

Annual Groundwater Monitoring Report

Southwestern Electric Power Company

H. W. Pirkey Power Plant

Landfill CCR Management Unit

CN600126767; RN100214287

Registration No: CCR104

Hallsville, Texas

January 31, 2023

Prepared by:

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Abbreviations:

- ASD - Alternate Source Demonstration
- CCR – Coal Combustion Residual
- GWPS - Groundwater protection standards
- SSI - Statistically Significant Increase
- SSL - Statistically Significant Level
- TCEQ – Texas Commission on Environmental Quality

I. Summary

This *Annual Groundwater Monitoring Report* (Report) has been prepared to report the status of activities for the preceding year for the Landfill (LF) Coal Combustion Residual (CCR) unit at Pirkey Power Plant. Southwestern Electric Power Company is wholly-owned subsidiary of American Electric Power Company (AEP). 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, 2023.

In general, the following activities were completed:

- At the start of the current annual reporting period, the LF was operating under the Detection monitoring program.
- At the end of the current annual reporting period, the LF was operating under the Detection monitoring program.
- Groundwater samples were collected for the wells the landfill groundwater monitoring network in June and November 2022 and analyzed for Appendix III, as specified in 30 TAC §352.941 *et seq.* and AEP's *Groundwater Sampling and Analysis Plan (2021)*.
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units.
- Data and statistical analysis not available for the previous reporting period indicated that during the 2nd semi-annual 2021 sampling event (November 2021) with confirmation sampling conducted in January 2022:

The following Appendix III parameters exceeded background:

- TDS at AD-34
- A successful ASDs for the Appendix III parameter that exceeded the GWPS for the 2nd semi-annual 2021 was certified on July 18, 2022 and submitted to TCEQ July 18, 2022 for approval.
- During the 1st semi-annual 2022 sampling event (June 2022) with confirmation sampling conducted in August 2022:

The following Appendix III parameters exceeded background:

- Calcium at AD-34
- Chloride at AD-36
- Pirkey Power Plant submitted a Notice of SSI over background to TCEQ (November 15, 2022) which indicated an alternative source demonstration would be conducted. An

alternative source demonstration report will be prepared and certified and submitted to TCEQ's Executive Director for review within 90 days of the SSI determination.

- The 2nd semi-annual event (November 2022) data are still undergoing statistical analysis.
- The background data was re-established on January 27, 2021.
- A statistical process in accordance with 30 TAC §352.931 to evaluate groundwater data was updated, certified, and posted to AEP's CCR website in 2021 titled: AEP's *Statistical Analysis Plan* (Geosyntec 2021). The statistical process was guided by USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* ("Unified Guidance," USEPA, 2009).

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

- A map, aerial photograph or a drawing showing the CCR management unit(s), all groundwater monitoring wells and monitoring well identification numbers;
- All of the monitoring data collected, including the rate and direction of groundwater flow, plus a summary showing the number of samples collected per monitoring well, the dates the samples were collected and whether the sample was collected as part of detection monitoring or assessment monitoring programs (Attached as **Appendix 1**);
- Statistical comparison of monitoring data to determine if there have been SSI(s) or SSL(s) (Attached as **Appendix 2**);
- A discussion of whether any alternate source demonstrations were performed, and the conclusions (where applicable Attached as **Appendix 3**);
- 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 (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;
- Other information required to be included in the annual report such as field sheets, analytical reports, etc. (**Appendix 4 and 5**)

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

A figure that depicts the PE-certified groundwater monitoring network, the monitoring well locations, and their corresponding identification numbers is provided in **Appendix 1**.

Landfill Monitoring Wells	
Upgradient	Downgradient
AD-8	AD-23
AD-12	AD-34
AD-16	AD-35 (decommissioned 2018)
AD-27	AD-36 (installed 2019)

III. Monitoring Wells Installed or Decommissioned

There were no new groundwater monitoring wells installed or decommissioned during 2022. The network design is summarized in the *Groundwater Monitoring Network Design Report* (January 2021) and is posted at the CCR website for Pirkey Power Plant’s LF. That network design report, viewable on the AEP CCR web site, discusses the facility location, the hydrogeological setting, the hydrostratigraphic units, the uppermost aquifer, downgradient monitoring well locations and the upgradient monitoring well locations.

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

Appendix 1 contains tables showing the groundwater quality data collected during the establishment of background quality, and during detection and assessment monitoring. The groundwater velocity calculations, groundwater flow direction, and potentiometric maps developed after each sampling event are shown in **Appendix 1**.

As required by the detection monitoring rules, 30 TAC §352.941 *et seq*, two rounds of sampling were conducted in June and November including all 30 TAC §352 Appendix III parameters.

The verification sample after the 2nd half 2021 and the verification sample after the 1st half 2022 groundwater sampling event appeared to be consistent with groundwater flow that is normally seen near the landfill (toward the south).

Detection monitoring will continue in 2023.

V. Statistical Evaluation of 2022 Events

Data and statistical analysis not available for the previous reporting period indicated that during the 2nd semi-annual 2021 sampling event (November 2021) with confirmation sampling conducted in January 2022:

The following Appendix III parameters exceeded background:

- TDS at AD-34

During the 1st semi-annual 2022 sampling event (June 2022) with confirmation sampling conducted in August 2022:

The following Appendix III parameters exceeded background:

- Calcium at AD-34
- Chloride at AD-36

The 2nd semi-annual event (November 2022) data are still undergoing statistical analysis.

Appendix 2 contains the statistical analysis report(s).

VI. Alternate Source Demonstration

A successful ASDs for the Appendix III parameter that exceeded the GWPS for the 2nd semi-annual 2021 was certified on July 18, 2022 and submitted to TCEQ July 18, 2022 for approval.

Pirkey Power Plant submitted a Notice of SSI over background to TCEQ (November 15, 2022) which indicated an alternative source demonstration would be conducted. An alternative source demonstration report will be prepared and certified and submitted to TCEQ's Executive Director for review within 90 days of the SSI determination.

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

No transition was made during the reporting period and the CCR Unit remained in detection monitoring.

Regarding defining an alternate monitoring frequency, the groundwater velocity and monitoring well production are high enough at this facility that no modification to the semiannual assessment monitoring frequency is needed.

VIII. Other Information Required

The background data was re-established on January 27, 2021.

As required by the CCR detection monitoring rules in 30 TAC §352.941, sampling all LF CCR wells for the 30 TAC §352 Appendix III parameters was completed in 2021.

IX. Description of Any Problems Encountered in 2022 and Actions Taken

No significant problems were encountered. The low flow sampling effort went smoothly and the schedule was met to support the annual groundwater report preparation covering the year 2022 groundwater monitoring activities.

X. A Projection of Key Activities for the Upcoming Year

Key activities for the next year include:

- Detection monitoring sampling will be conducted;

- Complete the statistical evaluation of the second semi-annual groundwater monitoring event that took place in November 2022.
- Conduct groundwater sampling events for all constituents listed in 30 TAC §352 Appendix III as required by 30 TAC 352.941.
- Perform statistical analysis on the sampling results for the 30 TAC §352 Appendix III parameters as required by 30 TAC 352.941.
- Evaluation of the detection monitoring results from a statistical analysis viewpoint, looking for any SSIs over background;
- Completed ASDs, as needed.
- Responding to any new data received in light of TCEQ CCR rule requirements;
- Preparation of the next annual groundwater report.

APPENDIX 1- Groundwater Data Tables and Figures

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

**Table 1 - Groundwater Data Summary: AD-8
Pirkey - LF
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/10/2016	Background	1.58	109	9	< 0.083 U1	6.1	181	432
7/13/2016	Background	0.775	20.7	13	2	6.2	131	280
9/8/2016	Background	1.04	50.7	12	2	5.1	121	285
10/12/2016	Background	0.793	20.8	13	2	3.7	184	276
11/15/2016	Background	0.769	17.2	13	3	3.7	208	296
1/11/2017	Background	0.734	18.6	13	3	3.6	228	280
2/28/2017	Background	0.777	18.1	10	2	3.7	157	250
4/11/2017	Background	0.779	17.1	12	3	3.9	168	284
8/23/2017	Detection	0.411	19.4	9	0.587 J1	3.9	56	110
3/21/2018	Assessment	1.03	56.1	8	1.1987	5.7	140	278
8/20/2018	Assessment	0.714	14.5	18	5.1991	3.7	168	300
2/28/2019	Assessment	1.05	103	6.83	0.40	5.7	175	462
5/21/2019	Assessment	1.11	85.5	4.48	0.33	5.9	127	296
8/13/2019	Detection	0.818	27.6	12.7	3.39	4.6	128	260
6/3/2020	Detection	0.783	74.4	11.5	2.45	5.8	196	396
11/3/2020	Detection	0.822	18.5	15.8	2.50	4.1	119	237
5/26/2021	Detection	0.986	93.4	3.28	0.35	5.9	168	390
11/17/2021	Detection	0.693	21.9 M1, P3	15.4	2.31	4.2	97.2	220
6/22/2022	Detection	1.04	37.2 M1	17.0	2.85	5.0	117	270
11/14/2022	Detection	1.03	17.9	23.1	2.04	4.5	119	240

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

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

**Table 1 - Groundwater Data Summary: AD-8
Pirkey - LF
Appendix IV Constituents**

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/10/2016	Background	< 0.93 U1	< 1.05 U1	38	1	< 0.07 U1	1	1.80288 J1	0.9155	< 0.083 U1	1.02541 J1	< 0.00013 U1	0.027	< 0.29 U1	15	1.19926 J1
7/13/2016	Background	< 0.93 U1	1.16508 J1	61	7	0.175996 J1	1	20	6.75	2	1.46729 J1	0.032	0.211	< 0.29 U1	< 0.99 U1	< 0.86 U1
9/8/2016	Background	< 0.93 U1	< 1.05 U1	48	2	< 0.07 U1	0.835837 J1	9	1.658	2	< 0.68 U1	0.018	0.048	< 0.29 U1	3.84567 J1	< 0.86 U1
10/12/2016	Background	< 0.93 U1	1.46586 J1	61	6	< 0.07 U1	0.74214 J1	18	6.72	2	2.30733 J1	0.032	0.112	< 0.29 U1	2.51464 J1	< 0.86 U1
11/15/2016	Background	< 0.93 U1	< 1.05 U1	52	6	0.118693 J1	0.805286 J1	18	6.14	3	2.85553 J1	0.03	0.16	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/11/2017	Background	< 0.93 U1	1.53134 J1	60	6	0.108717 J1	2	18	6.29	3	2.99592 J1	0.032	0.157	< 0.29 U1	1.4083 J1	< 0.86 U1
2/28/2017	Background	< 0.93 U1	1.68597 J1	52	6	0.13889 J1	0.633257 J1	18	7.64	2	3.26919 J1	0.031	0.153	< 0.29 U1	1.78549 J1	< 0.86 U1
4/11/2017	Background	< 0.93 U1	< 1.05 U1	51	6	0.128137 J1	0.887504 J1	19	5.56	3	2.44168 J1	0.031	0.01068 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/21/2018	Assessment	< 0.93 U1	< 1.05 U1	37.9	2.57	< 0.07 U1	< 0.23 U1	9.38	2.499	1.1987	0.95 J1	0.01503	0.049	< 0.29 U1	27.68	< 0.86 U1
8/20/2018	Assessment	0.02 J1	4.05	33.4	4.55	0.18	0.759	15.9	0.145	5.1991	4.46	0.0221	0.105	0.02 J1	9.8	0.083
2/28/2019	Assessment	< 0.4 U1	< 0.6 U1	46.8	< 0.4 U1	< 0.2 U1	< 0.8 U1	0.8 J1	1.066	0.40	< 0.4 U1	0.002 J1	< 0.005 U1	< 8 U1	30.8	< 2 U1
5/21/2019	Assessment	< 0.4 U1	1 J1	42.8	1 J1	< 0.2 U1	< 0.8 U1	< 0.4 U1	1.786	0.33	< 0.4 U1	0.0003 J1	0.009 J1	< 8 U1	23.9	< 0.1 U1

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

**Table 1 - Groundwater Data Summary: AD-12
Pirkey - LF
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/11/2016	Background	0.03	0.362	5	< 0.083 U1	4.4	4	94
7/13/2016	Background	0.03	0.26	6	< 0.083 U1	3.1	4	75
9/7/2016	Background	0.04	0.343	6	< 0.083 U1	3.9	7	63
10/12/2016	Background	0.03	0.271	7	1	3.4	8	92
11/14/2016	Background	0.04	0.331	8	< 0.083 U1	2.6	6	80
1/11/2017	Background	0.03	0.315	7	< 0.083 U1	4.8	6	76
2/28/2017	Background	0.04	0.434	5	< 0.083 U1	3.6	4	50
4/11/2017	Background	0.05	0.299	6	0.2565 J1	4.7	7	72
8/23/2017	Detection	0.0495	0.245	6	0.213 J1	4.8	6	52
3/21/2018	Assessment	0.01397	0.269	5	< 0.083 U1	4.2	3	< 2 U1
8/20/2018	Assessment	0.017	0.338	10	< 0.083 U1	4.4	4	94
2/27/2019	Assessment	0.03 J1	0.4 J1	6.08	0.09	5.2	3.6	36
5/21/2019	Assessment	0.020	0.3 J1	6.30	0.09	4.1	4.0	80
8/12/2019	Detection	< 0.02 U1	0.278	7.24	0.06 J1	4.9	2.6	90
3/10/2020	Detection	0.02 J1	0.3 J1	6.08	0.10	4.9	3.7	62
6/2/2020	Detection	< 0.02 U1	0.2 J1	5.63	0.10	4.0	3.9	91
11/2/2020	Detection	0.03 J1	0.3 J1	4.65	0.08	4.3	3.3	74
3/8/2021	Detection	0.01 J1	0.2 J1	6.46	0.11	4.1	3.8	68
5/24/2021	Detection	0.032 J1	0.2 J1	5.54	0.12	4.2	5.46	70
11/15/2021	Detection	0.012 J1	0.28	8.03	0.07	3.5	2.90	90
3/28/2022	Detection	0.021 J1	0.20	6.10	0.07	3.9	3.80	60 L1
6/20/2022	Detection	0.042 J1	0.32	7.59	0.09	4.3	4.81	80
11/15/2022	Detection	0.013 J1	0.36	8.03	0.08	4.7	3.39	70

Notes:

mg/L: milligrams per liter

SU: standard unit

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

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

--: Not analyzed

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.

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

Table 1 - Groundwater Data Summary: AD-12

Pirkey - LF

Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/11/2016	Background	< 0.93 U1	< 1.05 U1	26	0.219521 J1	< 0.07 U1	0.710981 J1	1.58207 J1	0.2073	< 0.083 U1	< 0.68 U1	< 0.00013 U1	< 0.005 U1	< 0.29 U1	1.73953 J1	< 0.86 U1
7/13/2016	Background	< 0.93 U1	< 1.05 U1	23	0.190337 J1	< 0.07 U1	0.68835 J1	1.29444 J1	2.909	< 0.083 U1	< 0.68 U1	0.008	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
9/7/2016	Background	< 0.93 U1	< 1.05 U1	30	0.232192 J1	< 0.07 U1	0.353544 J1	1.66591 J1	0.881	< 0.083 U1	< 0.68 U1	0.01	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/12/2016	Background	< 0.93 U1	< 1.05 U1	27	0.149553 J1	< 0.07 U1	0.529033 J1	1.56632 J1	0.257	1	< 0.68 U1	0.012	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
11/14/2016	Background	< 0.93 U1	< 1.05 U1	28	0.152375 J1	< 0.07 U1	0.32826 J1	1.47282 J1	0.767	< 0.083 U1	< 0.68 U1	0.013	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/11/2017	Background	< 0.93 U1	< 1.05 U1	23	0.126621 J1	< 0.07 U1	0.650158 J1	1.09495 J1	1.536	< 0.083 U1	< 0.68 U1	0.01	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/28/2017	Background	< 0.93 U1	< 1.05 U1	26	0.149219 J1	< 0.07 U1	0.325811 J1	1.29984 J1	0.416	< 0.083 U1	< 0.68 U1	0.009	< 0.005 U1	< 0.29 U1	< 0.99 U1	0.994913 J1
4/11/2017	Background	< 0.93 U1	< 1.05 U1	24	0.159412 J1	< 0.07 U1	0.416007 J1	1.33344 J1	0.3895	0.2565 J1	< 0.68 U1	0.008	0.01364 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/21/2018	Assessment	< 0.93 U1	< 1.05 U1	25.82	0.16 J1	< 0.07 U1	1.05	1.49 J1	0.784	< 0.083 U1	< 0.68 U1	0.00722	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/20/2018	Assessment	< 0.01 U1	0.11	27.8	0.159	0.01 J1	0.330	1.72	1.128	< 0.083 U1	0.089	0.0143	< 0.005 U1	0.04 J1	0.1	0.04 J1
2/27/2019	Assessment	< 0.4 U1	< 0.6 U1	22.5	< 0.4 U1	< 0.2 U1	< 0.8 U1	1.37	0.225	0.09	< 0.4 U1	0.00688	< 0.005 U1	< 8 U1	< 0.6 U1	< 2 U1
5/21/2019	Assessment	< 0.4 U1	< 0.6 U1	21.7	< 0.4 U1	< 0.2 U1	< 0.8 U1	1.15	0.201	0.09	< 0.4 U1	0.00576	< 0.005 U1	< 8 U1	< 0.6 U1	< 0.1 U1

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

**Table 1 - Groundwater Data Summary: AD-16
Pirkey - LF
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/10/2016	Background	0.02	1.21	8	< 0.083 U1	3.9	16	116
7/14/2016	Background	0.03	2	9	< 0.083 U1	3.8	45	148
9/8/2016	Background	0.03	1.83	9	< 0.083 U1	3.9	33	133
10/13/2016	Background	0.03	1.15	9	< 0.083 U1	3.9	16	124
11/14/2016	Background	0.03	1.58	9	< 0.083 U1	4.4	23	124
1/12/2017	Background	0.02	1.76	10	< 0.083 U1	3.7	43	112
3/1/2017	Background	0.03	1.29	9	< 0.083 U1	3.2	22	108
4/10/2017	Background	0.02	1.21	11	< 0.083 U1	3.4	24	106
8/24/2017	Detection	0.03648	0.945	12	< 0.083 U1	4.3	14	96
3/22/2018	Assessment	0.0171	1.03	14	< 0.083 U1	4.0	13	96
8/21/2018	Assessment	0.020	1.17	17	< 0.083 U1	4.0	15	128
2/27/2019	Assessment	0.03 J1	0.704	20.3	0.07 J1	4.1	17.7	76
5/23/2019	Assessment	0.022	1.06	20.8	0.06 J1	4.6	26.9	128
8/15/2019	Detection	< 0.02 U1	0.874	20.0	0.06 J1	5.1	15.4	110
6/3/2020	Detection	< 0.02 U1	0.872	21.7	0.11	4.7	13.3	122
11/3/2020	Detection	< 0.02 U1	0.817	19.9	0.07	4.4	11.0	105
5/26/2021	Detection	0.016 J1	0.8	23.2	0.13	4.4	7.36	120
11/17/2021	Detection	0.206	0.94	22.3	0.07	4.3	9.64	110
6/22/2022	Detection	0.021 J1	1.80	24.7	0.10	4.5	9.58	110
11/14/2022	Detection	0.024 J1	0.91	25.2	0.07	4.3	6.68	90

Notes:

mg/L: milligrams per liter

SU: standard unit

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

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

--: Not analyzed

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.

**Table 1 - Groundwater Data Summary: AD-16
Pirkey - LF
Appendix IV Constituents**

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/10/2016	Background	< 0.93 U1	1.83497 J1	61	0.453643 J1	0.0817904 J1	1	4.23727 J1	1.294	< 0.083 U1	< 0.68 U1	0.006	0.01506 J1	< 0.29 U1	2.26113 J1	1.3697 J1
7/14/2016	Background	< 0.93 U1	< 1.05 U1	64	0.565692 J1	< 0.07 U1	1	6	1.438	< 0.083 U1	< 0.68 U1	0.036	0.02395 J1	1.1177 J1	< 0.99 U1	< 0.86 U1
9/8/2016	Background	8	< 1.05 U1	70	0.810547 J1	0.0926258 J1	2	8	1.931	< 0.083 U1	< 0.68 U1	0.032	0.00753 J1	< 0.29 U1	< 0.99 U1	1.75243 J1
10/13/2016	Background	< 0.93 U1	1.52475 J1	56	0.250902 J1	< 0.07 U1	1	3.33761 J1	1.843	< 0.083 U1	< 0.68 U1	0.033	< 0.005 U1	< 0.29 U1	1.70284 J1	< 0.86 U1
11/14/2016	Background	< 0.93 U1	< 1.05 U1	55	0.38481 J1	< 0.07 U1	0.561291 J1	4.34297 J1	2.123	< 0.083 U1	< 0.68 U1	0.028	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/12/2017	Background	< 0.93 U1	< 1.05 U1	58	0.70928 J1	< 0.07 U1	0.406161 J1	8	2.629	< 0.083 U1	< 0.68 U1	0.031	0.01045 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/1/2017	Background	< 0.93 U1	1.50766 J1	76	0.487946 J1	< 0.07 U1	0.558767 J1	5	1.417	< 0.083 U1	< 0.68 U1	0.021	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
4/10/2017	Background	< 0.93 U1	< 1.05 U1	77	0.435552 J1	< 0.07 U1	0.822329 J1	5	0.932	< 0.083 U1	< 0.68 U1	0.019	0.00733 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/22/2018	Assessment	< 0.93 U1	< 1.05 U1	83.66	0.27 J1	< 0.07 U1	1.59	3.6 J1	2.11	< 0.083 U1	< 0.68 U1	0.02224	0.018 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/21/2018	Assessment	0.03 J1	0.42	69.0	0.213	0.03	0.211	3.78	1.92	< 0.083 U1	0.082	0.0347	0.014 J1	< 0.02 U1	0.1	0.051
2/27/2019	Assessment	< 0.4 U1	7.74	56.2	< 0.4 U1	< 0.2 U1	< 0.8 U1	3.21	0.848	0.07 J1	< 0.4 U1	0.0154	0.011 J1	< 8 U1	< 0.6 U1	< 2 U1
5/23/2019	Assessment	< 0.4 U1	5.80	83.4	< 0.4 U1	< 0.2 U1	< 0.8 U1	3.16	1.957	0.06 J1	< 0.4 U1	0.0227	< 0.005 U1	< 8 U1	< 0.6 U1	< 0.1 U1

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

Table 1 - Groundwater Data Summary: AD-23

Pirkey - LF

Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/10/2016	Background	0.01	0.535	4	< 0.083 U1	4.0	10	72
7/13/2016	Background	0.03	0.317	4	< 0.083 U1	2.7	11	59
9/8/2016	Background	0.02	0.26	5	< 0.083 U1	3.5	12	64
10/12/2016	Background	0.03	0.321	6	< 0.083 U1	3.7	13	68
11/15/2016	Background	0.03	0.249	5	< 0.083 U1	3.5	14	100
1/11/2017	Background	0.02	0.319	6	< 0.083 U1	3.7	13	60
2/28/2017	Background	0.03	0.217	4	< 0.083 U1	4.0	9	48
4/11/2017	Background	0.03	0.543	7	0.2688 J1	4.2	11	76
8/23/2017	Detection	0.04021	0.276	6	0.198 J1	4.1	11	64
12/21/2017	Detection	0.04498	0.469	--	--	--	--	--
3/21/2018	Assessment	0.01762	0.227	4	< 0.083 U1	3.9	10	72
8/20/2018	Assessment	0.017	0.247	9	< 0.083 U1	3.8	11	92
2/28/2019	Assessment	0.02 J1	0.3 J1	6.94	0.04 J1	5.1	7.2	70
5/23/2019	Assessment	0.017	0.3 J1	6.82	0.04 J1	4.8	9.1	54
8/13/2019	Detection	< 0.02 U1	0.325	7.12	0.03 J1	5.0	7.4	126
1/27/2020	Detection	--	--	--	--	4.3	--	70 J1
6/3/2020	Detection	< 0.02 U1	0.2 J1	7.08	0.07	4.3	8.5	65
11/4/2020	Detection	< 0.02 U1	0.2 J1	6.97	0.05 J1	3.9	7.9	71
5/26/2021	Detection	0.023 J1	0.3	6.94	0.06	3.6	7.90	70
11/17/2021	Detection	0.045 J1	0.22	7.11	0.05 J1	3.9	7.84	70
1/26/2022	Detection	0.040 J1	--	--	--	4.1	--	--
6/22/2022	Detection	0.057	0.25	7.32	0.07	3.6	9.52	80
8/30/2022	Detection	0.032 J1	--	--	--	3.9	--	--
11/14/2022	Detection	0.078	0.24	7.49	0.06	4.5	8.03	80

Notes:

mg/L: milligrams per liter

SU: standard unit

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

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

--: Not analyzed

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.

Table 1 - Groundwater Data Summary: AD-23

Pirkey - LF

Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/10/2016	Background	2.89148 J1	1.65098 J1	48	0.186855 J1	0.0739811 J1	2	2.29646 J1	6.86	< 0.083 U1	< 0.68 U1	0.000135818 J1	0.01188 J1	< 0.29 U1	1.91991 J1	< 0.86 U1
7/13/2016	Background	3.79558 J1	< 1.05 U1	48	0.192156 J1	0.0925427 J1	2	2.72879 J1	5.69	< 0.083 U1	< 0.68 U1	0.006	0.01721 J1	1.34973 J1	2.00038 J1	< 0.86 U1
9/8/2016	Background	< 0.93 U1	< 1.05 U1	53	0.20435 J1	< 0.07 U1	5	2.01019 J1	6.68	< 0.083 U1	2.23756 J1	0.006	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/12/2016	Background	1.29835 J1	7	120	0.463688 J1	0.13648 J1	41	3.91303 J1	12.89	< 0.083 U1	31	1.01	0.095	0.563586 J1	2.10924 J1	< 0.86 U1
11/15/2016	Background	< 0.93 U1	< 1.05 U1	50	0.129296 J1	< 0.07 U1	6	1.66943 J1	7.54	< 0.083 U1	3.21271 J1	0.006	0.02438 J1	0.403857 J1	1.34763 J1	< 0.86 U1
1/11/2017	Background	< 0.93 U1	2.03681 J1	73	0.159 J1	< 0.07 U1	15	2.25934 J1	8.06	< 0.083 U1	11	0.009	0.092	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/28/2017	Background	1.65681 J1	< 1.05 U1	41	0.116844 J1	< 0.07 U1	0.295768 J1	1.05228 J1	5.74	< 0.083 U1	< 0.68 U1	0.005	< 0.005 U1	< 0.29 U1	1.3076 J1	< 0.86 U1
4/11/2017	Background	< 0.93 U1	3.9673 J1	86	0.318917 J1	0.107977 J1	22	2.60853 J1	10.31	0.2688 J1	15	0.01	0.118	0.31517 J1	< 0.99 U1	< 0.86 U1
3/21/2018	Assessment	< 0.93 U1	< 1.05 U1	56.1	0.17 J1	< 0.07 U1	5.7	1.09 J1	7.55	< 0.083 U1	3.52 J1	0.00709	0.02 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/20/2018	Assessment	0.03 J1	0.87	53.5	0.147	0.01 J1	1.77	0.803	11	< 0.083 U1	4.79	0.00634	0.025	0.07 J1	1.0	0.176
2/28/2019	Assessment	< 0.4 U1	1 J1	46.9	< 0.4 U1	< 0.2 U1	4.16	1 J1	6.14	0.04 J1	3.46	0.00646	0.035	< 8 U1	1 J1	< 2 U1
5/23/2019	Assessment	< 0.4 U1	0.7 J1	56.4	< 0.4 U1	< 0.2 U1	3 J1	0.7 J1	9.66	0.04 J1	8.99	0.00537	0.058 J1	< 8 U1	< 0.6 U1	0.2 J1

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

**Table 1 - Groundwater Data Summary: AD-27
Pirkey - LF
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/11/2016	Background	0.02	4.41	8	0.6176 J1	3.9	51	198
7/13/2016	Background	0.03	4.43	8	< 0.083 U1	2.7	54	192
9/8/2016	Background	0.03	4.17	8	< 0.083 U1	2.9	52	196
10/12/2016	Background	0.03	4.09	8	< 0.083 U1	3.0	58	216
11/15/2016	Background	0.03	4.52	8	< 0.083 U1	3.5	92	216
1/11/2017	Background	0.02	3.74	9	< 0.083 U1	4.1	58	180
3/1/2017	Background	0.03	4.31	8	< 0.083 U1	2.8	56	216
4/10/2017	Background	0.03	4.01	9	< 0.083 U1	3.3	54	180
8/24/2017	Detection	0.0358	3.58	9	0.197 J1	3.7	52	168
3/22/2018	Assessment	0.03901	5.58	11	< 0.083 U1	3.9	78	192
8/21/2018	Assessment	0.024	4.58	10	< 0.083 U1	3.5	65	196
2/28/2019	Assessment	0.07 J1	4.02	11.7	0.20	4.7	52.8	42
5/23/2019	Assessment	0.023	3.89	11.4	0.20	4.4	55.2	204
8/16/2019	Detection	0.02 J1	3.94	10.5	0.18	3.9	53.2	198
6/3/2020	Detection	0.03 J1	3.55	12.8	0.25	4.2	54.6	219
11/3/2020	Detection	0.03 J1	3.45	10.8	0.19	3.6	53.1	196
5/26/2021	Detection	0.029 J1	3.6	13.5	0.25	3.5	50.8	230
11/17/2021	Detection	0.040 J1	3.76	11.6	0.20	3.7	56.4	190 P1
6/22/2022	Detection	0.028 J1	3.88	12.5	0.22	3.3	57.2	210
11/14/2022	Detection	0.034 J1	3.79	12.7	0.20	4.0	59.4	180

Notes:

mg/L: milligrams per liter

SU: standard unit

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

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

--: Not analyzed

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.

