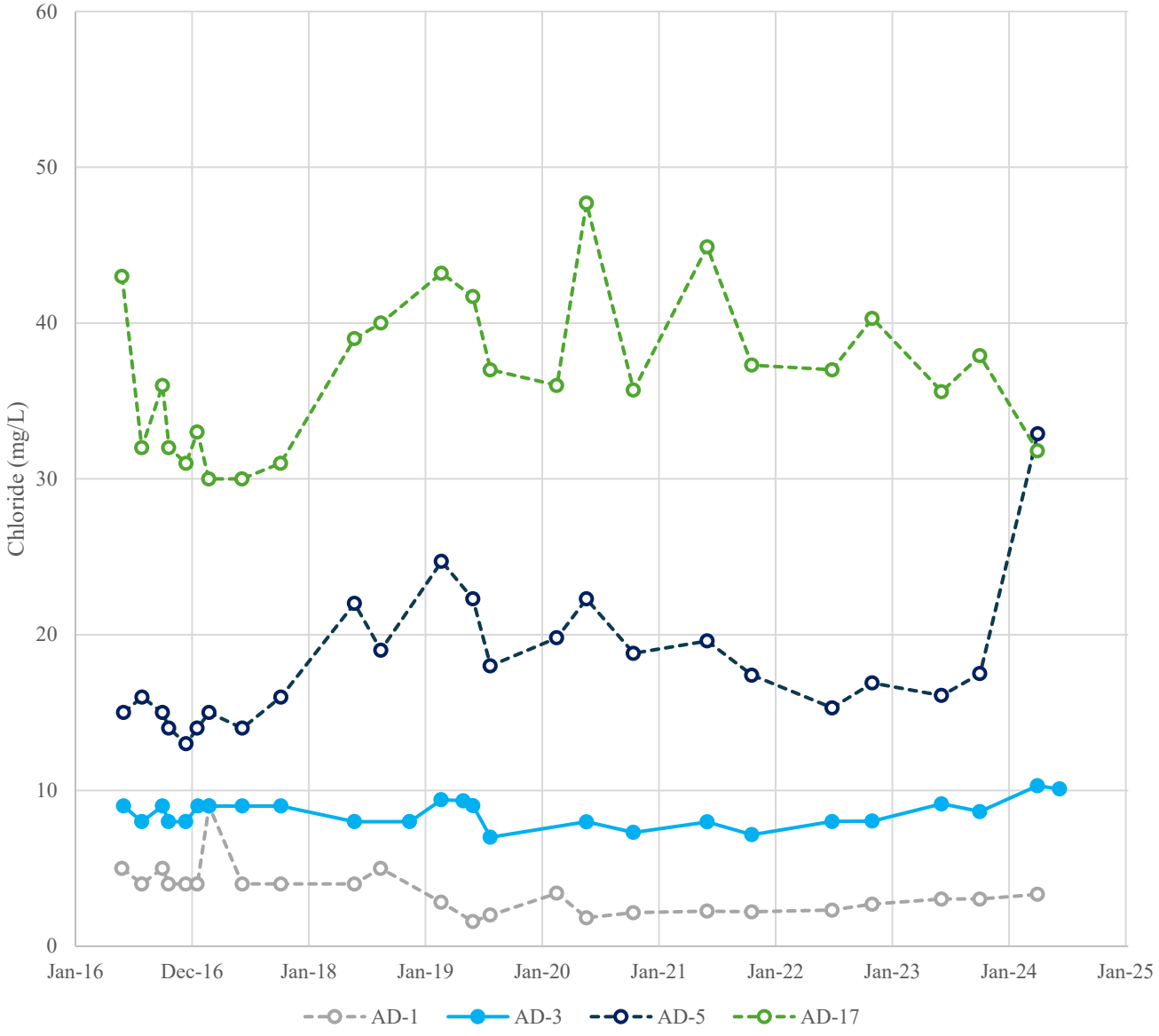
Geosyntec consultants

AMERICAN ELECTRIC POWER

Figure **5**

Columbus, Ohio

December 2024



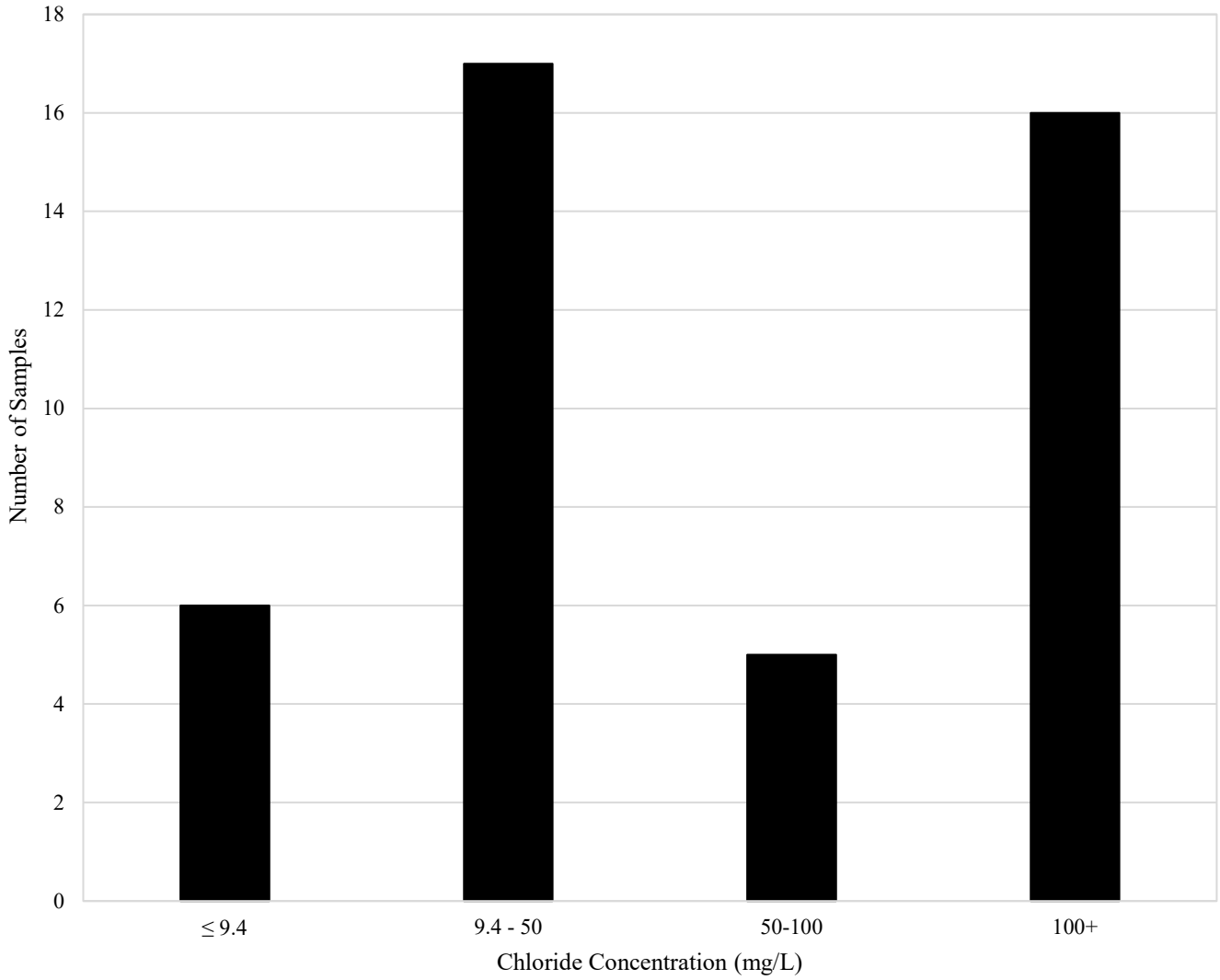
Notes: Chloride time series diagram for BASP background wells AD-1, AD-5, and AD-17 (dashed lines) and downgradient well AD-3 (solid line). Data collected as part of the federal coal combustion residuals (CCR) program. Results are shown in milligrams per liter (mg/L).

Chloride Time Series Graph
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | December 2024

Figure **6**



Notes: Chloride analytical data is shown for 44 groundwater samples collected from 27 groundwater wells screened at a depth of less than 60 feet below ground surface (bgs). Results are grouped in bins in units of milligrams per liter (mg/L). From Texas Water Commission 1965 (provided as **Attachment C**).

Titus County Chloride Concentrations in Shallow (<60' Depth) Wells

Welsh Bottom Ash Storage Pond

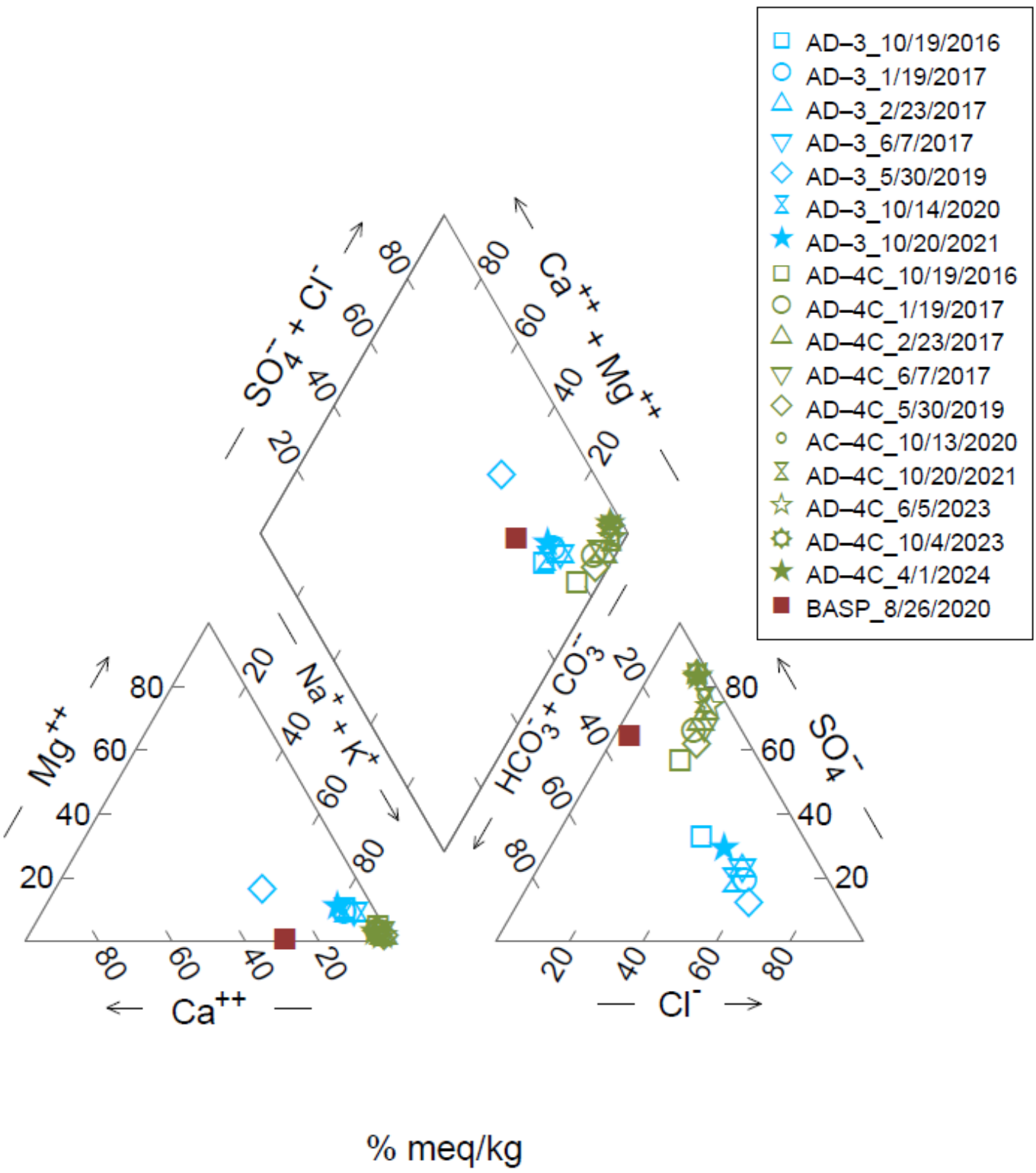
Geosyntec consultants

AMERICAN ELECTRIC POWER

Figure **7**

Columbus, Ohio

December 2024



Notes: Groundwater samples from monitoring wells AD-3 and AD-4C which contain analytical results for all major ions are plotted on the Piper diagram with the most recent BASP water sample collected. Results are shown in milliequivalents per kilogram (meq/kg). In instances where the total alkalinity and potassium analytical results were not detected, the method detection limit was provided for the Piper diagram.

AD-3 and AD-4C Piper Diagram
Welsh Bottom Ash Storage Pond

Geosyntec consultants | AMERICAN ELECTRIC POWER

Columbus, Ohio | December 2024

Figure **8**

ATTACHMENT A
Geologic Cross Sections

Document Path: Z:\GISProjects_ENV\AEP\Welsh Plant\MXD\Landfill report\September 2019\Fig2-3-Cross Section LocationsREV.mxd

A
AD-23
AD-22
FM 1735
SB-4 (background)
AD5
AD6
AD-18
SB-3
SB-2
AD-17
B
AD12
Temp-1
C
AD1
D
AD7
A
Ash-3
E
AD8
SB-5
A'
AD-15
B1
B2
Ash-2
Primary Bottom Ash Pond
Ash-1
Weir Box
Drainage Canal
AD9
G-1
B3
SB-6
B4
Clear Water Pond
B5
Welsh Reservoir
AD13
SB-7
AD10
B'
B6
G-2
AD11
TPDES Outfall
Landfill
AD14
AD-19
AD-16
G-3
AD-16R
AD-21
C'
AD-20
Bottom Ash Storage Pond
AD4a
AD4b
1/4-acre Clear Water Pond
D4
AD4c
Ash-4
Weir Box
SB-8
AD2
AD3
D'
E'
GB2
GB6
GB7
GB5
GB4
MW9
MW10

Legend

- Existing CCR Unit Upgradient Monitoring Well
- Existing CCR Unit Downgradient Monitoring Well
- Monitoring Well Location
- Piezometer/Temporary Monitoring Well Location
- Plugged Monitoring Well/Piezometer
- Soil Boring (May 2018)
- Geotechnical Soil Boring (October 2018)
- Ash Pore Water Sample Location (May 2018)
- Site Features
- A-A' LINE OF GEOLOGIC CROSS SECTION

0 800 1,600
SCALE IN FEET

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

SITE LAYOUT AND WELL LOCATIONS (UPDATED SEPTEMBER 2022)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

WEST

A

EAST

A'

STATE OF TEXAS
Kenneth J. Brandner
Geology
1787
LICENSED
PROFESSIONAL GEOSCIENTIST
9-29-22

AD-23 AD-22 AD-5 AD-6 AD-7 AD-8

PRIMARY BOTTOM ASH POND

WELSH RESERVOIR

370'
360'
350'
340'
330'
320'
310'
300'

ELEVATION (FEET MSL)

CLAYEY SAND, BROWN, UNSATURATED

SILTY CLAY, GRAY WITH RED MOTTLING.

CLAYEY SAND, REDDISH BROWN TO GRAY.

QUEEN CITY FORMATION

FILL (ASH)

CLAY, SANDY CLAY AND SILT, ORANGE, RED, GRAY AND BROWN.

SILTY SAND AND CLAYEY SAND, BROWN TO GRAY.

SILTY CLAY, GRAY TO BLACK.
(CONFINING UNIT)

CLAY

WELSH RESERVOIR

RECKLAW FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.95 ft/day)
(EFFECTIVE POROSITY = 0.21)

NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN EVALUATION (6/19/19)
- PROJECTED BASE OF PRIMARY BOTTOM ASH POND (SEE NOTE)

0 600'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
A - A'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
4

WEST

B

EAST

B'

LANDFILL

B-2 B-10

AD-12

AD-17

AD-13

AD-10

FILL
(W/ASH-COAL PIECES)

SILTY SAND, DRY

CLAY AND SANDY CLAY, GRAY TO TAN.

5'

CLAYEY/SILTY SAND AND SANDY SILT,
BROWN TO GRAY, FINE GRAINED.

SILTY AND SANDY CLAY, GRAY TO BROWN.
(CONFINING UNIT)

380'
370'
360'
350'
340'
330'
320'
310'
300'

ELEVATION (FEET MSL)

RECKLAW
FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.21
0.95 ft/day)
(EFFECTIVE POROSITY =

STATE OF TEXAS
Kenneth J. Brammer
Geology
1780
LICENSED
PROFESSIONAL GEOSCIENTIST

9-29-22

NOTES:
1. BASE OF LANDFILL ELEVATION TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I" DRAWING ID WEPX-88, DATED 12/3/76.
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-21-17; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (3/4/16)
- BASE OF LANDFILL (SEE NOTE)

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
B - B'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
5

WEST

C

EAST

C'

BOTTOM ASH STORAGE POND

WELSH RESERVOIR

370'
360'
350'
340'
330'
320'
310'
300'

PERIMETER ROAD (EL. 360')

PERIMETER ROAD (EL. 360')

B-12

B-13

AD-1

AD-4A

AD-4B

AD-4C

AD-20

AD-21

SILTY CLAY AND SANDY CLAY, BROWN TO GRAY.

CLAYEY SAND, DRY

BOTTOM ASH STORAGE 60-ML. HDPE LINER (PROJECTED)

SANDY SILT AND SILTY SAND, VERY FINE TO FINE GRAINED, GRAY TO TAN.

SANDY CLAY

REDDISH BROWN TO GRAY, SILTY CLAY.

DARK GRAY SILTY, SANDY CLAY.
(confining unit)

RECLAIM FORMATION
(AVERAGE HYDRAULIC CONDUCTIVITY = 0.95 ft/day)
(EFFECTIVE POROSITY = 0.21)

ELEVATION (FEET MSL)

ELEVATION (FEET MSL)

NOTES:
1. BASE OF BOTTOM ASH STORAGE HAS A 60-MIL. HDPE LINER AT ELEVATION 340.0', TAKEN FROM FREESE AND NICHOLS "HYDRAULIC ANALYSIS OF WELSH POWER PLANT ASH PONDS, AMERICAN ELECTRIC POWER COMPANY", DATED DECEMBER 2010.
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

STATE OF TEXAS
Kenneth J. Brandner
Geology
1787
LICENSED PROFESSIONAL GEOSCIENTIST

9-29-22

LEGEND

MONITORING WELL SCREENED INTERVAL

WATER LEVEL IN MONITORING WELL (10/29/18)

PROJECTED BASE OF ASH STORAGE (SEE NOTE)

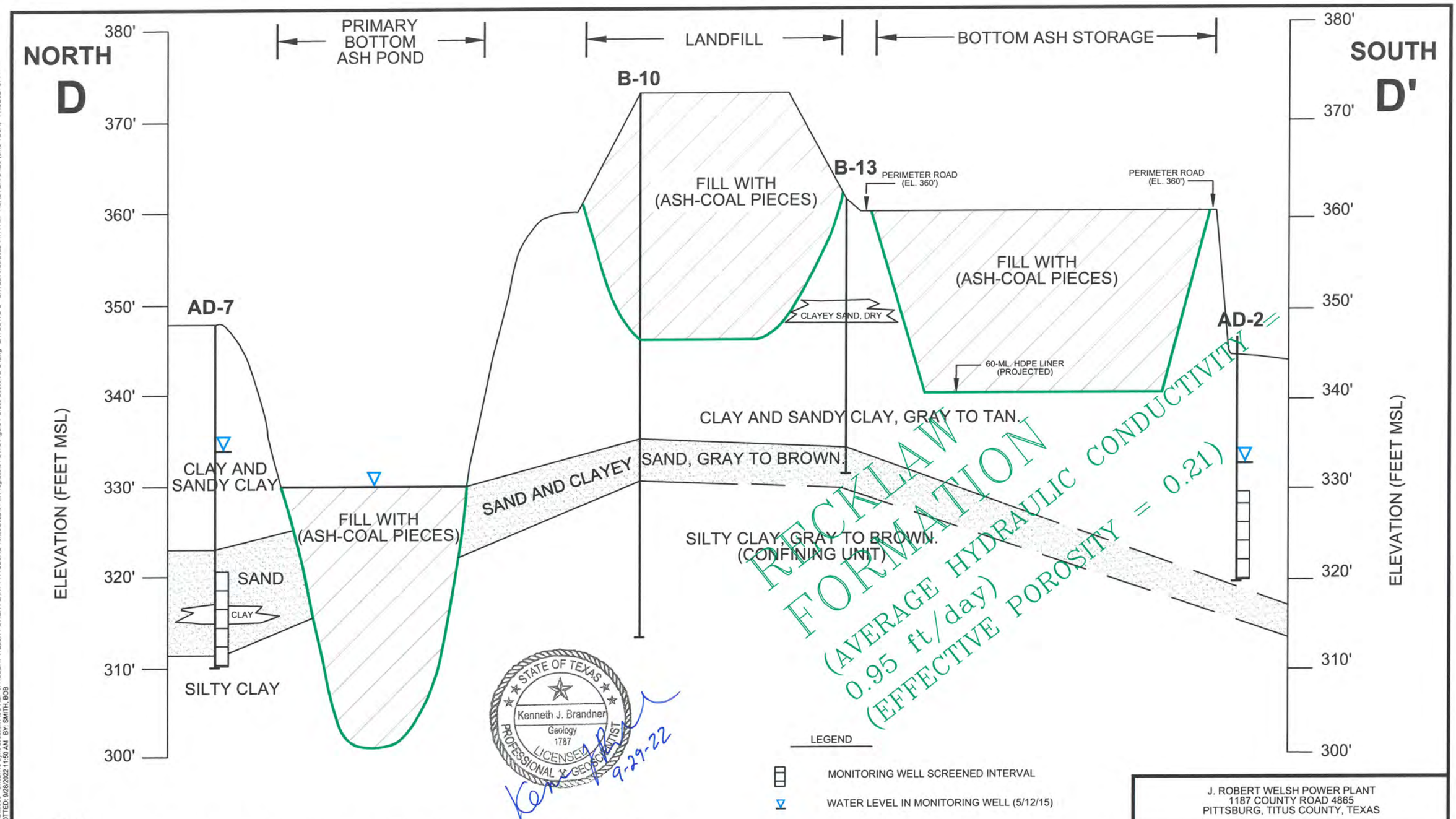
0 200'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
C - C'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
6



NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (5/12/15)
- BASE OF CCR UNIT

0 300'
HORIZONTAL SCALE

J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION D - D' (UPDATED SEPTEMBER 2022)

ARCADIS

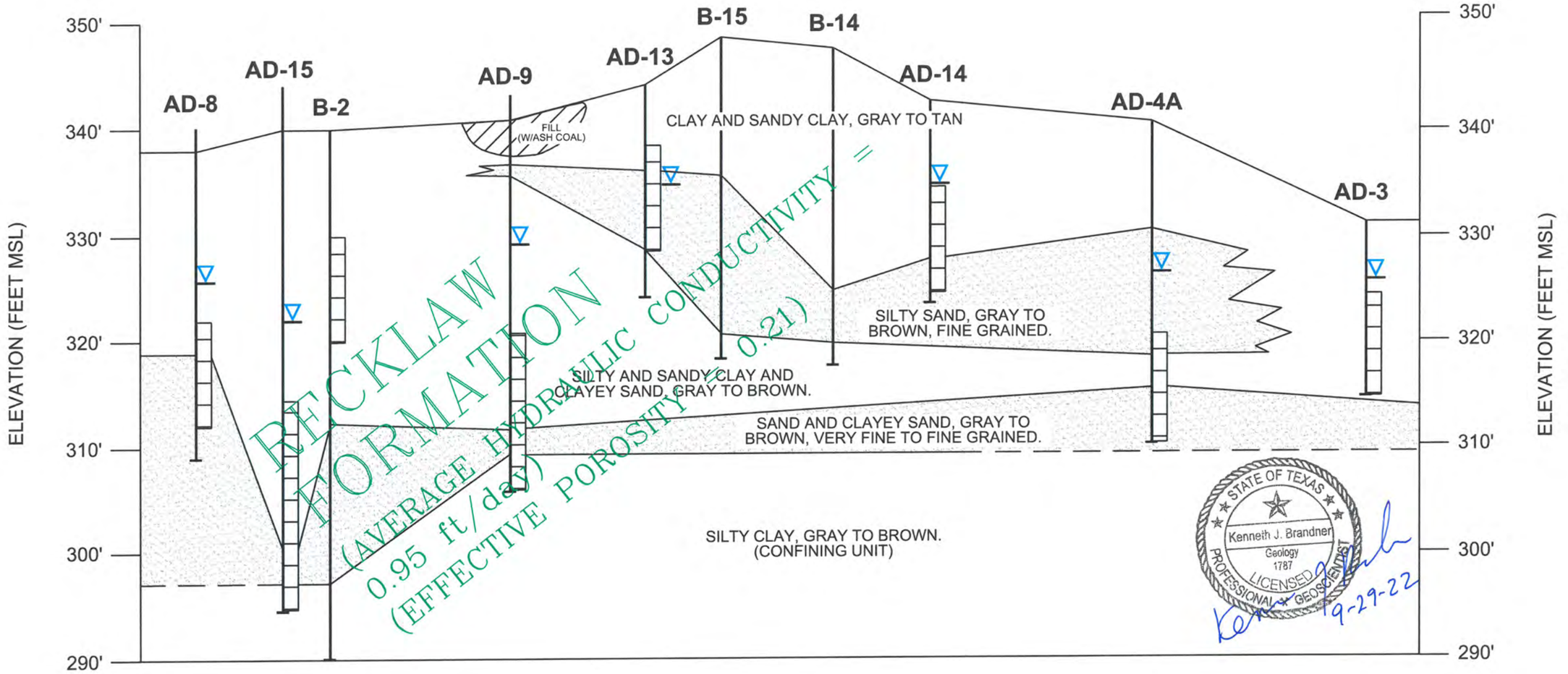
FIGURE 7

NORTH

E

SOUTH

E'



NOTES:
1. BASE OF ASH POND TAKEN FROM "WELSH POWER PLANT-UNIT 1 FLY ASH STORAGE AREA PHASE I " DRAWING ID WEPX-88, DATED 12-3-76; AND U.S. GEOLOGICAL SURVEY 7 1/2 MINUTE SERIES TOPOGRAPHIC MAP, CASON, TX QUADRANGLE, 1964 (PHOTO REVISED 1980).
2. HYDRAULIC CONDUCTIVITY CALCULATED BASED ON ON-SITE AQUIFER TEST OF MONITORING WELL AD-6 ON 9-17-21; AND SLUG TESTING OF MONITORING WELLS AD-6, AD-9, AD-13, AD-17, AND AD-19 DURING OCTOBER 2018.
3. EFFECTIVE POROSITY ESTIMATED AT 0.21 BASED ON SITE LITHOLOGY. SITE SPECIFIC YIELD FOR FINE SAND, REFERENCE: C. W. FETTER, "APPLIED HYDROGEOLOGY", UNIVERSITY OF WISCONSIN - OSHKOSH, 1980.

LEGEND

MONITORING WELL SCREENED INTERVAL

WATER LEVEL IN MONITORING WELL (3/4/16)

0 300'
HORIZONTAL SCALE

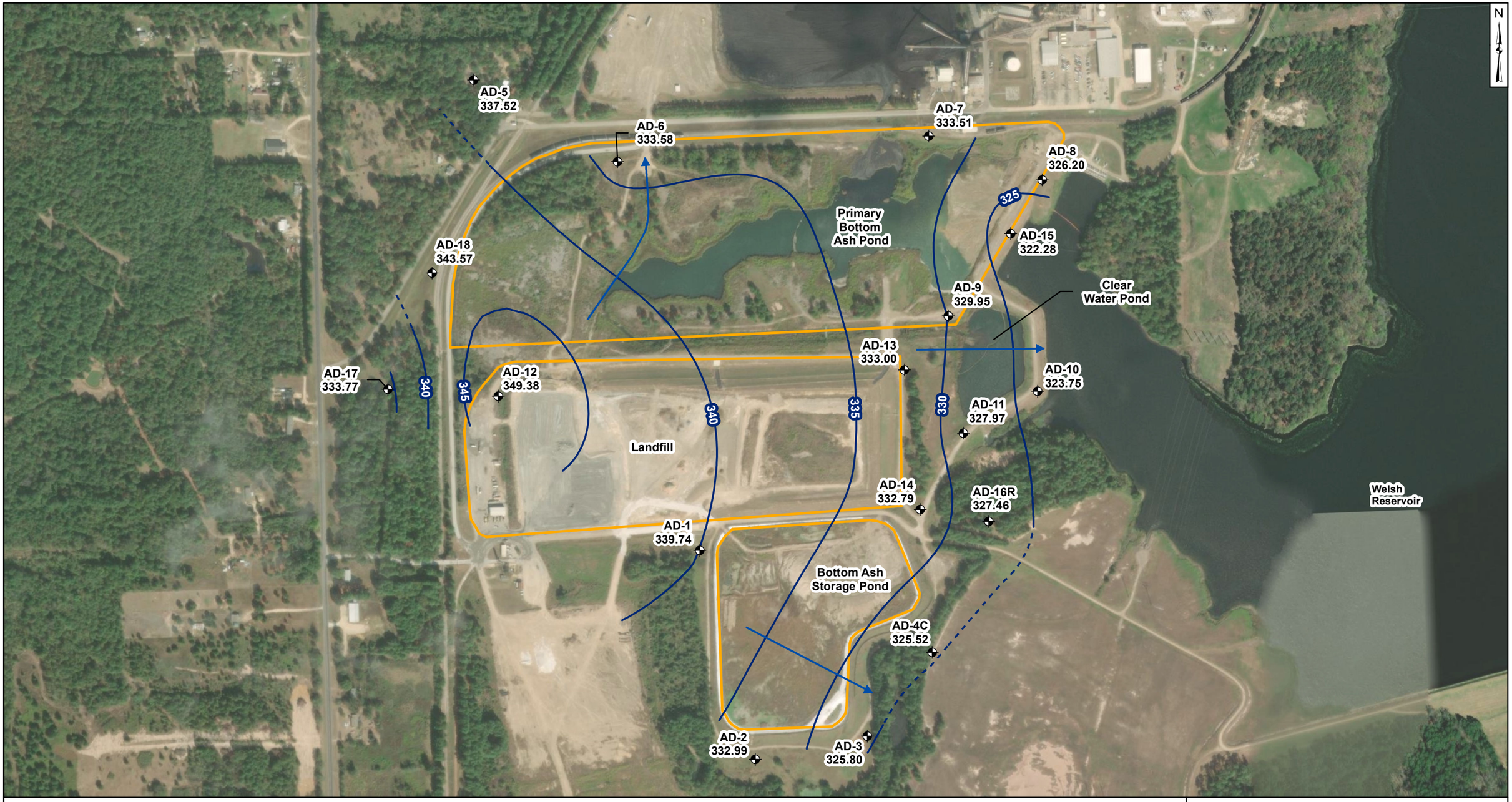
J. ROBERT WELSH POWER PLANT
1187 COUNTY ROAD 4865
PITTSBURG, TITUS COUNTY, TEXAS

CROSS SECTION
E - E'
(UPDATED SEPTEMBER 2022)

ARCADIS

FIGURE
8

ATTACHMENT B
Historical Potentiometric Maps



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 6 and 7, 2023) 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.
4. Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
February 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/30

Figure
1

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-02Feb.mxd. ASoltero. 11/30/2023. CHA8423/14/08.