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

Table 1 - Groundwater Data Summary: AD-27

Pirkey - LF

Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/11/2016	Background	1.20808 J1	2.15232 J1	43	5	0.431235 J1	0.87101 J1	20	2.031	0.6176 J1	< 0.68 U1	0.066	< 0.005 U1	< 0.29 U1	1.10872 J1	< 0.86 U1
7/13/2016	Background	0.956365 J1	1.27952 J1	45	5	0.434627 J1	2	21	2.406	< 0.083 U1	< 0.68 U1	0.097	0.02241 J1	0.434679 J1	< 0.99 U1	< 0.86 U1
9/8/2016	Background	< 0.93 U1	< 1.05 U1	47	6	0.398469 J1	2	20	2.71	< 0.083 U1	< 0.68 U1	0.095	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/12/2016	Background	< 0.93 U1	2.14429 J1	46	5	0.424977 J1	2	20	4.43	< 0.083 U1	< 0.68 U1	0.096	< 0.005 U1	< 0.29 U1	1.35863 J1	< 0.86 U1
11/15/2016	Background	< 0.93 U1	< 1.05 U1	41	5	0.419182 J1	2	22	3.69	< 0.083 U1	< 0.68 U1	0.095	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/11/2017	Background	< 0.93 U1	1.56781 J1	46	5	0.30207 J1	1	18	2.62	< 0.083 U1	< 0.68 U1	0.1	0.00659 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/1/2017	Background	< 0.93 U1	< 1.05 U1	43	5	0.286804 J1	2	21	3.48	< 0.083 U1	< 0.68 U1	0.1	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
4/10/2017	Background	< 0.93 U1	< 1.05 U1	45	5	0.414787 J1	0.954802 J1	21	2.58	< 0.083 U1	< 0.68 U1	0.104	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/22/2018	Assessment	< 0.93 U1	< 1.05 U1	40.53	5.29	0.48 J1	3.09	25.63	2.808	< 0.083 U1	< 0.68 U1	0.108	0.012 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/21/2018	Assessment	0.02 J1	1.71	39.5	4.90	0.46	1.14	24.6	2.619	< 0.083 U1	0.296	0.0921	0.006 J1	0.07 J1	3.7	0.137
2/28/2019	Assessment	< 0.4 U1	1 J1	39.5	5.32	0.5 J1	< 0.8 U1	18.9	2.95	0.20	< 0.4 U1	0.0892	< 0.005 U1	< 8 U1	2 J1	< 2 U1
5/23/2019	Assessment	< 0.4 U1	< 0.6 U1	41.0	5.22	0.3 J1	< 0.8 U1	19.9	3.93	0.20	< 0.4 U1	0.0885	< 0.005 U1	< 8 U1	0.6 J1	0.2 J1

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

Table 1 - Groundwater Data Summary: AD-34

Pirkey - LF

Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/10/2016	Background	0.08	37.8	7	< 0.083 U1	4.0	974	1,516
7/13/2016	Background	0.111	33.2	8	< 0.083 U1	3.6	837	1,396
9/8/2016	Background	0.09	39.5	8	< 0.083 U1	3.3	870	1,520
10/12/2016	Background	0.09	35.8	7	0.6272 J1	3.6	1,084	1,464
11/15/2016	Background	0.1	36.3	7	0.9978 J1	3.7	1,006	1,428
1/11/2017	Background	0.07	39.9	8	< 0.083 U1	3.2	1,334	1,378
2/28/2017	Background	0.08	37	6	< 0.083 U1	3.7	993	1,402
4/10/2017	Background	0.09	38.2	8	0.5241 J1	3.0	1,016	1,490
8/23/2017	Detection	0.107	36.2	7	0.619 J1	3.7	1,231	1,128
12/21/2017	Detection	--	--	8	0.6669 J1	--	1,020	1,260
3/21/2018	Assessment	0.171	40.1	6	< 0.083 U1	3.7	956	1,424
8/20/2018	Assessment	0.067	37.0	10	< 0.083 U1	3.7	1,064	1,462
2/27/2019	Assessment	0.08 J1	39.9	7.64	0.86	2.9	970	1,470
5/21/2019	Assessment	0.060	42.0	7.34	0.69	3.3	1,080	1,154
8/13/2019	Detection	0.070	39.8	7.46	1.13	3.7	1,060	1,648
1/27/2020	Detection	--	--	--	0.9	3.6	--	1,550
3/11/2020	Detection	--	--	--	--	3.6	--	--
6/3/2020	Detection	0.058	40.1	7.68	1.22	3.4	1,150	1,620
7/15/2020	Detection	--	--	--	1.39	4.1	--	1,510
11/4/2020	Detection	0.060	39.5	7.10	0.82	3.4	1,090	1,670
5/26/2021	Detection	0.063	39.7	7.44	2.1	2.9	1,110	1,670
7/27/2021	Detection	--	--	--	0.82	--	--	--
11/17/2021	Detection	0.069	45.8	7.09	1.11	3.1	1,280	1,850
1/26/2022	Detection	--	42.6	--	--	3.4	--	1,720 S7
6/22/2022	Detection	0.066	45.8	7.38	1.20	3.7	1,260	1,750
8/30/2022	Detection	--	46.0	--	--	4.0	--	1,650
11/14/2022	Detection	0.067	44.6	7.47	0.44	3.5	1,250	1,720

Notes:

mg/L: milligrams per liter

SU: standard unit

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

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

--: Not analyzed

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.

S7: Sample did not achieve constant weight.

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

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

Table 1 - Groundwater Data Summary: AD-34

Pirkey - LF

Appendix IV Constituents

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/10/2016	Background	< 0.93 U1	12	72	3	6	34	301	9.64	< 0.083 U1	12	0.176	0.105	0.688222 J1	< 0.99 U1	< 0.86 U1
7/13/2016	Background	< 0.93 U1	25	177	4	6	81	296	7.75	< 0.083 U1	39	0.183	0.313	2.11044 J1	7	< 0.86 U1
9/8/2016	Background	< 0.93 U1	9	31	3	8	12	306	7.91	< 0.083 U1	1.01746 J1	0.158	0.064	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/12/2016	Background	< 0.93 U1	10	39	3	5	15	297	10.12	0.6272 J1	3.69632 J1	0.174	0.036	< 0.29 U1	< 0.99 U1	< 0.86 U1
11/15/2016	Background	< 0.93 U1	7	23	2	8	6	292	13.21	0.9978 J1	< 0.68 U1	0.154	0.025	< 0.29 U1	4.50827 J1	< 0.86 U1
1/11/2017	Background	< 0.93 U1	6	29	2	7	8	284	11.9	< 0.083 U1	< 0.68 U1	0.164	0.032	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/28/2017	Background	< 0.93 U1	7	11	2	6	< 0.23 U1	294	9.87	< 0.083 U1	< 0.68 U1	0.158	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
4/10/2017	Background	< 0.93 U1	4.49903 J1	23	2	11	7	299	2.407	0.5241 J1	< 0.68 U1	0.167	0.0164 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
3/21/2018	Assessment	< 0.93 U1	6.51	10.6	2.24	11.97	< 0.23 U1	279	8.85	< 0.083 U1	< 0.68 U1	0.156	< 0.005 U1	< 0.29 U1	3.24 J1	< 0.86 U1
8/20/2018	Assessment	0.01 J1	14.4	7.77	1.77	4.34	0.977	249	10.17	< 0.083 U1	1.32	0.114	0.005 J1	0.03 J1	13.0	0.070
2/27/2019	Assessment	< 0.4 U1	15.9	9.93	2.42	4.57	0.9 J1	260	8.56	0.86	1 J1	0.153	0.015 J1	< 8 U1	14.8	< 2 U1
5/21/2019	Assessment	< 0.4 U1	12.7	10.5	2.25	4.48	0.8 J1	272	10.82	0.69	1 J1	0.158	< 0.005 U1	< 8 U1	4.9	< 0.1 U1

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

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.

**Table 1 - Groundwater Data Summary: AD-36
Pirkey - LF
Appendix III Constituents**

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
8/13/2019	Background	0.065	0.240	9.46	0.05 J1	4.7	2.2	92
1/27/2020	Background	0.056	0.304	8.65	0.05 J1	4.7	3.5	40 J1
3/11/2020	Background	0.05 J1	0.2 J1	8.44	0.06	5.0	3.7	60 J1
4/15/2020	Background	0.054	0.2 J1	8.40	0.05 J1	3.6	3.7	40 J1
5/13/2020	Background	0.055	0.2 J1	8.56	0.05 J1	4.1	3.4	40 J1
6/3/2020	Background	0.052	0.2 J1	8.52	0.07	4.6	3.3	65
6/16/2020	Background	0.064	0.2 J1	8.39	0.05 J1	4.6	3.6	50 J1
7/1/2020	Background	0.059	0.3 J1	--	--	4.9	--	52
7/15/2020	Background	--	--	8.09	0.08	5.0	3.7	--
11/4/2020	Detection	0.068	0.2 J1	7.99	0.06 J1	4.6	3.1	57
5/26/2021	Detection	0.057	0.6	10.6	0.10	4.0	4.08	60
7/27/2021	Detection	--	0.3	8.67	0.07	--	--	--
11/17/2021	Detection	0.070	0.25	8.97	0.05 J1	4.0	2.89	50 P1
6/22/2022	Detection	0.059	0.38	10.1	0.09	4.6	5.00	60
8/30/2022	Detection	--	0.28	10.3	0.07	4.9	3.00	--
11/14/2022	Detection	0.068	0.28	11.1	0.07	4.5	2.93	50

Notes:

mg/L: milligrams per liter

SU: standard unit

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

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

--: Not analyzed

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.

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

**Table 1 - Groundwater Data Summary: AD-36
Pirkey - LF
Appendix IV Constituents**

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
8/13/2019	Background	< 0.02 U1	0.15	10.8	0.234	< 0.01 U1	0.203	0.901	1.298	0.05 J1	< 0.05 U1	0.0161	< 0.005 U1	< 0.4 U1	0.09 J1	< 0.1 U1
1/27/2020	Background	< 0.02 U1	0.14	9.94	0.191	0.01 J1	0.09 J1	0.762	1.096	0.05 J1	< 0.05 U1	0.00277	< 0.2 U1	< 0.4 U1	0.07 J1	< 0.1 U1
3/11/2020	Background	< 0.02 U1	0.09 J1	10.2	0.184	< 0.01 U1	< 0.04 U1	0.760	4.056	0.06	< 0.05 U1	0.00246	< 0.002 U1	< 0.4 U1	0.1 J1	< 0.1 U1
4/15/2020	Background	< 0.02 U1	0.10	10.1	0.179	< 0.01 U1	0.1 J1	0.770	2.84	0.05 J1	< 0.05 U1	0.00210	0.003 J1	0.8 J1	0.09 J1	< 0.1 U1
5/13/2020	Background	< 0.02 U1	0.15	10.2	0.194	< 0.01 U1	0.247	0.750	2.346	0.05 J1	< 0.05 U1	0.00266	0.004 J1	< 0.4 U1	0.08 J1	< 0.1 U1
6/3/2020	Background	< 0.02 U1	0.11	9.81	0.204	< 0.01 U1	0.08 J1	0.683	0.692	0.07	< 0.05 U1	0.00262	0.005 J1	< 0.4 U1	0.09 J1	< 0.1 U1
6/16/2020	Background	< 0.02 U1	0.11	9.75	0.173	< 0.01 U1	0.214	0.723	0.885	0.05 J1	0.08 J1	0.00254	0.003 J1	1 J1	0.1 J1	< 0.1 U1
7/1/2020	Background	< 0.02 U1	0.09 J1	9.72	0.179	< 0.01 U1	0.09 J1	0.681	1.171	--	< 0.05 U1	0.00268	0.004 J1	< 0.4 U1	0.06 J1	< 0.1 U1
7/15/2020	Background	--	--	--	--	--	--	--	--	0.08	--	--	--	--	--	--

Notes:

µg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

--: Not analyzed

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.

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

Geosyntec Consultants, Inc.

CCR Management Unit	Monitoring Well	Well Diameter (inches)	2022-01 ^[3]		2022-06		2022-08 ^[3]		2022-11	
			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)
Landfill	AD-8 ^[1]	4.0	NC	NC	6.9	17.6	NC	NC	7.1	17.2
	AD-12 ^[1]	4.0	NC	NC	21.6	5.6	NC	NC	22.8	5.3
	AD-16 ^[1]	2.0	NC	NC	22.3	2.7	NC	NC	20.5	3.0
	AD-23 ^[2]	2.0	21.4	2.8	11.3	5.4	21.9	2.8	10.5	5.8
	AD-27 ^[1]	2.0	NC	NC	15.4	4.0	NC	NC	16.3	3.7
	AD-34 ^[2]	2.0	21.6	2.8	29.7	2.0	28.0	2.2	25.3	2.4
	AD-36 ^[2]	2.0	NC	NC	25.7	2.4	26.4	2.3	25.5	2.4

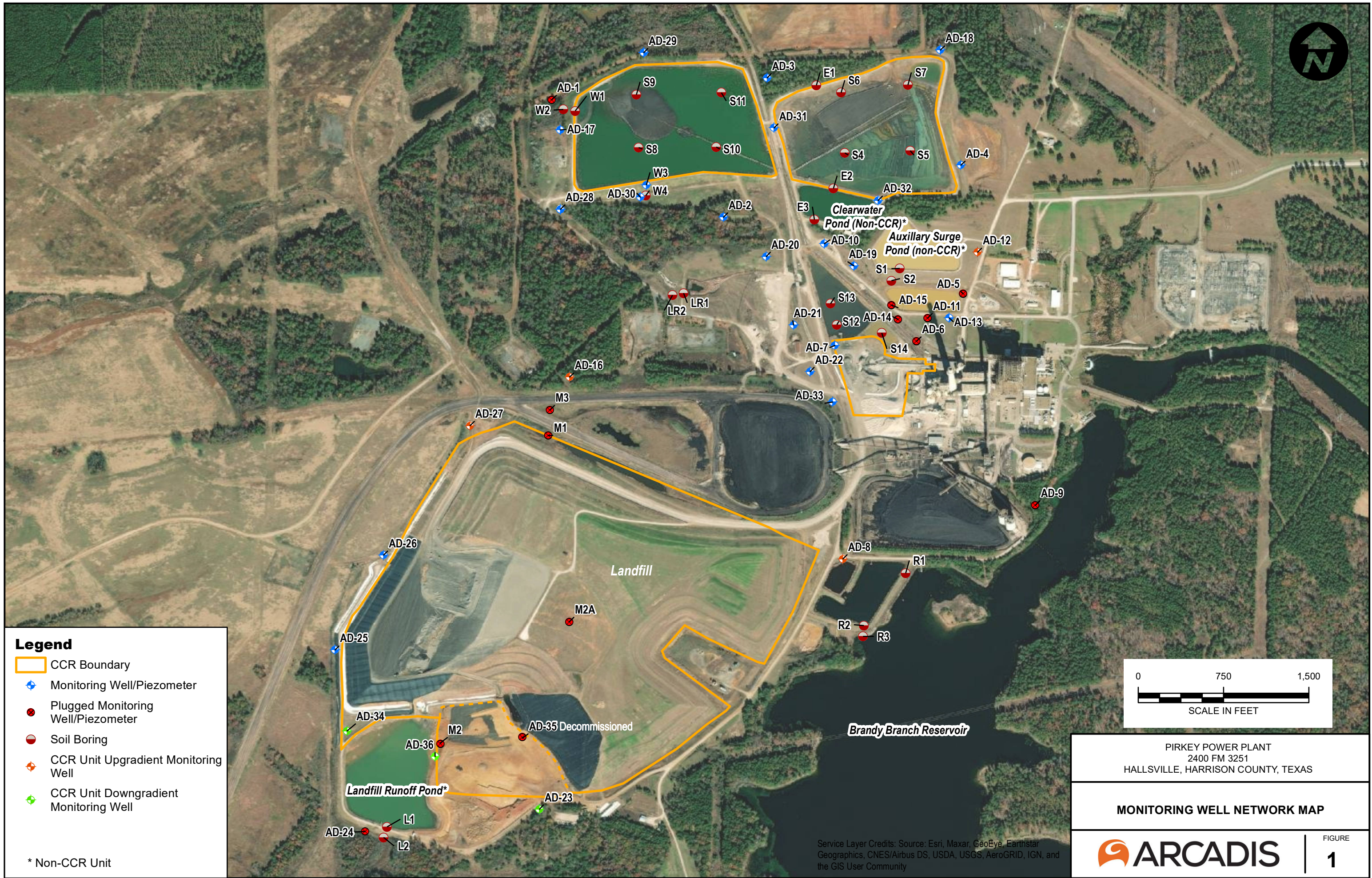
Notes:

[1] - Background Well

[2] - Downgradient Well

[3] - Only select wells were gauged as part of two-of-two verification sampling

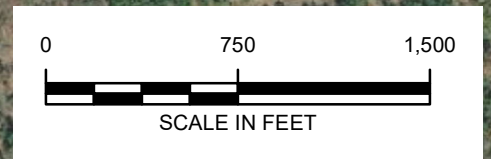
NC - Not Calculated



Legend

- CCR Boundary
- Monitoring Well/Piezometer
- Plugged Monitoring Well/Piezometer
- Soil Boring
- CCR Unit Upgradient Monitoring Well
- CCR Unit Downgradient Monitoring Well

* Non-CCR Unit



PIRKEY POWER PLANT
 2400 FM 3251
 HALLSVILLE, HARRISON COUNTY, TEXAS

MONITORING WELL NETWORK MAP

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



FIGURE 1

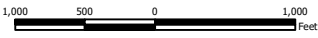


Legend

- Groundwater Monitoring Wells**
- ◆ Out of Network
 - ◆ EBAP
 - ◆ WBAP
 - ◆ Landfill
 - ◆ Stackout Area
 - ◆ EBAP and WBAP
- All CCR Unit Networks
- ▲ Piezometer
- Groundwater Elevation Contour
- - - Groundwater Elevation Contours (Inferred)
- Approximate Groundwater Flow Direction

Notes

- Monitoring well coordinates and water level data (collected on June 20-22, 2022) provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation Update (Arcadis, 2022) provided by AEP.
- Groundwater elevation units are feet above mean sea level.
- AD-10, AD-19, AD-20, AD-21, AD-24, AD-29, AD-35, and W-3 were not gauged during the June 2022 event.
- AD-35 was abandoned on November 13, 2018.



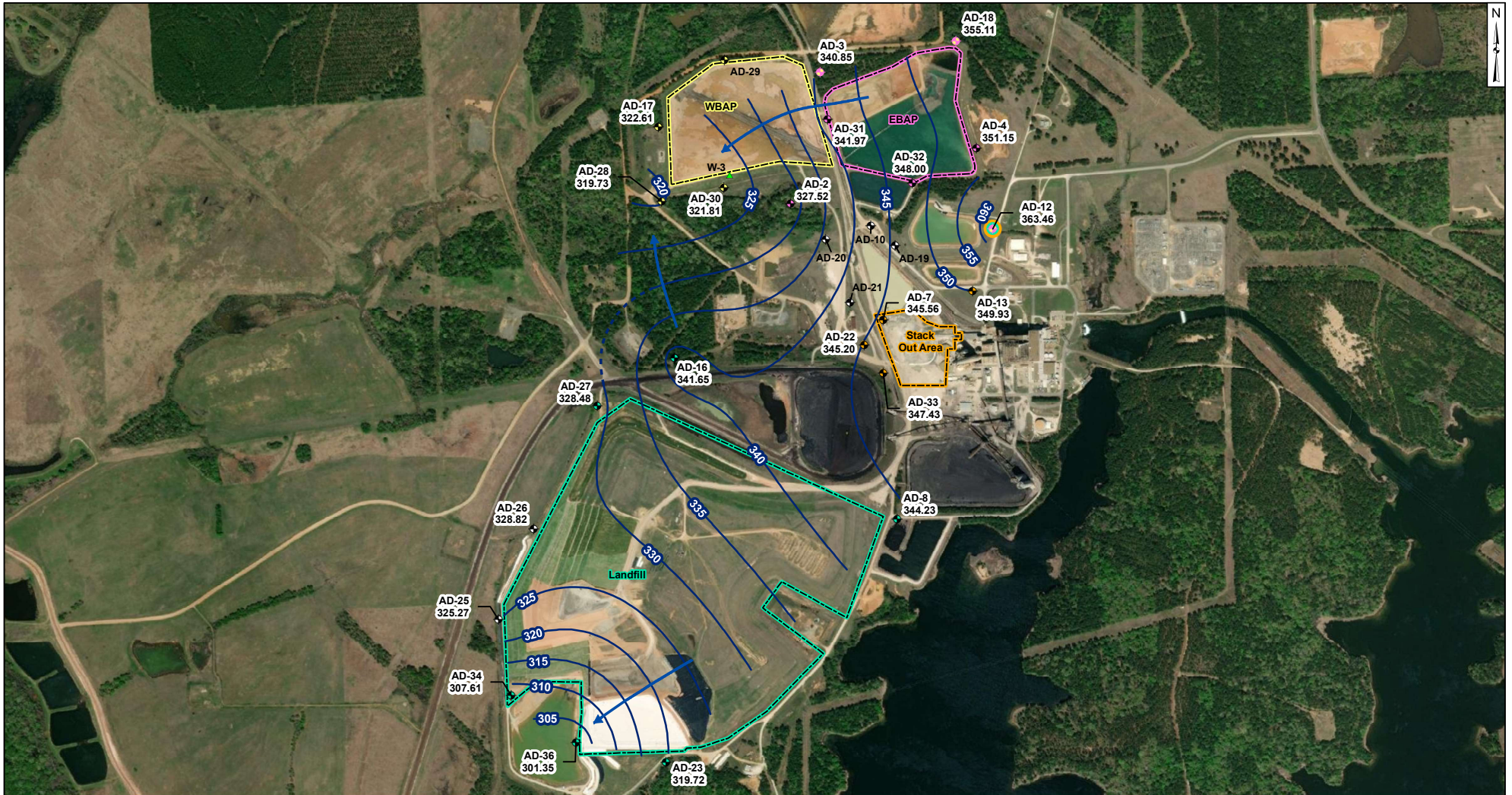
Beth Ann Gross
 12/29/2022
 Geosyntec Consultants, Inc.
 Texas Firm
 Registration No. 1182

**Potentiometric Contours - Uppermost Aquifer
 June 2022**

AEP Pirkey Power Plant
 Hallsville, Texas

		Figure 2
Columbus, Ohio	2022/12/21	

W:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\HXD\Pirkey\2022\WEP-Pirkey_GW_2022-06\June.mxd, ASoltero, 12/21/2022, Project/Phase/Task.



Legend

- Groundwater Monitoring Wells**
- ◆ Out of Network
 - ◆ EBAP
 - ◆ WBAP
 - ◆ Landfill
 - ◆ Stackout Area
 - ◆ EBAP and WBAP
- All CCR Unit Networks**
- Piezometer
 - Groundwater Elevation Contour
 - - - Groundwater Elevation Contours (Inferred)
 - Approximate Groundwater Flow Direction

Notes

- Monitoring well coordinates and water level data (collected on November 15, 2022) provided by AEP.
- Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation Update (Arcadis, 2022) provided by AEP.
- Groundwater elevation units are feet above mean sea level.
- AD-10, AD-19, AD-20, AD-21, AD-29, and W-3 were not gauged during the November 2022 event.
- AD-35 was abandoned on November 13, 2018.



Digitally signed by Beth Gross,
 Date: 2023.01.23 09:40:36 -05'00'
 Texas Eng Firm
 Registration No. 1182

**Potentiometric Contours - Uppermost Aquifer
 November 2022**

AEP Pirkey Power Plant
 Hallsville, Texas

Geosyntec consultants		Figure 3
Columbus, Ohio	2023/01/17	

APPENDIX 2- Statistical Analyses

The reports summarizing the statistical evaluation follow.

Memorandum

Date: March 23, 2022
To: David Miller (AEP)
Copies to: Leslie Fuerschbach (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Evaluation of Detection Monitoring Data at Pirkey Plant's Landfill

In accordance with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (30 TAC 352, "CCR rule"), the second semi-annual detection monitoring event of 2021 at the Landfill, an existing CCR unit at the Pirkey Power Plant located in Hallsville, Texas, was completed on November 17, 2021. Based on the results, a two-of-two verification sampling was completed on January 26, 2022.

Background values (prediction limits) for the LF were previously calculated in January 2018. An alternative source demonstration (ASD) was certified on January 7, 2020 which resulted in a revision from interwell tests to intrawell tests for the pH, sulfate, and total dissolved solids (TDS) prediction limits. After a minimum of four 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 calculation of these revised background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 27, 2021.

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.

- TDS concentrations exceeded the intrawell UPL of 1,700 mg/L in both the initial (1,850 mg/L) and second (1,720 mg/L) samples collected at AD-34. Therefore, an SSI over background is concluded for TDS at AD-34.

In response to the exceedances noted above, the Pirkey LF will either transition to assessment monitoring or an ASD for TDS at AD-34 will be conducted in accordance with 30 TAC 352.931. 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 A.

**Table 1: Detection Monitoring Data Evaluation
Pirkey - Landfill**

Analyte	Unit	Description	AD-23		AD-34		AD-36
			11/17/2021	1/26/2022	11/17/2021	1/26/2022	11/17/2021
Boron	mg/L	Intrawell Background Value (UPL)	0.0433		0.145		0.0702
		Analytical Result	0.045	0.040	0.069	--	0.070
Calcium	mg/L	Intrawell Background Value (UPL)	0.536		42.8		0.304
		Analytical Result	0.22	--	45.8	42.6	0.25
Chloride	mg/L	Intrawell Background Value (UPL)	8.88		9.35		9.54
		Analytical Result	7.11	--	7.09	--	8.97
Fluoride	mg/L	Intrawell Background Value (UPL)	1.00		1.29		0.0800
		Analytical Result	0.05	--	1.11	--	0.05
pH	SU	Intrawell Background Value (UPL)	5.2		4.2		5.7
		Intrawell Background Value (LPL)	2.8		2.9		3.5
		Analytical Result	3.9	--	3.1	--	4.0
Sulfate	mg/L	Intrawell Background Value (UPL)	14.5		1,280		4.20
		Analytical Result	7.84	--	1,280	--	2.89
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	111		1,700		98.5
		Analytical Result	70	--	1,850	1,720	50

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

Bold values exceed the background value.

Background values are shaded gray.

ATTACHMENT A

Certification by a Qualified Professional Engineer

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected statistical method, described above and in the January 27, 2021 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Pirkey Landfill 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

License Number

TEXAS

Licensing State

04.18.22

Date

January 11, 2023

David Miller
American Electric Power
1 Riverside Plaza
Columbus, Ohio 43215

Subject: November 2022 Evaluation of Detection Monitoring Data Memorandum Revisions

Dear Mr. Miller:

Geosyntec Consultants, Inc. (Geosyntec) has revised the attached Evaluation of Detection Monitoring Data Memorandum (Memo) for the H.W. Pirkey Power Plant's existing coal combustion residual (CCR) Landfill, which summarizes the first semi-annual detection monitoring event of 2022 at the Landfill, in accordance with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of CCRs in landfills and surface impoundments (Title 30 Chapter 352, "CCR Rule").

The Evaluation of Detection Monitoring Data Memo was previously certified on November 11, 2022, which was within 90 days of issuance of the analytical laboratory reports for the June 2022 and August 2022 groundwater sampling events. Following certification, the analytical laboratory reports for the June 2022 sampling event were reissued with amended matrix spike precision calculations. The data quality review memoranda, which were provided as Attachment A of the certified Evaluation of Detection Monitoring Data Memo, has been updated to reflect the reissued analytical laboratory reports. A record of revisions is provided with the updated data quality review memorandum as Attachment A of the compiled Evaluation of Detection Monitoring Data Memo attached to this cover letter. There are no other changes to the previously certified Memo, as the conclusions of the data quality review memorandum were unaffected and no changes to the statistical analysis were required.

Sincerely,



Allison Kreinberg, Project Manager

Attachment A: Evaluation of Detection Monitoring Data at Pirkey Plant's Landfill Memorandum, November 2022.

Memorandum

Date: November 8, 2022

To: David Miller (AEP)

Copies to: Leslie Fuerschbach (AEP)

From: Allison Kreinberg (Geosyntec)

Subject: Evaluation of Detection Monitoring Data at Pirkey Plant's Landfill

In accordance with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (30 TAC 352, "CCR rule"), the first semi-annual detection monitoring event of 2022 at the Landfill, an existing CCR unit at the Pirkey Power Plant located in Hallsville, Texas, was completed on June 22, 2022. Based on the results, a two-of-two verification sampling was completed on August 30, 2022.

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 analysis¹. The data were determined usable for supporting project objectives, as documented in the review memoranda provided in Attachment A.

Background values (prediction limits) for the LF were previously calculated in January 2018. An alternative source demonstration (ASD) was certified on January 7, 2020 which resulted in a revision from interwell tests to intrawell tests for the pH, sulfate, and TDS prediction limits. After a minimum of four 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 calculation of these revised background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 27, 2021.

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. Noted exceedances are described in the list below.

- Calcium concentrations exceeded the intrawell UPL of 42.8 mg/L in both the initial (45.8 mg/L) and second (46.0 mg/L) samples collected at AD-34. Therefore, an SSI over background is concluded for calcium at AD-34.
- Chloride concentrations exceeded the intrawell UPL of 9.54 mg/L in both the initial (10.1 mg/L) and second (10.3 mg/L) samples collected at AD-36. Therefore, an SSI over background is concluded for calcium at AD-36.

In response to the exceedances noted above, the Pirkey LF will either transition to assessment monitoring or an ASD for calcium at AD-34 and chloride at AD-36 will be conducted in accordance with 30 TAC 352.931. 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
Pirkey - Landfill**

Analyte	Unit	Description	AD-23		AD-34		AD-36	
			6/22/2022	8/30/2022	6/22/2022	8/30/2022	6/22/2022	8/30/2022
Boron	mg/L	Intrawell Background Value (UPL)	0.0433		0.145		0.0702	
		Analytical Result	0.057	0.032	0.066	--	0.059	--
Calcium	mg/L	Intrawell Background Value (UPL)	0.536		42.8		0.304	
		Analytical Result	0.25	--	45.8	46.0	0.38	0.28
Chloride	mg/L	Intrawell Background Value (UPL)	8.88		9.35		9.54	
		Analytical Result	7.32	--	7.38	--	10.1	10.3
Fluoride	mg/L	Intrawell Background Value (UPL)	1.00		1.29		0.0800	
		Analytical Result	0.07	--	1.20	--	0.09	0.07
pH	SU	Intrawell Background Value (UPL)	5.2		4.2		5.7	
		Intrawell Background Value (LPL)	2.8		2.9		3.5	
		Analytical Result	3.6	--	3.7	--	4.6	--
Sulfate	mg/L	Intrawell Background Value (UPL)	14.5		1,280		4.20	
		Analytical Result	9.52	--	1,260	--	5.00	3.00
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	111		1,700		98.5	
		Analytical Result	80	--	1,750	1,650	60	--

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

Bold values exceed the background value.

Background values are shaded gray.