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 June 6, 2023) provided by AEP.
2. AD-12 was not gauged during the June 2023 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.
5 Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
June 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/30

Figure **2**

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-06June.mxd. ASoltero. 11/30/2023. CHA8423/14/08.

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 July 27, 2023) provided by AEP.
2. Only well AD-04C was gauged during the July 2023 verification event.Groundwater contours based on June 2023 sampling event.
3. Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
4. Groundwater elevation units are feet above mean sea level.
5 Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 29, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
July 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/29

Figure **3**

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-07July_ver.mxd. ASoltero. 11/29/2023. CHA8423/14/08.

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 October 3 and 4, 2023) 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.
4. Satellite imagery provided by ESRI.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

November 30, 2023

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
October 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2023/11/30

Figure **4**

\\annarbor-01\Data\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-10Oct.mxd. ASoltero. 11/30/2023. CHA8423/14/08.

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 December 14, 2023) provided by AEP.
2. Only wells AD-3, AD-4C, and AD-16R were gauged during the December 2023 verification event. Groundwater contours based on October 2023 sampling event.
3. Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2018).
4. Groundwater elevation units are feet above mean sea level.
5 Aerial imagery provided by Google Earth Pro, dated December 29, 2023.

500 250 0 500 Feet

STATE OF TEXAS
BETH ANN GROSS
79864
LICENSED
PROFESSIONAL ENGINEER

Beth Ann Gross

December 23, 2024

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

Groundwater Potentiometric Map
December 2023

AEP Welsh Power Plant
Cason, Texas

Geosyntec consultants

Columbus, Ohio | 2024/12/23

Figure **5**

A:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Welsh\2023\AEP-Welsh_GW_2023-12Dec_ver.mxd. Okiemute.Commander. 12/23/2024. CHA8423/14/08.

ATTACHMENT C
Chemical Analysis of Wells in Titus County

Table 11.--Chemical analyses of water from wells and springs in Camp, Franklin, Morris, Titus, and adjoining counties--Continued

Titus County

Well	Depth of well (ft)	Date of collection	Silica (SiO_2)	Iron (Fe) (total)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
YA-16-41-101	22	Aug. 20, 1963	--	--	--	--	--	*17		7	0.0	18	--	40	--	--	--	27	57	1.4	0.00	149	5.1
102	34	do	--	--	--	--	--	--		34	--	358	--	--	--	--	--	324	--	--	--	1,250	5.8
201	30	May 26, 1942	--	--	--	12	1.2	*32		55	15	24	--	15	--	--	127	36	--	--	--	--	--
301	60	do	--	--	--	179	126	*126		12	1,025	115	0	3.0	--	--	1,580	968	--	--	--	--	--
302	60	do	--	--	--	134	39	*152		116	211	361	--	1.0	--	--	955	494	--	--	--	--	--
801	200	Feb. 25, 1963	13	0.13	--	6.8	2.0	*147		308	.0	65	.4	.0	--	--	385	25	93	13	4.55	703	7.3
802	31	do	--	--	--	--	--	--		22	4.0	238	--	44	--	--	--	181	--	--	.00	955	5.2
902	470	July 30, 1963	11	.13	--	3.2	.7	*326		406	.0	272	.9	1.5	--	--	815	11	98	43	6.43	1,410	7.5
903	27	May 26, 1942	--	--	--	82	63	*155		268	296	191	0	3.0	--	--	922	464	--	--	--	--	--
42-401	48	June 3, 1942	--	--	--	226	63	*421		549	33	890	--	0	--	--	1,903	824	--	--	--	--	--
702	22	do	--	--	--	12	5.8	*58		55	18	77	--	10	--	--	208	54	--	--	--	--	--
49-103	20	May 22, 1942	--	--	--	.8	1.0	*12		18	11	3.0	--	1.5	--	--	38	6	--	--	--	--	--
202	315	Feb. 20, 1963	51	22	--	9.8	3.2	*24		91	.0	11	.1	.0	--	--	144	38	58	1.7	.74	215	5.8
203	30	do	--	--	--	--	--	*275		64	1,420	700	--	--	--	--	--	1,920	24	2.7	.00	4,090	5.5
206	485	Feb. 25, 1963	14	.68	--	20	.7	*58		122	13	13	.2	1.0	--	--	162	8	94	8.9	1.84	284	7.3
301	24	May 26, 1942	--	--	--	2.4	1.2	*28		31	7	22	--	10	--	--	86	11	--	--	--	--	--
401	24	May 22, 1942	--	--	--	21	3.6	*13		43	26	20	--	7.0	--	--	112	67	--	--	--	--	--
402	395	Mar. 12, 1963	50	11	--	9.0	3.9	16	2.6	64	3.4	14	.2	0	--	0.00	130	38	45	1.1	.28	156	5.9
503	360	Feb. 20, 1963	54	12	--	9	3.2	*26		78	4.6	16	.1	.0	--	--	151	36	61	1.9	.57	218	5.8
601	22	May 25, 1942	--	--	--	49	19	*109		171	74	138	.2	33	--	--	506	202	--	--	--	--	--
603	350	July 30, 1963	11	.12	--	1.5	.1	*86		204	.0	16	.2	1.8	--	--	217	4	98	19	3.26	353	7.4
701	437	May 27, 1942	20	.07	--	3.7	1.2	*231		370	2	149	.2	2.0	--	--	594	14	--	--	--	--	8.2
701	437	June 22, 1949	15	.14	--	1.6	.7	196	1.6	a337	1.6	109	.1	2.2	--	.79	509	--	--	--	--	869	8.5
701	437	Feb. 19, 1963	12	2.8	--	1.5	.5	170	1.1	322	3.2	74	.2	.0	--	.20	421	6	98	30	5.17	758	7.4
702	597	May 27, 1942	20	.05	--	3.8	1.0	224	--	380	2	132	0	.0	--	--	567	14	--	--	--	--	8.4
702	597	Feb. 19, 1963	12	1.4	--	2.5	.7	218	1.2	368	.0	126	.3	.0	--	.27	542	9	98	32	5.85	991	7.7
706	430	May 14, 1942	39	5.6	--	14	6.6	30	--	126	2	15	.1	.5	--	--	176	62	--	--	--	--	--

See footnotes at end of table.

Table 11.--Chemical analyses of water from wells and springs in Camp, Franklin, Morris, Titus, and adjoining counties--Continued

Titus County

Well	Depth of well (ft)	Date of collection	Silica (SiO_2)	Iron (Fe) (total)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
YA-16-49-708	460	Mar. 14, 1963	13	0.13	--	1.5	0.2	152	.8	298	3.2	62	0.2	0.0	--	0.10	380	5	98	30	4.78	651	8.0
804	18	May 14, 1942	--	--	--	10	1.2		*7.4	24	18	6.0	--	0	--	--	55	31	--	--	--	--	--
924	300	Apr. 25, 1963	33	2.7	--	20	4.0		*55	156	13	31	.5	.0	--	--	234	66	64	2.9	1.23	352	7.1
50-101	35	June 3, 1942	--	--	--	13	2.4		*46	49	12	14	--	86	--	--	197	42	--	--	--	--	--
102	31	do	--	--	--	79	35		*44	110	11	141	--	169	--	--	533	342	--	--	--	--	--
202	48	do	--	--	--	47	12		*38	49	2	125	--	39	--	--	287	168	--	--	--	--	--
403	310	July 30, 1963	18	.09	--	27	6.9		*107	284	57	26	.2	.0	--	--	382	96	71	4.8	2.73	601	7.2
404	10	May 25, 1942	--	--	--	31	28		*6.4	18	74	78	--	5.0	--	--	231	192	--	--	--	--	--
409	300	July 30, 1963	12	.05	--	4.2	.9		*116	270	23	13	.2	2.0	--	--	304	14	95	13	4.15	485	7.3
501	37	May 25, 1942	--	--	--	308	97		*76	488	274	460	0	2.0	--	--	1,457	1,170	--	--	--	--	--
703	18	June 3, 1942	--	--	--	1.6	3.2		*2.3	12	4	4.0	.3	2.0	--	--	23	17	--	--	--	--	--
57-102	246	Aug. 22, 1963	34	2.9	--	45	9.7		*34	130	75	29	.2	.2	--	--	291	152	33	1.2	.00	452	6.6
110	700	June 3, 1963	12	.09	--	4.5	1.2		*420	396	0	425	.5	.7	--	--	1,060	16	98	46	6.17	1,890	7.6
114	475	Aug. 22, 1963	13	.06	--	6.0	.7		*56	155	.0	8.5	.2	.5	--	--	161	18	87	5.7	2.18	272	7.2
301	20	May 13, 1942	--	--	--	4.8	3.6		*10	12	26	7.0	.2	2.0	--	--	60	27	--	--	--	--	--
302	420	July 31, 1963	13	.22	--	3.5	.5		*104	266	.2	15	.2	2.2	--	.06	271	11	95	14	4.14	440	7.3
401	300	Aug. 22, 1963	13	--	--	4.8	1.0		*157	286	.0	86	.6	.0	--	--	403	16	96	17	4.37	688	7.7
402	300	May 1, 1963	13	1.1	0.00	5.0	1.1	157	1.6	296	.2	88	.5	.0	0.94	.28	414	17	95	17	4.51	708	7.5
601	18	May 13, 1942	--	--	--	8.8	2.4		*11	18	5	18	.2	12	--	--	67	32	--	--	--	--	--
58-101	9	May 14, 1942	--	--	--	12	6.1		*31	12	63	29	.2	6.0	--	--	153	54	--	--	--	--	--
103	24	do	--	--	--	8.8	3.6		*13	6	12	20	--	25	--	--	85	37	--	--	--	--	--
203	21	do	--	--	--	13	2.4		*29	61	5	28	--	12	--	--	119	42	--	--	--	--	--
401	13	May 13, 1942	--	--	--	4.8	2.4		*8.1	18	2	10	.1	10	--	--	47	22	--	--	--	--	--
701	25	May 14, 1942	--	--	--	13	12		*38	12	2	35	--	130	--	--	236	83	--	--	--	--	--
17-48-102	26	Aug. 21, 1963	--	--	--	--	--		--	53	--	38	--	--	--	--	--	53	--	--	.00	299	5.6
202	18	Mar. 22, 1942	--	--	--	11	1.0		*104	12	30	84	--	120	--	--	356	31	--	--	--	--	--
202	18	Aug. 21, 1963	--	--	--	--	--		--	22	--	89	--	--	--	--	--	86	--	--	.00	696	5.6

See footnotes at end of table.

Table 11.--Chemical analyses of water from wells and springs in Camp, Franklin, Morris, Titus, and adjoining counties--Continued

Titus County

Well	Depth of well (ft)	Date of collection	Silica (SiO_2)	Iron (Fe) (total)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)	Specific conductance (micromhos at 25°C)	pH
YA-17-48-801	13	May 22, 1942	--	--	--	11	4.9	*37		43	12	40	--	29	--	--	155	48	--	--	--	--	--
802	18	May 20, 1942	--	--	--	5.6	6.1	*17		31	7	12	--	33	--	--	96	39	--	--	--	--	--
901	25	May 22, 1942	--	--	--	13	4.9	*37		12	22	39	--	55	--	--	177	53	--	--	--	--	--
56-201	40	May 27, 1942	--	--	--	22	15	*17		12	2	18	--	141	--	--	221	114	--	--	--	--	--
303	20	May 20, 1942	--	--	--	26	4.6	*34		55	11	65	--	10	--	--	178	83	--	--	--	--	--
304	310	Aug. 13, 1963	18	1.8	--	7.5	2.6	*117		190	74	35	0.2	.0	--	--	347	29	90	9.4	2.53	560	7.2
401	11	May 27, 1942	--	--	--	16	7.3	*134		31	122	102	--	82	--	--	478	70	--	--	--	--	--
402	30	do	--	--	--	4.4	1.2	*19		18	30	4.0	.2	6.0	--	--	74	16	--	--	--	--	--
415	225	Jan. 17, 1963	12	.37	--	3.5	1.2	*132		248	71	15	.1	2.8	--	--	360	14	96	15	3.79	526	7.5
601	28	May 20, 1942	--	--	--	98	55	*67		171	185	199	.1	1.5	--	--	690	469	--	--	--	--	--
701	38	May 15, 1942	--	--	--	6.0	0	*5.1		18	4	5.0	0	0	--	--	29	15	--	--	--	--	--
† 707	260	Oct. 15, 1962	22	.1	--	6.7	2.5	*191.1		201.3	198	50.0	--	--	--	--	--	27	--	--	--	892	8.02
707	260	July 27, 1963	7.8	1.7	0.00	8.2	2.3	182	2.4	184	202	50	.1	2.8	0.24	0.09	548	30	92	14	2.42	866	7.0
801	Spring	May 15, 1942	--	--	--	8.8	2.4	*1.2		37	2	1.0	--	1.5	--	--	35	32	--	--	--	--	--
901	502	May 29, 1942	--	--	--	5.2	4.9	*297		323	2	288	.2	7.0	--	--	764	33	--	--	--	--	--
64-101	380	July 31, 1963	14	.09	--	3.8	.9	*82		187	1.8	24	.2	1.2	--	--	220	13	93	9.9	2.80	356	7.5
102	17	May 15, 1942	--	--	--	4.8	2.4	*22		49	3	15	.1	6.0	--	--	77	22	--	--	--	--	--
201	48	do	--	--	--	48	22	*124		43	30	254	--	66	--	--	565	208	--	--	--	--	--
301	40	do	--	--	--	205	126	*239		580	418	450	0	9.0	--	--	1,732	1,033	--	--	--	--	--
401	32	do	--	--	--	24	18	*127		98	30	195	--	32	--	--	474	136	--	--	--	--	--

* Sodium and potassium calculated as sodium (Na).
† Analyses by Curtis Laboratories.
a/ Includes the equivalent of 5 ppm as carbonate (CO_3).

ATTACHMENT D
Certification by a Qualified Professional Engineer

CERTIFICATION BY A QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected and above described alternative source demonstration is appropriate for evaluating the groundwater monitoring data for the Welsh Bottom Ash Storage Pond CCR management area and that the requirements of 30 TAC §352.941(c) have been met.

Beth Ann Gross
Printed Name of Licensed Professional Engineer

Beth Ann Gross
Signature

Geosyntec Consultants
2039 Centre Pointe Blvd, Suite 103
Tallahassee, Florida 32308

Texas Registered Engineering Firm
No. F-1182

79864	Texas	December 23, 2024
License Number	Licensing State	Date

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 WELSH PP Sampling Period: APRIL 2024

Sampling Contractor: EA6LE 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	✓	✓	✓		✓	✓	✓	OVERGROWN	

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: 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
AP-15	✓	✓	✓	✓	✓	✓	✓	
AP-3	✓	✓	✓	✓	✓	✓	✓	
AP-2	✓	✓	✓	✓	✓	✓	✓	
AP-17	✓	✓	✓	✓	✓	✓	✓	
AP-18	✓	✓	✓	✓	✓	✓	✓	
AP-14	✓	✓	✓	✓	✓	✓	✓	
AP-16R	✓	✓	✓	✓	✓	✓	✓	
AP-11	✓	✓	✓	✓	✓	✓	✓	
AP-10	✓	✓	✓	✓	✓	✓	✓	
AP-12	✓	✓	✓	✓	✓	✓	✓	well pad overgrown
AP-22	✓	✓	✓	✓	✓		✓	
AP-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	AEP WMSH PP
Sample by	Kenny 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 (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1032	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	
Sample appearance	clear
Sample time	1049
Sample date	04/01/24

BACKGROUND DUPLICATE 1200

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	AP-3

Depth to water, feet (TOC)	1.79
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 (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1005	8.88	300	4.02	88	22.3	10.83	376	21.18		
1010	9.05	300	3.74	68	20.0	1.06	412	19.72		
1015	9.16	300	3.74	65	5.9	0.87	419	19.65		
1020	9.21	300	3.74	64	5.7	0.83	423	19.59		

Total volume purged	
Sample appearance	Clear
Sample time	1022
Sample date	4.1.24

Dup - BASP

1313

Facility Name	AEP WELSH PP
Sample by	Kenny McDonald

Sample Location ID	AO-04C

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

Depth to water date	04/01/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (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	Clear
Sample time	0945
Sample date	04/01/24

Facility Name	AEO WASH PP
Sample by	KERRY McDONALD

Sample Location ID	AP-05

Depth to water, feet (TOC)	13.75
Measured Total Depth, feet (TOC)	32.88

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)		
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		
				WON'T HOLD WATER LEVEL						

Total volume purged	
Sample appearance	TURBID
Sample time	0845
Sample date	04/02/24

Facility Name	AEP WELSH PP
Sample by	Kerry McDonald

Sample Location ID	AO-08

Depth to water, feet (TOC)	13.88
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 (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
0831	13.94	220	6.31	441	1.4	2.31	305	22.93		
0836	13.93	220	6.52	436	1.7	2.20	297	22.95		
0841	13.95	220	6.55	436	1.6	2.16	293	22.95		
0846	13.95	220	6.57	436	1.8	2.13	289	22.98		

Total volume purged	
Sample appearance	CLEAR
Sample time	0848
Sample date	04/01/24

Facility Name	AEP WELSH PP
Sample by	KENNY McDONALD

Sample Location ID	AP-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	
Sample appearance	CLEAN
Sample time	1021
Sample date	04/02/24

PBAP DUPLICATE 1200

Facility Name	Welsh
Sample by	Matt Hamilton

Depth to water, feet (TOC)	14.34
Measured Total Depth, feet (TOC)	22.10

Sample Location ID	AD-11
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)		
1024	14.54	200	3.71	966	14.2	9.69	461	21.21		
1029	14.57	200	3.42	911	22.8	1.15	455	21.23		
1034	14.58	200	3.46	874	7.8	0.95	450	21.34		
1039	14.59	200	3.47	852	7.7	0.86	447	21.38		

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

Facility Name	ACP WEBSITE 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	M-H Hamilton

Depth to water, feet (TOC)	12.40
Measured Total Depth, feet (TOC)	21.27

Sample Location ID	AD-14
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	4.04	350	29.7	11.44	445	20.75		
903	12.76	220	3.81	255	0	3.58	478	18.95		
908	12.78	220	3.77	245	0	2.64	478	18.56		

Total volume purged	
Sample appearance	clear
Sample time	916
Sample date	4-2-24

Duplicate

Landfill

1230

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	AD-15
Depth to water date	4-1-24

Depth to water, feet (TOC)	20.54
Measured Total Depth, feet (TOC)	49.15

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)		
916	21.30	280	3.90	195	118	5.63	396	23.19		
921	21.41	280	3.85	132	107	1.02	448	23.44		
926	21.44	280	3.84	128	85.3	0.80	461	23.57		
931	21.46	280	4.09	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	21.49	280	4.36	183	35.9	0.61	436	23.74		

Total volume purged	
Sample appearance	clear
Sample time	945
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	Matt Hamilton

Sample Location ID	AD-16R
Depth to water date	4-2-24

Depth to water, feet (TOC)	24.59
Measured Total Depth, feet (TOC)	31.30

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)		
946	25.07	150	2.65	183	4.0	9.43	547	18.87		
954	25.16	150	2.66	196	3.2	1.45	551	19.20		
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

Facility Name	Welsh
Sample by	Matt Hamlin

Sample Location ID	AD-17

Depth to water, feet (TOC)	22.60
Measured Total Depth, feet (TOC)	41.47

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)		
830	23.33	100	5.12	1610	102	10.39	204	21.43		
835	24.02	100	5.44	1750	82.3	4.09	155	20.35		
				Will not hold water level.						
				Pumped dry and Sampled later						
				in the day.						

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

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	AD-3
Depth to water date	6-10-24

Depth to water, feet (TOC)	7.82
Measured Total Depth, feet (TOC)	20.13

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)		
1001	8.35	300	4.42	168	4	10.98	401	25.14		
1006	8.45	300	4.38	84	0	1.20	429	22.99		
1011	8.57	300	4.37	77	0	1.14	426	22.96		

Total volume purged	
Sample appearance	clear
Sample time	1012
Sample date	6-10-24

lid will not close, will not lock

Facility Name	Walsh
Sample by	Matt Hamilton

Sample Location ID	AP-4C
Depth to water date	6/10/24

Depth to water, feet (TOC)	7.66
Measured Total Depth, feet (TOC)	18.82

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)		
1031	7.52	220	4.35	337	0	2.09	356	25.26		
1036	7.61	220	4.18	355	0	0.97	248	23.61		
1041	7.70	220	4.15	359	0	0.91	230	23.34		

Total volume purged	
Sample appearance	clear
Sample time	1042
Sample date	6/10/24

Facility Name	Walsh
Sample by	Matt Hamilton

Sample Location ID	AD-16R
Depth to water date	6-10-24

Depth to water, feet (TOC)	24.65
Measured Total Depth, feet (TOC)	31.30

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)		
1103	25.01	120	3.68	213	7.2	4.78	460	24.98		
1108	25.12	120	3.65	207	3.3	1.52	471	23.15		
1113	25.20	120	3.63	204	2.5	1.43	475	22.98		

Total volume purged	
Sample appearance	
Sample time	
Sample date	

CCR Groundwater Monitoring Well Inspection Form

Facility: Welsh

Sampling Contractor: Eagle

Sampling Period: Sept. 2024

Signature: Matt Tomlin

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-16	✓	✓	✓	✓	✓	✓	✓	
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	
AO-13	✓	✓	✓	✓	✓	✓	✓		
AO-09	✓	✓	✓	✓	✓	✓	✓		
AO-08	✓	✓	✓	✓	✓	✓	✓		
AO-05	✓	✓	✓	✓	✓	✓	✓		
AO-06	✓	✓	✓	✓	✓	✓	✓		13,17
AO-12	✓	✓	✓	✓	✓	✓	✓		20,70
AO-01	✓	✓	✓	✓	✓	✓	✓		
AO-04c	✓	✓	✓	✓	✓	✓	✓		
AO-04b	✓	✓	✓	✓	✓	✓	✓		9,45
AO-04	✓	✓	✓	✓	✓	✓	✓		18,21
AO-04a	✓	✓	✓	✓		✓	✓	WELL PAD CRACKED	18,28

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	WELSH PP
Sample by	KENNY McDONALD

Sample Location ID	AD-01

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

Depth to water date	09/10/24

Purge Stabilization Data

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

Total volume purged	
Sample appearance	CLEAR
Sample time	0935
Sample date	09/10/24

BACKGROUND DUP 1100

Facility Name	Welch
Sample by	Matt 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	10.59	300	3.20	77	11.8	1.95	485	21.60		
900	10.65	300	3.19	71	11.2	0.60	511	21.87		
905		300	3.18	70	11.2	0.58	515	21.51		

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

Dup - BASP
1159

Facility Name	WMSH PP
Sample by	Kinney McDonald

Sample Location ID	AD-04c

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

Depth to water date	09/10/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°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	WELSH PP
Sample by	KENNY McDONALD

Sample Location ID	AD-05

Depth to water, feet (TOC)	13.72
Measured Total Depth, feet (TOC)	32.88

Depth to water date	09/10/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
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		
			WON'T HOLD							

Total volume purged	
Sample appearance	SLIGHTLY TURBID (REDDISH BROWN)
Sample time	0840
Sample date	09/10/24

Facility Name	WELSH PP
Sample by	Kenny McDonald

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		
1024	15.31	224	6.67	422	1.7	1.57	277	22.09		
1029	15.31	224	6.66	422	1.9	1.56	274	22.11		

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

Facility Name	WEST PP
Sample by	Kim McDonald

Sample Location ID	AD-09

Depth to water, feet (TOC)	14.43
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	Welsh
Sample by	Matt Hamilton

Sample Location ID	AD-1
Depth to water date	9-5-24

Depth to water, feet (TOC)	15.11
Measured Total Depth, feet (TOC)	22.16

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)		
954	15.36	200	3.58	953	22.5	0.85	406	25.52		
959	15.36	200	3.50	933	7.6	0.57	409	24.84		
1004	15.36	200	3.51	942	7.5	0.51	410	24.62		

Total volume purged	
Sample appearance	clear
Sample time	1006
Sample date	9-9-24

Duplicate

1227

Facility Name	WELSH PP
Sample by	KIMMY McDONALD

Sample Location ID	AD-13

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

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)		
0832	17.11	100	5.17	383	17.4	3.02	291	20.88		
0837	18.03	100	5.28	402	22.8	2.57	281	20.85		
			WON'T HOLD							

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

Facility Name	Welsh
Sample by	Matt Hamilton

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

Sample Location ID	AD-14
Depth to water date	9.9.24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1046	[redacted] 16.00	220	4.30	907	4.0	0.86	451	25.47		
1051	16.06	220	[redacted] 4.24	822	0	0.59	457	24.95		
1056	16.11	220	[redacted] 4.19	807	0	0.67	459	25.28		

Total volume purged	
Sample appearance	clear
Sample time	1058
Sample date	9.9.24

AD-2 - 15.09 AD-7 - 17.00 AD-22 - 3.86

AD-10 14.36 AD-18 - 7.64 AD-23 - 4.49

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	MD-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)		
904	22.91	300	4.67	232	146	1.55	407	22.32		
909	23.13	300	3.91	275	45.8	1.42	386	22.65		
914	23.15	300	3.70	294	35.3	1.36	378	22.88		
919	23.16	300	3.70	302	37.1	1.36	372	23.04		
924	23.18	300	3.78	267	35.2	1.33	364	24.32		

Total volume purged	
Sample appearance	clear
Sample time	926
Sample date	9-9-24

Facility Name	Nelson
Sample by	Matt Hamilton

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

Sample Location ID	AD-16R
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)		
954	25.78	150	2.58	181	12.8	2.92	558	21.96		
959	25.89	150	2.48	200	4.8	0.64	559	21.07		
1004	25.97	150	2.45	241	2.9	0.61	554	20.94		

Total volume purged	
Sample appearance	clear
Sample time	1006
Sample date	9.16.24

CCR Groundwater Monitoring Well Inspection Form

Facility: Welsh

Sampling Period: Nov. 2024

Sampling Contractor: Eagle

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-3	✓	–	–	–	–	–	–	
AD-4C	✓	✓	–	–	–	–	–	
AD-16R	✓	–	✓	–	–	–	–	

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

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	AD-3

Depth to water, feet (TOC)	9.61
Measured Total Depth, feet (TOC)	20.13

Depth to water date	11-4-24

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)		
941	10.47	300	4.14	88	17.8	2.24	400	22.38		
946	10.62	300	4.38	82	12.2	1.76	415	22.10		
951	10.73	300	4.46	77	8.6	1.33	416	21.95		
956	10.74	300	4.49	76	8.6	1.26	415	21.90		

Total volume purged	
Sample appearance	clear
Sample time	958
Sample date	11-4-24

Chloride

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	AD-4C

Depth to water, feet (TOC)	9.41
Measured Total Depth, feet (TOC)	18.82

Depth to water date	11-4-24

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)		
1025	9.47	220	4.62	398	25.8	7.91	233	22.46		
1030	9.50	220	4.71	376	22.2	2.84	286	22.92		
1035	9.53	220	4.77	369	22.4	1.11	306	22.89		
1040	9.55	220	4.80	368	22.7	1.06	304	22.93		
1045	9.57	220	4.82	368	22.8	1.03	311	22.97		

Total volume purged	
Sample appearance	clear / slightly opaque
Sample time	1047
Sample date	11-4-24

Facility Name	Welsh
Sample by	Matt Hamilton

Sample Location ID	AD16R

Depth to water, feet (TOC)	25.45
Measured Total Depth, feet (TOC)	31.30

Depth to water date	11-4-24

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)		
1105	25.92	150	3.54	138	6-8	1.64	500	22.67		
1110	26.04	150	3.65	140	5.7	1.10	524	22.48		
1115	26.11	150	3.68	144	5.1	1.04	533	22.35		

Total volume purged	
Sample appearance	clear
Sample time	
Sample date	

pH 3.68

CALIBRATION RECORD FORM

Name: Matt Hamilton Date: 11-4-24

pH Meter
Manufacturer Horiba Calibrated @ 4.0
Model U-5000
Serial Number 4TS7A3T7
Calibration method Auto Calibration
Calibration standard: Part no.: AutoCal Standard pH4.0 Lot no.: 4GC0413
Expiration Date: Mar/25
Calibration standard: Part no.: _____ Lot no.: _____
Expiration Date: _____
Manufacturer's recommended calibration procedure was followed: (YES) / NO

Specific Conductivity Meter
Manufacturer _____
Model _____
Serial Number _____
Calibration method _____
Calibration standard: Part no.: _____ Lot no.: _____
Expiration Date: _____
Calibration standard: Part no.: _____ Lot no.: _____
Expiration Date: _____
Manufacturer's recommended calibration procedure was followed: YES / NO

Turbidity Meter
Manufacturer _____
Model _____
Serial Number _____
Calibration method _____
Calibration standard: Part no.: _____ Lot no./Serial no.: _____
Expiration Date: _____
Calibration standard: Part no.: _____ Lot no. /Serial no.: _____
Expiration Date: _____
Manufacturer's recommended calibration procedure was followed: YES / NO

Other
Manufacturer _____
Model _____
Serial Number _____
Calibration method _____
Calibration standard: Part no.: _____ Lot no. /Serial no.: _____
Expiration Date: _____
Calibration standard: Part no.: _____ Lot no. /Serial no.: _____
Expiration Date: _____
Manufacturer's recommended calibration procedure was followed: YES / NO

Facility Name	Welsh
Sample by	Matt Hamilton

Depth to water, feet (TOC)	22.66
Measured Total Depth, feet (TOC)	41.47

Sample Location ID	MW-17
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)		
814	23.44	100	5.29	1,780	113	1.31	326	23.86		
824	24.15	100	5.42	1,790	76	0.92	213	22.94		
					Well not hold water level					
					Pumped dry and sampled					
					later in the day.					

Total volume purged	
Sample appearance	slightly turbid
Sample time	1106
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
Lab Number: 241174-001
Date Collected: 04/01/2024 11:49 EDT

Customer Description:
Preparation:
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
Lab Number: 241174-002
Date Collected: 04/02/2024 09:45 EDT

Customer Description:
Preparation:
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
Lab Number: 241174-003
Date Collected: 04/01/2024 12:11 EDT

Customer Description:
Preparation:
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
Lab Number: 241174-005
Date Collected: 04/01/2024 11:26 EDT

Customer Description:
Preparation:
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
Lab Number: 241174-006
Date Collected: 04/01/2024 11:28 EDT

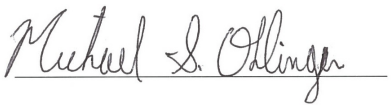
Customer Description:
Preparation:
Date Received: 04/05/2024 11:10 EDT

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.