ATTACHMENT A
Data Quality Review Memorandum
Revision 1 - January 2023

ATTACHMENT A
DATA QUALITY REVIEW – H.W. PIRKEY POWER PLANT
JUNE 2022 SAMPLING EVENT MEMORANDUM
RECORD OF REVISIONS

Revision 1 (January 2023)

- The introductory text was updated to note that the laboratory reports for the sample data groups (SDGs) discussed in this memorandum were reissued in December 2022 with amended matrix spike (MS) precision calculations.
- For the second bullet point, regarding equipment blank detections, the text was amended to note that a high bias for groundwater chromium results may occur in multiple, not all, samples.
- The low matrix spike duplicate (MSD) recovery for beryllium in the sample “Duplicate 1” was added to the discussion of MS and MSD issues associated with SDG 222015.
- The relative percent difference (RPD) for sodium between the MS and MSD associated with sample ‘AD-2’ on SDG 222015 is no longer outside the acceptable range. This text was removed.
- The RPDs for calcium, lithium, magnesium, and sodium between the MS and MSD associated with sample ‘Duplicate-1’ on SDG 222015 are no longer outside the acceptable range. This text was removed.
- The RPD for calcium and sodium associated with the sample ‘AD-8’ on SDG 222016 are no longer outside the acceptable range. This text was removed.

Memorandum

Date: January 11, 2023
To: David Miller (AEP)
Copies to: Leslie Fuerschbach (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Data Quality Review – H.W. Pirkey Power Plant
June 2022 Sampling Event – Revision 1

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the H.W. Pirkey Power Plant, located in Pittsburg, Texas in June 2022. 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 groundwater samples were analyzed for 40 CFR 257 Appendix III and IV constituents, plus additional constituents collected to support site evaluation efforts.

The following sample data groups (SDGs) were associated with the June 2022 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 221988
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 221989
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 221990
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 221991
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222015
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222016

The laboratory reports for these SDGs were reissued in December 2022 with amended matrix spike precision calculations. The data included in the revised laboratory reports associated with these

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

The following data quality issues were identified:

- As reported in SDG 221989, the sample “AD-3” submitted for total dissolved solids (TDS) analysis via method SM2540C was analyzed out of hold time. The “AD-3” TDS results should be considered estimated.
- As reported in SDG 222015, chromium and cobalt were detected in the equipment blank sample “Equipment Blank” collected on 6/20/2022. The detected chromium concentration in the equipment blank (0.41 µg/L) was higher than the detected values for chromium in multiple groundwater samples, which could result in high bias for all groundwater chromium results. The cobalt equipment blank detection was less than 10% of the detected values in the groundwater samples and would not result in a high bias.
- As reported in SDG 221988 and SDG 221989, the relative percent difference (RPD) for fluoride concentrations from parent sample “AD-13” and duplicate sample “Duplicate-1” was 24%. The “AD-13” fluoride results should be considered estimated.
- As reported in SDG 2221989, the RPD for TDS (11.5%) in the laboratory duplicate was above the acceptable limit of 10%. The associated sample (“AD-3”) was flagged P1: the precision between duplicate results was above acceptance limits. The “AD-3” TDS results should be considered estimated.
- As reported in SDG 222015, the following matrix spike (MS) or matrix spike duplicate (MSD) recovery issues were observed:
 - The MSD recovery for sodium (-30.9%) associated with sample “AD-2” was below the acceptable range of 75-125%. The associated sample (AD-2) was flagged M1: the associated MS or MSD recovery was outside acceptance limits. The “AD-2” sodium results should be considered estimated. Sodium is not a regulated Appendix III or IV constituent.
 - The MS recovery for cobalt (69.7%) and lithium (54%) associated with sample “AD13” were below the acceptable range of 75-125%. The associated sample (AD-13) was flagged M1: the associated MS or MSD recovery was outside

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

acceptance limits. The “AD-13” cobalt and lithium results should be considered estimated.

- The MSD recovery (72%) for beryllium associated with sample “Duplicate-1”, which was collected from well AD-13, was below the acceptable range of 75-125%. The MS recovery (62.6%) for calcium was below the acceptable range of 75-125%. The MS recovery (5.81%) and MSD recovery (53.9%) for cobalt were below the acceptable range of 75-125%. The MS recovery (-3.26%) and MSD recovery (-49.7%) for lithium were below the acceptable range of 75-125%. The MS recovery (32.4%) and MSD recovery (52.1%) for magnesium were below the acceptable range of 75-125%. The MS recovery (71.5%) and MSD recovery (54.3%) for sodium were below the acceptable range of 75-125%. The ‘Duplicate-1’ beryllium, calcium, cobalt, lithium, magnesium, and sodium results should be considered estimated. Magnesium and sodium are not regulated Appendix III or IV constituents.
- As reported in SDG 222015, the RPD for radium-226 (25.5%) in the laboratory duplicate was above the acceptable limit of 25%. The “AD-13” radium-226 results should be considered estimated.
- As reported in SDG 222016, the MS recovery (49.2%) and MSD recovery (63.5%) for calcium associated with sample “AD-8” were below the acceptable range of 75-125%. The MS recovery for sodium (70.1%) was below the acceptable range of 75-125%. The MS recovery (62.6%) and MSD recovery (72.2%) were below the acceptable range of 75-125%. The associated sample (AD-8) was flagged M1: the associated MS or MSD recovery was outside acceptance limits. The “AD-8” calcium, sodium, and strontium results should be considered estimated. Sodium and strontium are not regulated Appendix III or Appendix IV constituents.

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

Memorandum

Date: November 1, 2022
To: David Miller (AEP)
Copies to: Leslie Fuerschbach (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Data Quality Review – Pirkey Power Plant
August 2022 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Pirkey Power Plant, located in Hallsville, Texas, in August 2022. 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 40 CFR 257 Appendix III constituents.

The following sample data groups (SDGs) were associated with the groundwater samples collected during the August 2022 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222847

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

No data quality issues were identified. Based on these findings, the data reported in this SDG are considered accurate and complete and the data are considered usable for supporting project objectives.

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 27, 2021 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Pirkey Landfill 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

License Number

TEXAS

Licensing State

11.11.22

Date

Memorandum

Date: January 20, 2023
To: David Miller (AEP)
Copies to: Leslie Fuerschbach (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Data Quality Review – H.W. Pirkey Power Plant
November 2022 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the H.W. Pirkey Power Plant, located in Pittsburg, Texas in November 2022. 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 groundwater samples were analyzed for 40 CFR 257 Appendix III and IV constituents, plus additional constituents collected to support site evaluation efforts.

The following sample data groups (SDGs) were associated with the November 2022 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223647
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223649
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223664
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223668

The laboratory reports for SDGs 223647 and 223649 were reissued in December 2022 with amended matrix spike precision calculations. The data included in the revised laboratory reports associated with these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32¹ prior to submittal of this data to TCEQ.

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

The following data quality issues were identified:

- As reported in SDG 223664, chromium, cobalt, and molybdenum were detected in the equipment blank sample “Equipment Blank” collected on 11/16/2022. The detected chromium concentration in the equipment blank (0.47 µg/L) was more than 10% of the detected values in the groundwater samples, which could result in high bias for all groundwater chromium results. The detected cobalt concentration in the equipment blank (0.143 µg/L) was more than 10% of the detected value in sample “AD-18” (0.723 µg/L), which could result in high bias in the “AD-18” cobalt results. The estimated molybdenum concentration in the equipment blank (0.2 µg/L) was more than 10% of the detected value in sample “Duplicate-2” (0.2 µg/L), which could result in high bias in the “Duplicate-2” molybdenum results. Molybdenum was not detected in the other groundwater samples.
- As reported in SDG 223649, the relative percent difference (RPD) for sulfate concentrations from parent sample “AD-36” and duplicate sample “Landfill Duplicate” was 86%. The “AD-36” sulfate results should be considered estimated.
- As reported in SDG 223664, the following matrix spike (MS) and matrix spike duplicate (MSD) recovery for sodium (160% and 223%, respectively) associated with sample “AD-2” was above the acceptable range of 75-125%. The MS recovery for sodium (50.4%) associated with sample “AD-30” was below the acceptable range of 75-125%. The associated samples (“AD-2” and “AD-30”) were flagged M1: the associated MS or MSD recovery was outside acceptance limits. The “AD-2” and “AD-30” sodium results should be considered estimated. Sodium is not a regulated Appendix III or IV constituent.
- As reported in SDG 223664, the RPD for radium-226 (52.5%) in the laboratory duplicate was above the acceptable limit of 25%. The “AD-12” radium-226 result was flagged P1: the precision between duplicate results was above acceptance limits. The “AD-12” radium-226 results should be considered estimated.

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

APPENDIX 3- Alternate Source Demonstrations

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

**ALTERNATIVE SOURCE
DEMONSTRATION REPORT
TEXAS STATE CCR RULE**

H.W. Pirkey Power Plant

Landfill

Hallsville, Texas

Submitted to



1 Riverside Plaza
Columbus, Ohio 43215-2372

Submitted by

Geosyntec 
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July 2022

CHA8495

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ATTACHMENTS

Attachment A	Geologic Cross-Sections
Attachment B	February 2019 Landfill Leachate Laboratory Analytical Report
Attachment C	July 2019 FGD Sludge Laboratory Analytical Report
Attachment D	January 2022 Verification Sampling Laboratory Analytical Report
Attachment E	Certification by a Qualified Professional Engineer

LIST OF ACRONYMS

amsl	Above Mean Sea Level
ASD	Alternative Source Demonstration
CCR	Coal Combustion Residuals
EPRI	Electric Power Research Institute
FGD	Flue Gas Desulfurization
LPL	Lower Prediction Limit
QA	Quality Assurance
QC	Quality Control
SPLP	Synthetic Precipitation Leaching Procedure
SSI	Statistically Significant Increase
SWFPR	Site-wide False Positive Rate
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit

SECTION 1

INTRODUCTION AND SUMMARY

This Alternative Source Demonstration (ASD) report has been prepared to address a statistically significant increase (SSI) for total dissolved solids (TDS) in the groundwater monitoring network at the H.W. Pirkey Power Plant's Landfill (Landfill), located in Hallsville, Texas, following the second semiannual detection monitoring event of 2021. The H.W. Pirkey Plant has four coal combustion residual (CCR) storage units regulated by the Texas Commission on Environmental Quality (TCEQ) under Registration No. CCR104, including the Landfill. The Landfill is also registered as a source impoundment under TCEQ Industrial and Hazardous Waste Solid Waste Registration No. 33240. The western side of the Landfill overlies a former lignite mining area, as shown on **Figure 1**.

Background groundwater concentrations for the Landfill were initially calculated in January 2018 with data from at least eight monitoring events (Geosyntec, 2018). Upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Lower prediction limits (LPLs) were also calculated for pH. An ASD was certified on January 7, 2020 which resulted in a revision from interwell tests to intrawell tests for pH, sulfate, and TDS prediction limits due to the presence of lignite mine spoils within the screened interval at downgradient well AD-34 (Geosyntec, 2020). Prediction limits were calculated based on a one-of-two retesting procedure to maintain an appropriate site-wide false positive rate (SWFPR). With this procedure, an SSI is concluded only if both samples in a series of two exceed the UPL or, in the case of pH, are below the LPL.

The second semi-annual detection monitoring event of 2021 was performed in November 2021 (initial sampling event), and the results were compared to the calculated prediction limits in accordance with 30 TAC §352.941(a). Where initial exceedances were identified, verification resampling was completed in January 2022. Following verification resampling, an SSI for TDS was identified at well AD-34 by intrawell analysis. A summary of the detection monitoring analytical results and the calculated prediction limits to which they were compared is provided in **Table 1**.

1.1 CCR Rule Requirements

TCEQ regulations regarding assessment monitoring programs for CCR landfills and surface impoundments (TCEQ, 2020a) provide owners and operators with the option to make an ASD when an SSL is identified (30 TAC §352.941(c)):

*... In making a demonstration under this subsection, 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 30 TAC §352.941(c)(2), Geosyntec Consultants, Inc. (Geosyntec) has prepared this ASD report to document that the SSI identified for TDS at AD-34 is from a source other than the Landfill.

1.2 Demonstration of Alternative Sources

An evaluation was completed to assess possible alternative sources to which the identified SSI could be attributed. Alternative sources were identified amongst five types, based on methodology 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; and
- ASD Type V: Alternative Sources.

A demonstration was conducted to show that the SSI identified for TDS at AD-34 was based on a Type V cause and not by a release from the Pirkey Landfill.

SECTION 2

ALTERNATIVE SOURCE DEMONSTRATION

The TCEQ CCR Rule allows the owner or operator 90 days from the determination of an SSI to demonstrate that a source other than the CCR unit caused the SSI. Descriptions of the regional geology and site hydrogeology and the methodology used to evaluate the SSI identified for TDS and the proposed alternative source are described below.

2.1 Regional Geology and Site Hydrogeology

The Landfill is positioned on an outcrop of the Eocene-age Recklaw Formation, which consists predominantly of clay and fine-grained sand (Arcadis, 2022). The Recklaw Formation is underlain by the Carrizo Sand, which crops out in the topographically lower southern portion of the plant. The Carrizo Sand consists of fine to medium grained sand interbedded with silt and clay.

The Landfill monitoring well network monitors groundwater within the uppermost aquifer, which was defined by Arcadis (2022) as very fine to fine grained clayey and silty sand located below and adjacent to the Landfill between an elevation of approximately 270 and 330 feet above mean sea level (amsl). Geologic cross sections C-C' and D-D' from the Arcadis Monitoring Well Network Report (2022) show the subsurface structure of the uppermost aquifer (indicated on the figures as clayey silty sand, brown to gray) underlying the Landfill. These figures as well as the cross-section location map are provided as **Attachment A**. Geologic cross-sections C-C' and D-D' demonstrate lateral continuity of the uppermost aquifer spanning both directions underneath the entire length of the Landfill.

Groundwater flow direction near the Landfill is south-southwesterly (**Figure 2**). Seasonal variability in groundwater flow has not been observed since the monitoring well network was installed. The Landfill monitoring well network consists of upgradient monitoring wells AD-8, AD-12, AD-16, and AD-27, and downgradient compliance wells AD-23, AD-34, and AD-36. AD-36 was installed in April 2019 after the initial monitoring well network was already in place as a replacement for well AD-35, which was decommissioned in November 2018 due to Landfill expansion activities.

2.2 Proposed Alternative Source – Anthropogenic Impacts

An initial review of site geochemistry, site historical data, and laboratory quality assurance/quality control (QA/QC) data did not identify ASDs due to Type I (sampling), Type II (laboratory), or Type III (statistical evaluation) issues. Groundwater sampling, laboratory analysis, and statistical evaluations were generally completed in accordance with draft TCEQ guidance for groundwater monitoring (TCEQ, 2020b). As described below, the SSI for TDS at monitoring well AD-34 has been attributed to anthropogenic impacts associated with the former lignite mine, which is a Type V issue.

Variability in TDS concentrations at AD-34 is likely associated with former mining activities that took place immediately underlying and downgradient of the Landfill. As has been noted in previous ASDs (Burns & McDonnell, 2019; Geosyntec, 2019; Geosyntec, 2020), AD-34 is located within the footprint of a former lignite mining area (**Figure 1**), which has significantly impacted groundwater chemical composition. Prior to the installation of AD-34 in 2015, groundwater from the former lignite mine discharged to ground surface in the area of AD-34 (Burns & McDonnell, 2019). Water levels at AD-34 consistently reflect artesian conditions, indicating that this area was previously subjected to infiltration of surfaced groundwater from the lignite mine. Increased sulfate and TDS concentrations in waters affected by mine spoils are well documented in academic studies (Cunningham and Jones, 1990; Skousen and Zipper, 2014). Such impacts may be influential on TDS concentrations at monitoring wells within the area formerly in contact with mine groundwater, such as AD-34.

While it is likely that AD-34 is affected by the former lignite mining activities, there is limited evidence that AD-34 is impacted by the Landfill. Chloride and boron, which function as indicators for potential CCR releases due to their high relative concentration in CCR, are typically considered geochemically conservative parameters due to their lack of attenuation by geochemical processes in groundwater flow. Chloride was detected in the Landfill leachate at 640 mg/L (**Attachment B**), which is approximately two orders of magnitude greater than the concentrations detected at AD-34 (**Figure 3**). If Landfill leachate, which contains chloride concentrations multiple orders of magnitude greater than AD-34, were impacting downgradient monitoring wells, an increase in chloride concentrations at AD-34 would be expected. **Figure 3** shows that chloride concentrations at AD-34 over time do not display an increasing trend; rather, recent chloride concentrations at AD-34 are comparable to previous sample results.

Boron concentrations in Landfill leachate were unable to be accurately quantified in the 2019 leachate sample due to elevated reporting limits (5,000 mg/L for boron) caused by a large sample dilution factor. Boron was not detected above 5,000 mg/L in the leachate sample. However, boron concentrations in leached Flue Gas Desulfurization (FGD) sludge, which comprises much of the material placed in the Landfill, were reported to be 22.3 mg/L (via Synthetic Precipitation Leaching Procedure [SPLP]) and 8.44 mg/L (via Texas 7-day distilled water leaching procedure) in 2019 (**Attachment C**). Considering the elevated boron concentrations reported in the leached FGD sludge material, it is likely that boron concentrations in the Landfill leachate exceed concentrations at AD-34 (0.058 – 0.171 mg/L). An increase in boron concentrations at AD-34 would be expected if a release from the Landfill had occurred. Boron concentrations at AD-34 over time are shown on **Figure 4**. Recent (2020 to present) samples contain lower than average (0.084 mg/L) boron concentrations, which is not consistent with the expected concentration trend if a Landfill release had occurred.

While a TDS SSI was identified during the second semi-annual sampling event, there is limited evidence that these TDS concentrations are indicative of larger changes in groundwater chemical composition, such as those that would be expected for geochemically conservative parameters following a release from the Landfill. Further, the reported TDS concentration for the verification

sampling event was 1,720 mg/L, which is only marginally above the intrawell UPL of 1,700 mg/L for AD-34. However, this result was flagged as “S7 – Sample did not achieve constant weight” (**Attachment D**), suggesting possible variability in the analytical results. These results suggest that the observed variability in TDS concentrations during the recent events may also be at least partially associated with the analytical procedure and not indicative of ongoing changes in the groundwater composition suggestive of a release from the LF. Additional sampling should be completed if TDS concentrations continue to remain above the UPL.

The current chloride and boron concentrations at AD-34 do not display increasing trends relative to previous monitoring data (**Figures 3 and 4**), which suggests that changes in TDS concentrations in AD-34 groundwater should not be attributed to a release from the Landfill. Instead, the elevated TDS concentrations at AD-34 are likely associated with the presence of mine spoils from the former lignite mine in the vicinity of AD-34.

2.3 Sampling Requirements

As the ASD described above supports the position that the identified TDS SSI is not due to a release from the Pirkey Landfill, the unit will remain in the detection monitoring program. Groundwater at the unit will continue to be sampled for Appendix III parameters on a semi-annual basis.

SECTION 3

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 TDS SSI at AD-34 identified during the second semi-annual detection monitoring event of 2021 was not due to a release from the Landfill. The identified SSI was, instead, attributed to groundwater impacts associated with former mining activities. Therefore, no further action is warranted, and the Pirkey Landfill will remain in the detection monitoring program. Certification of this ASD by a qualified professional engineer is provided in **Attachment E**.

SECTION 4

REFERENCES

- Arcadis, 2022. Landfill – CCR Groundwater Monitoring Well Network Evaluation Update – H. W. Pirkey Power Plant. January.
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TABLES

**Table 1: Detection Monitoring Data Evaluation
Pirkey - Landfill**

Geosyntec Consultants, Inc.

Analyte	Unit	Description	AD-23		AD-34		AD-36
			11/17/2021	1/26/2022	11/17/2021	1/26/2022	11/17/2021
Boron	mg/L	Intrawell Background Value (UPL)	0.0433		0.145		0.0702
		Analytical Result	0.045	0.040	0.069	--	0.070
Calcium	mg/L	Intrawell Background Value (UPL)	0.536		42.8		0.304
		Analytical Result	0.22	--	45.8	42.6	0.25
Chloride	mg/L	Intrawell Background Value (UPL)	8.88		9.35		9.54
		Analytical Result	7.11	--	7.09	--	8.97
Fluoride	mg/L	Intrawell Background Value (UPL)	1.00		1.29		0.0800
		Analytical Result	0.05	--	1.11	--	0.05
pH	SU	Intrawell Background Value (UPL)	5.2		4.2		5.7
		Intrawell Background Value (LPL)	2.8		2.9		3.5
		Analytical Result	3.9	--	3.1	--	4.0
Sulfate	mg/L	Intrawell Background Value (UPL)	14.5		1,280		4.20
		Analytical Result	7.84	--	1,280	--	2.89
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	111		1,700		98.5
		Analytical Result	70	--	1,850	1,720	50

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

Bold values exceed the background value.

Background values are shaded gray.

FIGURES



Legend

- ◆ Upgradient Well
- ◆ Downgradient Well
- ◆ Out of Network Well
- ◆ Abandoned Well
- ▭ A Area
- ▭ Landfill

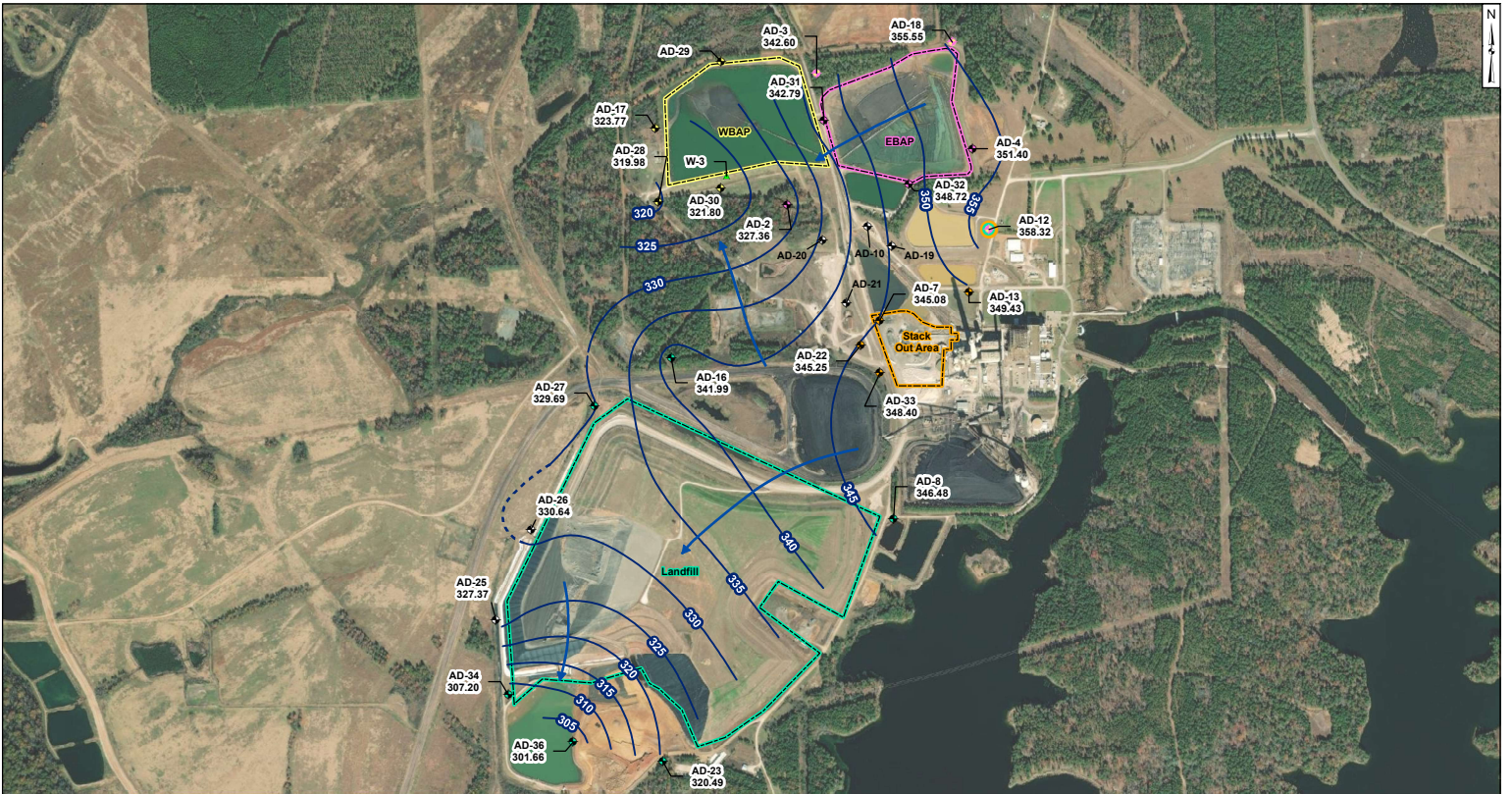
Notes

- Monitoring well coordinates, site features, and data provided by AEP.
- A Area is a former (reclaimed) lignite mine.
- AD-35 was abandoned in November 2018 and a new downgradient well, AD-36, was installed in April 2019.
- Aerial imagery provided by DigitalGlobe and dated 12/1/2018.



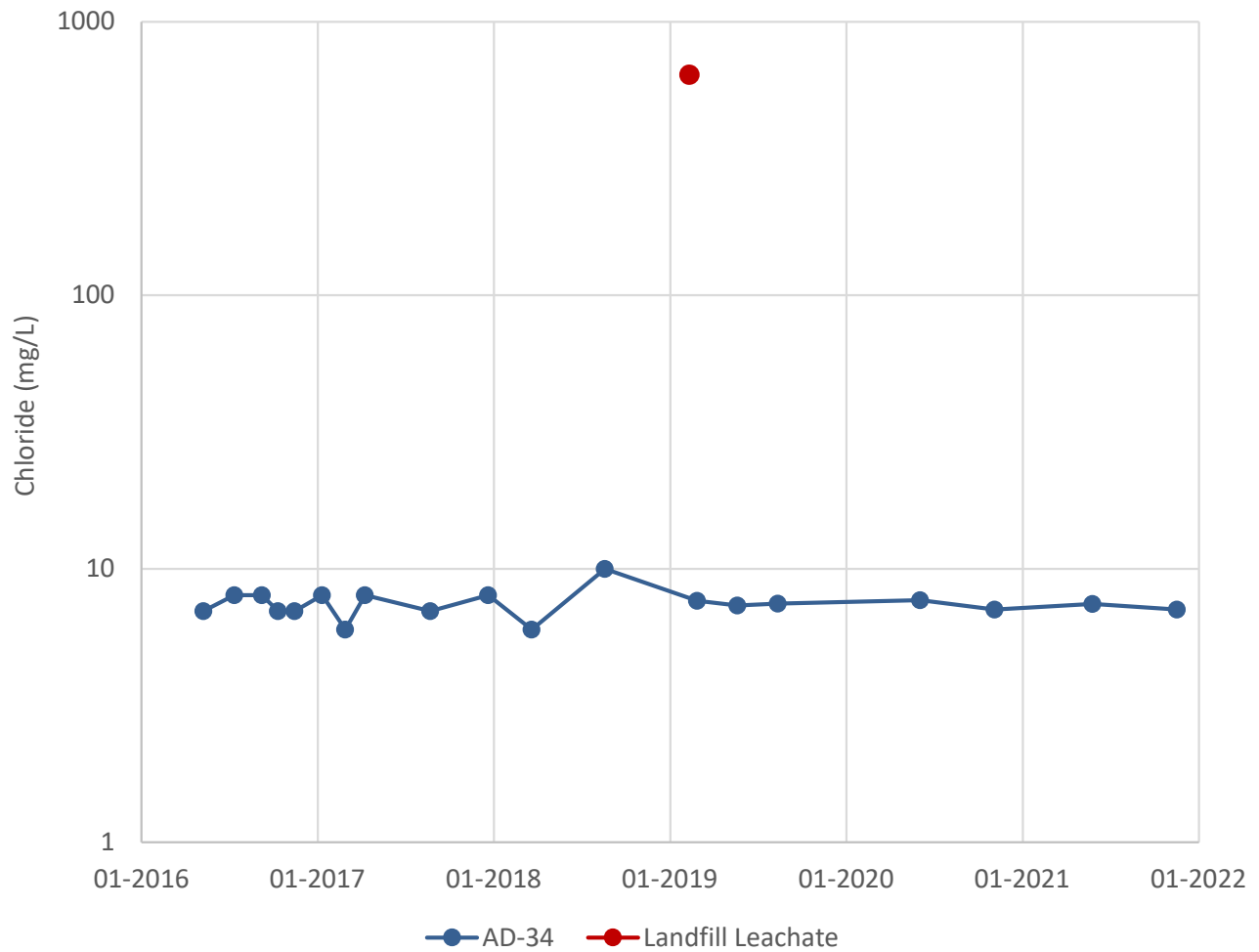
Site Layout		Figure 1
AEP Pirkey Power Plant Hallsville, Texas		
Geosyntec consultants		
Columbus, Ohio	2020/07/12	

Project: AEP Groundwater Statistical Evaluation - CHAIR2\Groundwater Mapping\GIS Files\AEP\AEP_SiteLayout_20191204.mxd; Release: 1/8/2020; Project/Phase: GSA



<p>Legend</p> <p>Groundwater Monitoring Wells</p> <ul style="list-style-type: none"> ⊕ Out of Network ⊕ EBAP ⊕ WBAP ⊕ Landfill ⊕ Stackout Area ⊕ EBAP and WBAP 	<ul style="list-style-type: none"> ⊕ All CCR Unit Networks ▲ Piezometer — Groundwater Elevation Contour - - - Groundwater Elevation Contours (Inferred) ➔ Approximate Groundwater Flow Direction 	<p>Notes</p> <ul style="list-style-type: none"> - Monitoring well coordinates and water level data (collected on November 15 - 17, 2021) provided by AEP. - Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis, 2016) provided by AEP. - Groundwater elevation units are feet above mean sea level. - East and West Bottom Ash Ponds have compacted cohesive soil from elevation 344 to 347 ft. msl (Sargent and Lundy, 1984; AMEC, 2011). - Clearwater pond base elevation is 344 ft. msl (Sargent and Lundy, 1983). - AD-10, AD-19, AD-20, AD-21, AD-29, AD-35, and W-3 were not gauged during the May 2021 event. 	<p>1,000 500 0 1,000 Feet</p> <p><i>Boh An Kwan</i></p> <p>Jan 14, 2022</p> <p>Geosyntec Consultants, Inc. Texas Firm Registration No. 1182</p>	<p>Potentiometric Contours - Uppermost Aquifer November 2021</p> <p>AEP Pirkey Power Plant Hallsville, Texas</p> <p>Geosyntec consultants</p> <p>Columbus, Ohio 01/13/2022</p> <p>Figure 2</p>
--	---	--	---	--

F:\Projects\AEP\Groundwater Statistical Evaluation - CHAIR\2\Groundwater Mapping\GIS Files\AEP\Key\2021\WBAP_Pirkey_OV_2021-November.mxd - 8/3/2022 - Project/Phase/Task



Notes: Chloride concentrations are shown in milligrams per liter (mg/L). 'LF Leachate' represents Landfill leachate collected in February 2019.