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Phone: 614-836-4184
Audinet: 8-210-4184

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 Qualifer 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

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

Site Contact:

Date:

For Lab Use Only: COC/Order #: 241174

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3: B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	Field-filter 500 mL bottle, then pH<2, HNO_3: dissolved Fe and Mn	1 L bottle, Cool, 0-6°C: TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3: Ra-226, Ra-228	250 mL Glass bottle, HCl**, pH<2: Hg			Sample Specific Notes:
AD-1	4/1/2024	1049	G	GW	8		X			X	X			Routine (28 days)
AD-5	4/2/2024	845	G	GW	5		X			X	X			TG-32 needed
AD-17	4/1/2024	1111	G	GW	5		X			X	X			
DUPLICATE - BACKGROUND	4/1/2024	1200	G	GW	2		X				X			
EQUIPMENT BLANK - BACKGROUND	4/1/2024	1026	G	GW	2		X				X			
FIELD BLANK - BACKGROUND	4/1/2024	1028	G	GW	1		X							
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4	2			

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

Special Instructions/QC Requirements & Comments:

Relinquished by: Matt Hamilton	Company: Eagle	Date/Time: 4-3-24 1300	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time: 4/5/24 1110

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY (UPS) FedEX USPS
	Other _____

Plant/Customer Welsh Power Station **Number of Plastic Containers:** 18

Opened By Misgna/BReed/Jackab **Number of Glass Containers:** 5

Date/Time 04/05/24 11:10 **Number of Mercury Containers:** _____

Were all temperatures within 0-6°C? (Y) / N or N/A **Initial:** mgk on ice / (no ice)
MGK 04-05-24

(IR Gun Ser# 240009843, *Expir.* 01/03/2026) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: _____ If **RUSH**, who was notified? _____

pH (15 min)	Cr^{+6} (pres) (24 hr)	NO_2 or NO_3 (48 hr)	*ortho*-PO_4 (48 hr)	Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** mgk 5/04/24

pH paper (circle one): MQuant,PN1.09535.0001,LOT#_____ [OR] Lab Rat,PN4801,LOT# X000RVDG21 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: _____

Initial & Date & Time : _____

Lab ID# 241174

Comments: _____

Logged by WCG

Reviewed by MSD

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

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

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: 241174

Reviewer Name: Jonathan Barnhill

LRC Date: 4/22/2024

Laboratory Job Number: 241174

Prep Batch Number(s): PB24041002 QC2404114

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

ICP-MS Laboratory Review Checklist

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: 241174

Reviewer Name: Jonathan Barnhill

LRC Date: 4/22/2024

Laboratory Job Number: 241174

Prep Batch Number(s): PB24041002 QC2404114

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

ICP-MS Laboratory Review Checklist

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: 241174

Reviewer Name: Jonathan Barnhill

LRC Date: 4/22/2024

Laboratory Job Number: 241174

Prep Batch Number(s): PB24041002 QC2404114

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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	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: 2401174

Prep Batch Number(s): PB24040905

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

Mercury Laboratory Review Checklist

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Plant

Reviewer Name: Susann Sulzmann

LRC Date: 04-15-2024

Laboratory Job Number: 2401174

Prep Batch Number(s): PB24040905

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

Mercury Laboratory Review Checklist

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Plant

Reviewer Name: Susann Sulzmann

LRC Date: 04-15-2024

Laboratory Job Number: 2401174

Prep Batch Number(s): PB24040905

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Water Analysis Report

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

Job ID: 241145 **Customer: Welsh Power Station** **Date Reported: 05/06/2024**

Customer Sample ID: AD-1
Customer Description:
Lab Number: 241145-001
Preparation:
Date Collected: 04/01/2024 11:49 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

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

Wet Chemistry

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

Customer Sample ID: AD-5
Customer Description:
Lab Number: 241145-002
Preparation:
Date Collected: 04/02/2024 09:45 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

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

Wet Chemistry

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

Customer Sample ID: AD-17
Customer Description:
Lab Number: 241145-003
Preparation:
Date Collected: 04/01/2024 12:11 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

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

Wet Chemistry

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

Water Analysis Report

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

Job ID: 241145 **Customer: Welsh Power Station** **Date Reported: 05/06/2024**

Customer Sample ID: DUPLICATE - BACKGROUND
Lab Number: 241145-004
Date Collected: 04/01/2024 13:00 EDT

Customer Description:
Preparation:
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

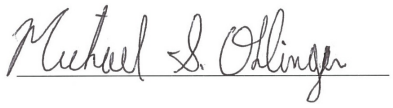
Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	3.35	mg/L	2	0.04	0.01		CRJ	04/09/2024 15:46	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.23	mg/L	2	0.06	0.02		CRJ	04/09/2024 15:46	EPA 300.1 -1997, Rev. 1.0
Sulfate	103	mg/L	10	3.0	0.6		CRJ	04/10/2024 14:49	EPA 300.1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

Data Qualifer Legend

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

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
4001 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

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

Site Contact: **Date:**

For Lab Use Only:
COC/Order #: 241145

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3	Field-filter 500 mL bottle, then pH<2, HNO_3	1 L bottle, Cool, 0-6°C	Three (six every 10th*) 1 L bottles, pH<2, HNO_3	40 mL Glass vial or 125 mL PTFE lined bottle, HCL**, pH<2			Sample Specific Notes:
							B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	dissolved Fe and Mn	TDS, F, Cl, SO_4	Ra-226, Ra-228	Hg			
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							4	F4	1	4				

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

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Matt Hamilton	Engr	4-3-24 1300		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			Michael Ohlinger	4/4/24 1000

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY (UPS) FedEX USPS
	Other _____

Plant/Customer Welsh **Number of Plastic Containers:** 4

Opened By WCG / MGH **Number of Glass Containers:** -

Date/Time 4/4/2024 1000 **Number of Mercury Containers:** -

Were all temperatures within 0-6°C? (Y) / N or N/A **Initial:** MGH/WCG (on ice) / no ice

(IR Gun Ser# 240009843, *Expir.* 01/03/2026) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: Routine If **RUSH**, who was notified? _____

pH (15 min) Cr^{+6} (pres) (24 hr) NO_2 or NO_3 (48 hr) *ortho*-PO_4 (48 hr) Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** 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# 24/145 Initial & Date & Time : _____

Comments: _____

Logged by MSD _____

Reviewed by _____ 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.

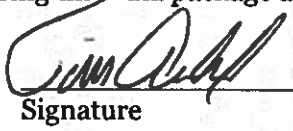
Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Tim Arnold		Principle Chemist	04/12/24
Name (printed)	Signature	Official Title	Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404085

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404085

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404085

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Michael Ohlinger	Michael Ohlinger	Chemist	5/6/2024
Name (printed)	Signature	Official Title	Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404077

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

TDS Laboratory Review Checklist

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404077

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404077

Exception Report No.	Description

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Water Analysis Report

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

Job ID: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Customer Sample ID: AD-3
Lab Number: 241168-001
Date Collected: 04/01/2024 11:22 EDT

Customer Description:
Preparation:
Date Received: 04/05/2024 11:10 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	GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Arsenic	0.24	µg/L	1	0.10	0.03		GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Barium	38.3	µg/L	1	0.20	0.05		GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Beryllium	0.22	µg/L	10	0.50	0.07	J1	GES	04/11/2024 15:42	EPA 200.8-1994, Rev. 5.4
Boron	0.027	mg/L	1	0.050	0.007	J1	GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Cadmium	0.041	µg/L	1	0.020	0.004		GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Calcium	0.65	mg/L	1	0.05	0.02		GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Chromium	0.75	µg/L	1	0.30	0.07		GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Cobalt	1.24	µg/L	1	0.020	0.005		GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Lead	0.10	µg/L	1	0.20	0.05	J1	GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Lithium	0.0133	mg/L	10	0.0030	0.0006		GES	04/11/2024 15:42	EPA 200.8-1994, Rev. 5.4
Mercury	240	ng/L	10	50	20		RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2	µg/L	1	0.5	0.1	J1	GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Selenium	0.11	µg/L	1	0.50	0.04	J1	GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 15:25	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.49	pCi/L	0.14	0.25		ST	04/26/2024 11:24	SW-846 9315-1986, Rev. 0
Carrier Recovery	94.8	%						
Radium-228	0.86	pCi/L	0.15	0.48		TTP	05/02/2024 15:39	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	79.7	%						

* 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.

AMERICAN ELECTRIC POWER

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

Water Analysis Report

Job ID: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Customer Sample ID: AD-4c
Lab Number: 241168-002
Date Collected: 04/01/2024 10:45 EDT

Customer Description:
Preparation:
Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.016	µg/L	1	0.100	0.008	J1	GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Arsenic	0.49	µg/L	1	0.10	0.03		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Barium	92.0	µg/L	1	0.20	0.05		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Beryllium	0.24	µg/L	5	0.25	0.04	J1	GES	04/30/2024 15:27	EPA 200.8-1994, Rev. 5.4
Boron	0.217	mg/L	1	0.050	0.007		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Cadmium	0.018	µg/L	1	0.020	0.004	J1	GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Calcium	1.83	mg/L	1	0.05	0.02		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Chromium	0.46	µg/L	1	0.30	0.07		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Cobalt	0.887	µg/L	1	0.020	0.005		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Lithium	0.0079	mg/L	5	0.0015	0.0003		GES	04/30/2024 15:27	EPA 200.8-1994, Rev. 5.4
Magnesium	1.13	mg/L	1	0.100	0.009		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Mercury	130	ng/L	10	50	20		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 16:04	EPA 200.8-1994, Rev. 5.4
Potassium	0.21	mg/L	1	0.10	0.01		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Selenium	0.29	µg/L	1	0.50	0.04	J1	GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Sodium	60.8	mg/L	1	0.20	0.02		GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	GES	04/11/2024 16:04	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.76	pCi/L	0.18	0.22		ST	04/26/2024 09:55	SW-846 9315-1986, Rev. 0
Carrier Recovery	89.2	%						
Radium-228	0.66	pCi/L	0.29	0.97		TTP	05/02/2024 15:39	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	45.6	%						

* 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: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Customer Sample ID: AD-16R
Lab Number: 241168-003
Date Collected: 04/02/2024 11:01 EDT

Customer Description:
Preparation:
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 16:09	EPA 200.8-1994, Rev. 5.4
Arsenic	0.72	µg/L	1	0.10	0.03		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Barium	35.5	µg/L	1	0.20	0.05		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Beryllium	1.66	µg/L	5	0.25	0.04		GES	04/30/2024 15:32	EPA 200.8-1994, Rev. 5.4
Boron	0.033	mg/L	1	0.050	0.007	J1	GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Cadmium	0.834	µg/L	1	0.020	0.004		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Calcium	0.54	mg/L	1	0.05	0.02		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Chromium	0.79	µg/L	1	0.30	0.07		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Cobalt	37.3	µg/L	1	0.020	0.005		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Lead	0.19	µg/L	1	0.20	0.05	J1	GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Lithium	0.0268	mg/L	5	0.0015	0.0003		GES	04/30/2024 15:32	EPA 200.8-1994, Rev. 5.4
Mercury	10	ng/L	1	5	2		RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Selenium	1.52	µg/L	1	0.50	0.04		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4
Thallium	0.55	µg/L	1	0.20	0.02		GES	04/11/2024 16:09	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.99	pCi/L	0.35	0.23		ST	04/26/2024 09:55	SW-846 9315-1986, Rev. 0
Carrier Recovery	87.9	%						
Radium-228	6.44	pCi/L	0.25	0.64		TTP	05/02/2024 15:39	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	67.9	%						

* 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: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Customer Sample ID: Duplicate-BASP
Customer Description:
Lab Number: 241168-004
Preparation:
Date Collected: 04/01/2024 14:13 EDT
Date Received: 04/05/2024 11:10 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	GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Arsenic	0.23	µg/L	1	0.10	0.03		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Barium	37.6	µg/L	1	0.20	0.05		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Beryllium	0.177	µg/L	1	0.050	0.007		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Boron	0.016	mg/L	1	0.050	0.007	J1	GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Cadmium	0.046	µg/L	1	0.020	0.004		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Calcium	0.62	mg/L	1	0.05	0.02		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Chromium	0.34	µg/L	1	0.30	0.07		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Cobalt	1.26	µg/L	1	0.020	0.005		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Lead	0.10	µg/L	1	0.20	0.05	J1	GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Lithium	0.0107	mg/L	1	0.00030	0.00006		GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Mercury	220	ng/L	1	5	2		RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Selenium	0.12	µg/L	1	0.50	0.04	J1	GES	04/11/2024 16:14	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 16:14	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: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Customer Sample ID: Equipment Blank-BASP
Customer Description:
Lab Number: 241168-005
Preparation:
Date Collected: 04/01/2024 11:00 EDT
Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Barium	0.05	µg/L	1	0.20	0.05	J1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Boron	0.013	mg/L	1	0.050	0.007	J1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Chromium	0.39	µg/L	1	0.30	0.07		GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Cobalt	0.011	µg/L	1	0.020	0.005	J1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	GES	04/11/2024 16:19	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 16:19	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 16:19	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 16:19	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: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Customer Sample ID: Field Blank-BASP
Lab Number: 241168-006
Date Collected: 04/01/2024 11:08 EDT

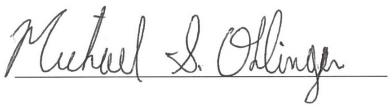
Customer Description:
Preparation:
Date Received: 04/05/2024 11:10 EDT

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 16:25	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Boron	0.010	mg/L	1	0.050	0.007	J1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Chromium	0.20	µg/L	1	0.30	0.07	J1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Cobalt	0.007	µg/L	1	0.020	0.005	J1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 16:25	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 16:25	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

Water Analysis Report

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

Job ID: 241168 **Customer: Welsh Power Station** **Date Reported: 05/14/2024**

Data Qualifer 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)

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

Contacts: Michael Ohlinger (614-836-4184)

Project Name: Welsh BASP
Contact Name: Rebecca Jones
Contact Phone: (737) 330-3725
Sampler(s): Matt Hamilton Kenny McDonald

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

Site Contact:

Date:

For Lab Use Only:
COC/Order #: 241168

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 B, Ca, Ll, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL, Mg, Na, K	250 mL bottle, pH<2, HNO_3 B, Ca, Ll, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	1 L bottle, Cool, 0-6°C TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3 Ra-226, Ra-228	250 mL Glass bottle, HCL**, pH<2 Hg	filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn		Sample Specific Notes:
AD-3	4/1/2024	1022	G	GW	8			X		X	X			TG-32 needed
AD-4c	4/1/2024	945	G	GW	5		X			X	X			
AD-16R	4/2/2024	1001	G	GW	5			X		X	X			
DUPLICATE - BASP	4/1/2024	1313	G	GW	2			X			X			
EQUIPMENT BLANK - BASP	4/1/2024	1000	G	GW	2			X			X			
FIELD BLANK - BASP	4/1/2024	1008	G	GW	1			X						
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							**4**	**4**	**1**	**4**	**2**			

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

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Matt Hamilton	Eggk	4-3-24 1300		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
				4/5/24 1110

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY (UPS) FedEX USPS
	Other _____

Plant/Customer WILSH P.S. **Number of Plastic Containers:** 18

Opened By Misgha **Number of Glass Containers:** 5

Date/Time 04/05/24 11:10Am **Number of Mercury Containers:** —

Were all temperatures within 0-6°C? Y / N or (N/A) **Initial:** MG-IC on ice / (no ice)

(IR Gun Ser# 240009843, *Expir.* 01/03/2026) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: 28 days If **RUSH**, who was notified? _____

pH (15 min)	Cr^{+6} (pres) (24 hr)	NO_2 or NO_3 (48 hr)	*ortho*-PO_4 (48 hr)	Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** MGK/JDH/BLH

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# 241168 ~~241164~~ Initial & Date & Time : _____

Logged by WCG Comments: _____

Reviewed by _____

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.

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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	S. Sulamann	Senior Chemist	4-15-22
Name (printed)	Signature	Official Title	Date

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: 2401168

Prep Batch Number(s): PB24040905

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

Mercury Laboratory Review Checklist

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

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: 2401168

Prep Batch Number(s): PB24040905

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

Mercury Laboratory Review Checklist

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

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: 2401168

Prep Batch Number(s): PB24040905

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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: Welsh CCR

Reviewer Name: Jonathan Barnhill

LRC Date: 4/22/2024

Laboratory Job Number: 241168

Prep Batch Number(s): PB24041002 QC2404114

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

ICP-MS Laboratory Review Checklist

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

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: 241168

Prep Batch Number(s): PB24041002 QC2404114

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

ICP-MS Laboratory Review Checklist

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

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: 241168

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.

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Water Analysis Report

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

Job ID: 241146 **Customer: Welsh Power Station** **Date Reported: 05/06/2024**

Customer Sample ID: AD-3
Customer Description:
Lab Number: 241146-001
Preparation:
Date Collected: 04/01/2024 11:22 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.3	mg/L	2	0.04	0.01		CRJ	04/09/2024 18:31	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.12	mg/L	2	0.06	0.02		CRJ	04/09/2024 18:31	EPA 300.1 -1997, Rev. 1.0
Sulfate	2.4	mg/L	2	0.6	0.1		CRJ	04/09/2024 18:31	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	100	mg/L	1	50	20		ELT	04/05/2024 08:28	SM 2540C-2015

Customer Sample ID: AD-4c
Customer Description:
Lab Number: 241146-002
Preparation:
Date Collected: 04/01/2024 10:45 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	14.0	mg/L	2	0.04	0.01		CRJ	04/09/2024 19:37	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.12	mg/L	2	0.06	0.02		CRJ	04/09/2024 19:37	EPA 300.1 -1997, Rev. 1.0
Sulfate	120	mg/L	10	3.0	0.6		CRJ	04/09/2024 19:04	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	<5	mg/L	1	20	5	U1	MGK	04/09/2024 11:59	SM 2320B-2011
Bicarbonate Alkalinity	<5	mg/L	1	20	5	U1	MGK	04/09/2024 11:59	SM 4500 CO2D-2011
TDS, Filterable Residue	320	mg/L	1	50	20		ELT	04/05/2024 08:28	SM 2540C-2015

AMERICAN ELECTRIC POWER

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

Water Analysis Report

Job ID: 241146 **Customer: Welsh Power Station** **Date Reported: 05/06/2024**

Customer Sample ID: AD-16R
Customer Description:
Lab Number: 241146-003
Preparation:
Date Collected: 04/02/2024 11:01 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	6.68	mg/L	2	0.04	0.01		CRJ	04/09/2024 20:43	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.10	mg/L	2	0.06	0.02		CRJ	04/09/2024 20:43	EPA 300.1 -1997, Rev. 1.0
Sulfate	66.5	mg/L	2	0.6	0.1		CRJ	04/09/2024 20:43	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	170	mg/L	1	50	20		ELT	04/05/2024 08:35	SM 2540C-2015

Customer Sample ID: DUPLICATE - BASP
Customer Description:
Lab Number: 241146-004
Preparation:
Date Collected: 04/01/2024 14:13 EDT
Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.2	mg/L	2	0.04	0.01		CRJ	04/10/2024 00:33	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.11	mg/L	2	0.06	0.02		CRJ	04/10/2024 00:33	EPA 300.1 -1997, Rev. 1.0
Sulfate	2.1	mg/L	2	0.6	0.1		CRJ	04/10/2024 00:33	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	100	mg/L	1	50	20		ELT	04/05/2024 08:35	SM 2540C-2015

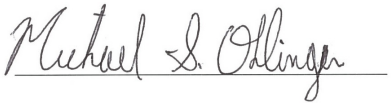
Water Analysis Report

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

Job ID: 241146 **Customer: Welsh Power Station** **Date Reported: 05/06/2024**

Report Verification

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



Michael Ohlinger, Chemist
Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Data Qualifer Legend

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

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 BASP
Contact Name: Rebecca Jones
Contact Phone: (737) 330-3725
Sampler(s): Matt Hamilton Kenny McDonald

Site Contact:

Date:

For Lab Use Only:
COC/Order #: 24146

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

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 B, Ca	500 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	1 L bottle, Cool, 0-6°C Total Alkalinity, Bicarbonate Alkalinity, TDS, F, Cl, SO_4	1 L bottle, Cool, 0-6°C TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3 Ra-226, Ra-228	40 mL Glass vial or 250 mL PTFE lined bottle, HCL*, pH<2 Hg	filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn	Sample Specific Notes:
AD-3	4/1/2024	1022	G	GW	1					X				TG-32 needed
AD-4c	4/1/2024	945	G	GW	1				X					
AD-16R	4/2/2024	1001	G	GW	1					X				
DUPLICATE - BASP	4/1/2024	1313	G	GW	1					X				
Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____; F= filter in field							4	F4		1	4			

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

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Matt Hamilton	Eagle	4-3-24 1300		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Michael Ohlinger	Date/Time: 4/4/24 1000

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY UPS FedEX USPS
	Other _____

Plant/Customer Welsh **Number of Plastic Containers:** 4

Opened By MGK/WCC/MSO **Number of Glass Containers:** -

Date/Time 4/4/24 1000 **Number of Mercury Containers:** -

Were all temperatures within 0-6°C? (Y) / N or N/A **Initial:** MGK/WCC (on ice) / no ice

(IR Gun Ser# 240009843, *Expir.* 01/03/2026) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: 28 days If **RUSH**, who was notified? _____

pH (15 min) Cr^{+6} (pres) (24 hr) NO_2 or NO_3 (48 hr) *ortho*-PO_4 (48 hr) Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N 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:** WCC / MGK 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# 241146 Initial & Date & Time : _____

Comments: _____

Logged by MSO _____

Reviewed by [signature] 4/4/24 _____

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

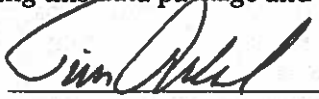
Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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 BASP

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241146

Prep Batch Number(s): QC2404085

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241146

Prep Batch Number(s): QC2404085

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

Ion Chromatography Laboratory Review Checklist

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241146

Prep Batch Number(s): QC2404085

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

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

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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 BASP

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241146

Prep Batch Number(s): QC2404077

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

TDS Laboratory Review Checklist

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

TDS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241146

Prep Batch Number(s): QC2404077

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241146

Prep Batch Number(s): QC2404077

Exception Report No.	Description

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

Water Analysis Report

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

Job ID: 241804 **Customer: Welsh Power Station** **Date Reported: 07/05/2024**

Customer Sample ID: AD-3 Customer Description:
Lab Number: 241804-001 Preparation:
Date Collected: 06/10/2024 11:22 EDT Date Received: 06/12/2024 10:15 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.1	mg/L	2	0.06	0.02		CRJ	06/13/2024 22:51	EPA 300.1 -1997, Rev. 1.0

Customer Sample ID: AD-4c Customer Description:
Lab Number: 241804-002 Preparation:
Date Collected: 06/10/2024 11:45 EDT Date Received: 06/12/2024 10:15 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.176	mg/L	1	0.050	0.007		GES	06/17/2024 16:10	EPA 200.8-1994, Rev. 5.4
Calcium	1.56	mg/L	1	0.05	0.02		GES	06/17/2024 16:10	EPA 200.8-1994, Rev. 5.4

241804-001
Comments:

TG-32

241804-002
Comments:

TG-32

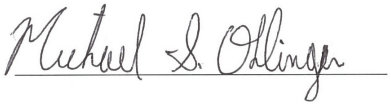
Water Analysis Report

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

Job ID: 241804 **Customer: Welsh Power Station** **Date Reported: 07/05/2024**

Report Verification

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



Michael Ohlinger, Chemist
Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

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 BASP
Contact Name: Rebecca Jones
Contact Phone: (737) 330-3725
Sampler(s): Matt Hamilton

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

Site Contact:

Date:

For Lab Use Only:
COC/Order #: 241804

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 Boron, Calcium	250 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	250 mL bottle, Cool, 0-6°C Chloride	Three (six every 10th*) 1 L bottles, pH<2, HNO_3 Ra-226, Ra-228	250 mL Glass bottle, HCL**, pH<2 Hg	filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn		Sample Specific Notes:
AD-3	6/10/2024	1022	G	GW	1				X					TG-32 needed
AD-4c	6/10/2024	945	G	GW	1		X							
Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____; F= filter in field							4	4	1	4	2			

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

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Matt Hamilton	Eagle	6-11-24 1600		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
				06/12/24 10:15 Am

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY UPS (FedEX) USPS
	Other _____

Plant/Customer Welsh BASP **Number of Plastic Containers:** 2

Opened By BLH **Number of Glass Containers:** 0

Date/Time 6/12/24 @ 10:15 **Number of Mercury Containers:** 0

Were all temperatures within 0-6°C? (Y) N or N/A **Initial:** BLH on ice / no ice

(IR Gun Ser# 240009843, *Expir.* 01/03/2026) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: _____ If **RUSH**, who was notified? _____

pH (15 min) | Cr^{+6} (pres) (24 hr) | NO_2 or NO_3 (48 hr) | *ortho*-PO_4 (48 hr) | Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** BLH 6/12/24

pH paper (circle one): MQuant,PN1.09535.0001,LOT#_____ [OR] Lab Rat,PN4801,LOT# (200R/ADG21 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# 241804 Initial & Date & Time : _____

Comments: _____

Logged by MGC _____

Reviewed by _____ _____

6/12/24 _____

6/12/24

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.

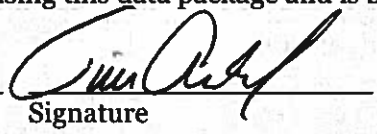
Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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	7/5/2024
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 CCR

Reviewer Name: Tim Arnold

LRC Date: 7/5/2024

Laboratory Job Number: 241804

Prep Batch Number(s): QC2406096

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Tim Arnold

LRC Date: 7/5/2024

Laboratory Job Number: 241804

Prep Batch Number(s): QC2406096

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

Ion Chromatography Laboratory Review Checklist

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Tim Arnold

LRC Date: 7/5/2024

Laboratory Job Number: 241804

Prep Batch Number(s): QC2406096

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Water Analysis Report

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

Job ID: 242778 **Customer: Welsh Power Station** **Date Reported: 10/17/2024**

Customer Sample ID: AD-1
Lab Number: 242778-001
Date Collected: 09/10/2024 10:35 EDT

Customer Description:
Preparation:
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
Lab Number: 242778-002
Date Collected: 09/10/2024 09:40 EDT

Customer Description:
Preparation:
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
Lab Number: 242778-003
Date Collected: 09/10/2024 12:06 EDT

Customer Description:
Preparation:
Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Arsenic	0.35	µg/L	1	0.10	0.03		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Barium	14.0	µg/L	1	0.20	0.05		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Beryllium	0.035	µg/L	1	0.050	0.007	J1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Boron	0.106	mg/L	1	0.050	0.007		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Cadmium	0.014	µg/L	1	0.020	0.004	J1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Calcium	172	mg/L	1	0.05	0.02		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.30	0.07		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Cobalt	42.6	µg/L	1	0.020	0.005		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Lead	0.06	µg/L	1	0.20	0.05	J1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Lithium	0.254	mg/L	1	0.00030	0.00006		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Mercury	3	ng/L	1	5	2	J1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	4.95	pCi/L	0.51	0.27		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.0	%						
Radium-228	1.04	pCi/L	0.12	0.38		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	87.6	%						

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

Water Analysis Report

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

Job ID: 242778 **Customer: Welsh Power Station** **Date Reported: 10/17/2024**

Customer Sample ID: Duplicate - Background
Customer Description:
Lab Number: 242778-004
Preparation:
Date Collected: 09/10/2024 12:00 EDT
Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.033	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Arsenic	0.19	µg/L	1	0.10	0.03		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Barium	83.8	µg/L	1	0.20	0.05		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Beryllium	2.2	µg/L	50	2.5	0.4	J1	ELT	09/20/2024 11:44	EPA 200.8-1994, Rev. 5.4
Boron	0.988	mg/L	1	0.050	0.007		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Cadmium	0.044	µg/L	1	0.020	0.004		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Calcium	7.94	mg/L	1	0.05	0.02		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Chromium	0.37	µg/L	1	0.30	0.07		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Cobalt	4.97	µg/L	1	0.020	0.005		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Lead	0.21	µg/L	1	0.20	0.05		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Lithium	0.011	mg/L	50	0.015	0.003	J1	ELT	09/20/2024 11:44	EPA 200.8-1994, Rev. 5.4
Mercury	2	ng/L	1	5	2	J1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Selenium	11.7	µg/L	1	0.50	0.04		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Thallium	0.06	µg/L	1	0.20	0.02	J1	ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4

Water Analysis Report

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

Job ID: 242778 **Customer: Welsh Power Station** **Date Reported: 10/17/2024**

Customer Sample ID: Equipment Blank - Background
Customer Description:
Lab Number: 242778-005
Preparation:
Date Collected: 09/10/2024 10:11 EDT
Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/20/2024 12:40	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Chromium	0.29	µg/L	1	0.30	0.07	J1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELT	09/20/2024 12:40	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4

Water Analysis Report

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

Job ID: 242778 **Customer: Welsh Power Station** **Date Reported: 10/17/2024**

Customer Sample ID: Field Blank - Background
Lab Number: 242778-006
Date Collected: 09/10/2024 10:09 EDT

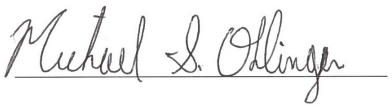
Customer Description:
Preparation:
Date Received: 09/16/2024 11:00 EDT

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

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 Qualifer 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)

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

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

Site Contact: 14 2 | Date: 1

For Lab Use Only:
COC/Order #: 242778

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Field-filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn	1 L bottle, Cool, 0-6°C TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3 Ra-226, Ra-228	125 mL PTFE lined bottle, HCL**, pH<2 Hg			Sample Specific Notes:
AD-1	9/10/2024	935	G	GW	8		X			X	X			Routine (28 days)
AD-5	9/10/2024	840	G	GW	5		X			X	X			**TG-32 needed**
AD-17	9/10/2024	1106	G	GW	5		X			X	X			
DUPLICATE - BACKGROUND	9/10/2024	1100	G	GW	2		X				X			
EQUIPMENT BLANK - BACKGROUND	9/10/2024	911	G	GW	2		X				X			
FIELD BLANK - BACKGROUND	9/10/2024	909	G	GW	1		X							
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4	2			

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by: Matt Hamilton	Company: Eagle	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: Michael Ohlinger	Date/Time: 9/16/24 11:00

WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102 Sample Receipt Form Rev 8, 05 23 24

Package Type: (Cooler) Box Bag Envelope

Delivery Type: UPS (FedEX) USPS Other _____

Plant/Customer Welsh Background **Total # of Containers RECEIVED in Job:** 23

Opened By MWK

Date/Time 9.16.24 11:15am

Were all temperatures within 0-6°C? Y / N or (N/A) (Temps) **Initial:** BLB on ice (no ice)

If No, specify each deviation(s) on back of form. (IR Gun Ser# ~~240009843~~, *Expir.* ~~01-03-2026~~) 221821056 10/12/24

Was container in good condition? (Y) / N Comments

Was Chain of Custody received? (Y) / N Comments MSD 9/6/24

Requested turnaround: Routine If **RUSH**, who was notified?

pH (15 min)	Cr^{+6} (pres) (24 hr)	NO_2 or NO_3 (48 hr)	*ortho*-PO_4 (48 hr)	Hg-diss (pres) (48 hr)

Was 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? (Y) N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) N Comments _____

Was the customer contacted? If Yes: Person Contacted _____

Initial & Date & Time : _____

Lab ID# 247772

Comments: _____

Logged by MSD

(Record Test Count on back of form)

Total # of Containers LISTED on COC: 23

WATER & WASTE SAMPLE RECEIPT FORM (CONT)

Form SOP-7102 Sample Receipt Form Rev 8, 08 23 24

REMINDER Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the Sample or Job "Comments" field in the LIMS. **Comments below**

i.e Mark "LF" if needs Lab filtered, Temperature or Preservative deviation, Preserved upon arrival , etc

JOB #: 247778 **Initial/ Date:** MJO 9/16/24

Login Test Count from COC	LIMS Sample ID (or COC Sample Name)	Comments /Nonconformities	Peer Review Test Count from COC
17	247778-001		17 JP 9/17/24
17	-002		17
17	-003		17
15	-004		15
15	-005		15
14	-006		14

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Susann Sulzmann	S. Sulzmann	Senior Chemist	9-25-24
Name (printed)	Signature	Official Title	Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 09-25-24

Laboratory Job Number: 242778

Prep Batch Number(s): PB24091303

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

Mercury Laboratory Review Checklist

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

Mercury Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 09-25-24

Laboratory Job Number: 242778

Prep Batch Number(s): PB24091303

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

Mercury Laboratory Review Checklist

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

Table 3. Exception Reports.