AD-34 Chloride Time Series Graph
Pirkey Landfill

Geosyntec
consultants

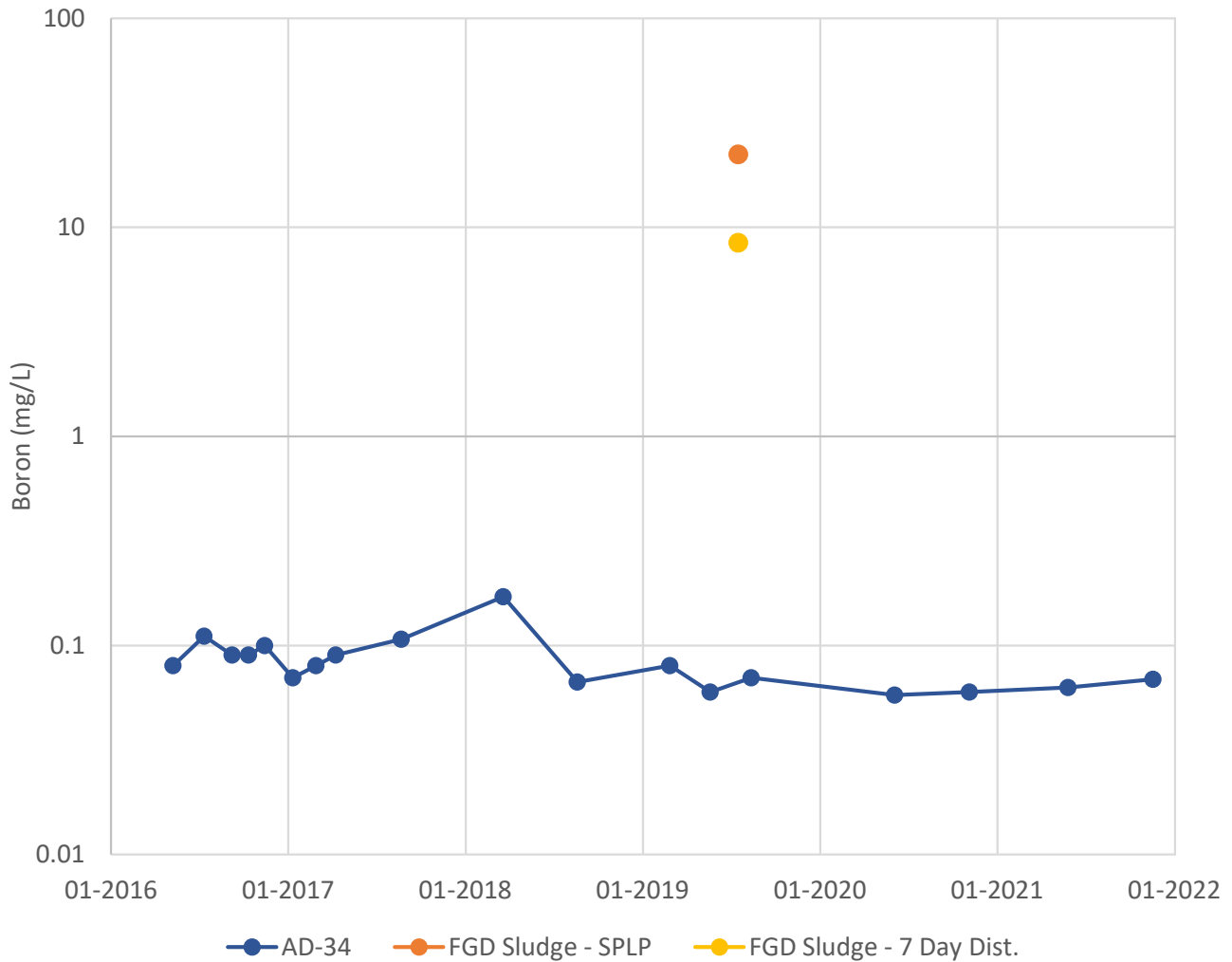


Figure

3

Columbus, Ohio

July-2022



Notes: Boron concentrations are shown in milligrams per liter (mg/L). Flue gas desulfurization (FDG) sludge solid phase samples were leached using Synthetic Precipitation Leaching Procedure (SPLP) and Texas 7 day distilled water methods, and boron concentrations in the leached material are shown.

AD-34 Boron Time Series Graph
Pirkey Landfill

Geosyntec
consultants



Figure

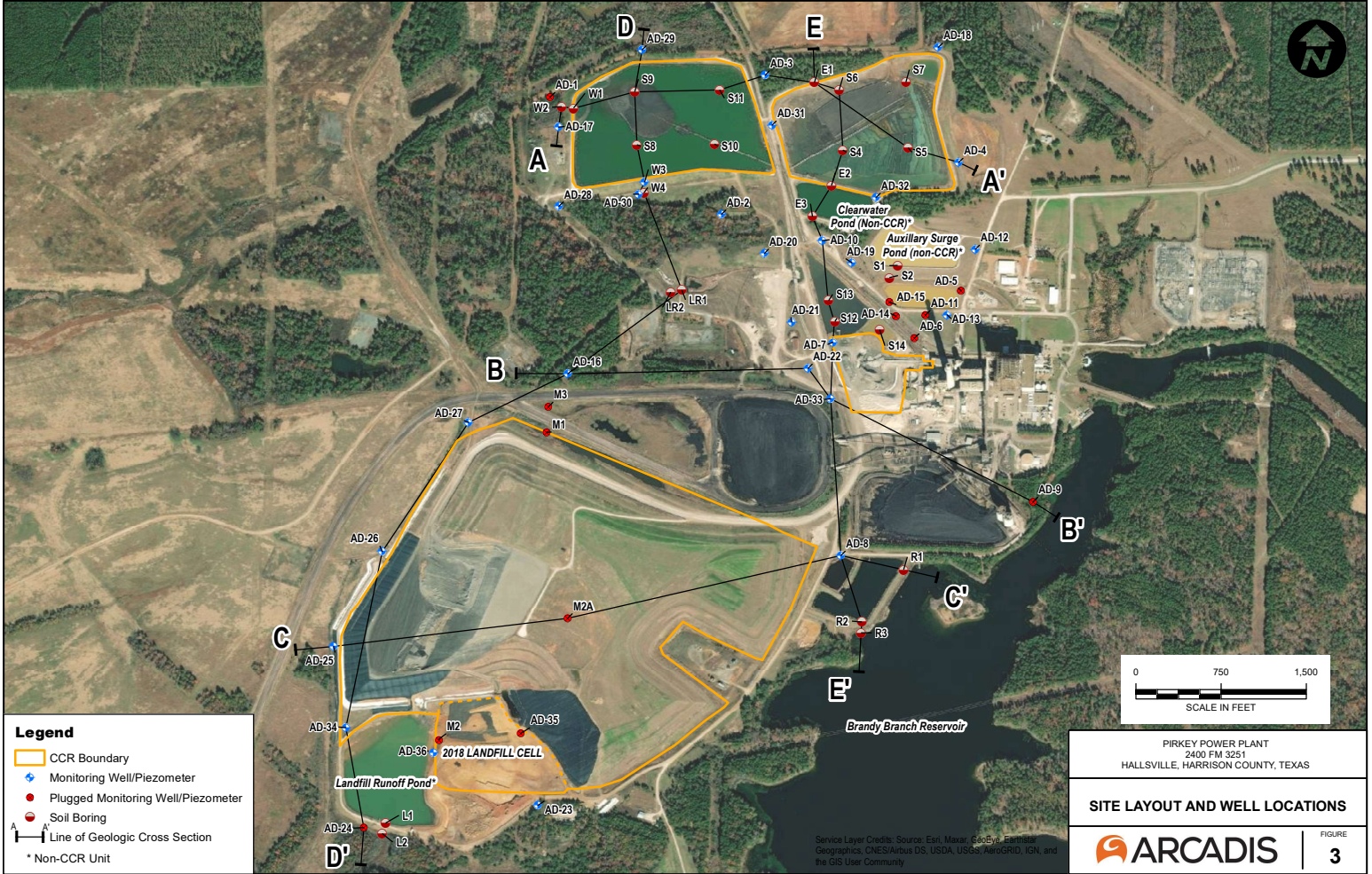
4

Columbus, Ohio

July-2022

ATTACHMENT A
Geologic Cross-Sections

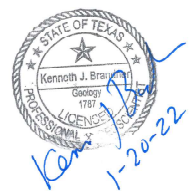
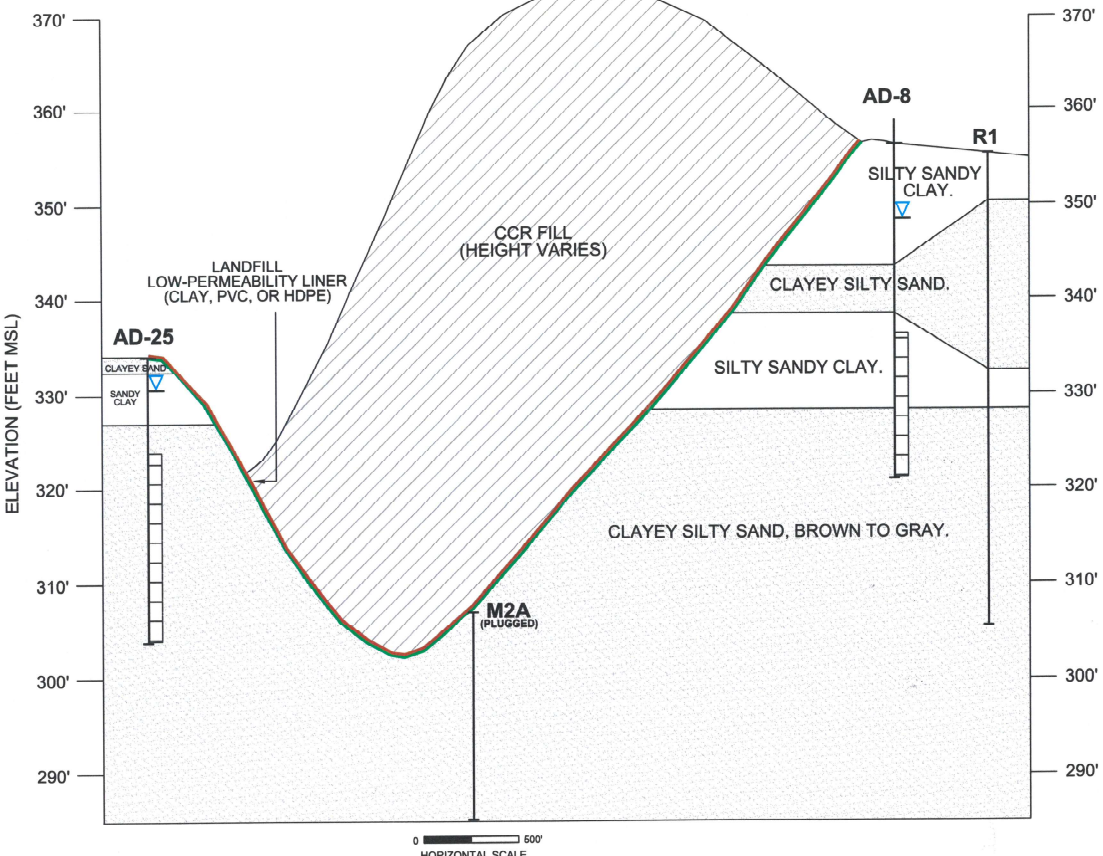
Document Path: T:\ENV\PEP\Power Plant\MXD\Updated\Figure 3 - Site Layout and Well Locations.mxd



CITY OF WACO, TEXAS, PROJECT NO. 2020-10-11, WACO POWER PLANT ASH PILE CLOSURE AND RESTORATION PROJECT - FINAL DESIGN - PLAN VIEW (11/20/21) - DATE PLOTTED 11/20/21 10:00 AM BY: [unclear]

WEST
C

EAST
C'



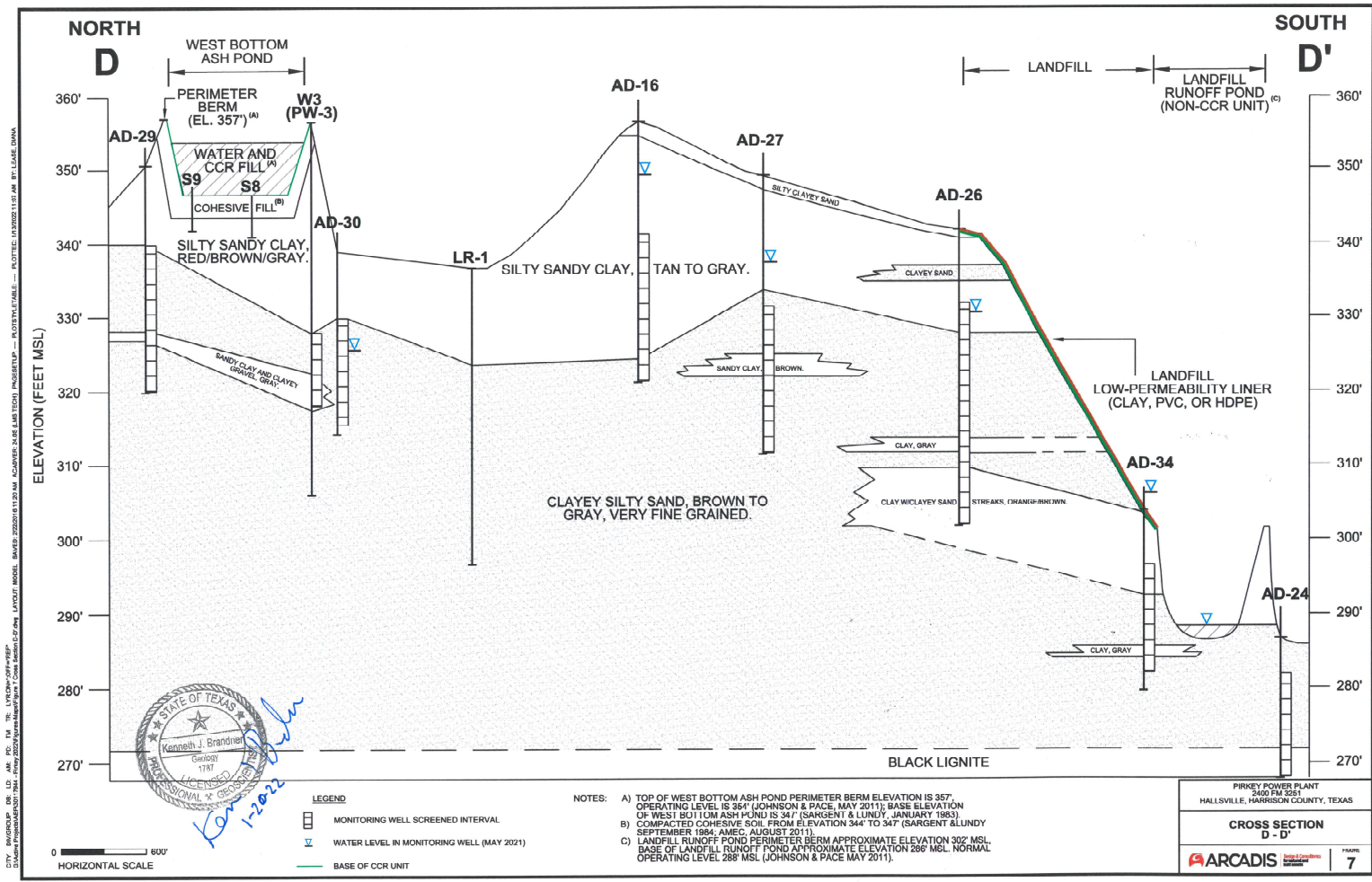
LEGEND

- MONITORING WELL SCREENED INTERVAL
- WATER LEVEL IN MONITORING WELL (MAY 2021)
- BASE OF CCR UNIT

PIRKEY POWER PLANT
2400 FM 3251
HALLSVILLE, HARRISON COUNTY, TEXAS

**CROSS SECTION
C - C'**

ARCADIS Design & Construction for natural and built worlds | **FIGURE 6**



CITY: BAYLOR COUNTY, TEXAS; PROJECT: WEST BOTTOM ASH POND PERIMETER BERM; DATE: 11/20/21; DRAWN BY: K. BRANDNER; CHECKED BY: K. BRANDNER; SCALE: AS SHOWN; SHEET: 7 OF 7; PROJECT NO.: 2021-001; CLIENT: AMEC; PROJECT LOCATION: WEST BOTTOM ASH POND, HALLSVILLE, TEXAS.

STATE OF TEXAS
 Kenneth J. Brandner
 Geologist
 7741
 PROFESSIONAL REGISTRATION NO. 12021

ATTACHMENT B

February 2019 Landfill Leachate Laboratory Analytical Report

Client Sample Results

Client: Burns & McDonnell
 Project/Site: CCR App III & IV GW Monitoring - Texas

TestAmerica Job ID: 490-168409-2
 SDG: AEP-Pirkey Plant

Client Sample ID: LANDFILL LEACHATE-1

Lab Sample ID: 490-168409-1

Date Collected: 02/11/19 15:45

Matrix: Water

Date Received: 02/13/19 09:40

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.50	J	1.0	0.010	mg/L			02/14/19 16:31	1
Sulfate	2200	B	500	3.0	mg/L			02/15/19 12:11	100
Chloride	640		150	10	mg/L			02/15/19 11:55	50

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0044	B	0.0030	0.00080	mg/L		02/13/19 15:36	02/18/19 17:23	1
Arsenic	0.045		0.0050	0.00040	mg/L		02/13/19 15:36	02/15/19 17:49	1
Barium	0.048	J	0.20	0.00010	mg/L		02/13/19 15:36	02/15/19 17:49	1
Beryllium	0.00011	J	0.0040	0.00010	mg/L		02/13/19 15:36	02/15/19 17:49	1
Boron	5000	U	5000	180	mg/L		02/19/19 10:08	02/20/19 15:59	5000
Cadmium	0.00030	J	0.0050	0.00010	mg/L		02/13/19 15:36	02/15/19 17:49	1
Calcium	590		1.0	0.053	mg/L		02/13/19 15:36	02/15/19 17:49	1
Chromium	0.0050	U	0.0050	0.00050	mg/L		02/13/19 15:36	02/15/19 17:49	1
Cobalt	0.00043	J	0.0050	0.00010	mg/L		02/13/19 15:36	02/15/19 17:49	1
Lead	0.00029	J B	0.0050	0.00010	mg/L		02/13/19 15:36	02/15/19 17:49	1
Lithium	0.042		0.040	0.0030	mg/L		02/13/19 15:36	02/15/19 17:49	1
Molybdenum	3.7		0.010	0.0010	mg/L		02/13/19 15:36	02/15/19 17:49	1
Selenium	0.13		0.010	0.00030	mg/L		02/13/19 15:36	02/18/19 17:23	1
Thallium	0.0020	U	0.0020	0.00080	mg/L		02/13/19 15:36	02/15/19 17:49	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00050		0.00020	0.00010	mg/L		02/15/19 10:11	02/18/19 12:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5100		1.0	0.28	mg/L			02/14/19 12:50	1

ATTACHMENT C

July 2019 FGD Sludge Laboratory Analytical Report



AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

02004
502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

Report ID : 40143	Company: SEP - Flint Creek (TW)	Address: 502 North Allen Avenue
Date Received: 07/18/2019	Contact: Terry Wehling	Shreveport, LA 71101
	Phone: (318) 673-2721	Fax: (318) 673-3960
AEP Sample ID : 227040	Collected Date: 07/17/2019	By: RF
Cust Sample ID: Dirt/Sludge	Location: H.W. Pirkey Power Plant	Matrix: Solid
Sample Desc.: Pirkey Sludge FGD Total		

Metals (227040)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Aluminum	20500	mg/Kg	12.5	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Antimony	0.993	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Arsenic	28.3	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Barium	142	mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Beryllium	2.12	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Boron	845	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:18	M4	JDB
Cadmium	1.68	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Calcium	77500	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Chromium	30.6	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Cobalt	24.8	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Copper	30.2	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Dry Weight, Percent	94.7	%	0.001	1		07/22/2019 15:30	T5	JDB
Iron	36300	mg/Kg	12.5	1:2500	EPA 6010B 1996	07/26/2019 0:18	M4	JDB
Lead	5.31	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Lithium	11.5	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47	T5	JDB
Magnesium	7150	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Manganese	498	mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Mercury	0.653	mg/Kg	0.000025	1	EPA 7471B 1998	07/24/2019 14:37		LNLM
Molybdenum	8.45	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Nickel	28.8	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Potassium	1370	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Selenium	36.4	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Silver	0.208	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB
Sodium	1230	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Strontium	382	mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:18		JDB
Thallium	0.503	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB

The results apply only to the samples as received in the laboratory. The analyses used to obtain the results meet NELAC requirement, if applicable. No part of this work may be altered in any form or by any means - graphic, electronic, or mechanical, including photocopying, recording, taping, or information and retrieval systems - without written permission of AEPAnalytical Chemistry Services.



AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

02004
502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960						
Tin	1.28 mg/Kg	0.2	1:50	EPA 6010B 1996	07/26/2019 0:47	T5	JDB	
Titanium	1360 mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:18	M4	JDB	
Vanadium	77.5 mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB	
Zinc	26 mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 0:47		JDB	
Waste Characterization (227040)								
Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
pH, Soil	8.44	pH		1	EPA 9045D 2002	07/25/2019 12:30		GB

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Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960
AEP Sample ID : 227041 Cust Sample ID: Dirt/Sludge Sample Desc.: Pirkey Sludge FGD SPLP	Collected Date: 07/17/2019 Location: H.W. Pirkey Power Plant	By: RF Matrix: Solid

SPLP (227041)								
Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Aluminum	14.2	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Antimony	0.018	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Arsenic	0.015	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Barium	3.46	mg/L	0.05	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Beryllium	0.012	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Boron	22.3	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Cadmium	0.002	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Calcium	2090	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Chromium	0.005	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Cobalt	0.051	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Copper	0.009	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Iron	52.4	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Lead	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Lithium	0.146	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Magnesium	62.3	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Manganese	2.83	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Mercury	0.002272	mg/L	0.000025	1	EPA 7470A 1994	07/24/2019 14:05		LNLM
Molybdenum	0.229	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Nickel	0.054	mg/L	0.025	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Potassium	9.61	mg/L	0.01	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Selenium	0.93	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Silver	< 0.001	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Sodium	35.6	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Strontium	12.7	mg/L	0.05	1:50	EPA 1312/6010B 1996	07/25/2019 20:58		JDB
Thallium	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB
Tin	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09		JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

02004
502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960				
Titanium	0.041 mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09	JDB
Vanadium	0.269 mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:09	JDB
Zinc	0.299 mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:09	JDB

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Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960
AEP Sample ID : 227042 Cust Sample ID: Dirt/Sludge Sample Desc.: Pirkey Sludge FGD 7 Day Leachate	Collected Date: 07/17/2019 Location: H.W. Pirkey Power Plant	By: RF Matrix: Solid

7-Day Leachate (227042)								
Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Aluminum	0.563	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Antimony	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Arsenic	0.011	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Barium	0.134	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Beryllium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Boron	8.44	mg/L	0.5	1:50	EPA 6010B 1996	08/04/2019 17:43		JDB
Cadmium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Calcium	252	mg/L	0.5	1:50	EPA 6010B 1996	08/04/2019 17:43		JDB
Chromium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Cobalt	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Copper	0.002	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Iron	0.211	mg/L	0.01	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Lead	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Lithium	0.069	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Magnesium	6.73	mg/L	0.01	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Manganese	0.008	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Mercury	< 0.005	mg/L	0.005	1:200	EPA 7470A 1994	07/30/2019 10:19		LNLM
Molybdenum	0.18	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Nickel	< 0.025	mg/L	0.025	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Potassium	4.82	mg/L	0.01	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Selenium	0.208	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Silver	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Sodium	19.8	mg/L	0.5	1:50	EPA 6010B 1996	08/04/2019 17:43		JDB
Strontium	1.6	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Thallium	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB
Tin	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35		JDB

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Analysis Report

02004
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Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

Report ID : 40143	Company: SEP - Flint Creek (TW)			Address: 502 North Allen Avenue			
Date Received: 07/18/2019	Contact: Terry Wehling			Shreveport, LA 71101			
	Phone: (318) 673-2721			Fax: (318) 673-3960			
Titanium	0.015	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35	JDB
Vanadium	0.03	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:35	JDB
Zinc	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:35	JDB

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Analysis Report

02004
502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
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Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960
AEP Sample ID : 227043 Cust Sample ID: Dirt/Sludge 2 Sample Desc.: Pirkey Sludge FGD 2 Total	Collected Date: 07/17/2019 Location: H.W. Pirkey Power Plant	By: RF Matrix: Solid

Metals (227043)								
Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Aluminum	19600	mg/Kg	12.5	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Antimony	0.919	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Arsenic	22.8	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Barium	121	mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Beryllium	1.66	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Boron	891	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:25	T5	JDB
Cadmium	1.37	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Calcium	84500	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Chromium	28.5	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Cobalt	20.3	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Copper	26.9	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Dry Weight, Percent	97.2	%	0.001	1		07/22/2019 15:30	T5	JDB
Iron	28800	mg/Kg	12.5	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Lead	5.78	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Lithium	12	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26	T5	JDB
Magnesium	7070	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Manganese	388	mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Mercury	0.606	mg/Kg	0.000025	1	EPA 7471B 1998	07/24/2019 14:27		LNLM
Molybdenum	11	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Nickel	25.7	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Potassium	1460	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Selenium	30.4	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Silver	0.19	mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB
Sodium	1780	mg/Kg	25	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Strontium	451	mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB
Thallium	0.562	mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB

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Analysis Report

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Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960						
Tin	1.06 mg/Kg	0.2	1:50	EPA 6010B 1996	07/26/2019 1:26	T5	JDB	
Titanium	1280 mg/Kg	2.5	1:2500	EPA 6010B 1996	07/26/2019 0:25		JDB	
Vanadium	68.3 mg/Kg	0.05	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB	
Zinc	33.8 mg/Kg	0.25	1:50	EPA 6010B 1996	07/26/2019 1:26		JDB	
Waste Characterization (227043)								
Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
pH, Soil	8.71	pH		1	EPA 9045D 2002	07/25/2019 12:30		GB

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AEP Sample ID : 227044 Cust Sample ID: Dirt/Sludge 2 Sample Desc.: Pirkey Sludge FGD 2 SPLP	Collected Date: 07/17/2019 Location: H.W. Pirkey Power Plant	By: RF Matrix: Solid

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Aluminum	10.5	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Antimony	0.017	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Arsenic	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Barium	2.57	mg/L	0.05	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Beryllium	0.009	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Boron	26.7	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Cadmium	0.002	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Calcium	1960	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Chromium	0.004	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Cobalt	0.051	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Copper	0.003	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Iron	47.7	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Lead	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Lithium	0.136	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Magnesium	70.2	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Manganese	2.87	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Mercury	< 0.000025	mg/L	0.000025	1	EPA 7470A 1994	07/24/2019 14:21		LNLM
Molybdenum	0.288	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Nickel	0.071	mg/L	0.025	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Potassium	11.4	mg/L	0.01	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Selenium	0.775	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Silver	< 0.001	mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Sodium	56.7	mg/L	0.5	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Strontium	13.2	mg/L	0.05	1:50	EPA 1312/6010B 1996	07/25/2019 21:06		JDB
Thallium	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB
Tin	< 0.005	mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55		JDB

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Report ID : 40143 Date Received: 07/18/2019	Company: SEP - Flint Creek (TW) Contact: Terry Wehling Phone: (318) 673-2721	Address: 502 North Allen Avenue Shreveport, LA 71101 Fax: (318) 673-3960				
Titanium	0.037 mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55	JDB
Vanadium	0.194 mg/L	0.001	1	EPA 1312/6010B 1996	07/25/2019 23:55	JDB
Zinc	0.338 mg/L	0.005	1	EPA 1312/6010B 1996	07/25/2019 23:55	JDB

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AEP Sample ID : 227045 Cust Sample ID: Dirt/Sludge 2 Sample Desc.: Pirkey Sludge FGD 2 7 Day Leachate	Collected Date: 07/17/2019 Location: H.W. Pirkey Power Plant	By: RF Matrix: Solid

7-Day Leachate (227045)								
Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Aluminum	0.994	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Antimony	0.006	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Arsenic	0.031	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Barium	0.121	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Beryllium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Boron	16.4	mg/L	0.5	1:50	EPA 6010B 1996	08/04/2019 17:53		JDB
Cadmium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Calcium	633	mg/L	0.5	1:50	EPA 6010B 1996	08/04/2019 17:53		JDB
Chromium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Cobalt	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Copper	0.003	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Iron	0.225	mg/L	0.01	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Lead	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Lithium	0.1	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Magnesium	9.54	mg/L	0.01	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Manganese	0.015	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Mercury	< 0.005	mg/L	0.005	1:200	EPA 7470A 1994	07/30/2019 10:36		LNLM
Molybdenum	0.448	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Nickel	< 0.025	mg/L	0.025	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Potassium	9.02	mg/L	0.01	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Selenium	0.201	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Silver	< 0.001	mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Sodium	48.3	mg/L	0.5	1:50	EPA 6010B 1996	08/04/2019 17:53		JDB
Strontium	3.79	mg/L	0.05	1:50	EPA 6010B 1996	08/04/2019 17:53		JDB
Thallium	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB
Tin	< 0.005	mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45		JDB

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Titanium	0.02 mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45	JDB
Vanadium	0.087 mg/L	0.001	1	EPA 6010B 1996	08/04/2019 19:45	JDB
Zinc	< 0.005 mg/L	0.005	1	EPA 6010B 1996	08/04/2019 19:45	JDB