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

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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 -04'00'	Chemist	10/14/2024
Name (printed)	Signature	Official Title	Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Elizabeth L. Tinapple

LRC Date: 10/14/2024

Laboratory Job Number: 242778

Prep Batch Number(s): PB24091804 QC2409126 QC2409133

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

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Elizabeth L. Tinapple

LRC Date: 10/14/2024

Laboratory Job Number: 242778

Prep Batch Number(s): PB24091804 QC2409126 QC2409133

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

ICP-MS Laboratory Review Checklist

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

Table 3. Exception Reports.

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

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

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

Water Analysis Report

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

Job ID: 242752 **Customer: Welsh Power Station** **Date Reported: 10/02/2024**

Customer Sample ID: AD-1
Lab Number: 242752-001
Date Collected: 09/10/2024 10:35 EDT
Customer Description:
Preparation:
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
Lab Number: 242752-002
Date Collected: 09/10/2024 09:40 EDT
Customer Description:
Preparation:
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
Lab Number: 242752-003
Date Collected: 09/10/2024 12:06 EDT
Customer Description:
Preparation:
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	1110	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
Lab Number: 242752-004
Date Collected: 09/10/2024 12:00 EDT

Customer Description:
Preparation:
Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

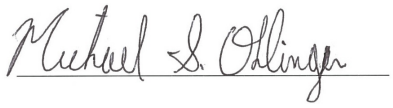
Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	4.02	mg/L	2	0.06	0.02		CRJ	09/17/2024 18:08	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.43	mg/L	2	0.06	0.02		CRJ	09/17/2024 18:08	EPA 300.1 -1997, Rev. 1.0
Sulfate	125	mg/L	10	3.0	0.6		CRJ	09/17/2024 13:44	EPA 300.1 -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

Data Qualifer Legend

U1 - Not detected at or below method detection limit (MDL).
S7 - Sample did not achieve constant weight.

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

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

Site Contact:

Date:

For Lab Use Only:
COC/Order #: 242752

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	Field-filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn	1 L bottle, Cool, 0-6°C TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3 Ra-226, Ra-228	40 mL Glass vial or 125 mL PTFE lined bottle, HCL**, pH<2 Hg			Sample Specific Notes:
AD-1	9/10/2024	935	G	GW	1				X					TG-32 needed
AD-5	9/10/2024	840	G	GW	1				X					
AD-17	9/10/2024	1106	G	GW	1				X					
DUPLICATE - BACKGROUND	9/10/2024	1100	G	GW	1				X					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4	2			

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	Eagl	9-11-24 1100		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 9/12/24 9:50

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

WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102 Sample Receipt Form Rev 8, 05 23 24

Package Type: (Cooler) Box Bag Envelope

Delivery Type: UPS (FedEX) USPS Other _____

Plant/Customer Welsh **Total # of Containers RECEIVED in Job:** 4

Opened By MSD/MCH

Date/Time 9/12/24 9:50

Were all temperatures within 0-6°C? (Y) / N or N/A (Temps) **Initial:** MCH on (ice) / no ice

If No, specify each deviation(s) on back of form. (IR Gun Ser# ~~240009843~~ 221821056, *Expir.* ~~01-03-2026~~ 10/12/24)

Was container in good condition? (Y) / N Comments

Was Chain of Custody received? (Y) / N Comments MSD 9/6/24

Requested turnaround: Routine If **RUSH**, who was notified?

pH (15 min) Cr^{+6} (pres) (24 hr) NO_2 or NO_3 (48 hr) *ortho*-PO_4 (48 hr) Hg-diss (pres) (48 hr)

Was 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? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was the customer contacted? If Yes: Person Contacted: _____

Initial & Date & Time : _____

Lab ID# 242752

Comments: _____

Logged by MSD

(Record Test Count on back of form)

Total # of Containers LISTED on COC: 4

WATER & WASTE SAMPLE RECEIPT FORM (CONT)

Form SOP-7102 Sample Receipt Form Rev 8, 08 23 24

REMINDER Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the Sample or Job "Comments" field in the LIMS. **Comments below**

i.e. Mark "LF" if needs Lab filtered, Temperature or Preservative deviation, Preserved upon arrival , etc

JOB #: 242752 **Initial/ Date:** MSO 9/12/24

Login Test Count from COC	LIMS Sample ID (or COC Sample Name)	Comments /Nonconformities	Peer Review Test Count from COC
4	242752-001		4
4	-002		4
4	-003		4
4	-004		4

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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	09/18/2024
Name (printed)	Signature	Official Title	Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Plant - Background

Reviewer Name: Tim Arnold

LRC Date: 09/18/2024

Laboratory Job Number: 242752

Prep Batch Number(s): QC2409103

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Plant - Background

Reviewer Name: Tim Arnold

LRC Date: 09/18/2024

Laboratory Job Number: 242752

Prep Batch Number(s): QC2409103

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

Ion Chromatography Laboratory Review Checklist

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Plant - Background

Reviewer Name: Tim Arnold

LRC Date: 09/18/2024

Laboratory Job Number: 242752

Prep Batch Number(s): QC2409103

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Sandra Williams	Sandra Williams	Chemist	9/19/2024
Name (printed)	Signature	Official Title	Date

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 9/19/2024

Laboratory Job Number: 242752

Prep Batch Number(s): QC2409104

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

TDS Laboratory Review Checklist

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 05/06/2024

Laboratory Job Number: 242752

Prep Batch Number(s): QC2409104

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

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

Table 3. Exception Reports.

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

Exception Report No.	Description

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

Water Analysis Report

Reissued

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

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: AD-3
Lab Number: 242777-001
Date Collected: 09/10/2024 10:07 EDT

Customer Description:
Preparation:
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	ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Arsenic	0.17	µg/L	1	0.10	0.03		ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Barium	41.1	µg/L	1	0.20	0.05		ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Beryllium	0.26	µg/L	10	0.50	0.07	J1	ELH	09/19/2024 14:05	EPA 200.8-1994, Rev. 5.4
Boron	0.010	mg/L	1	0.050	0.007	J1	ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Cadmium	0.052	µg/L	1	0.020	0.004		ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Calcium	0.78	mg/L	1	0.05	0.02		ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Chromium	0.34	µg/L	1	0.30	0.07		ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Cobalt	1.46	µg/L	1	0.020	0.005		ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Lead	0.11	µg/L	1	0.20	0.05	J1	ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Lithium	0.0156	mg/L	10	0.0030	0.0006		ELH	09/19/2024 14:05	EPA 200.8-1994, Rev. 5.4
Mercury	97	ng/L	4	20	8		RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Selenium	0.13	µg/L	1	0.50	0.04	J1	ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	ELH	09/19/2024 14:10	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.71	pCi/L	0.22	0.44		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	81.8	%						
Radium-228	1.37	pCi/L	0.11	0.32	M1, P3	TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	103	%						

* 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.

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

Water Analysis Report

Reissued

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: AD-4c	Customer Description:
Lab Number: 242777-002	Preparation:
Date Collected: 09/10/2024 11:41 EDT	Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.014	µg/L	1	0.100	0.008	J1	ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Arsenic	0.55	µg/L	1	0.10	0.03		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Barium	87.6	µg/L	1	0.20	0.05		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.4	µg/L	50	2.5	0.4	U1	ELH	09/20/2024 11:08	EPA 200.8-1994, Rev. 5.4
Boron	0.251	mg/L	1	0.050	0.007		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Cadmium	0.132	µg/L	1	0.020	0.004		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Calcium	1.74	mg/L	1	0.05	0.02		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Chromium	0.71	µg/L	1	0.30	0.07		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Cobalt	0.864	µg/L	1	0.020	0.005		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Lead	0.16	µg/L	1	0.20	0.05	J1	ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Lithium	0.010	mg/L	50	0.015	0.003	J1	ELH	09/20/2024 11:08	EPA 200.8-1994, Rev. 5.4
Magnesium	1.09	mg/L	1	0.100	0.009		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Mercury	65	ng/L	4	20	8		RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Potassium	0.27	mg/L	1	0.10	0.01		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Selenium	0.37	µg/L	1	0.50	0.04	J1	ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Sodium	72.4	mg/L	1	0.20	0.02		ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4
Thallium	0.02	µg/L	1	0.20	0.02	J1	ELH	09/19/2024 14:20	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.83	pCi/L	0.33	0.50		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	91.6	%						
Radium-228	1.38	pCi/L	0.12	0.35		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	94.4	%						

* 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.

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

Water Analysis Report

Reissued

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: AD-16R
Customer Description:
Lab Number: 242777-003
Preparation:
Date Collected: 09/10/2024 11:06 EDT
Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Arsenic	0.67	µg/L	1	0.10	0.03		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Barium	47.5	µg/L	1	0.20	0.05		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Beryllium	1.2	µg/L	50	2.5	0.4	J1	ELH	09/20/2024 11:13	EPA 200.8-1994, Rev. 5.4
Boron	0.020	mg/L	1	0.050	0.007	J1	ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Cadmium	0.713	µg/L	1	0.020	0.004		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Calcium	0.32	mg/L	1	0.05	0.02		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Chromium	0.78	µg/L	1	0.30	0.07		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Cobalt	29.7	µg/L	1	0.020	0.005		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Lead	0.36	µg/L	1	0.20	0.05		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Lithium	0.022	mg/L	50	0.015	0.003		ELH	09/20/2024 11:13	EPA 200.8-1994, Rev. 5.4
Mercury	6	ng/L	1	5	2		RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Selenium	0.82	µg/L	1	0.50	0.04		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4
Thallium	0.54	µg/L	1	0.20	0.02		ELH	09/19/2024 14:31	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	9.25	pCi/L	0.72	0.33		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.5	%						
Radium-228	4.14	pCi/L	0.14	0.30		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	103	%						

* 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.

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

Water Analysis Report

Reissued

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: Duplicate - BASP
Customer Description:
Lab Number: 242777-004
Preparation:
Date Collected: 09/10/2024 12:59 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	ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Arsenic	0.17	µg/L	1	0.10	0.03		ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Barium	41.2	µg/L	1	0.20	0.05		ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.4	µg/L	50	2.5	0.4	U1	ELH	09/20/2024 11:18	EPA 200.8-1994, Rev. 5.4
Boron	0.009	mg/L	1	0.050	0.007	J1	ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Cadmium	0.050	µg/L	1	0.020	0.004		ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Calcium	0.77	mg/L	1	0.05	0.02		ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Chromium	0.30	µg/L	1	0.30	0.07		ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Cobalt	1.44	µg/L	1	0.020	0.005		ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Lead	0.12	µg/L	1	0.20	0.05	J1	ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Lithium	0.017	mg/L	50	0.015	0.003		ELH	09/20/2024 11:18	EPA 200.8-1994, Rev. 5.4
Mercury	85	ng/L	1	5	2		RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Selenium	0.12	µg/L	1	0.50	0.04	J1	ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	ELH	09/19/2024 15:47	EPA 200.8-1994, Rev. 5.4

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

Water Analysis Report

Reissued

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: Equipment Blank - BASP
Customer Description:
Lab Number: 242777-005
Preparation:
Date Collected: 09/10/2024 10:49 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	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Chromium	0.25	µg/L	1	0.30	0.07	J1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELH	09/19/2024 17:25	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	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELH	09/19/2024 17:25	EPA 200.8-1994, Rev. 5.4

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

Water Analysis Report

Reissued

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: Field Blank - BASP
Customer Description:
Lab Number: 242777-006
Preparation:
Date Collected: 09/10/2024 10:48 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	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Chromium	0.25	µg/L	1	0.30	0.07	J1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELH	09/19/2024 17:30	EPA 200.8-1994, Rev. 5.4

242777
Job Comments:

Original report issued 10/17/24. Report reissued 12/10/24 with corrected flag on 242777-001 Rad-228.

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

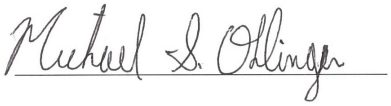
Water Analysis Report

Reissued

Job ID: 242777 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Report Verification

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



Michael Ohlinger, Chemist
Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Data Qualifer 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.
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.

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 BASP
Contact Name: Rebecca Jones
Contact Phone: (737) 330-3725
Sampler(s): Matt Hamilton Kenny McDonald

Site Contact: 17 14 4 2 Date: 1

For Lab Use Only:
COC/Order #: 242711

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

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL, Mg, Na, K	250 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	1 L bottle, Cool, 0-6°C TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3 Ra-226, Ra-228	125 mL PTFE lined bottle, HCL**, pH<2 Hg	filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn		Sample Specific Notes
AD-3	9/10/2024	907	G	GW	8			X		X	X			TG-32 needed
AD-4c	9/10/2024	1041	G	GW	5		X			X	X			
AD-16R	9/10/2024	1006	G	GW	5			X		X	X			
DUPLICATE - BASP	9/10/2024	1159	G	GW	2			X			X			
EQUIPMENT BLANK - BASP	9/10/2024	949	G	GW	2			X			X			
FIELD BLANK - BASP	9/10/2024	948	G	GW	1			X						
Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4	2			

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	Eqk	9-11-24 1144		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 9/16/24 11:00

WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102 Sample Receipt Form Rev 8, 05 23 24

Package Type: (Cooler) Box Bag Envelope

Delivery Type: UPS (FedEX) USPS Other _____

Plant/Customer Welsh BASP **Total # of Containers RECEIVED in Job:** 23

Opened By MWK

Date/Time 9.16.24 11:15am

Were all temperatures within 0-6°C? Y / N or (N/A (Temps) **Initial:** BLB on ice / (no ice)

If No, specify each deviation(s) on back of form. (IR Gun Ser# ~~240009849~~, *Expir.* ~~01-03-2026~~) 221821056 10/12/24

Was container in good condition? (Y) N Comments

Was Chain of Custody received? (Y) N Comments MJD 9/6/24

Requested turnaround: Routine If **RUSH**, who was notified?

pH (15 min) | Cr^{+6} (pres) (24 hr) | NO_2 or NO_3 (48 hr) | *ortho*-PO_4 (48 hr) | Hg-diss (pres) (48 hr)

Was pH checked & Color Coding done? (Y) N or N/A (pH) **Initial & Date:** MWK 9.16.24

pH paper mfr LabRat PN 4801 LOT#X000RWDG21 exp 11-30-25 ** ***Note changes to pH paper in comments below***

Was Add'l Preservative needed? Y (N) If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y (N) Comments _____ (See Prep Book)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was the customer contacted? If Yes: Person Contacted: _____

Initial & Date & Time : _____

Lab ID# 242774

Comments: _____

Logged by MJD

(Record Test Count on back of form)

Total # of Containers LISTED on COC: 23

WATER & WASTE SAMPLE RECEIPT FORM (CONT)

Form SOP-7102 Sample Receipt Form Rev 8, 08 23 24

REMINDER Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the Sample or Job "Comments" field in the LIMS. **Comments below**

i.e. Mark "LF" if needs Lab filtered, Temperature or Preservative deviation, Preserved upon arrival, etc

JOB # : 242117 **Initial/ Date:** MBO 9/16/24

Login Test Count from COC	LIMS Sample ID (or COC Sample Name)	Comments /Nonconformities	Peer Review Test Count from COC
17	242777-001		16 → 17
20	-002		19 → 20
17	-003		16 → 17
15	-004		14 → 15
15	-005		14 → 15
14	-006		13 → 14

9/17/24

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Jonathan Barnhill		Lab Supervisor	10/9/2024
Name (printed)	Signature	Official Title	Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Jonathan Barnhill

LRC Date: 10-9-2024

Laboratory Job Number: 242777

Prep Batch Number(s): PB24091804 QC2409126 QC2409133

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

ICP-MS Laboratory Review Checklist

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Jonathan Barnhill

LRC Date: 10-9-2024

Laboratory Job Number: 242777

Prep Batch Number(s): PB24091804 QC2409126 QC2409133

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Jonathan Barnhill

LRC Date: 10-9-2024

Laboratory Job Number: 242777

Prep Batch Number(s): PB24091804 QC2409126 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.

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

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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.

Susan Sulzmann	S. Sulzmann	Lab Director	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: 242777

Prep Batch Number(s): PB24091303

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

Mercury Laboratory Review Checklist

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

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: 242777

Prep Batch Number(s): PB24091303

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

Mercury Laboratory Review Checklist

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

Mercury Laboratory Review Checklist

Table 3. Exception Reports.

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: 242777

Prep Batch Number(s): PB24091303

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Water Analysis Report

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

Job ID: 242751 **Customer: Welsh Power Station** **Date Reported: 10/02/2024**

Customer Sample ID: AD-3 Customer Description:
Lab Number: 242751-001 Preparation:
Date Collected: 09/10/2024 10:07 EDT Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	9.89	mg/L	2	0.06	0.02		CRJ	09/14/2024 04:14	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09	mg/L	2	0.06	0.02		CRJ	09/14/2024 04:14	EPA 300.1 -1997, Rev. 1.0
Sulfate	4.0	mg/L	2	0.6	0.1		CRJ	09/14/2024 04:14	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	120	mg/L	1	50	20		BHB	09/13/2024 09:49	SM 2540C-2015

Customer Sample ID: AD-4c Customer Description:
Lab Number: 242751-002 Preparation:
Date Collected: 09/10/2024 11:41 EDT Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	15.9	mg/L	2	0.06	0.02		CRJ	09/14/2024 05:19	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.10	mg/L	2	0.06	0.02		CRJ	09/14/2024 05:19	EPA 300.1 -1997, Rev. 1.0
Sulfate	123	mg/L	10	3.0	0.6		CRJ	09/14/2024 04:46	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	<5	mg/L	1	20	5	U1	MGK	09/16/2024 10:37	SM 2320B-2011
Bicarbonate Alkalinity	<5	mg/L	1	20	5	U1	MGK	09/16/2024 10:37	SM 4500 CO2D-2011
TDS, Filterable Residue	360	mg/L	1	50	20	S7	BHB	09/13/2024 09:49	SM 2540C-2015

AMERICAN ELECTRIC POWER

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

Water Analysis Report

Job ID: 242751 **Customer: Welsh Power Station** **Date Reported: 10/02/2024**

Customer Sample ID: AD-16R
Lab Number: 242751-003
Date Collected: 09/10/2024 11:06 EDT
Customer Description:
Preparation:
Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	7.30	mg/L	2	0.06	0.02		CRJ	09/14/2024 06:25	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.05	mg/L	2	0.06	0.02	J1	CRJ	09/14/2024 06:25	EPA 300.1 -1997, Rev. 1.0
Sulfate	44.7	mg/L	2	0.6	0.1		CRJ	09/14/2024 06:25	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	180	mg/L	1	50	20		BHB	09/13/2024 09:55	SM 2540C-2015

Customer Sample ID: DUPLICATE - BASP
Lab Number: 242751-004
Date Collected: 09/10/2024 12:59 EDT
Customer Description:
Preparation:
Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	9.94	mg/L	2	0.06	0.02		CRJ	09/14/2024 03:08	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09	mg/L	2	0.06	0.02		CRJ	09/14/2024 03:08	EPA 300.1 -1997, Rev. 1.0
Sulfate	4.1	mg/L	2	0.6	0.1		CRJ	09/14/2024 03:08	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	120	mg/L	1	50	20		BHB	09/13/2024 09:55	SM 2540C-2015

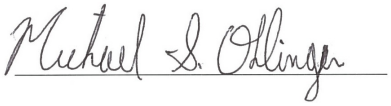
Water Analysis Report

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

Job ID: 242751 **Customer: Welsh Power Station** **Date Reported: 10/02/2024**

Report Verification

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



Michael Ohlinger, Chemist
Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Data Qualifer Legend

U1 - Not detected at or below method detection limit (MDL).
S7 - Sample did not achieve constant weight.
J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

Chain of Custody Record

Dolan Chemical Laboratory (DCL)
4001 Bixby Road
Groveport, Ohio 43125
Contacts: Michael Ohlinger (614-836-4184)

Program: Coal Combustion Residuals (CCR)

Site Contact:
Date:

For Lab Use Only:
COC/Order #: 247751

Project Name: Welsh BASP
Contact Name: Rebecca Jones
Contact Phone: (737) 330-3725
Sampler(s): Matt Hamilton Kenny McDonald

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

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3: B, Ca	500 mL bottle, pH<2, HNO_3: B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	1 L bottle, Cool, 0-6°C: Total Alkalinity, Bicarbonate Alkalinity, TDS, F, Cl, SO_4	1 L bottle, Cool, 0-6°C: TDS, F, Cl, SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO_3: Ra-226, Ra-228	40 mL Glass vial or 250 mL PTFE lined bottle, HCL**, pH<2: Hg	filter 500 mL bottle, then pH<2, HNO_3: dissolved Fe and Mn		Sample Specific Notes:
AD-3	9/10/2024	907	G	GW	1					X					TG-32 needed
AD-4c	9/10/2024	1041	G	GW	1				X						
AD-16R	9/10/2024	1006	G	GW	1					X					
DUPLICATE - BASP	9/10/2024	1159	G	GW	1					X					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ________; F= filter in field							4	F4	1	1	4	2			

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by: [signature]	Company: Eagle	Date/Time: 9-11-24 1100	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 9/12/24 9:50

WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102 Sample Receipt Form Rev.8, 08 23 24

Package Type: (Cooler) Box Bag Envelope

Delivery Type: UPS (FedEX) USPS Other _____

Plant/Customer Welsh **Total # of Containers RECEIVED in Job:** 4

Opened By MSD / MGW

Date/Time 9/12/24 9:50

Were all temperatures within 0-6°C? (Y) / N or N/A (Temps) **Initial:** MGW (on ice) / no ice

If No, specify each deviation(s) on back of form. (IR Gun Ser# ~~240009843~~ 221821056, *Expir.* ~~01-03-2026~~ 10/12/24)

Was container in good condition? (Y) / N Comments

Was Chain of Custody received? (Y) / N Comments MSD 9/6/24

Requested turnaround: Rotan If **RUSH**, who was notified?

pH (15 min) Cr^{+6} (pres) (24 hr) NO_2 or NO_3 (48 hr) *ortho*-PO_4 (48 hr) Hg-diss (pres) (48 hr)

Was pH checked & Color Coding done? (Y) N or N/A (pH) **Initial & Date:** MGW 9/12/24

pH paper mfr LabRat, PN 4801, LOT#X000RWDG21 exp 11-30-25 ** ***Note changes to pH paper in comments below***

Was Add'l Preservative needed? Y / (N) If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y / (N) Comments _____ (See Prep Book)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was the customer contacted? ~~If Yes~~: Person Contacted: _____

Initial & Date & Time : _____

Lab ID# 242751

Comments: _____

Logged by MSD

(Record Test Count on back of form)

Total # of Containers LISTED on COC: 4

WATER & WASTE SAMPLE RECEIPT FORM (CONT)

REMINDER Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the Sample or Job "Comments" field in the LIMS **Comments below**
i.e. Mark "LF" if needs Lab filtered, Temperature or Preservative deviation, Preserved upon arrival , etc.

JOB # : 242751 Initial/ Date: MSJ 9/12/24

Login Test Count from COC	LIMS Sample ID (or COC Sample Name)	Comments /Nonconformities	Peer Review Test Count from COC
4	242751-001		4
6	-002		6
4	-003		4
4	-004		4

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Tim Arnold		Chemist Principle	9/16/2024
Name (printed)	Signature	Official Title	Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Plant - CCR BASP

Reviewer Name: Tim Arnold

LRC Date: 9/16/2024

Laboratory Job Number: 242751

Prep Batch Number(s): QC2409087

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Plant - CCR BASP

Reviewer Name: Tim Arnold

LRC Date: 9/16/2024

Laboratory Job Number: 242751

Prep Batch Number(s): QC2409087

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

Ion Chromatography Laboratory Review Checklist

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

Ion Chromatography Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Plant - CCR BASP

Reviewer Name: Tim Arnold

LRC Date: 9/16/2024

Laboratory Job Number: 242751

Prep Batch Number(s): QC2409087

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Sandra Williams	Sandra Williams	Chemist	9/19/2024
Name (printed)	Signature	Official Title	Date

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: 242751

Prep Batch Number(s): QC2409104

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

TDS Laboratory Review Checklist

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

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: 242751

Prep Batch Number(s): QC2409104

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 9/19/2024

Laboratory Job Number: 242751

Prep Batch Number(s): QC2409104

Exception Report No.	Description

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

Water Analysis Report

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

Job ID: 243293 **Customer: Welsh Power Station** **Date Reported: 12/10/2024**

Customer Sample ID: AD-3 Customer Description: TG-32
Lab Number: 243293-001 Preparation:
Date Collected: 11/04/2024 10:58 EST Date Received: 11/08/2024 09:45 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.9	mg/L	2	0.06	0.02		CRJ	11/11/2024 21:34	EPA 300.1 -1997, Rev. 1.0

Customer Sample ID: AD-4c Customer Description: TG-32
Lab Number: 243293-002 Preparation:
Date Collected: 11/04/2024 12:47 EST Date Received: 11/08/2024 09:45 EST

Metals

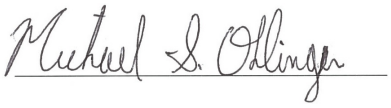
Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.205	mg/L	1	0.050	0.007		ELH	11/19/2024 16:25	EPA 200.8-1994, Rev. 5.4
Calcium	1.30	mg/L	1	0.05	0.02		ELH	11/19/2024 16:25	EPA 200.8-1994, Rev. 5.4

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	390	mg/L	1	50	20		BLB	11/08/2024 12:48	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

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 BASP
Contact Name: Rebecca Jones
Contact Phone: (737) 330-3725
Sampler(s): Matt Hamilton

Site Contact:

Date:

For Lab Use Only:
COC/Order #: 943293

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

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO_3 B, Ca	250 mL bottle, pH<2, HNO_3 B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	1 L bottle, Cool, 0-6°C TDS	250 mL bottle, Cool, 0-6°C Chloride	125 mL PTFE lined bottle, HCL**, pH<2 Hg	filter 500 mL bottle, then pH<2, HNO_3 dissolved Fe and Mn		Sample Specific Notes:
AD-3	11/4/2024	958	G	GW	1					X				TG-32 needed
AD-4c	11/4/2024	1047	G	GW	2		X		X					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4	2			

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Matt Hamilton	East	11-7-24 1500		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			[illegible]	11/08/24 9:45 Am

WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102 Sample Receipt Form Rev 9, 10/07/24

Package Type

(Cooler) Box Bag Envelope

Delivery Type

(UPS) FedEX USPS Other _____

Plant/Customer Welsh Power Station **Total # of Containers RECEIVED in Job:** 3

Opened By Misgina

Date/Time 11/08/24 9:45 Am

Were all temperatures within 0-6°C? (Y) / N or N/A (Temps) **Initial:** mblc (on ice) / no ice

If No, specify each deviation(s) on back of form. (IR Gun Ser# 240093386, *Expir.* 01/31/2026)

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: 28 days If **RUSH**, who was notified? _____

pH (15 min) Cr^{+6} (pres) (24 hr) NO_2 or NO_3 (48 hr) *ortho*-PO_4 (48 hr) Hg-diss (pres) (48 hr)

Was pH checked & Color Coding done? (Y) / N or N/A (pH) **Initial & Date:** mblc 11/08/24

pH paper: mfr LabRat ,PN 4801 ,LOT# X000RWDG21 EXPIR DATE 11/30/2025

*** 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? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was the customer contacted? If Yes: Person Contacted: _____

Initial & Date & Time : _____

Lab ID# 243293

Comments: TG-32 needed

Logged by mblc

(Record Test Count on back of form)

Total # of Containers LISTED on COC: 3

WATER & WASTE SAMPLE RECEIPT FORM (CONT)

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the Sample or Job "Comments" field in the LIMS. **Comments below**:
i.e. Mark "LF" if needs Lab filtered, Temperature or Preservative deviation, Preserved upon arrival , etc.

JOB # : 243293 **Initial/ Date:** MGA 11/08/24 **Peer Review Initial/ Date:** [illegible] 11/11/24

Login Test Count from COC	LIMS Sample ID (or COC Sample Name)	Comments /Nonconformities	Peer Review Test Count from COC
1	243293-001		1
3	243293-002		3

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- [x] 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.
- [x] R1 Field chain-of-custody documentation
- [x] R2 Sample identification cross-reference
- [x] 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)
- [x] R4 Surrogate recovery data including:
  - (a) Calculated recovery (%R)
  - (b) The laboratory's surrogate QC limits
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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 Prin.	11/12/2024
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 CCR

Reviewer Name: Tim Arnold

LRC Date: 11/12/2024

Laboratory Job Number: 243293

Prep Batch Number(s): QC2411081

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

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Tim Arnold

LRC Date: 11/12/2024

Laboratory Job Number: 243293

Prep Batch Number(s): QC2411081

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Tim Arnold

LRC Date: 11/12/2024

Laboratory Job Number: 243293

Prep Batch Number(s): QC2411081

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

[1] Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

[2] O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

[3] NA - Not applicable; NR - Not reviewed.

[4] Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Municipal Solid Waste Laboratory Review Checklist

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  - (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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Sandra Williams	Sandra D. Williams	Chemist	12/4/2024
Name (printed)	Signature	Official Title	Date

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 12/4/2024

Laboratory Job Number: 243293

Prep Batch Number(s): QC2411086

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

TDS Laboratory Review Checklist

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 12/4/2024

Laboratory Job Number: 243293

Prep Batch Number(s): QC2411086

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 12/4/2024

Laboratory Job Number: 243293

Prep Batch Number(s): QC2411086

Exception Report No.	Description

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

Municipal Solid Waste Laboratory Review Checklist

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  - (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
- [x] R5 Test reports/summary forms for blank samples
- [x] 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
- [x] 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
- [x] 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
- [x] R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- [x] R10 Other problems or anomalies
- [x] 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 Hoitink	Elizabeth L Hoitink Digitally signed by Elizabeth L Hoitink Date: 2024.12.04 11:06:40 -05'00'	Chemist	12/04/2024
Name (printed)	Signature	Official Title	Date

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Elizabeth Hoitink

LRC Date: 12/04/2024

Laboratory Job Number: 243293

Prep Batch Number(s): PB24111201 QC2411173

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

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

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Elizabeth Hoitink

LRC Date: 12/04/2024

Laboratory Job Number: 243293

Prep Batch Number(s): PB24111201 QC2411173

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

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

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Elizabeth Hoitink

LRC Date: 12/04/2024

Laboratory Job Number: 243293

Prep Batch Number(s): PB24111201 QC2411173

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

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