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Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
7/25/2019	Aluminum	226939.1	<0.005	2	2.0229733	101.1	2	2.071639	103.6		0.4	JDB
7/25/2019	Aluminum	227041.1	<0.005	2	2.0229733	101.1	2	2.2242	111.2		0.0	JDB
7/26/2019	Aluminum	227040.1	<12.5	2	2.0358232	101.8	100	132.38333	132.4		1.2	JDB
7/25/2019	Antimony	226939.1	<0.005	0.8	0.8092462	101.2	0.8	0.8159776	102.0		0.2	JDB
7/25/2019	Antimony	227041.1	<0.005	0.8	0.8092462	101.2	0.8	0.7671843	95.9		0.5	JDB
7/26/2019	Antimony	227040.1	<0.25	0.8	0.8071122	100.9	40	32.643192	81.6		1.8	JDB
7/25/2019	Arsenic	227041.1	<0.005	0.8	0.8086795	101.1	0.8	0.7758421	97.0		0.0	JDB
7/25/2019	Arsenic	226939.1	<0.005	0.8	0.8086795	101.1	0.8	0.8086275	101.1		0.1	JDB
7/26/2019	Arsenic	226915.1	<0.25	0.8	0.7906797	98.8	40	40.306278	100.8		0.8	JDB
7/26/2019	Arsenic	227040.1	<0.25	0.8	0.7940238	99.3	40	34.433917	86.1		2.3	JDB
7/25/2019	Barium	226939.1	<0.001	0.2	0.2080557	104.0	0.2	0.209543	104.8		0.1	JDB
7/25/2019	Barium	227041.1	<0.05	0.2	0.2080557	104.0	0.2	0.1829767	91.5		0.4	JDB
7/26/2019	Barium	227040.1	<2.5	0.2	0.2112650	105.6	500	543.5715	108.7		7.2	JDB
7/25/2019	Beryllium	226939.1	<0.001	0.2	0.2122779	106.1	0.2	0.2142832	107.1		0.3	JDB
7/25/2019	Beryllium	227041.1	<0.001	0.2	0.2122779	106.1	0.2	0.1992329	99.6		0.4	JDB
7/26/2019	Beryllium	227040.1	<0.05	0.2	0.2131235	106.6	10	9.40679	94.1		0.2	JDB
7/25/2019	Boron	226939.1	<0.01	0.3	0.2995651	99.9	0.3	0.2984183	99.5		0.7	JDB
7/25/2019	Boron	227041.1	<0.5	0.3	0.2995651	99.9	0.3	0.2855333	95.2		0.5	JDB
7/25/2019	Cadmium	227041.1	<0.001	0.2	0.2069934	103.5	0.2	0.1836838	91.8		0.6	JDB
7/25/2019	Cadmium	226939.1	<0.001	0.2	0.2069934	103.5	0.2	0.2061243	103.1		0.5	JDB
7/26/2019	Cadmium	226915.1	<0.05	0.2	0.1973571	98.7	10	10.058007	100.6		1.8	JDB
7/26/2019	Cadmium	227040.1	<0.05	0.2	0.2013293	100.7	10	8.0453767	80.5		1.6	JDB
7/25/2019	Calcium	226939.1	<0.01	1	1.0087505	100.9	1	1.0243667	102.4		0.9	JDB
7/26/2019	Calcium	227040.1	<25	1	0.8616568	86.2	50	113.63333	227.3		0.8	JDB
7/25/2019	Chromium	226939.1	<0.001	0.4	0.4116387	102.9	0.4	0.4125529	103.1		0.4	JDB
7/25/2019	Chromium	227041.1	<0.001	0.4	0.4116387	102.9	0.4	0.3867339	96.7		0.3	JDB
7/26/2019	Chromium	227040.1	<0.05	0.4	0.40798	102.0	20	17.692233	88.5		1.6	JDB
7/26/2019	Chromium	226915.1	<0.05	0.4	0.4059509	101.5	20	20.758823	103.8		0.8	JDB
7/25/2019	Cobalt	227041.1	<0.005	0.2	0.2043482	102.2	0.2	0.1839347	92.0		0.4	JDB
7/25/2019	Cobalt	226939.1	<0.005	0.2	0.2043482	102.2	0.2	0.2054714	102.7		0.4	JDB
7/26/2019	Cobalt	227040.1	<0.05	0.2	0.2032547	101.6	10	7.7614833	77.6		1.8	JDB
7/25/2019	Copper	227041.1	<0.001	0.3	0.3066399	102.2	0.3	0.2963301	98.8		0.1	JDB

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		Phone: (318) 673-2721				Fax: (318) 673-3960						
7/25/2019	Sodium	227041.1	<0.5	3	3.1384831	104.6	3	2.3746333	79.2		0.0	JDB
7/25/2019	Sodium	226939.1	<0.01	3	3.1384831	104.6	3	2.4693667	82.3		0.1	JDB
7/26/2019	Sodium	227040.1	<25	3	3.1256605	104.2	150	120.525	80.4		1.9	JDB
7/25/2019	Strontium	226939.1	<0.001	0.2	0.2059899	103.0	0.2	0.2081687	104.1		0.4	JDB
7/26/2019	Strontium	227040.1	<2.5	0.2	0.2078256	103.9	500	577.76733	115.6		17.9	JDB
7/25/2019	Thallium	227041.1	<0.005	0.4	0.4152040	103.8	0.4	0.3682771	92.1		1.2	JDB
7/25/2019	Thallium	226939.1	<0.005	0.4	0.4152040	103.8	0.4	0.4171124	104.3		0.0	JDB
7/26/2019	Thallium	227040.1	<0.25	0.4	0.4155052	103.9	20	15.947380	79.7		1.2	JDB
7/25/2019	Tin	226939.1	<0.005	0.7	0.6995446	99.9	0.7	0.6930628	99.0		0.2	JDB
7/25/2019	Tin	227041.1	<0.005	0.7	0.6995446	99.9	0.7	0.644164	92.0		0.2	JDB
7/26/2019	Tin	227040.1	<0.2	0.7	0.6896072	98.5	35	28.438362	81.3		0.8	JDB
7/25/2019	Titanium	227041.1	<0.005	0.2	0.2109341	105.5	0.2	0.2098874	104.9		0.2	JDB
7/25/2019	Titanium	226939.1	<0.005	0.2	0.2109341	105.5	0.2	0.2124567	106.2		0.1	JDB
7/26/2019	Titanium	227040.1	<2.5	0.2	0.2121079	106.1					1.6	JDB
7/25/2019	Vanadium	226939.1	<0.001	0.3	0.3076519	102.6	0.3	0.3104754	103.5		0.4	JDB
7/25/2019	Vanadium	227041.1	<0.001	0.3	0.3076519	102.6	0.3	0.2997157	99.9		0.6	JDB
7/26/2019	Vanadium	227040.1	<0.05	0.3	0.30789	102.6	15	15.291667	101.9		0.0	JDB
7/25/2019	Zinc	226939.1	<0.005	0.2	0.2091679	104.6	0.2	0.2081374	104.1		0.3	JDB
7/25/2019	Zinc	227041.1	<0.005	0.2	0.2091679	104.6	0.2	0.1851907	92.6		0.1	JDB
7/26/2019	Zinc	227040.1	<0.25	0.2	0.2074233	103.7	10	8.4881167	84.9		0.5	JDB

Code Code Description

- M4 The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The associated blank spike recovery was acceptable.
- T5 This parameter is not included in the Laboratory's LELAP Laboratory Scope of Accreditation.

Jonathan Bannhill
Quality Assurance Officer

05-Aug-19
Report Date

The results apply only to the samples as received in the laboratory. The analyses used to obtain the results meet NELAC requirement, if applicable. No part of this work may be altered in any form or by any means - graphic, electronic, or mechanical, including photocopying, recording, taping, or information and retrieval systems - without written permission of AEPAnalytical Chemistry Services.

JOB 7-18-19

Figure 1 – Chain of Custody

American Electric Power
Analytical Chemistry Services

CHAIN OF CUSTODY

COC 40143

OPCC/PROJECT NAME H.W Pirkey Power Plant				FAX NO. (903) 927-5840				ANALYSIS REQUESTED <i>Total Metals (Cobalt, metals) SPLP Deionized water/leach PH</i>				Metals to analyze for each (Totals SPLP, Deionized) Bi, Ca, Sb, Ag, Ba, Be, Cd, Cr Co, Pb, Li, Hg, Mn, Se, Te and any other metals in calibration.	
CONTACT PERSON (Please Print) Ron Franklin, Randy Rountree, Ben House				PHONE NO. (903) 927-5889									
SAMPLE SIGNATURE <i>Ron Franklin</i>				CG	OR	NUMBER	OF	CONTAINERS				Lab	REMARKS
DATE	TIME	SAMPLE SOURCE & DESCRIPTION	SAMPLE ID	M	A	P	B					Number	
7-17-19	1800	Pirkey Sludge FGD	Dirt Sludge	✓				✓	✓	✓	✓	27040-42	Terry Wehling
"	"	"	"	✓				✓	✓	✓	✓	27043-45	
RELINQUISHED BY (SIGN)				DATE/TIME		RECEIVED BY		RELINQUISHED BY (SIGN)		DATE/TIME		RECEIVED BY	
RELINQUISHED BY (SIGN)				DATE/TIME		RECEIVED BY		RELINQUISHED BY (SIGN)		DATE/TIME		RECEIVED BY	
RECEIVED FOR LABORATORY <i>Jonathan Bannill 7-18-19 1036</i>								COMMENTS					



SHREVEPORT CHEMICAL LABORATORY

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

PROJECT RECEIPT FORM

Container Type Ice Chest <input type="checkbox"/> <u>Bag</u> <input type="checkbox"/> Action Pak <input type="checkbox"/> PCB Mailer <input type="checkbox"/> Bottle <input type="checkbox"/> Other _____				Delivery Type UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> US Mail <input type="checkbox"/> <u>Walk in</u> <input type="checkbox"/> Shuttle <input type="checkbox"/> Other _____			
				Tracking # _____			

Client Terry Wehling
 Received By JOB
 Received Date 7-18-19
 Open Date 7-18-19

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

Container Temp Read NA
Thermometer Serial #F04103
 Correction Factor _____
 Corrected Temp _____

Project I.D. _____
 Were samples received on ice? YES NO

- Did container arrive in good condition? YES NO _____
- Was sample documentation received? YES NO _____
- Was documentation filled out properly? YES NO _____
- Were samples labeled properly? YES NO _____
- Were correct containers used? YES NO _____
- Were the pH's of samples appropriately checked? YES NO _____
- Total number of sample containers 2 _____

Was any corrective action taken? NO YES
 Person Contacted _____
 Date & Time _____

Comments _____

ATTACHMENT D

January 2022 Verification Sampling Laboratory Analytical Report



Water Analysis Report

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

Job ID: 220297

Customer: Pirkey Power Station

Date Reported: 02/15/2022

Customer Sample ID: AD-23

Customer Description:

Lab Number: 220297-001

Preparation:

Date Collected: 01/26/2022 08:53

Date Received: 01/28/2022 11:30

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.040	mg/L	1	0.050	0.009	J1	GES	02/01/2022 15:20	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-34

Customer Description:

Lab Number: 220297-002

Preparation:

Date Collected: 01/26/2022 09:35

Date Received: 01/28/2022 11:30

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Calcium	42.6	mg/L	1	0.05	0.02		GES	02/01/2022 15:25	EPA 200.8-1994, Rev. 5.4

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1720	mg/L	1	50	20	S7	SDW	01/31/2022 12:18	SM 2540C-2011



Water Analysis Report

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

Job ID: 220297

Customer: Pirkey Power Station

Date Reported: 02/15/2022

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

S7 - Sample did not achieve constant weight.

ATTACHMENT E
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 Pirkey Landfill CCR management area and that the requirements of 30 TAC §352.941(c)(2) 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
License Number

Texas
Licensing State

7/18/2022
Date

APPENDIX 4- Field Reports

Facility Name	Pinkney
Sample by	Matt Hamilton

Depth to water, feet (TOC)	30.10
Measured Total Depth, feet (TOC)	38.20

Sample Location ID	AD-23
--------------------	-------

Depth to water date	1-26-22
---------------------	---------

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)		
833	30.33	220	4.31	195	30.2	6.23	219	17.24		
838	30.33	220	4.16	143	78.9	4.12	248	17.35		
843	30.34	220	4.15	116	25	3.85	257	17.30		
848	30.34	220	4.14	116	24	3.62	259	17.29		
853	30.34	220	4.13	117	25	3.53	261	17.28		

Total volume purged	
Sample appearance	clear
Sample time	853
Sample date	1-26-22

AD-36-8.35

Facility Name	
Sample by	Pirkey Matt Hamilton

Sample Location ID	AD-34
--------------------	-------

Depth to water, feet (TOC)	
Measured Total Depth, feet (TOC)	TOC 26.05

Depth to water date	1-26-22
---------------------	---------

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)		
918	0.51	120	3.54	1680						
923	0.60	120	3.49	1690	23.20	5.55	580	17.92		
928	0.67	120	3.45	1690	19.8	4.94	536	17.90		
933	0.72	120	3.40	1640	15.5	4.54	530	17.91		
					15.6	4.46	528	18.16		

Total volume purged	
Sample appearance	clear
Sample time	935
Sample date	1-26-22

CCR Groundwater Monitoring Well Inspection Form

Facility: Pirkey

Sampling Period: June 2022

Sampling Contractor: Eagle

Signature: [Signature]

Well No.	Well Locked	Fastener and Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Protective Cover, Barriers and Pad in Good Shape	Well Properly Labeled	Well Cap Present and Vented*	Comments
								<u>All wells</u> <u>no fill</u> <u>no weep hole</u> <u>no inside label</u>
AD-12	S	S	S	S	S	U	S	labeled as MW-12
AD-32	S	S	S	S	S	S	S	
AD-37	S	S	S	S	S	S	S	
AD-30	S	S	S	S	S	S	S	
B-2	U	U	U	U	S	U	S	- no lock - access not maintained - no label
AD-28	S	S	S	S	S	S	S	
AD-17	S	S	S	S	S	S	S	- needs needletting to see pad
AD-3	S	S	S	S	S	S	S	
AD-26	S	S	S	S	S	S	S	- needs new lock
AD-25	S	S	S	S	S	S	S	
AD-23	S	S	S	S	S	S	S	
AD-27	S	S	S	S	S	S	S	

*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: APP PIANM PP

Sampling Period: JUNE 2022

Sampling Contractor: EAGLE ENVIRONMENTAL

Signature: [Signature]

Well No.	Well Locked	Fastener and Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Protective Cover, Barriers and Pad in Good Shape	Well Properly Labeled	Well Cap Present and Vented*	Comments
AD-13	S	S	S	S	U	U	U	NO WEEP HOLE, NO GRANULAR FILL, WELL LABELED MW-13, CAP NOT VENTED
AD-22	S	S	S	S	U	U	U	NO WEEP HOLE, NO GRANULAR FILL, CAP NOT VENTED, NOT LABELED INSIDE
AD-33	S	S	S	U	U	U	U	NOT WEEP PATTED, NO WEEP HOLE, NO GRANULAR FILL, CAP NOT VENTED, NOT LABELED INSIDE
AD-7R	S	S	S	S	U	U	U	NOT LABELED INSIDE OR OUTSIDE, NO WEEP HOLE, CAP NOT VENTED, NO GRANULAR FILL
AD-2	S	S	S	S	U	U	U	NO WEEP HOLE, NO GRANULAR FILL, CAP NOT VENTED, LABELED AS MW-2, NOT LABELED INSIDE
AD-7	S	S	S	S	U	U	U	
AD-4	U	U	U	U	U	U	U	NO LOCK, NOT WEEP PATTED, NO GOOD WAY TO GET TO WELL
AD-18	S	S	S	U	U	U	U	OVERGROWN DOWN TREE IN WAY, NOT LABELED INSIDE, NO WEEP HOLE, CAP NOT VENTED, NO FILL
B-3	U	U	U	U	U	U	U	NO LOCK NO LABEL INSIDE OR OUTSIDE, NO WEEP HOLE, NO VENT, NO GRANULAR FILL
AD-16	S	S	S	U	U	U	U	OVERGROWN TRAIL, WELL OVERGROWN, NO WEEP HOLE, NO INTERNAL LABEL, CAP NOT VENTED
AD-34	S	S	S	S	U	U	U	HINGE BROKEN WHEN NOT SECURED, NOT LABELED INSIDE, NO GRANULAR FILL, NO WEEP
AD-36	S	S	S	S	U	U	U	NOT LABELED INSIDE, NO GRANULAR FILL, CAP NOT VENTED, NO WEEP
AD-8	S	S	S	S	U	U	U	LABELED AS MW-8, NO WEEP, CAP NOT VENTED

*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	Asp PIANO PP
Sample by	KERRY McDEAN cd

Sample Location ID	A0-02
--------------------	-------

Depth to water, feet (TOC)	16.97
Measured Total Depth, feet (TOC)	40.36

Depth to water date	06/21/22
---------------------	----------

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	17.01	200	7.02	668	16.5	8.31	475	23.82		
0837	17.13	200	4.00	674	1.8	5.00	475	23.16		
0842	17.21	200	3.96	675	0.0	4.47	475	23.04		
0847	17.28	200	3.96	677	0.0	4.42	476	22.92		

Total volume purged	
Sample appearance	clear
Sample time	0849
Sample date	06/21/22

Facility Name
Sample by

Pirkey
Matt Hamill

Sample Location ID

AD-3

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

33.08
57.41

Depth to water date

6-21-22

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)		
1106	33.51	220	4.38	92	41.3	1.88	274	31.70		
1111	33.68	220	4.40	90	10.8	1.04	275	25.50		
1116	33.77	220	4.39	90	9.2	1.02	275	24.62		
1121	33.85	220	4.38	90	9.2	1.00	276	24.51		

Total volume purged
Sample appearance
Sample time
Sample date

Clear
1123
6-21-22

Facility Name	ASP Pinnon PP
Sample by	Kerry McDonald

Sample Location ID	A0-4
--------------------	------

Depth to water, feet (TOC)	15.48
Measured Total Depth, feet (TOC)	47.29

Depth to water date	06/21/22
---------------------	----------

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)		
1017	15.81	160	4.27	127	228	8.21	329	24.82		
1022	15.86	160	4.36	113	216	3.17	341	24.63		
1027	15.93	160	4.39	110	201	3.06	355	24.57		
1032	15.99	160	4.40	108	204	3.02	357	24.51		

Total volume purged	
Sample appearance	CLEAR
Sample time	10:34
Sample date	06/21/22

Facility Name	NEP PINTON PD
Sample by	KIMM McDONALD

Sample Location ID	AD-7
--------------------	------

Depth to water, feet (TOC)	17.44
Measured Total Depth, feet (TOC)	41.98

Depth to water date	06/21/22
---------------------	----------

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)		
0930	18.02	150	3.55	410	20.6	9.79	472	26.83		
0935	18.11	150	3.54	406	5.9	2.80	472	26.42		
0940	18.19	150	3.54	397	2.6	2.71	472	26.11		
0945	18.25	150	3.52	399	0.0	2.63	467	25.99		

Total volume purged	
Sample appearance	CLM
Sample time	0947
Sample date	06/21/22

Facility Name	AEP PinnacPP
Sample by	Kerry McDonald

Sample Location ID	AD-7R
--------------------	-------

Depth to water, feet (TOC)	10.95
Measured Total Depth, feet (TOC)	33.03

Depth to water date	06/20/22
---------------------	----------

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)		
1107	11.01	120	4.56	210	4.1	10.21	383	28.27		
1109	11.02	120	4.59	211	0.0	3.21	360	26.97		
1114	11.05	120	4.58	212	0.0	3.19	351	26.52		
1119	11.10	120	4.57	213	0.0	3.12	346	26.25		

Total volume purged	
Sample appearance	Clear
Sample time	1121
Sample date	06/20/22

Facility Name	AEP PIAHOT PP
Sample by	Kerry McDonald

Sample Location ID	A-D-8
--------------------	-------

Depth to water, feet (TOC)	13.57
Measured Total Depth, feet (TOC)	31.33

Depth to water date	06/22/22
---------------------	----------

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)		
1154	13.82	160	5.25	334	26.0	9.45	350	27.41		
1159	13.87	160	5.16	335	13.1	2.47	346	26.46		
1204	13.88	160	5.03	337	6.8	2.22	350	26.28		
1209	13.89	160	5.00	337	4.8	2.19	352	26.19		
1214	13.88	160	5.01	337	5.2	2.17	354	26.13		

Total volume purged	
Sample appearance	Clear
Sample time	1216
Sample date	06/22/22

Facility Name	Piskey
Sample by	Matt Hamilton

Sample Location ID	AD-12
--------------------	-------

Depth to water, feet (TOC)	21.44
Measured Total Depth, feet (TOC)	52.00

Depth to water date	6-20-22
---------------------	---------

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)
840	21.67	300	4.61	123	0	3.71	254	27.28
845	21.78	300	4.30	57	0	1.63	242	24.73
850	21.90	300	4.25	56	0	1.48	300	24.58

Total volume purged	
Sample appearance	clear
Sample time	852
Sample date	6-20-22

Facility Name	ALP PIRANON PD
Sample by	KERRY McDONALD

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

Depth to water, feet (TOC)	15.01
Measured Total Depth, feet (TOC)	40.70

Depth to water date	06/20/22
---------------------	----------

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)		
0821	15.22	170	5.79	539	556	12.75	-33	24.29		
0826	15.28	170	5.71	537	321	6.37	-22	24.31		
0831	15.37	170	5.68	536	337	6.30	-8	24.02		
0836	15.48	170	5.68	535	306	5.97	-10	24.07		
0841	15.55	170	5.68	533	298	5.91	-18	24.08		

Total volume purged	
Sample appearance	BROWN
Sample time	0843
Sample date	06/20/22

COMPLETE DUPLICATE - 1400

Facility Name	APP VIMAWY PP
Sample by	Kenny A. DeAcid

Sample Location ID	AD-16
--------------------	-------

Depth to water, feet (TOC)	17.64
Measured Total Depth, feet (TOC)	38.24

Depth to water date	06/22/22
---------------------	----------

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)		
0948	18.01	210	4.57	131	35.5	3.87	421	23.87		
0953	18.09	210	4.54	136	28.6	1.97	419	23.91		
0958	18.13	210	4.51	136	27.1	2.03	419	23.94		
1002	18.17	210	4.51	136	26.9	2.11	414	23.97		

Total volume purged	
Sample appearance	CLEAR
Sample time	1005
Sample date	06/22/22

Facility Name	Pillay
Sample by	M. J. Hamill

Sample Location ID	AD-17
--------------------	-------

Depth to water, feet (TOC)	22.61
Measured Total Depth, feet (TOC)	23.05

Depth to water date	6-21-22
---------------------	---------

Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S/cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
1023	22.76	200	3.75	146	6.7	3.24	360	26.48		
1028	22.76	200	3.35	147	7.8	1.07	328	23.42		
1033	22.76	200	3.32	145	4.8	0.95	321	23.22		
1038	22.76	200	3.20	145	2.2	0.85	316	23.01		

Total volume purged	
Sample appearance	clear
Sample time	1040
Sample date	6-21-22

Facility Name	REP PIRMM PP
Sample by	KENNY McDONALD

Sample Location ID	AD-18
--------------------	-------

Depth to water, feet (TOC)	7.91
Measured Total Depth, feet (TOC)	28.42

Depth to water date	06/21/22
---------------------	----------

Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
1108	8.37	102	4.83	58	56.4	5.28	365	25.12		
1113	9.41	102	4.61	51	18.2	3.79	374	24.68		

Total volume purged	
Sample appearance	CLEAR
Sample time	0817
Sample date	06/22/22

Facility Name	APP P11001 PP
Sample by	Kerry McDermid

Sample Location ID	R0-22
--------------------	-------

Depth to water, feet (TOC)	13.02
Measured Total Depth, feet (TOC)	32.70

Depth to water date	06/20/22
---------------------	----------

Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0936	13.22	164	4.80	766	13.0	8.21	274	27.21		
0941	13.29	164	4.57	778	5.5	3.63	290	26.69		
0946	13.31	164	4.54	787	5.1	3.59	277	26.75		
0951	13.36	164	4.51	791	4.6	3.52	274	26.71		

Total volume purged	
Sample appearance	CLM
Sample time	0953
Sample date	06/20/22

Facility Name	
Sample by	Pirkey Matt Hamilton

Sample Location ID	AD-23
--------------------	-------

Depth to water, feet (TOC)	30.23
Measured Total Depth, feet (TOC)	38.20

Depth to water date	6-22-22
---------------------	---------

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
1050	30.45	220	3.56	237	96.2	2.33	260	31.16		
1055	30.50	220	3.58	14	85.7	1.93	269	26.41		
1100	30.52	220	2.59	87	55.7	1.78	280	26.04		
1105	30.53	220	3.51	79	36.8	1.66	284	25.94		
1110	30.53	220	3.62	77	32.2	1.61	287	25.89		
1115	30.53	220	3.62	76	32.6	1.57	288	25.85		

Total volume purged	
Sample appearance	white/cloudy
Sample time	1117
Sample date	6-22-22

Facility Name	Pinkney
Sample by	Mitt Hamilton

Sample Location ID	AD-25
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Depth to water, feet (TOC)	9.72
Measured Total Depth, feet (TOC)	27.38

Depth to water date	6-22-23
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
955	9.91	120	3.81	867	54.0	1.45	218	29.00		
1000	9.98	120	3.83	834	32.3	0.38	208	28.12		
1005	10.06	120	3.77	849	10.1	0.29	209	28.15		
1010	10.14	120	3.75	856	9.9	0.22	210	28.17		

Total volume purged	
Sample appearance	Clear
Sample time	1012
Sample date	6-22-23

Facility Name	Pirley	
Sample by	Matt Hamilton	
Depth to water, feet (TOC)	15.28	
Measured Total Depth, feet (TOC)	42.71	

Sample Location ID	AD-26
Depth to water date	6-22-22

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)		
857	15.61	300	3.41	2,050	51.40	1.61	261	27.41		
902	15.76	300	3.34	2,110	59.30	2.41	248	25.10		
907	15.85	300	3.23	2,110	50.0	3.27	249	24.91		
912	15.99	300	3.24	2,110	28.20	4.01	245	24.82		
917	16.07	300	3.24	2,120	17.5	4.42	244	24.75		
922	16.15	300	3.25	2,120	17.8	4.53	243	24.70		

Total volume purged	
Sample appearance	clear
Sample time	924
Sample date	6-22-21

Facility Name	Piskey
Sample by	Matt Hamilton

Sample Location ID	AD-27
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Depth to water, feet (TOC)	22.52
Measured Total Depth, feet (TOC)	40.07

Depth to water date	6-22-22
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Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1140	22.67	300	3.37	221	8.7	2.01	312	31.84		
1145	22.81	300	3.33	224	17.6	0.60	324	28.55		
1150	22.90	300	3.30	230	5.9	0.43	332	27.17		
1155	22.97	300	3.30	232	5.8	0.39	335	27.02		

Total volume purged	
Sample appearance	clear
Sample time	1157
Sample date	6-22-22

Facility Name	Pirlov
Sample by	Matt / Hamilton

Sample Location ID	AD-28
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Depth to water, feet (TOC)	19.25
Measured Total Depth, feet (TOC)	38.59

Depth to water date	6-21-27
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
944	19.68	220	4.22	103	1	4.60	208	26.52		
949	19.68	22-	4.06	107	2.1	1.76	237	24.30		
954	19.74	220	4.00	108	1.3	1.63	245	24.01		

Total volume purged	
Sample appearance	Clear
Sample time	956
Sample date	6-21-27

Facility Name	P. McCoy
Sample by	Matt Hamilton

Sample Location ID	AD-3
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Depth to water, feet (TOC)	20.48
Measured Total Depth, feet (TOC)	27.15

Depth to water date	6-2-22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
11-7	20.46	220	4.15	495	48.8	1.69	296	22.09		
1112	20.91	220	4.23	518	57.1	0.97	294	27.38		
1117	21.00	220	4.20	520	13.1	0.97	297	26.28		
1122	21.00	220	4.17	521	3.2	0.85	300	26.00		
1129	21.01	220	4.15	522	3.1	0.81	301	25.99		

Total volume purged	
Sample appearance	clear
Sample time	1129
Sample date	6-2-22

Facility Name	P. McCoy
Sample by	Matt Hamilton

Sample Location ID	A11-31
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Depth to water, feet (TOC)	18.35
Measured Total Depth, feet (TOC)	37.32

Depth to water date	6-20-22
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Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
1021	18.71	220	3.51	308	79.4	1.96	311	29.33
1026	18.77	220	3.48	295	24.6	0.43	336	20.81
1031	18.75	220	3.47	296	14.3	0.34	256	25.57
1036	18.50	220	3.46	252	7.6	0.25	253	25.55
1041	18.81	220	3.45	290	7.5	0.28	317	25.51

Total volume purged	
Sample appearance	clear
Sample time	1043
Sample date	6-20-22

Facility Name	Pinkney
Sample by	Matt Hamilton

Sample Location ID	AD-32
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Depth to water, feet (TOC)	9.74
Measured Total Depth, feet (TOC)	34.69

Depth to water date	6-20-22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S}/\text{cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
925	11.71	220	3.31	415	82.6	1.14	351	26.89		
934	11.75	220	3.15	421	51.4	0.48	355	24.93		
936	11.85	220	3.06	410	31.3	0.38	383	24.59		
944	11.87	220	3.05	412	9.9	0.31	386	24.48		
949	11.88	220	3.09	413	9.8	0.30	387	24.45		

Total volume purged	
Sample appearance	clear
Sample time	9:51
Sample date	6-20-22

Facility Name	ADD PINKY PP
Sample by	KERRY McDONALD

Sample Location ID	AD-33
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Depth to water, feet (TOC)	14.02
Measured Total Depth, feet (TOC)	32.50

Depth to water date	06/20/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
1020	14.09	200	4.60	180	9.5	6.93	323	26.47		
1025	14.10	200	4.44	163	9.3	3.45	297	26.33		
1030	14.11	200	4.39	161	9.3	3.37	294	25.91		
1035	14.13	200	4.37	158	8.9	3.31	296	25.87		

Total volume purged	
Sample appearance	CL6AA
Sample time	1037
Sample date	06/20/22

Facility Name	APP PIANO
Sample by	KIMMIE McPHERSON

Sample Location ID	AD-34
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Depth to water, feet (TOC)	0.61
Measured Total Depth, feet (TOC)	26.05

Depth to water date	06/22/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
1031	1.01	120	3.76	1610	10.4	10.84	452	28.41		
1036	1.10	120	3.70	1650	0.0	2.99	434	27.72		
1041	1.14	120	3.66	1670	3.3	2.87	428	27.49		
1046	1.20	120	3.66	1670	5.6	2.79	423	27.48		

Total volume purged	
Sample appearance	Clear
Sample time	1048
Sample date	06/22/22

Duplicate - 3
1400

Facility Name	ABP Pinnac AP
Sample by	Kenny McDonald

Sample Location ID	A0-36
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Depth to water, feet (TOC)	7.71
Measured Total Depth, feet (TOC)	17.10

Depth to water date	06/22/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1113	7.83	146	4.03	63	62.7	2.87	354	29.71		
1118	7.85	146	4.53	64	24.1	1.87	353	29.64		
1123	7.89	146	4.55	64	11.4	1.42	350	29.63		
1128	7.89	146	4.58	64	10.9	1.37	349	29.72		
1133	7.92	146	4.58	63	11.2	1.32	347	29.78		

Total volume purged	
Sample appearance	CLAMM
Sample time	1135
Sample date	06/22/22

Facility Name	Pirkey
Sample by	Matt Hamilton

Sample Location ID	B-2
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Depth to water, feet (TOC)	24.40
Measured Total Depth, feet (TOC)	51.44

Depth to water date	6-21-22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S}/\text{cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
823	24.71	300	4.54	106	7.9	5.85	275	25.44		
828	24.78	300	4.52	103	0	4.51	251	22.51		
833	24.85	300	4.66	121	0	1.13	161	22.27		
838	24.90	300	4.68	125	0	1.07	158	22.19		

Total volume purged	
Sample appearance	clear
Sample time	54c
Sample date	6-21-22

Duplicate
1000

Facility Name	APR PUMPS PP
Sample by	KERRY MCDONALD

Sample Location ID	B-3
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Depth to water, feet (TOC)	16.24
Measured Total Depth, feet (TOC)	37.49

Depth to water date	06/21/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
1142	17.13	106	4.84	246	35.2	8.31	414	23.34		
1147	18.27	106	4.88	248	7.8	2.75	407	23.73		

WON'T HOLD WATER LEVEL

Total volume purged	
Sample appearance	CLWA
Sample time	0951
Sample date	06/22/22

Facility Name	
Sample by	P. McKay M. Hamilla

Sample Location ID	EBAD
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Depth to water, feet (TOC)	—
Measured Total Depth, feet (TOC)	—

Depth to water date	6-22-22
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Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
12:10			5.02	4,460	246	7.87	176	27.31		

Total volume purged	
Sample appearance	cloudy
Sample time	12:10
Sample date	6-22-22

Facility Name	Pier 107 AP
Sample by	Kenny McDonald

Sample Location ID	AP-3
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Depth to water, feet (TOC)	33.46
Measured Total Depth, feet (TOC)	

Depth to water date	08/30/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1033	33.91	200	4.88	136	31.3	2.38	306	24.91		
1038	33.96	200	4.71	110	8.4	1.04	299	24.86		
1043	34.00	200	4.68	108	9.2	0.98	289	24.83		
1048	34.03	200	4.66	107	8.6	0.98	287	24.80		

Total volume purged	
Sample appearance	Clear
Sample time	1050
Sample date	08/30/22

Facility Name	P. R. H. P.P.
Sample by	Kenny McDonald

Sample Location ID	AD-23
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Depth to water, feet (TOC)	30.29
Measured Total Depth, feet (TOC)	38.20

Depth to water date	08/30/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
0946	30.61	200	4.01	80	32.6	2.87	327	24.64		
0951	30.61	200	3.97	78	24.5	1.42	331	24.51		
0956	30.62	200	3.92	78	24.5	1.47	338	24.44		
1001	30.61	200	3.91	81	24.3	1.39	341	24.43		
1006	30.62	200	3.89	80	24.1	1.36	342	24.40		

Total volume purged	
Sample appearance	Clear
Sample time	1008
Sample date	08/30/22

Facility Name	P, 2107 PP
Sample by	Kenny McDonald

Sample Location ID	A0-34
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Depth to water, feet (TOC)	0.77
Measured Total Depth, feet (TOC)	26.05

Depth to water date	08/30/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0819	0.92	118	4.25	1820	16.7	3.17	386	26.31		
0824	0.97	118	4.05	1820	2.4	2.79	381	25.91		
0829	1.03	118	4.03	1820	1.8	2.77	378	25.90		
0834	1.12	118	4.01	1810	0.0	2.76	378	25.89		

Total volume purged	
Sample appearance	Clear
Sample time	0836
Sample date	08/30/22

Facility Name	Pinkney PP
Sample by	Kenny McDonald

Sample Location ID	AD-36
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Depth to water, feet (TOC)	7.85
Measured Total Depth, feet (TOC)	17.10

Depth to water date	08/30/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0848	8.01	150	4.98	125	38.6	2.17	353	26.21		
0853	8.03	150	5.11	74	10.3	1.42	353	26.17		
0859	8.06	150	4.97	71	9.7	1.38	350	25.93		
0903	8.06	150	4.93	68	9.2	1.35	346	25.88		

Total volume purged	
Sample appearance	Clear
Sample time	0905
Sample date	08/30/22

CCR Groundwater Monitoring Well Inspection Form

Facility: Pittcoy

Sampling Period: Nov 2022

Sampling Contractor: Engle

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-26	S	S	S	S	S	S	S	
AD-25	S	S	S	S	S	S	S	
AD-23	S	S	S	S	S	S	S	
AD-27	S	S	S	S	S	S	S	
AD-32	S	S	S	S	S	S	S	
AD-31	S	S	S	S	S	S	S	
AD-12	S	S	S	S	S	S	S	
B-2	U	U	U	S	S	U	S	-No label -No lock
AD-28	S	S	S	S	S	S	S	
AD-30	S	S	S	S	S	S	S	
AD-17	S	S	S	S	S	S	S	
AD-3	S	S	S	S	S	S	S	

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: PIRNEY PP

Sampling Period: NOVEMBER 2022

Sampling Contractor: EAGLE

Signature: [Signature]

Well No.	Well Locked	Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Housing, and Pad in Good Shape	Well Properly Labeled	Well cap present	Comments
AD-34	✓	✓	✓	✓		✓	✓	Hinge broken
AD-36	✓	✓	✓	✓	✓	✓	✓	
AD-8	✓	✓	✓	✓	✓	✓	✓	
AD-16	✓		✓	✓	✓	✓	✓	NFDS NEW LOCK
AD-22	✓	✓	✓	✓	✓	✓	✓	
AD-13	✓	✓	✓	✓	✓	✓	✓	
AD-7R	✓	✓	✓	✓	✓		✓	NO LABEL
AD-2	✓	✓	✓	✓	✓	✓	✓	
AD-33	✓	✓	✓	✓	✓	✓	✓	
B-3				✓	✓		✓	NO LOCK NOT LABELED
AD-18	✓	✓	✓		✓	✓	✓	NFDS MOWING + BRUSH CLEARING
AD-7	✓	✓	✓	✓	✓	✓	✓	

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: PIANON
 Sampling Contractor: EAGLE

Sampling Period: NOVEMBER 2022
 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-4					✓	✓	✓	NEEDS WELL CAP

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	APT Pinnacle AP
Sample by	Kenny McDonald

Sample Location ID	AD-2
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Depth to water, feet (TOC)	16.52
Measured Total Depth, feet (TOC)	40.36

Depth to water date	11/15/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0948	16.71	210	3.97	581	2.4	3.97	280	15.52		
0953	16.76	210	3.96	592	1.8	2.54	276	16.28		
0958	16.83	210	3.96	594	1.7	2.46	276	16.39		
1003	16.87	210	3.96	595	1.3	2.49	275	16.47		

Total volume purged	
Sample appearance	clear
Sample time	1005
Sample date	11/15/22

Facility Name _____
 Sample by P. Riley
M. H. H. Smith

Depth to water, feet (TOC) _____
34.45
 Measured Total Depth, feet (TOC) _____
57.41

Sample Location ID _____
A1-3

Depth to water date _____
11-16-20

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S/cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
1128	34.86	220	5.70	132	25.4	1.27	243	17.54		
1133	34.79	220	5.84	144	7.6	0.71	212	18.33		
1138	35.07	220	5.91	148	6.5	0.26	164	18.68		
1143	35.18	220	5.94	149	6.4	0.28	186	18.79		

Total volume purged _____
 Sample appearance clear
 Sample time 1145
 Sample date 11-16-20

Facility Name	Air Pinhook PP
Sample by	Kenny McDonald

Sample Location ID	AD-4
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Depth to water, feet (TOC)	15.64
Measured Total Depth, feet (TOC)	47.29

Depth to water date	11/16/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1116	15.69	170	4.59	77	13.2	4.82	339	19.86		
1121	15.73	170	4.63	77	14.3	3.31	330	20.65		
1126	15.99	170	4.65	77	15.9	3.27	330	20.71		
1131	16.03	170	4.68	76	16.2	3.22	329	20.74		

Total volume purged	
Sample appearance	clear
Sample time	1133
Sample date	11/16/22

Facility Name	AEP PIRAHAY PP
Sample by	Kenny McDonald

Sample Location ID	AD-7
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Depth to water, feet (TOC)	17.23
Measured Total Depth, feet (TOC)	41.98

Depth to water date	11/16/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
0853	17.82	160	3.66	424	4.2	3.62	367	16.82		
0858	17.91	160	3.67	424	2.7	2.09	372	17.46		
0903	17.98	160	3.64	427	3.2	2.03	369	17.51		
0908	18.03	160	3.62	429	5.6	1.97	366	17.57		

Total volume purged	
Sample appearance	Clear
Sample time	0910
Sample date	11/16/22

RA MS/MSO

Facility Name	A&P Pinnac AP
Sample by	Kimmy McDonauld

Sample Location ID	AD-7R
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Depth to water, feet (TOC)	10.75
Measured Total Depth, feet (TOC)	33.03

Depth to water date	11/15/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S}/\text{cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
0859	10.90	126	4.92	204	12.9	6.21	142	15.62		
0904	10.81	126	4.89	208	2.4	2.48	151	16.13		
0909	10.82	126	4.90	208	2.8	2.46	156	16.18		
0914	10.85	126	4.90	208	3.1	2.45	161	16.27		

Total volume purged	
Sample appearance	CL from
Sample time	0916
Sample date	11/15/22

Facility Name	AEP Pinney PP
Sample by	Kenny McDermott

Sample Location ID	AD-8
--------------------	------

Depth to water, feet (TOC)	15.61
Measured Total Depth, feet (TOC)	31.33

Depth to water date	11/24/22
---------------------	----------

Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0956	15.63	168	4.43	310	8.2	3.84	322	19.07		
0955	15.64	168	4.44	312	7.6	2.13	331	19.19		
1000	15.64	168	4.43	314	7.4	2.09	333	19.22		
1005	15.66	168	4.46	323	6.9	2.14	333	19.26		

Total volume purged	
Sample appearance	clear
Sample time	100.7
Sample date	11/14/22

Facility Name	
Sample by	P. Hwang Mett Hamilton
Depth to water, feet (TOC)	18.53
Measured Total Depth, feet (TOC)	52.0

Sample Location ID	AD-12
Depth to water date	11-15-22

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)		
1036	18.98	300	4.38	72						
1041	19.57	300	4.56	67	12	2.46	72	17.14		
1046	20.21	300	4.66	67	33.8	1.88	328	19.00		
1051	20.52	300	4.71	67	30.2	1.83	223	19.17		
1056	20.93	300	4.73	66	30.1	1.82	318	19.25		
					30.0	1.80	320	19.28		

Total volume purged	
Sample appearance	clear
Sample time	1058
Sample date	11-15-22

MS/MSD

Facility Name	APP PIRACY PP
Sample by	Kathy McDonald

Sample Location ID	AD-13
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Depth to water, feet (TOC)	14.83
Measured Total Depth, feet (TOC)	40.70

Depth to water date	11/15/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0804	15.01	180	5.65	400	126	8.21	224	17.21		
0809	15.10	180	5.83	400	88.2	4.63	140	18.06		
0814	15.21	180	5.81	399	86.4	4.59	131	18.32		
0819	15.33	180	5.81	398	85.1	4.54	124	18.51		

Total volume purged	
Sample appearance	SLIGHTLY TURBID
Sample time	0821
Sample date	11/15/22

DUPLICATE-2
 WG + METALS ONLY
 1400

Facility Name	PLAKEY PP
Sample by	Kenny Medina

Sample Location ID	AD-16
--------------------	-------

Depth to water, feet (TOC)	18.40
Measured Total Depth, feet (TOC)	38.24

Depth to water date	11/14/22
---------------------	----------

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)		
1038	18.62	200	4.26	132	21.7	2.87	313	18.14		
1043	18.68	200	4.31	132	19.9	1.94	321	18.71		
1048	18.71	200	4.33	132	19.7	1.94	324	19.02		
1053	18.73	200	4.33	134	18.8	1.90	331	19.13		

Total volume purged	
Sample appearance	CLM
Sample time	1055
Sample date	11/14/22

Facility Name _____
 Sample by Pillcoy
Matt Hamilton

Sample Location ID AD-17

Depth to water, feet (TOC) _____
 Measured Total Depth, feet (TOC) 23.48
33.05

Depth to water date 11-16-22

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1026	23.59	200	4.87	154	42.7	1.60	286	17.43		
1031	23.60	200	4.76	153	55.2	0.77	283	16.87		
1036	23.61	200	4.66	156	43.1	0.45	285	16.33		
1041	23.61	200	4.66	160	32.2	1.07	284	16.54		
1046	23.62	200	4.56	163	21.8	1.13	283	16.72		
1051	23.62	200	4.55	165	9.6	1.09	286	16.75		
1056	23.62	200	4.51	166	4.6	1.07	285	16.71		

Total volume purged _____
 Sample appearance Clear
 Sample time 1058
 Sample date 11-16-22

Facility Name	AFP PIRMIT PP
Sample by	Kenny M. Dinkard

Sample Location ID	A0-22
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Depth to water, feet (TOC)	13.31
Measured Total Depth, feet (TOC)	32.70

Depth to water date	11/14/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
1114	13.46	160	4.64	769	10.7	4.21	311	17.45		
1119	13.48	160	4.76	767	5.2	2.87	300	17.50		
1124	13.49	160	4.77	768	4.8	2.83	295	17.56		
1129	13.51	160	4.77	770	5.5	2.80	292	17.61		

Total volume purged	
Sample appearance	Clear
Sample time	113
Sample date	11/14/22

Facility Name	Puricom
Sample by	Mark Hamilton
Depth to water, feet (TOC)	3-38
Measured Total Depth, feet (TOC)	38.20

Sample Location ID	AD-23
Depth to water date	11-14-22

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)		
1034	30.61	220	4.77	500	28.8	7.15	160	10.06		
1039	30.63	220	4.32	151	376	6.30	218	13.75		
1044	30.64	220	4.38	104	212	5.17	224	14.62		
1049	30.65	220	4.43	87	204	4.58	228	14.80		
1054	30.65	220	4.46	79	201	3.97	231	14.94		
1059	30.65	220	4.48	71	204	3.81	233	15.07		

Total volume purged	
Sample appearance	turbid
Sample time	1102
Sample date	11-14-22

Facility Name	Pirley
Sample by	19 Oct Hamilton
Depth to water, feet (TOC)	11.82
Measured Total Depth, feet (TOC)	27.38

Sample Location ID	AD-25
Depth to water date	11-14-27

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)
944	12.00	120	4.88	11040	12.6	7.04	172	11.41
949	12.08	120	5.01	11200	21.5	0.85	158	13.67
954	12.14	120	4.89	986	38.6	0.93	153	14.43
959	12.19	120	4.90	975	37.1	0.95	151	14.78
1004	12.23	120	4.91	971	37.8	0.97	150	14.87

Total volume purged	
Sample appearance	clear
Sample time	1006
Sample date	11-14-27

Facility Name	
Sample by	P. Key M. Hamilton
Depth to water, feet (TOC)	16.43
Measured Total Depth, feet (TOC)	42.76

Sample Location ID	AD-26
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Depth to water date	11-14-22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
841	16.87	300	3.57	2,230	56.1	17.06	340	13.06		
852	17.02	300	3.78	2,230	31.8	1.82	274	14.78		
857	17.14	300	3.97	2,220	31.1	0.86	251	15.23		
902	17.22	300	3.98	2,220	31.2	0.70	243	15.06		
907	17.27	300	3.99	2,220	31.1	0.65	238	15.04		

Total volume purged	
Sample appearance	clear
Sample time	9:09
Sample date	11-14-22

Facility Name	
Sample by	P. Rizew Matt Hamill
Depth to water, feet (TOC)	24.14
Measured Total Depth, feet (TOC)	40.07

Sample Location ID	AD-27
Depth to water date	11-14-22

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S}/\text{cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
1122	24.34	300	3.71	159	52.1	7.57	165	11.03		
1127	24.44	300	3.66	214	47.8	3.43	310	13.26		
1132	24.48	300	3.81	215	29.2	2.26	303	14.21		
1137	24.51	300	3.97	223	23.5	1.05	211	14.40		
1142	24.56	300	4.02	225	9.8	0.87	287	14.48		
1147	24.60	300	4.04	226	9.9	0.82	285	14.55		

Total volume purged	
Sample appearance	clear
Sample time	1149
Sample date	11-14-22

Facility Name
 Sample by *Pirley 11-14 Hamby*

Sample Location ID *AD-28*

Depth to water, feet (TOC)
 Measured Total Depth, feet (TOC) *19.67 38.59*

Depth to water date *11-16-22*

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)
826	20.02	220	4.54	95	10.4	2.39	302	16.53
831	20.13	220	4.40	96	22.0	2.26	307	17.63
836	20.24	220	4.43	97	12.7	2.81	308	17.82
841	20.31	220	4.32	97	4.8	1.58	301	18.11
846	20.36	220	4.29	100	4.9	1.52	310	18.16

Total volume purged
 Sample appearance *clear*
 Sample time *848*
 Sample date *11-16-22*

Facility Name	Pirkey
Sample by	Matt Hamilton

Depth to water, feet (TOC)	20.21
Measured Total Depth, feet (TOC)	27.15

Sample Location ID	AD-3a
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Depth to water date	11-16-22
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Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
915	20.52	220	4.89	447	24.7	2.54	296	14.08
924	20.60	220	4.94	516	23.1	1.36	284	18.22
929	20.63	220	4.98	523	22.5	1.29	276	18.69
934	20.65	220	5.03	526	22.2	1.22	275	19.65
935	20.65	220	5.05	527	11.8	1.19	265	19.72
944	20.65	220	5.05	528	10.7	1.17	264	19.75

Total volume purged	
Sample appearance	clear
Sample time	946
Sample date	11-16-22

Facility Name	
Sample by	Pillew Mark Hamill

Sample Location ID	AD-31
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Depth to water, feet (TOC)	18.78
Measured Total Depth, feet (TOC)	37.32

Depth to water date	11-15-22
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Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
930	19.03	220	3.95	407	12.7	3.51	361	12.13		
935	19.10	220	4.15	313	11.1	0.66	348	16.71		
940	19.12	220	4.24	307	65.5	0.46	338	17.67		
945	19.17	220	4.26	302	57.2	0.46	335	17.84		
950	19.13	220	4.27	307	40.6	0.46	333	17.67		
955	19.13	220	4.27	301	12.5	0.45	332	18.06		
1000	19.13	220	4.28	302	13.3	0.45	331	18.10		

Total volume purged	
Sample appearance	clear
Sample time	1002
Sample date	11-15-22

Facility Name	APP PIAHON PP
Sample by	KIMMY M. DENARD

Sample Location ID	AD-33
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Depth to water, feet (TOC)	14.94
Measured Total Depth, feet (TOC)	32.50

Depth to water date	11/15/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1049	15.00	192	3.97	171	5.6	5.12	312	18.95		
1054	15.01	192	3.97	166	4.8	3.27	306	18.97		
1059	15.01	192	3.98	164	4.3	3.24	302	18.96		
1104	15.02	192	3.96	163	4.5	3.20	297	18.95		

Total volume purged	
Sample appearance	CLM
Sample time	1106
Sample date	11/15/22

Facility Name	
Sample by	Pitkey Nate Hamiltz

Sample Location ID	AD-32
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Depth to water, feet (TOC)	11.18
Measured Total Depth, feet (TOC)	34.65

Depth to water date	11-15-22
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Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S/cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)		
831	11.62	220	3.76	610	77.3	5.81	401	15.65		
836	11.71	220	3.75	618	66.4	0.71	341	17.01		
841	11.77	220	3.82	606	46.5	0.57	375	15.16		
846	11.83	220	3.91	598	34.8	0.58	378	15.10		
851	11.84	220	3.96	597	15.5	0.62	363	17.74		
856	11.85	220	3.98	596	4.2	0.64	359	17.85		
901	11.85	220	3.99	596	208	0.65	357	17.92		

Total volume purged	
Sample appearance	clear
Sample time	903
Sample date	11-15-22

Facility Name	AEP RINNEY PP
Sample by	Kenny McDonald

Sample Location ID	AD-34
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Depth to water, feet (TOC)	TOP OF CASING
Measured Total Depth, feet (TOC)	26.05

Depth to water date	11/14/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)		
0802	0.61	124	3.63	1750	3.8	3.02	78	14.94		
0807	0.73	124	3.61	1730	6.1	2.55	98	15.37		
0812	0.88	124	3.59	1720	4.2	2.54	104	15.40		
0817	0.97	124	3.54	1690	4.5	2.51	106	15.44		

Total volume purged	
Sample appearance	CLEAR
Sample time	0819
Sample date	11/14/22

Facility Name	ATE PLANT PP
Sample by	KELLY McDONALD

Sample Location ID	AD-36
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Depth to water, feet (TOC)	7.85
Measured Total Depth, feet (TOC)	17.10

Depth to water date	11/14/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
0901	7.92	150	4.18	125	41.2	13.21	184	15.39		
0906	7.93	150	4.39	90	16.8	7.48	177	16.54		
0911	7.93	150	4.41	83	10.1	6.13	169	17.61		
0916	7.95	150	4.45	75	7.6	5.52	170	18.20		
0921	7.95	150	4.45	74	7.8	5.52	168	18.24		
0926	7.95	150	4.46	72	7.4	5.50	168	18.26		

Total volume purged	
Sample appearance	Clear
Sample time	0928
Sample date	11/14/22

LAND FILL DUPLICATE 11/05

Facility Name
 Sample by P. Y. Key
 M. H. Hamilton

Depth to water, feet (TOC) 27.15
 Measured Total Depth, feet (TOC) 51.44

Sample Location ID B-2

Depth to water date 11-15-22

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)		
1141	27.58	300	5.68	113	41.9	2.11	266	17.77		
1146	27.66	300	5.87	125	42.0	0.83	197	18.54		
1151	27.61	300	5.89	124	42.2	0.56	155	18.45		

Total volume purged
 Sample appearance clear
 Sample time 1153
 Sample date 11-15-22

Dap-1
 1023

Facility Name	AEP Piracy PP
Sample by	Kenny McDonald

Sample Location ID	B-3
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Depth to water, feet (TOC)	15.83
Measured Total Depth, feet (TOC)	37.49

Depth to water date	11/15/22
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
1216	16.71	108	4.99	227	11.4	4.11	335	15.82		
1221	17.93	108	5.03	216	6.1	2.97	314	16.04		

Total volume purged	
Sample appearance	clear
Sample time	0803
Sample date	11/16/22

APPENDIX 5- Analytical Laboratory Reports



Water Analysis Report

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

Job ID: 220297

Customer: Pirkey Power Station

Date Reported: 02/15/2022

Customer Sample ID: AD-23

Customer Description:

Lab Number: 220297-001

Preparation:

Date Collected: 01/26/2022 08:53

Date Received: 01/28/2022 11:30

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.040	mg/L	1	0.050	0.009	J1	GES	02/01/2022 15:20	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-34

Customer Description:

Lab Number: 220297-002

Preparation:

Date Collected: 01/26/2022 09:35

Date Received: 01/28/2022 11:30

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Calcium	42.6	mg/L	1	0.05	0.02		GES	02/01/2022 15:25	EPA 200.8-1994, Rev. 5.4

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1720	mg/L	1	50	20	S7	SDW	01/31/2022 12:18	SM 2540C-2011



Water Analysis Report

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

Job ID: 220297

Customer: Pirkey Power Station

Date Reported: 02/15/2022

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

S7 - Sample did not achieve constant weight.

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Site Contact:

For Lab Use Only:

COC/Order #:

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

22297

250 mL bottle, pH<2, HNO3

250 mL bottle, pH<2, HNO3

1 L bottle, Cool, 0-6C
 Three (six every 10th) L bottles, pH<2, HNO3

250 mL bottle, pH<2, HNO3

Sample(s): Matt Hamilton

Sampler(s) Initials

Ra-226, Ra-228

Sample Specific Notes:

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.
1/28/2022	853	G	GW	1
1/28/2022	935	G	GW	2

Boron

Calcium

TDS

Sample Specific Notes:

X

X

X

4

4

1

4

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

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <u>Pat Lambert</u>	Company: <u>Eng's</u>	Date/Time: <u>1-27-22 1:30</u>	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <u>Michael Ohlinger</u>	Date/Time: <u>1/28/22 11:30 AM</u>

AEP WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

<u>Package Type</u> <input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope			<u>Delivery Type</u> PONY UPS <input checked="" type="radio"/> FedEX USPS Other _____		
Plant/Customer <u>Piney</u>		Number of Plastic Containers: <u>3</u>			
Opened By <u>MSO</u>		Number of Glass Containers: _____			
Date/Time <u>1/28/22 11:30</u>		Number of Mercury Containers: _____			
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / <input type="radio"/> N or N/A Initial: <u>JAB</u> <input checked="" type="radio"/> on ice / <input type="radio"/> no ice (IR Gun Ser# 210441568, Expir. 5/27/2023) - If No, specify each deviation: _____					
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____					
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____					
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____					
pH (15 min)		Cr ⁶⁺ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: JAB

pH paper (circle one): MQuant pH Cat 1.09535.0001 lot HC904495 [OR] Lab rat pH Cat # LRS -4801 Lot X000RWDG21

- 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# 220291 Initial & Date & Time : _____

Logged by MSO Comments: _____

Reviewed by mlk _____

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.



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-2

Customer Description:

Lab Number: 221989-001

Preparation:

Date Collected: 06/21/2022 09:49 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.32	mg/L	2	0.10	0.02		CRJ	07/06/2022 20:44	EPA 300.1-1997, Rev. 1.0
Chloride	29.7	mg/L	10	0.2	0.1		CRJ	07/06/2022 20:18	EPA 300.1-1997, Rev. 1.0
Fluoride	0.21	mg/L	2	0.06	0.02		CRJ	07/06/2022 20:44	EPA 300.1-1997, Rev. 1.0
Sulfate	259	mg/L	10	2.0	0.3		CRJ	07/06/2022 20:18	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO ₃	<5	mg/L	1	20	5	U1	MGK	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	490	mg/L	1	50	20		SDW	06/27/2022 13:08	SM 2540C-2015

Customer Sample ID: AD-3

Customer Description:

Lab Number: 221989-002

Preparation:

Date Collected: 06/21/2022 12:23 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.04	mg/L	2	0.10	0.02	J1	CRJ	07/06/2022 19:53	EPA 300.1-1997, Rev. 1.0
Chloride	5.65	mg/L	2	0.04	0.02		CRJ	07/06/2022 19:53	EPA 300.1-1997, Rev. 1.0
Fluoride	0.04	mg/L	2	0.06	0.02	J1	CRJ	07/06/2022 19:53	EPA 300.1-1997, Rev. 1.0
Sulfate	21.2	mg/L	2	0.40	0.06		CRJ	07/06/2022 19:53	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO ₃	<5	mg/L	1	20	5	U1	MGK	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	150	mg/L	1	50	20	P1, H2	SDW	06/29/2022 11:00	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-4

Customer Description:

Lab Number: 221989-003

Preparation:

Date Collected: 06/21/2022 11:34 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.20	mg/L	2	0.10	0.02		CRJ	07/06/2022 21:36	EPA 300.1-1997, Rev. 1.0
Chloride	3.92	mg/L	2	0.04	0.02		CRJ	07/06/2022 21:36	EPA 300.1-1997, Rev. 1.0
Fluoride	0.05	mg/L	2	0.06	0.02	J1	CRJ	07/06/2022 21:36	EPA 300.1-1997, Rev. 1.0
Sulfate	20.5	mg/L	2	0.40	0.06		CRJ	07/06/2022 21:36	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	160	mg/L	1	50	20		SDW	06/27/2022 13:15	SM 2540C-2015

Customer Sample ID: AD-7

Customer Description:

Lab Number: 221989-004

Preparation:

Date Collected: 06/21/2022 10:47 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	3.56	mg/L	2	0.10	0.02		CRJ	07/06/2022 22:28	EPA 300.1-1997, Rev. 1.0
Chloride	53.1	mg/L	10	0.2	0.1		CRJ	07/06/2022 22:02	EPA 300.1-1997, Rev. 1.0
Fluoride	0.30	mg/L	2	0.06	0.02		CRJ	07/06/2022 22:28	EPA 300.1-1997, Rev. 1.0
Sulfate	71.1	mg/L	10	2.0	0.3		CRJ	07/06/2022 22:02	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	290	mg/L	1	50	20		SDW	06/27/2022 13:15	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-12

Customer Description:

Lab Number: 221989-005

Preparation:

Date Collected: 06/20/2022 09:52 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.11	mg/L	2	0.10	0.02		CRJ	07/06/2022 23:19	EPA 300.1-1997, Rev. 1.0
Chloride	7.59	mg/L	2	0.04	0.02		CRJ	07/06/2022 23:19	EPA 300.1-1997, Rev. 1.0
Fluoride	0.09	mg/L	2	0.06	0.02		CRJ	07/06/2022 23:19	EPA 300.1-1997, Rev. 1.0
Sulfate	4.81	mg/L	2	0.40	0.06		CRJ	07/06/2022 23:19	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	80	mg/L	1	50	20		SDW	06/27/2022 08:30	SM 2540C-2015

Customer Sample ID: AD-13

Customer Description:

Lab Number: 221989-006

Preparation:

Date Collected: 06/20/2022 09:43 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.30	mg/L	2	0.10	0.02		CRJ	07/07/2022 03:12	EPA 300.1-1997, Rev. 1.0
Chloride	54.5	mg/L	25	0.5	0.3		CRJ	07/07/2022 02:46	EPA 300.1-1997, Rev. 1.0
Fluoride	0.26	mg/L	2	0.06	0.02		CRJ	07/07/2022 03:12	EPA 300.1-1997, Rev. 1.0
Sulfate	138	mg/L	25	5.0	0.8		CRJ	07/07/2022 02:46	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	270	mg/L	2	100	40		SDW	06/27/2022 08:30	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-17

Customer Description:

Lab Number: 221989-007

Preparation:

Date Collected: 06/21/2022 11:40 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.20	mg/L	2	0.10	0.02		CRJ	07/06/2022 23:45	EPA 300.1-1997, Rev. 1.0
Chloride	30.2	mg/L	2	0.04	0.02		CRJ	07/06/2022 23:45	EPA 300.1-1997, Rev. 1.0
Fluoride	0.30	mg/L	2	0.06	0.02		CRJ	07/06/2022 23:45	EPA 300.1-1997, Rev. 1.0
Sulfate	5.78	mg/L	2	0.40	0.06		CRJ	07/06/2022 23:45	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO ₃	<5	mg/L	1	20	5	U1	MGK	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	90	mg/L	1	50	20		SDW	06/27/2022 13:22	SM 2540C-2015

Customer Sample ID: AD-18

Customer Description:

Lab Number: 221989-008

Preparation:

Date Collected: 06/21/2022 09:17 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.06	mg/L	2	0.10	0.02	J1	CRJ	07/07/2022 02:20	EPA 300.1-1997, Rev. 1.0
Chloride	5.20	mg/L	2	0.04	0.02		CRJ	07/07/2022 02:20	EPA 300.1-1997, Rev. 1.0
Fluoride	<0.02	mg/L	2	0.06	0.02	U1	CRJ	07/07/2022 02:20	EPA 300.1-1997, Rev. 1.0
Sulfate	6.47	mg/L	2	0.40	0.06		CRJ	07/07/2022 02:20	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO ₃	<5	mg/L	1	20	5	U1	MGK	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	110	mg/L	1	50	20		SDW	06/27/2022 13:22	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-22

Customer Description:

Lab Number: 221989-009

Preparation:

Date Collected: 06/20/2022 10:53 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.79	mg/L	2	0.10	0.02		CRJ	07/07/2022 07:57	EPA 300.1-1997, Rev. 1.0
Chloride	107	mg/L	25	0.5	0.3		CRJ	07/07/2022 05:47	EPA 300.1-1997, Rev. 1.0
Fluoride	0.32	mg/L	2	0.06	0.02		CRJ	07/07/2022 07:57	EPA 300.1-1997, Rev. 1.0
Sulfate	293	mg/L	25	5.0	0.8		CRJ	07/07/2022 05:47	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	580	mg/L	2	100	40		SDW	06/27/2022 08:48	SM 2540C-2015

Customer Sample ID: AD-28

Customer Description:

Lab Number: 221989-010

Preparation:

Date Collected: 06/21/2022 10:56 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.04	mg/L	2	0.10	0.02	J1	CRJ	07/07/2022 04:04	EPA 300.1-1997, Rev. 1.0
Chloride	4.36	mg/L	2	0.04	0.02		CRJ	07/07/2022 04:04	EPA 300.1-1997, Rev. 1.0
Fluoride	0.61	mg/L	2	0.06	0.02		CRJ	07/07/2022 04:04	EPA 300.1-1997, Rev. 1.0
Sulfate	28.0	mg/L	2	0.40	0.06		CRJ	07/07/2022 04:04	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	110	mg/L	1	50	20		SDW	06/27/2022 13:29	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-30

Customer Description:

Lab Number: 221989-011

Preparation:

Date Collected: 06/20/2022 12:29 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.34	mg/L	2	0.10	0.02		CRJ	07/07/2022 04:56	EPA 300.1-1997, Rev. 1.0
Chloride	26.0	mg/L	2	0.04	0.02		CRJ	07/07/2022 04:56	EPA 300.1-1997, Rev. 1.0
Fluoride	0.06	mg/L	2	0.06	0.02		CRJ	07/07/2022 04:56	EPA 300.1-1997, Rev. 1.0
Sulfate	177	mg/L	10	2.0	0.3		CRJ	07/07/2022 04:30	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	340	mg/L	1	50	20		SDW	06/27/2022 09:01	SM 2540C-2015

Customer Sample ID: AD-31

Customer Description:

Lab Number: 221989-012

Preparation:

Date Collected: 06/20/2022 11:43 EDT

Date Received: 06/24/2022 11:56 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.29	mg/L	5	0.25	0.05		CRJ	07/11/2022 15:51	EPA 300.1-1997, Rev. 1.0
Chloride	23.2	mg/L	5	0.10	0.05		CRJ	07/11/2022 15:51	EPA 300.1-1997, Rev. 1.0
Fluoride	0.14	mg/L	5	0.15	0.05	J1	CRJ	07/11/2022 15:51	EPA 300.1-1997, Rev. 1.0
Sulfate	89.0	mg/L	10	2.0	0.3		CRJ	07/07/2022 06:13	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	270	mg/L	1	50	20		SDW	06/27/2022 08:55	SM 2540C-2015

221989

Job Comments:

Original report issued 7/29/2022. Report reissued with amended Matrix Spike precision calculations.



Water Analysis Report

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

Reissued

Job ID: 221989

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

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

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

H2 - Sample analysis performed past holding time.

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Site Contact:

Date:

COC/Order #:

For Lab Use Only:

Dolan Chemical Laboratory (DCL)
4001 Bixby Road
Groveport, Ohio 43125
Michael Ohlinger (614-836-4184)
Contacts: Dave Conover (614-836-4219)

Project Name: Pirkey PP Semi-Annual CCR
Contact Name: Leslie Fuerschbach
Contact Phone: 319-673-2744

Sampler(s): Matt Hamilton, Kenny McDonald

Analysis Turnaround Time (in Calendar Days)

☉ Routine (28 days for Monitoring Wells)

Sampler(s) Initials

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Parameters				Sample Specific Notes
						250 mL bottle, pH<2, HNO3	Field-filter 250 mL bottle, then pH<2, HNO3	1 L bottle, Cool, 0-6C 10th*	Three (six every 10th*) L bottles, pH<2, HNO3	
AD-2	6/21/2022	849	G	GW	1					
AD-3	6/21/2022	1123	G	GW	1					
AD-4	6/21/2022	1034	G	GW	1					
AD-7	6/21/2022	947	G	GW	1					
AD-12	6/20/2022	852	G	GW	1					
AD-13	6/20/2022	843	G	GW	1					
AD-17	6/21/2022	1040	G	GW	1					
AD-18	6/21/2022	817	G	GW	1					
AD-22	6/20/2022	953	G	GW	1					
AD-28	6/21/2022	956	G	GW	1					
AD-30	6/20/2022	1129	G	GW	1					
AD-31	6/20/2022	1043	G	GW	1					
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other						F	F	4	4	

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <i>Esk</i>	Date/Time: 6/23/22	Received by: <i>[Signature]</i>	Date/Time: 6/24/22
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: 6/24/22 10:30 AM



WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

Package Type				Delivery Type			
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	<input type="radio"/> PONY	<input checked="" type="radio"/> UPS	<input checked="" type="radio"/> FedEx	<input type="radio"/> USPS
				Other _____			

Plant/Customer Pukey Number of Plastic Containers: 12

Opened By MCK Number of Glass Containers: _____

Date/Time 6/24/22 10:30 AM Number of Mercury Containers: _____

Were all temperatures within 0-6°C? Y / N or N/A Initial: MCK on ice / no ice
 (IR Gun Ser# 210441568, Expir. 5/27/2023) - 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: MCK 6/24/22

pH paper (circle one): MQuant pH Cat 1.09535.0001 _____ (OR) Lab rat pH Cat # LRS -4801
 lot HC904495 Lot X000RWDG21

- 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# 221989 Initial & Date & Time : _____

Logged by JAB Comments: _____

Reviewed by MCK _____

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.

Alkalinity Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

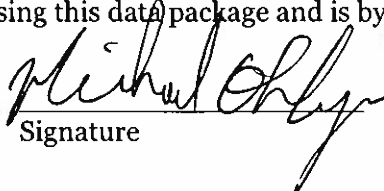
This data package consists of:

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

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

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

Michael Ohlinger
Name (printed)


Signature

Chemist
Official Title

7/29/22
Date

Alkalinity Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221989
Prep Batch Number(s): QC2206187

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?	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	

Alkalinity 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	

Alkalinity Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221989
Prep Batch Number(s): QC2206187

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?	Yes	
	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?	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	

Alkalinity 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	

Alkalinity Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221989
Prep Batch Number(s): QC2206187

Exception Report No.	Description
ER1	CCB acceptance criteria is $CCB < 0.5 * MQL$.

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.”

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Timothy E. Arnold

Name (printed)


Signature

Chemist Principle

Official Title

7/13/2022

Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Timothy E. Arnold
LRC Date: 7/13/2022
Laboratory Job Number: 221989
Prep Batch Number(s): QC2207051

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: Pirkey PP Semi-Annual CCR
Reviewer Name: Timothy E. Arnold
LRC Date: 7/13/2022
Laboratory Job Number: 221989
Prep Batch Number(s): QC2207051

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: Pirkey PP Semi-Annual CCR
Reviewer Name: Timothy E. Arnold
LRC Date: 7/13/2022
Laboratory Job Number: 221989
Prep Batch Number(s): QC2207051

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

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

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

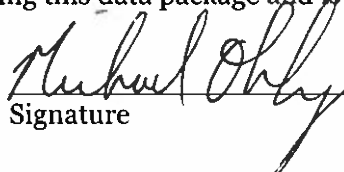
This data package consists of:

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

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

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

Michael Ohlinger
Name (printed)


Signature

Chemist
Official Title

7/29/22
Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221989
Prep Batch Number(s): QC2207061 & QC2207063

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?	No	ER1
	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?	No	ER2
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: Pirkey PP Semi-Annual CCR
Reviewer Name: Michael Ohlinger
LRC Date: 4/5/22
Laboratory Job Number: 221989
Prep Batch Number(s): QC2207061 & QC2207063

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

TDS Laboratory Review Checklist

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

TDS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221989
Prep Batch Number(s): QC2207061 & QC2207063

Exception Report No.	Description
ER1	Sample analysis performed past holding time for 221989-002.
ER2	The precision between duplicate results was above acceptance limits for the duplicate analyzed on 221989-002.

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

Reissued

Job ID: 221990

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-8

Customer Description:

Lab Number: 221990-001

Preparation:

Date Collected: 06/22/2022 13:16 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.80	mg/L	2	0.10	0.02		CRJ	07/08/2022 06:33	EPA 300.1-1997, Rev. 1.0
Chloride	17.0	mg/L	2	0.04	0.02		CRJ	07/08/2022 06:33	EPA 300.1-1997, Rev. 1.0
Fluoride	2.85	mg/L	2	0.06	0.02		CRJ	07/08/2022 06:33	EPA 300.1-1997, Rev. 1.0
Sulfate	117	mg/L	10	2.0	0.3		CRJ	07/08/2022 06:07	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	270	mg/L	1	50	20		SDW	06/27/2022 13:29	SM 2540C-2015

Customer Sample ID: AD-16

Customer Description:

Lab Number: 221990-002

Preparation:

Date Collected: 06/22/2022 11:05 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.16	mg/L	2	0.10	0.02		CRJ	07/08/2022 02:40	EPA 300.1-1997, Rev. 1.0
Chloride	24.7	mg/L	2	0.04	0.02		CRJ	07/08/2022 02:40	EPA 300.1-1997, Rev. 1.0
Fluoride	0.10	mg/L	2	0.06	0.02		CRJ	07/08/2022 02:40	EPA 300.1-1997, Rev. 1.0
Sulfate	9.58	mg/L	2	0.40	0.06		CRJ	07/08/2022 02:40	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	110	mg/L	1	50	20		SDW	06/27/2022 13:37	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221990

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-23

Customer Description:

Lab Number: 221990-003

Preparation:

Date Collected: 06/22/2022 12:17 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.17	mg/L	2	0.10	0.02		CRJ	07/08/2022 03:06	EPA 300.1-1997, Rev. 1.0
Chloride	7.32	mg/L	2	0.04	0.02		CRJ	07/08/2022 03:06	EPA 300.1-1997, Rev. 1.0
Fluoride	0.07	mg/L	2	0.06	0.02		CRJ	07/08/2022 03:06	EPA 300.1-1997, Rev. 1.0
Sulfate	9.52	mg/L	2	0.40	0.06		CRJ	07/08/2022 03:06	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	80	mg/L	1	50	20		SDW	06/27/2022 13:37	SM 2540C-2015

Customer Sample ID: AD-27

Customer Description:

Lab Number: 221990-004

Preparation:

Date Collected: 06/22/2022 12:57 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.26	mg/L	2	0.10	0.02		CRJ	07/08/2022 05:41	EPA 300.1-1997, Rev. 1.0
Chloride	12.5	mg/L	2	0.04	0.02		CRJ	07/08/2022 05:41	EPA 300.1-1997, Rev. 1.0
Fluoride	0.22	mg/L	2	0.06	0.02		CRJ	07/08/2022 05:41	EPA 300.1-1997, Rev. 1.0
Sulfate	57.2	mg/L	2	0.40	0.06		CRJ	07/08/2022 05:41	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	210	mg/L	1	50	20		SDW	06/27/2022 14:10	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221990

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-34

Customer Description:

Lab Number: 221990-005

Preparation:

Date Collected: 06/22/2022 11:48 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.12	mg/L	5	0.25	0.05	J1	CRJ	07/08/2022 07:51	EPA 300.1-1997, Rev. 1.0
Chloride	7.38	mg/L	5	0.10	0.05		CRJ	07/08/2022 07:51	EPA 300.1-1997, Rev. 1.0
Fluoride	1.20	mg/L	5	0.15	0.05		CRJ	07/08/2022 07:51	EPA 300.1-1997, Rev. 1.0
Sulfate	1260	mg/L	50	10	2		CRJ	07/08/2022 07:25	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	1750	mg/L	1	50	20		SDW	06/27/2022 14:10	SM 2540C-2015

Customer Sample ID: AD-36

Customer Description:

Lab Number: 221990-006

Preparation:

Date Collected: 06/22/2022 12:35 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.33	mg/L	2	0.10	0.02		CRJ	07/08/2022 10:00	EPA 300.1-1997, Rev. 1.0
Chloride	10.1	mg/L	2	0.04	0.02		CRJ	07/08/2022 10:00	EPA 300.1-1997, Rev. 1.0
Fluoride	0.09	mg/L	2	0.06	0.02		CRJ	07/08/2022 10:00	EPA 300.1-1997, Rev. 1.0
Sulfate	5.00	mg/L	2	0.40	0.06		CRJ	07/08/2022 10:00	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	60	mg/L	1	50	20		SDW	06/27/2022 14:18	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 221990

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: Duplicate-3

Customer Description:

Lab Number: 221990-007

Preparation:

Date Collected: 06/22/2022 15:00 EDT

Date Received: 06/24/2022 12:07 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.12	mg/L	5	0.25	0.05	J1	CRJ	07/08/2022 09:08	EPA 300.1-1997, Rev. 1.0
Chloride	7.47	mg/L	5	0.10	0.05		CRJ	07/08/2022 09:08	EPA 300.1-1997, Rev. 1.0
Fluoride	1.19	mg/L	5	0.15	0.05		CRJ	07/08/2022 09:08	EPA 300.1-1997, Rev. 1.0
Sulfate	1290	mg/L	50	10	2		CRJ	07/08/2022 08:42	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	06/28/2022 10:03	SM 2320B-2011
TDS, Filterable Residue	1770	mg/L	2	100	40		SDW	06/27/2022 14:18	SM 2540C-2015

221990

Job Comments:

Original report issued 7/29/2022. Report reissued with amended matrix spike precision calculations.

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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



Water Analysis Report

Reissued

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

Job ID: 221990

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Data Qualifier Legend

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

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)
 Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR - Landfill
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kenny McDonald

Program: Coal Combustion Residuals (CCR)

Site Contact:

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

For Lab Use Only:
 COC/Order #: 221990

Date:

Three (six every 10th) L bottles, pH<2, HNO3

1 L bottle, Cool, 0-6C

Field-filter 250 mL bottle, then pH<2, HNO3

250 mL bottle, pH<2, HNO3

Field-filter 250 mL bottle, then pH<2, HNO3

Disolved Mercury

Mercury

TDS, Alkalinity, F, Cl, SO4, Br

Ra-226, Ra-228

1 4

Sample Specific Notes:

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Samplers' initials	250 mL bottle, pH<2, HNO3	Field-filter 250 mL bottle, then pH<2, HNO3	1 L bottle, Cool, 0-6C	Three (six every 10th) L bottles, pH<2, HNO3	Date:
6/22/2022	1216	G	GW	1						
6/22/2022	1005	G	GW	1						
6/22/2022	1117	G	GW	1						
6/22/2022	1157	G	GW	1						
6/22/2022	1048	G	GW	1						
6/22/2022	1135	G	GW	1						
6/22/2022	1400	G	GW	1						
Duplicate - 3										

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ; F= filter in field ; F4

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Date/Time: 6/23/22	Received by: <i>[Signature]</i>	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by: <i>[Signature]</i>	Date/Time: 07/24/22 12:07



WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

Package Type				Delivery Type			
Cooler	Box	Bag	Envelope	PONY	UPS	FedEX	USPS
				Other _____			
Plant/Customer <u>Pukey</u>				Number of Plastic Containers: <u>6</u>			
Opened By <u>MCK</u>				Number of Glass Containers: _____			
Date/Time <u>6/24/22 10:30 AM</u>				Number of Mercury Containers: _____			
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / N or N/A Initial: <u>mbk</u> <input checked="" type="radio"/> on ice / no ice							
(IR Gun Ser# 210441568, Expir. 5/27/2023) - If No, specify each deviation: _____							
Was container in good condition? <input checked="" type="radio"/> Y / N Comments _____							
Was Chain of Custody received? <input checked="" type="radio"/> Y / N Comments _____							
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____							
pH (15 min)	Cr ⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)			

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: MCK 6/24/22

pH paper (circle one): MQuant pH Cat 1.09535.0001 _____ [OR] Lab rat pH Cat # LRS -4801 ✓
lot HC904495 Lot X000RWDG21

- 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# 221990 Initial & Date & Time : _____

Logged by mbk Comments: _____

Reviewed by JTB _____

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.

Alkalinity Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Michael Ohlenger
Name (printed)


Signature

Chemist
Official Title

7/29/22
Date

Alkalinity Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221990
Prep Batch Number(s): QC2206187

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?	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	

Alkalinity 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	

Alkalinity Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221990
Prep Batch Number(s): QC2206187

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?	Yes	
	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?	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	

Alkalinity 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	

Alkalinity Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 7/29/22
Laboratory Job Number: 221990
Prep Batch Number(s): QC2206187

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB<0.5*ML.

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."

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

<u>Timothy E. Arnold</u>		<u>Chemist Principle</u>	<u>7/11/2022</u>
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: Pirkey PP CCR - Landfill
Reviewer Name: Timothy E. Arnold
LRC Date: 7/11/2022
Laboratory Job Number: 221990
Prep Batch Number(s): QC2207069

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: Pirkey PP CCR - Landfill
Reviewer Name: Timothy E. Arnold
LRC Date: 7/11/2022
Laboratory Job Number: 221990
Prep Batch Number(s): QC2207069

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: Pirkey PP CCR - Landfill

Reviewer Name: Timothy E. Arnold

LRC Date: 7/11/2022

Laboratory Job Number: 221990

Prep Batch Number(s): QC2207069

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

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

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

³ NA - Not applicable; NR - Not reviewed.

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

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

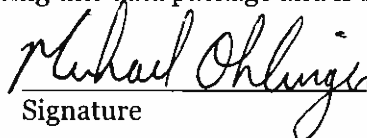
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Michael Ohlinger

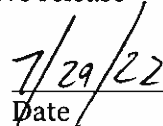
Name (printed)



Signature

Chemist

Official Title



Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 7/26/22
Laboratory Job Number: 221990
Prep Batch Number(s): QC2207061, 2207062

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: Pirkey PP CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 4/5/22
Laboratory Job Number: 221990
Prep Batch Number(s): QC2207061, 2207062

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

TDS Laboratory Review Checklist

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

TDS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Pirkey PP CCR - Landfill

Reviewer Name: Michael Ohlinger

LRC Date: 7/26/22

Laboratory Job Number: 221990

Prep Batch Number(s): QC2207061, 2207062

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
Audinnet: 210-4221

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-2

Customer Description:

Lab Number: 222015-001

Preparation:

Date Collected: 06/21/2022 09:49 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.1	µg/L	5	0.5	0.1	U1	GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Arsenic	2.0	µg/L	5	0.5	0.2		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Barium	17.5	µg/L	5	1.0	0.3		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Beryllium	0.85	µg/L	5	0.25	0.04		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Boron	3.26	mg/L	5	0.25	0.05		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Cadmium	0.11	µg/L	5	0.10	0.02		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Calcium	3.4	mg/L	5	0.3	0.1		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Chromium	0.5	µg/L	5	1.0	0.2	J1	GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Cobalt	25.7	µg/L	5	0.10	0.02		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Lead	0.6	µg/L	5	1.0	0.3	J1	GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Lithium	0.0688	mg/L	5	0.0010	0.0003		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Magnesium	7.1	mg/L	5	0.5	0.1		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Mercury	244	ng/L	4	20	7		JAB	07/12/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Potassium	1.4	mg/L	5	0.5	0.1		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Selenium	2.7	µg/L	5	2.5	0.5		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Sodium	111	mg/L	5	1.0	0.3	M1	GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Strontium	0.048	mg/L	5	0.010	0.002		GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4
Thallium	0.3	µg/L	5	1.0	0.2	J1	GES	07/12/2022 14:16	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.59	pCi/L	0.17	0.28		ST	06/30/2022 14:29	SW-846 9315-1986, Rev. 0
Carrier Recovery	95.1	%						
Radium-228	1.28	pCi/L	0.17	0.52		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	87.8	%						

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



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-2

Customer Description:

Lab Number: 222015-001-01

Preparation: Dissolved

Date Collected: 06/21/2022 09:49 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.1	µg/L	5	0.5	0.1	U1	GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Arsenic	1.6	µg/L	5	0.5	0.2		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Barium	17.8	µg/L	5	1.0	0.3		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Beryllium	0.80	µg/L	5	0.25	0.04		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Cadmium	0.11	µg/L	5	0.10	0.02		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Chromium	0.5	µg/L	5	1.0	0.2	J1	GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Cobalt	25.4	µg/L	5	0.10	0.02		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Iron	0.13	mg/L	5	0.10	0.03		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Lead	0.7	µg/L	5	1.0	0.3	J1	GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Lithium	0.0673	mg/L	5	0.0010	0.0003		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Manganese	0.096	mg/L	5	0.005	0.001		GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Selenium	2.2	µg/L	5	2.5	0.5	J1	GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4
Thallium	<0.2	µg/L	5	1.0	0.2	U1	GES	07/12/2022 15:18	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-3

Customer Description:

Lab Number: 222015-002

Preparation:

Date Collected: 06/21/2022 12:23 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.1	µg/L	5	0.5	0.1	U1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Arsenic	0.2	µg/L	5	0.5	0.2	J1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Barium	55.6	µg/L	5	1.0	0.3		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Beryllium	0.22	µg/L	5	0.25	0.04	J1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Boron	0.08	mg/L	5	0.25	0.05	J1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.02	µg/L	5	0.10	0.02	U1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Calcium	3.1	mg/L	5	0.3	0.1		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Chromium	0.3	µg/L	5	1.0	0.2	J1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Cobalt	2.70	µg/L	5	0.10	0.02		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Lead	<0.3	µg/L	5	1.0	0.3	U1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Lithium	0.0457	mg/L	5	0.0010	0.0003		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Magnesium	1.4	mg/L	5	0.5	0.1		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Mercury	4	ng/L	1	5	2	J1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Potassium	2.1	mg/L	5	0.5	0.1		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Selenium	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Sodium	7.5	mg/L	5	1.0	0.3		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Strontium	0.020	mg/L	5	0.010	0.002		GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4
Thallium	<0.2	µg/L	5	1.0	0.2	U1	GES	07/12/2022 15:23	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.04	pCi/L	0.23	0.29		ST	06/30/2022 14:29	SW-846 9315-1986, Rev. 0
Carrier Recovery	88.2	%						
Radium-228	0.64	pCi/L	0.14	0.45		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.1	%						

* 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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-3

Customer Description:

Lab Number: 222015-002-01

Preparation: Dissolved

Date Collected: 06/21/2022 12:23 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.1	µg/L	5	0.5	0.1	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.2	µg/L	5	0.5	0.2	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Barium	49.5	µg/L	5	1.0	0.3		GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Beryllium	0.14	µg/L	5	0.25	0.04	J1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.02	µg/L	5	0.10	0.02	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Chromium	0.4	µg/L	5	1.0	0.2	J1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Cobalt	2.25	µg/L	5	0.10	0.02		GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Iron	<0.03	mg/L	5	0.10	0.03	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Lead	<0.3	µg/L	5	1.0	0.3	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Lithium	0.0459	mg/L	5	0.0010	0.0003		GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Manganese	0.025	mg/L	5	0.005	0.001		GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Mercury	3	ng/L	1	5	2	J1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Selenium	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4
Thallium	<0.2	µg/L	5	1.0	0.2	U1	GES	07/12/2022 15:28	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-4

Customer Description:

Lab Number: 222015-003

Preparation:

Date Collected: 06/21/2022 11:34 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Arsenic	0.30	µg/L	1	0.10	0.03		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Barium	124	µg/L	1	0.20	0.05		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Beryllium	0.407	µg/L	1	0.050	0.007		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Boron	0.020	mg/L	1	0.050	0.009	J1	GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Cadmium	0.021	µg/L	1	0.020	0.004		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Calcium	2.51	mg/L	1	0.05	0.02		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Chromium	0.46	µg/L	1	0.20	0.04		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Cobalt	4.10	µg/L	1	0.020	0.003		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Lithium	0.0220	mg/L	1	0.00020	0.00005		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Magnesium	0.76	mg/L	1	0.10	0.02		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Mercury	4	ng/L	1	5	2	J1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Potassium	2.21	mg/L	1	0.10	0.02		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Sodium	6.94	mg/L	1	0.20	0.05		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Strontium	0.0184	mg/L	1	0.0020	0.0004		GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4
Thallium	0.09	µg/L	1	0.20	0.04	J1	GES	07/12/2022 14:47	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.66	pCi/L	0.18	0.26		ST	06/30/2022 14:29	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.3	%						
Radium-228	0.65	pCi/L	0.14	0.47		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	89.0	%						

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



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-4

Customer Description:

Lab Number: 222015-003-01

Preparation: Dissolved

Date Collected: 06/21/2022 11:34 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Barium	104	µg/L	1	0.20	0.05		GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Beryllium	0.226	µg/L	1	0.050	0.007		GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Cadmium	0.016	µg/L	1	0.020	0.004	J1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Chromium	0.27	µg/L	1	0.20	0.04		GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Cobalt	3.12	µg/L	1	0.020	0.003		GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Iron	0.019	mg/L	1	0.020	0.006	J1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Lead	0.14	µg/L	1	0.20	0.05	J1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Lithium	0.0233	mg/L	1	0.00020	0.00005		GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Manganese	0.0289	mg/L	1	0.0010	0.0002		GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4
Thallium	0.09	µg/L	1	0.20	0.04	J1	GES	07/12/2022 14:52	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-7

Customer Description:

Lab Number: 222015-004

Preparation:

Date Collected: 06/21/2022 10:47 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.1	µg/L	5	0.5	0.1	U1	GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Arsenic	1.3	µg/L	5	0.5	0.2		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Barium	58.7	µg/L	5	1.0	0.3		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Beryllium	4.66	µg/L	5	0.25	0.04		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Boron	6.13	mg/L	5	0.25	0.05		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Cadmium	0.95	µg/L	5	0.10	0.02		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Calcium	5.4	mg/L	5	0.3	0.1		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Chromium	0.4	µg/L	5	1.0	0.2	J1	GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Cobalt	36.4	µg/L	5	0.10	0.02		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Lead	1.0	µg/L	5	1.0	0.3		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Lithium	0.113	mg/L	5	0.0010	0.0003		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Magnesium	8.9	mg/L	5	0.5	0.1		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Mercury	<400	ng/L	200	1000	400	U1	JAB	07/12/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.5	µg/L	5	2.5	0.5	U1	GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Potassium	3.2	mg/L	5	0.5	0.1		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Selenium	2.3	µg/L	5	2.5	0.5	J1	GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Sodium	22.6	mg/L	5	1.0	0.3		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Strontium	0.058	mg/L	5	0.010	0.002		GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4
Thallium	0.2	µg/L	5	1.0	0.2	J1	GES	07/12/2022 15:33	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.59	pCi/L	0.38	0.35		ST	06/30/2022 14:29	SW-846 9315-1986, Rev. 0
Carrier Recovery	79.1	%						
Radium-228	2.23	pCi/L	0.16	0.46		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	84.4	%						

* 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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-7

Customer Description:

Lab Number: 222015-004-01

Preparation: Dissolved

Date Collected: 06/21/2022 10:47 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Arsenic	1.38	µg/L	1	0.10	0.03		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Barium	54.1	µg/L	1	0.20	0.05		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Beryllium	3.55	µg/L	1	0.050	0.007		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Cadmium	0.972	µg/L	1	0.020	0.004		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Chromium	0.34	µg/L	1	0.20	0.04		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Cobalt	35.4	µg/L	1	0.020	0.003		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Iron	0.324	mg/L	1	0.020	0.006		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Lead	1.06	µg/L	1	0.20	0.05		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Lithium	0.0887	mg/L	1	0.00020	0.00005		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Manganese	0.142	mg/L	1	0.0010	0.0002		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Mercury	<20	ng/L	10	50	20	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2	µg/L	1	0.5	0.1	J1	GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Selenium	2.15	µg/L	1	0.50	0.09		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4
Thallium	0.21	µg/L	1	0.20	0.04		GES	07/12/2022 15:02	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-12

Customer Description:

Lab Number: 222015-005

Preparation:

Date Collected: 06/20/2022 09:52 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Arsenic	0.08	µg/L	1	0.10	0.03	J1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Barium	24.2	µg/L	1	0.20	0.05		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Beryllium	0.135	µg/L	1	0.050	0.007		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Boron	0.042	mg/L	1	0.050	0.009	J1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Cadmium	0.008	µg/L	1	0.020	0.004	J1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Calcium	0.32	mg/L	1	0.05	0.02		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Chromium	0.63	µg/L	1	0.20	0.04		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Cobalt	1.35	µg/L	1	0.020	0.003		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Lithium	0.00949	mg/L	1	0.00020	0.00005		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Magnesium	0.45	mg/L	1	0.10	0.02		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Potassium	0.53	mg/L	1	0.10	0.02		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Selenium	0.16	µg/L	1	0.50	0.09	J1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Sodium	5.28	mg/L	1	0.20	0.05		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Strontium	0.0030	mg/L	1	0.0020	0.0004		GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 15:07	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.51	pCi/L	0.16	0.28		ST	06/30/2022 14:29	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.1	%						
Radium-228	0.12	pCi/L	0.11	0.37		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	96.0	%						

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



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-12

Customer Description:

Lab Number: 222015-005-01

Preparation: Dissolved

Date Collected: 06/20/2022 09:52 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Arsenic	0.06	µg/L	1	0.10	0.03	J1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Barium	24.4	µg/L	1	0.20	0.05		GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Beryllium	0.131	µg/L	1	0.050	0.007		GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Cadmium	0.009	µg/L	1	0.020	0.004	J1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Chromium	0.33	µg/L	1	0.20	0.04		GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Cobalt	1.30	µg/L	1	0.020	0.003		GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Iron	0.006	mg/L	1	0.020	0.006	J1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Lead	0.07	µg/L	1	0.20	0.05	J1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Lithium	0.00918	mg/L	1	0.00020	0.00005		GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Manganese	0.0052	mg/L	1	0.0010	0.0002		GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Selenium	0.12	µg/L	1	0.50	0.09	J1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 15:13	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-13

Customer Description:

Lab Number: 222015-006

Preparation:

Date Collected: 06/20/2022 09:43 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Arsenic	4.30	µg/L	1	0.10	0.03		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Barium	41.4	µg/L	1	0.20	0.05		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Beryllium	0.409	µg/L	1	0.050	0.007		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Boron	0.075	mg/L	1	0.050	0.009		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Calcium	11.1	mg/L	1	0.05	0.02		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.20	0.04		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Cobalt	56.2	µg/L	1	0.020	0.003	M1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Lithium	0.150	mg/L	1	0.00020	0.00005	M1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Magnesium	15.7	mg/L	1	0.10	0.02		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	1.1	µg/L	1	0.5	0.1		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Potassium	5.19	mg/L	1	0.10	0.02		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Selenium	0.1	µg/L	1	0.50	0.09	J1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Sodium	21.4	mg/L	1	0.20	0.05		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Strontium	0.0509	mg/L	1	0.0020	0.0004		GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 16:40	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.15	pCi/L	0.24	0.29		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.3	%						
Radium-228	1.07	pCi/L	0.14	0.45		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	95.1	%						

* 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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-13

Customer Description:

Lab Number: 222015-006-01

Preparation: Dissolved

Date Collected: 06/20/2022 09:43 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Arsenic	0.80	µg/L	1	0.10	0.03		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Barium	40.0	µg/L	1	0.20	0.05		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Beryllium	0.203	µg/L	1	0.050	0.007		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Cadmium	0.005	µg/L	1	0.020	0.004	J1	GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Chromium	0.27	µg/L	1	0.20	0.04		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Cobalt	55.8	µg/L	1	0.020	0.003		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Iron	47.8	mg/L	1	0.020	0.006		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Lithium	0.146	mg/L	1	0.00020	0.00005		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Manganese	0.550	mg/L	1	0.0010	0.0002		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.8	µg/L	1	0.5	0.1		GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.04	J1	GES	07/12/2022 17:11	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-17

Customer Description:

Lab Number: 222015-007

Preparation:

Date Collected: 06/21/2022 11:40 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Arsenic	0.39	µg/L	1	0.10	0.03		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Barium	250	µg/L	1	0.20	0.05		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Beryllium	0.650	µg/L	1	0.050	0.007		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Boron	0.021	mg/L	1	0.050	0.009	J1	GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Cadmium	0.063	µg/L	1	0.020	0.004		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Calcium	1.10	mg/L	1	0.05	0.02		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Chromium	0.51	µg/L	1	0.20	0.04		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Cobalt	12.2	µg/L	1	0.020	0.003		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Lead	0.13	µg/L	1	0.20	0.05	J1	GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Lithium	0.0206	mg/L	1	0.00020	0.00005		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Magnesium	4.35	mg/L	1	0.10	0.02		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Mercury	200	ng/L	100	500	200	J1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Potassium	1.11	mg/L	1	0.10	0.02		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Selenium	0.44	µg/L	1	0.50	0.09	J1	GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Sodium	8.53	mg/L	1	0.20	0.05		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Strontium	0.0206	mg/L	1	0.0020	0.0004		GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.04	J1	GES	07/12/2022 17:21	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	7.36	pCi/L	0.63	0.30		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	94.4	%						
Radium-228	4.60	pCi/L	0.17	0.41		TTP	07/05/2022 17:32	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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-17

Customer Description:

Lab Number: 222015-007-01

Preparation: Dissolved

Date Collected: 06/21/2022 11:40 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Arsenic	0.17	µg/L	1	0.10	0.03		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Barium	245	µg/L	1	0.20	0.05		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Beryllium	0.489	µg/L	1	0.050	0.007		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Cadmium	0.061	µg/L	1	0.020	0.004		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Chromium	0.47	µg/L	1	0.20	0.04		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Cobalt	11.5	µg/L	1	0.020	0.003		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Iron	0.021	mg/L	1	0.020	0.006		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Lead	0.24	µg/L	1	0.20	0.05		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Lithium	0.0198	mg/L	1	0.00020	0.00005		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Manganese	0.0377	mg/L	1	0.0010	0.0002		GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Mercury	<200	ng/L	100	500	200	U1	JAB	07/08/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Selenium	0.20	µg/L	1	0.50	0.09	J1	GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4
Thallium	0.04	µg/L	1	0.20	0.04	J1	GES	07/12/2022 17:31	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-18

Customer Description:

Lab Number: 222015-008

Preparation:

Date Collected: 06/21/2022 09:17 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Arsenic	0.30	µg/L	1	0.10	0.03		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Barium	79.3	µg/L	1	0.20	0.05		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Beryllium	0.073	µg/L	1	0.050	0.007		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Boron	<0.009	mg/L	1	0.050	0.009	U1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Cadmium	0.012	µg/L	1	0.020	0.004	J1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Calcium	1.49	mg/L	1	0.05	0.02		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Chromium	0.47	µg/L	1	0.20	0.04		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Cobalt	0.790	µg/L	1	0.020	0.003		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Lead	0.11	µg/L	1	0.20	0.05	J1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Lithium	0.0108	mg/L	1	0.00020	0.00005		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Magnesium	0.30	mg/L	1	0.10	0.02		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Mercury	<7	ng/L	4	20	7	U1	JAB	07/12/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Potassium	0.70	mg/L	1	0.10	0.02		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Selenium	0.14	µg/L	1	0.50	0.09	J1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Sodium	5.16	mg/L	1	0.20	0.05		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Strontium	0.0069	mg/L	1	0.0020	0.0004		GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 17:42	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.55	pCi/L	0.17	0.30		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.7	%						
Radium-228	0.18	pCi/L	0.17	0.58		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	92.3	%						

* 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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-18

Customer Description:

Lab Number: 222015-008-01

Preparation: Dissolved

Date Collected: 06/21/2022 09:17 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Arsenic	0.05	µg/L	1	0.10	0.03	J1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Barium	31.8	µg/L	1	0.20	0.05		GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Chromium	0.29	µg/L	1	0.20	0.04		GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Cobalt	0.237	µg/L	1	0.020	0.003		GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Iron	0.024	mg/L	1	0.020	0.006		GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Lead	0.07	µg/L	1	0.20	0.05	J1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Lithium	0.0107	mg/L	1	0.00020	0.00005		GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Manganese	0.0008	mg/L	1	0.0010	0.0002	J1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Mercury	8	ng/L	4	20	7	J1	JAB	07/12/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 17:52	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-22

Customer Description:

Lab Number: 222015-009

Preparation:

Date Collected: 06/20/2022 10:53 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Arsenic	3.02	µg/L	1	0.10	0.03		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Barium	16.2	µg/L	1	0.20	0.05		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Beryllium	2.11	µg/L	1	0.050	0.007		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Boron	0.028	mg/L	1	0.050	0.009	J1	GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Cadmium	0.587	µg/L	1	0.020	0.004		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Calcium	11.9	mg/L	1	0.05	0.02		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Chromium	0.66	µg/L	1	0.20	0.04		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Cobalt	69.6	µg/L	1	0.020	0.003		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Lead	0.18	µg/L	1	0.20	0.05	J1	GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Lithium	0.110	mg/L	1	0.00020	0.00005		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Magnesium	15.6	mg/L	1	0.10	0.02		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Mercury	460	ng/L	10	50	20		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.1	µg/L	1	0.5	0.1	J1	GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Potassium	3.63	mg/L	1	0.10	0.02		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Selenium	2.01	µg/L	1	0.50	0.09		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Sodium	90.5	mg/L	1	0.20	0.05		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Strontium	0.0955	mg/L	1	0.0020	0.0004		GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4
Thallium	0.15	µg/L	1	0.20	0.04	J1	GES	07/12/2022 18:02	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.96	pCi/L	0.31	0.33		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.0	%						
Radium-228	1.99	pCi/L	0.19	0.58		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	92.5	%						

* 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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-22

Customer Description:

Lab Number: 222015-009-01

Preparation: Dissolved

Date Collected: 06/20/2022 10:53 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Arsenic	2.14	µg/L	1	0.10	0.03		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Barium	16.3	µg/L	1	0.20	0.05		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Beryllium	2.25	µg/L	1	0.050	0.007		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Cadmium	0.564	µg/L	1	0.020	0.004		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Chromium	0.41	µg/L	1	0.20	0.04		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Cobalt	74.5	µg/L	1	0.020	0.003		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Iron	38.1	mg/L	1	0.020	0.006		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Lead	0.1	µg/L	1	0.20	0.05	J1	GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Lithium	0.125	mg/L	1	0.00020	0.00005		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Manganese	0.351	mg/L	1	0.0010	0.0002		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Mercury	4	ng/L	1	5	2	J1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Selenium	2.13	µg/L	1	0.50	0.09		GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4
Thallium	0.15	µg/L	1	0.20	0.04	J1	GES	07/12/2022 18:12	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-28

Customer Description:

Lab Number: 222015-010

Preparation:

Date Collected: 06/21/2022 10:56 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Arsenic	0.14	µg/L	1	0.10	0.03		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Barium	130	µg/L	1	0.20	0.05		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Beryllium	0.463	µg/L	1	0.050	0.007		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Boron	0.311	mg/L	1	0.050	0.009		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Cadmium	0.047	µg/L	1	0.020	0.004		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Calcium	1.40	mg/L	1	0.05	0.02		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Chromium	0.40	µg/L	1	0.20	0.04		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Cobalt	13.3	µg/L	1	0.020	0.003		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Lithium	0.0213	mg/L	1	0.00020	0.00005		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Magnesium	2.95	mg/L	1	0.10	0.02		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Mercury	7	ng/L	1	5	2		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Potassium	0.78	mg/L	1	0.10	0.02		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Selenium	0.15	µg/L	1	0.50	0.09	J1	GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Sodium	6.84	mg/L	1	0.20	0.05		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Strontium	0.0192	mg/L	1	0.0020	0.0004		GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 18:23	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	5.02	pCi/L	0.51	0.30		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	85.4	%						
Radium-228	0.94	pCi/L	0.15	0.49		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	93.6	%						

* 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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-28

Customer Description:

Lab Number: 222015-010-01

Preparation: Dissolved

Date Collected: 06/21/2022 10:56 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Arsenic	0.11	µg/L	1	0.10	0.03		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Barium	131	µg/L	1	0.20	0.05		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Beryllium	0.486	µg/L	1	0.050	0.007		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Cadmium	0.054	µg/L	1	0.020	0.004		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Chromium	0.38	µg/L	1	0.20	0.04		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Cobalt	13.0	µg/L	1	0.020	0.003		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Iron	0.070	mg/L	1	0.020	0.006		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Lead	0.07	µg/L	1	0.20	0.05	J1	GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Lithium	0.0226	mg/L	1	0.00020	0.00005		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Manganese	0.0530	mg/L	1	0.0010	0.0002		GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Mercury	4	ng/L	1	5	2	J1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Selenium	0.21	µg/L	1	0.50	0.09	J1	GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 18:33	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-30

Customer Description:

Lab Number: 222015-011

Preparation:

Date Collected: 06/20/2022 12:29 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Arsenic	0.23	µg/L	1	0.10	0.03		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Barium	106	µg/L	1	0.20	0.05		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Beryllium	0.089	µg/L	1	0.050	0.007		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Boron	2.49	mg/L	1	0.050	0.009		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Cadmium	0.014	µg/L	1	0.020	0.004	J1	GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Calcium	0.75	mg/L	1	0.05	0.02		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Chromium	0.42	µg/L	1	0.20	0.04		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Cobalt	4.90	µg/L	1	0.020	0.003		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Lithium	0.0100	mg/L	1	0.00020	0.00005		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Magnesium	2.48	mg/L	1	0.10	0.02		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Mercury	14	ng/L	2	10	4		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Potassium	0.89	mg/L	1	0.10	0.02		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Selenium	0.34	µg/L	1	0.50	0.09	J1	GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Sodium	87.2	mg/L	1	0.20	0.05		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Strontium	0.0114	mg/L	1	0.0020	0.0004		GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4
Thallium	0.04	µg/L	1	0.20	0.04	J1	GES	07/12/2022 19:55	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.72	pCi/L	0.35	0.28		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.5	%						
Radium-228	0.99	pCi/L	0.15	0.47		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	91.7	%						

* 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.



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-30

Customer Description:

Lab Number: 222015-011-01

Preparation: Dissolved

Date Collected: 06/20/2022 12:29 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Arsenic	0.10	µg/L	1	0.10	0.03		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Barium	90.4	µg/L	1	0.20	0.05		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Beryllium	0.092	µg/L	1	0.050	0.007		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Cadmium	0.011	µg/L	1	0.020	0.004	J1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Chromium	0.36	µg/L	1	0.20	0.04		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Cobalt	4.45	µg/L	1	0.020	0.003		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Iron	0.014	mg/L	1	0.020	0.006	J1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Lead	0.05	µg/L	1	0.20	0.05	J1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Lithium	0.00993	mg/L	1	0.00020	0.00005		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Manganese	0.0194	mg/L	1	0.0010	0.0002		GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Mercury	6	ng/L	2	10	4	J1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Selenium	0.18	µg/L	1	0.50	0.09	J1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 20:00	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-31

Customer Description:

Lab Number: 222015-012

Preparation:

Date Collected: 06/20/2022 11:43 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Arsenic	0.42	µg/L	1	0.10	0.03		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Barium	34.1	µg/L	1	0.20	0.05		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Beryllium	1.03	µg/L	5	0.25	0.04		GES	07/14/2022 13:04	EPA 200.8-1994, Rev. 5.4
Boron	0.028	mg/L	1	0.050	0.009	J1	GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Cadmium	0.071	µg/L	1	0.020	0.004		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Calcium	2.65	mg/L	1	0.05	0.02		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Chromium	0.59	µg/L	1	0.20	0.04		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Cobalt	9.61	µg/L	1	0.020	0.003		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Lead	0.35	µg/L	1	0.20	0.05		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Lithium	0.0844	mg/L	5	0.0010	0.0003		GES	07/14/2022 13:04	EPA 200.8-1994, Rev. 5.4
Magnesium	3.85	mg/L	1	0.10	0.02		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Mercury	89	ng/L	2	10	4		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Potassium	1.50	mg/L	1	0.10	0.02		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Selenium	0.33	µg/L	1	0.50	0.09	J1	GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Sodium	30.7	mg/L	1	0.20	0.05		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Strontium	0.0376	mg/L	1	0.0020	0.0004		GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4
Thallium	0.08	µg/L	1	0.20	0.04	J1	GES	07/12/2022 20:05	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.51	pCi/L	0.34	0.27		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	94.2	%						
Radium-228	2.09	pCi/L	0.15	0.42		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.8	%						

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



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-31

Customer Description:

Lab Number: 222015-012-01

Preparation: Dissolved

Date Collected: 06/20/2022 11:43 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Arsenic	0.23	µg/L	1	0.10	0.03		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Barium	33.1	µg/L	1	0.20	0.05		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Beryllium	0.96	µg/L	5	0.25	0.04		GES	07/14/2022 13:09	EPA 200.8-1994, Rev. 5.4
Cadmium	0.061	µg/L	1	0.020	0.004		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Chromium	0.50	µg/L	1	0.20	0.04		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Cobalt	9.49	µg/L	1	0.020	0.003		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Iron	0.114	mg/L	1	0.020	0.006		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Lead	0.31	µg/L	1	0.20	0.05		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Lithium	0.0860	mg/L	5	0.0010	0.0003		GES	07/14/2022 13:09	EPA 200.8-1994, Rev. 5.4
Manganese	0.0253	mg/L	1	0.0010	0.0002		GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Mercury	9	ng/L	1	5	2		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Selenium	0.18	µg/L	1	0.50	0.09	J1	GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4
Thallium	0.08	µg/L	1	0.20	0.04	J1	GES	07/12/2022 20:11	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-32

Customer Description:

Lab Number: 222015-013

Preparation:

Date Collected: 06/20/2022 10:51 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Arsenic	1.81	µg/L	1	0.10	0.03		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Barium	32.3	µg/L	1	0.20	0.05		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Beryllium	3.28	µg/L	5	0.25	0.04		GES	07/14/2022 13:14	EPA 200.8-1994, Rev. 5.4
Boron	0.909	mg/L	1	0.050	0.009		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Cadmium	0.318	µg/L	1	0.020	0.004		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Calcium	7.25	mg/L	1	0.05	0.02		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Chromium	0.68	µg/L	1	0.20	0.04		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Cobalt	27.2	µg/L	1	0.020	0.003		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Lead	0.43	µg/L	1	0.20	0.05		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Lithium	0.0923	mg/L	5	0.0010	0.0003		GES	07/14/2022 13:14	EPA 200.8-1994, Rev. 5.4
Magnesium	9.33	mg/L	1	0.10	0.02		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Mercury	2700	ng/L	100	500	200		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Potassium	3.05	mg/L	1	0.10	0.02		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Selenium	2.67	µg/L	1	0.50	0.09		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Sodium	33.8	mg/L	1	0.20	0.05		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Strontium	0.128	mg/L	1	0.0020	0.0004		GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4
Thallium	0.17	µg/L	1	0.20	0.04	J1	GES	07/12/2022 20:16	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	6.24	pCi/L	0.56	0.29		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	85.8	%						
Radium-228	7.63	pCi/L	0.23	0.55		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	89.7	%						

* 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.



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-32

Customer Description:

Lab Number: 222015-013-01

Preparation: Dissolved

Date Collected: 06/20/2022 10:51 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Arsenic	1.69	µg/L	1	0.10	0.03		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Barium	37.4	µg/L	1	0.20	0.05		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Beryllium	3.48	µg/L	5	0.25	0.04		GES	07/14/2022 13:19	EPA 200.8-1994, Rev. 5.4
Cadmium	0.342	µg/L	1	0.020	0.004		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Chromium	0.45	µg/L	1	0.20	0.04		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Cobalt	26.6	µg/L	1	0.020	0.003		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Iron	1.20	mg/L	1	0.020	0.006		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Lead	0.38	µg/L	1	0.20	0.05		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Lithium	0.0952	mg/L	5	0.0010	0.0003		GES	07/14/2022 13:19	EPA 200.8-1994, Rev. 5.4
Manganese	0.0517	mg/L	1	0.0010	0.0002		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Mercury	80	ng/L	20	100	40	J1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Selenium	2.57	µg/L	1	0.50	0.09		GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4
Thallium	0.18	µg/L	1	0.20	0.04	J1	GES	07/12/2022 20:21	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-33

Customer Description:

Lab Number: 222015-014

Preparation:

Date Collected: 06/20/2022 11:37 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.04	µg/L	1	0.10	0.02	J1	GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Arsenic	1.19	µg/L	1	0.10	0.03		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Barium	42.0	µg/L	1	0.20	0.05		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Beryllium	0.939	µg/L	1	0.050	0.007		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Boron	0.093	mg/L	1	0.050	0.009		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Cadmium	0.039	µg/L	1	0.020	0.004		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Calcium	1.06	mg/L	1	0.05	0.02		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Chromium	0.64	µg/L	1	0.20	0.04		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Cobalt	7.81	µg/L	1	0.020	0.003		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Lead	0.27	µg/L	1	0.20	0.05		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Lithium	0.0166	mg/L	1	0.00020	0.00005		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Magnesium	3.11	mg/L	1	0.10	0.02		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Mercury	3000	ng/L	100	500	200		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Potassium	0.27	mg/L	1	0.10	0.02		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Selenium	1.27	µg/L	1	0.50	0.09		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Sodium	16.7	mg/L	1	0.20	0.05		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Strontium	0.0218	mg/L	1	0.0020	0.0004		GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 20:26	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.21	pCi/L	0.32	0.30		ST	06/30/2022 11:09	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.6	%						
Radium-228	1.16	pCi/L	0.14	0.42		TTP	07/05/2022 17:32	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.0	%						

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



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-33

Customer Description:

Lab Number: 222015-014-01

Preparation: Dissolved

Date Collected: 06/20/2022 11:37 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Arsenic	0.72	µg/L	1	0.10	0.03		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Barium	41.3	µg/L	1	0.20	0.05		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Beryllium	0.863	µg/L	1	0.050	0.007		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Cadmium	0.038	µg/L	1	0.020	0.004		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Chromium	0.33	µg/L	1	0.20	0.04		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Cobalt	7.29	µg/L	1	0.020	0.003		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Iron	0.553	mg/L	1	0.020	0.006		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Lead	0.22	µg/L	1	0.20	0.05		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Lithium	0.0183	mg/L	1	0.00020	0.00005		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Manganese	0.0059	mg/L	1	0.0010	0.0002		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Mercury	410	ng/L	20	100	40		JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Selenium	0.77	µg/L	1	0.50	0.09		GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 20:31	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: Duplicate 1

Customer Description:

Lab Number: 222015-015

Preparation:

Date Collected: 06/20/2022 15:00 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Arsenic	4.50	µg/L	1	0.10	0.03		GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Barium	41.7	µg/L	1	0.20	0.05		GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Beryllium	0.427	µg/L	1	0.050	0.007	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Boron	0.083	mg/L	1	0.050	0.009		GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Calcium	11.6	mg/L	1	0.05	0.02	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Chromium	0.33	µg/L	1	0.20	0.04		GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Cobalt	61.1	µg/L	1	0.020	0.003	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Lithium	0.163	mg/L	1	0.00020	0.00005	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Magnesium	16.9	mg/L	1	0.10	0.02	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	1.1	µg/L	1	0.5	0.1		GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Potassium	5.48	mg/L	1	0.10	0.02	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Selenium	0.09	µg/L	1	0.50	0.09	J1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Sodium	23.3	mg/L	1	0.20	0.05	M1	GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Strontium	0.0519	mg/L	1	0.0020	0.0004		GES	07/12/2022 20:36	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 20:36	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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: Duplicate 1

Customer Description:

Lab Number: 222015-015-01

Preparation: Dissolved

Date Collected: 06/20/2022 15:00 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Arsenic	0.84	µg/L	1	0.10	0.03		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Barium	39.6	µg/L	1	0.20	0.05		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Beryllium	0.203	µg/L	1	0.050	0.007		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Chromium	0.29	µg/L	1	0.20	0.04		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Cobalt	57.9	µg/L	1	0.020	0.003		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Iron	50.0	mg/L	1	0.020	0.006		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Lithium	0.147	mg/L	1	0.00020	0.00005		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Manganese	0.561	mg/L	1	0.0010	0.0002		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.8	µg/L	1	0.5	0.1		GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4
Thallium	0.08	µg/L	1	0.20	0.04	J1	GES	07/12/2022 20:52	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: Equipment Blank

Customer Description:

Lab Number: 222015-016

Preparation:

Date Collected: 06/20/2022 11:13 EDT

Date Received: 06/27/2022 14:08 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Boron	<0.009	mg/L	1	0.050	0.009	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Chromium	0.41	µg/L	1	0.20	0.04		GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Cobalt	0.013	µg/L	1	0.020	0.003	J1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00005	mg/L	1	0.00020	0.00005	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Magnesium	<0.02	mg/L	1	0.10	0.02	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	07/18/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Potassium	<0.02	mg/L	1	0.10	0.02	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Sodium	<0.05	mg/L	1	0.20	0.05	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Strontium	<0.0004	mg/L	1	0.0020	0.0004	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	07/12/2022 21:43	EPA 200.8-1994, Rev. 5.4

222015

Job Comments:

Original report issued 8/9/2022. Report reissued with amended matrix spike precision calculations.



Water Analysis Report

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

Reissued

Job ID: 222015

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

U1 - Not detected at or above 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.

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Contacts: Michael Ohlinger (614-836-4184)
 Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR
 Contact Name: Leslie Flierschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kenny McDonald

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Site Contact:

Date:

For Lab Use Only:

COC/Order #:

222015

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

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials						Sample Specific Notes:
						250 mL bottle, pH<2, HNO ₃	Field-filter 250 mL bottle, then pH<2, HNO ₃	Three (six every 10th) 1 L bottles, pH<2, HNO ₃	250 mL Glass bottle, HCL**, pH<2	250 mL Glass bottle, HCL**, pH<2		
AD-2	6/21/2022	849	G	GW	7	Sb, As, B, Ba, Be, Ca, Cd, Cr, Co, K, Li, Mg, Mo, Na, Pb, Se, Sr, Ti	Disolved Sb, As, Ba, Be, Cd, Cr, Co, Fe, Li, Mn, Mo, Pb, Se, Ti	Ra-226, Ra-228	Mercury	Disolved Mercury		
AD-3	6/21/2022	1123	G	GW	7							
AD-4	6/21/2022	1034	G	GW	7							
AD-7	6/21/2022	947	G	GW	7							
AD-12	6/20/2022	852	G	GW	7							
AD-13	6/20/2022	843	G	GW	10							
AD-17	6/21/2022	1040	G	GW	7							
AD-18	6/21/2022	817	G	GW	7							
AD-22	6/20/2022	953	G	GW	7							
AD-28	6/21/2022	956	G	GW	7							
AD-30	6/20/2022	1129	G	GW	7							
AD-31	6/20/2022	1043	G	GW	7							

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

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <i>Egis</i>	Date/Time: 6/23/22 1600	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: 6/27/22 1:00PM

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Contacts: Dave Conover (614-836-4219)

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Site Contact: _____ Date: _____
 For Lab Use Only:
 COC/Order #: **22015**

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

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 250 mL bottle, then pH<2, HNO ₃	Three (six every 10th) 1 L bottles, pH<2, HNO ₃	250 mL Glass bottle, HCL ⁺⁺ , pH<2	250 mL Glass bottle, HCL ⁺⁺ , pH<2
6/20/2022	951	G	GW	7		Sb, As, B, Ba, Be, Ca, Cd, Cr, Co, K, Li, Mg, Mo, Na, Pb, Se, Sr, Ti	Dissolved Sb, As, Ba, Be, Cd, Cr, Co, Fe, Li, Mn, Mo, Pb, Se, Ti	Ra-226, Ra-228	Mercury	Dissolved Mercury
6/20/2022	1037	G	GW	7						
6/20/2022	1400	G	GW	4						
6/20/2022	1013	G	GW	2						

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

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <i>Esk</i>	Date/Time: <i>07/23/22</i>	Received by: <i>[Signature]</i>	Date/Time: <i>07/27/22 1:00pm</i>
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: <i>07/27/22 1:00pm</i>

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 4/17/017



WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

45+31

<u>Package Type</u> <input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope			<u>Delivery Type</u> PONY UPS FedEX USPS Other _____			
Plant/Customer <u>Pukey</u>			Number of Plastic Containers: <u>76</u>			
Opened By <u>JAB/JDB/JWB</u>			Number of Glass Containers: _____			
Date/Time <u>6/27/22 1:00pm</u>			Number of Mercury Containers: <u>31</u>			
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A Initial: _____ on ice <input checked="" type="radio"/> (no ice)						
(IR Gun Ser# 210441568, Expir. 5/27/2023) - If No, specify each deviation: _____						
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____						
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____						
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____						
pH (15 min)	Cr ⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)		

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: JWB 6/27/22

pH paper (circle one): MQuant pH Cat 1.09535.0001 lot HC904495 (OR) Lab rat pH Cat # LRS -4801 Lot X000RWDG21 ✓

- 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# 222015 Initial & Date & Time : _____

Logged by GAB Comments: _____

Reviewed by Mso _____

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

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Jonathan Barnhill

Name (printed)



Signature

Lab Supervisor

Official Title

12-12-2022

Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12-12-2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22070101 PB2207151 QC2207105 QC2207151

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?		
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: _____

Reviewer Name: Jonathan Barnhill

LRC Date: 12-12-2022

Laboratory Job Number: 222015

Prep Batch Number(s): PB22070101 PB2207151 QC2207105 QC2207151

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

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12-12-2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22070101 PB2207151 QC2207105 QC2207151

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 failure for Na on sample 222015-001
	Matrix Spike failure for Co Li on sample 222015-006
	Matrix Spike failure for Ca Li Mg Na Co K on sample 222015-015

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.”

Radium Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Tamisha T. Palmer		Chemical Technician, Principal	07/07/2022
Name (printed)	Signature	Official Title	Date

Radium Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Tamisha Palmer
LRC Date: 07/07/2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22062803, PB22062804

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?	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	

Radium 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, No	ER1
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	

Radium Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Tamisha Palmer
LRC Date: 07/07/2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22062803, PB22062804

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?	NA	
	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?	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	

Radium 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?	NA	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	NA	
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	

Radium Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Tamisha Palmer
LRC Date: 07/07/2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22062803, PB22062804

Exception Report No.	Description
ER1	PB22062804 the RPD was slightly above 25%

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.”

Radium Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

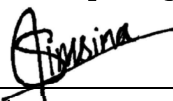
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Sunita Timsina

Name (printed)


Signature

Chemist Associate

Official Title

07/07/2022

Date

Radium Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 07/07/2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22062806

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?	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	

Radium 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?	N/A	
	I	Were analytical duplicates analyzed at the appropriate frequency?	N/A	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	N/A	
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	

Radium Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 07/07/2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22062806

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?	NA	
	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?	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	

Radium 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?	NA	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	NA	
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	

Radium Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 07/07/2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22062806

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.”

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
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 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
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 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
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 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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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	<i>Susann Sulzmann</i>	Senior Chemist	08-03-2022
Name (printed)	Signature	Official Title	Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Susann Sulzmann
LRC Date: 8-03-2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22070805, PB22070708, PB22071112

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?		
	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?		
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: Pirkey Power

Reviewer Name: Susann Sulzmann

LRC Date: 8-03-2022

Laboratory Job Number: 222015

Prep Batch Number(s): PB22070805, PB22070708, PB22071112

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: Pirkey Power
Reviewer Name: Susann Sulzmann
LRC Date: 8-03-2022
Laboratory Job Number: 222015
Prep Batch Number(s): PB22070805, PB22070708, PB22071112

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
Audinnet: 210-4221

Reissued

Job ID: 222016

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-8

Customer Description:

Lab Number: 222016-001

Preparation:

Date Collected: 06/22/2022 13:16 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	1.04 mg/L	1	0.050	0.009		GES	07/12/2022 21:48	EPA 200.8-1994, Rev. 5.4
Calcium	37.2 mg/L	1	0.05	0.02	M1	GES	07/12/2022 21:48	EPA 200.8-1994, Rev. 5.4
Magnesium	3.73 mg/L	1	0.10	0.02		GES	07/12/2022 21:48	EPA 200.8-1994, Rev. 5.4
Potassium	0.69 mg/L	1	0.10	0.02		GES	07/12/2022 21:48	EPA 200.8-1994, Rev. 5.4
Sodium	12.4 mg/L	1	0.20	0.05	M1	GES	07/12/2022 21:48	EPA 200.8-1994, Rev. 5.4
Strontium	0.208 mg/L	1	0.0020	0.0004	M1	GES	07/12/2022 21:48	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-16

Customer Description:

Lab Number: 222016-002

Preparation:

Date Collected: 06/22/2022 11:05 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.021 mg/L	1	0.050	0.009	J1	GES	07/12/2022 22:04	EPA 200.8-1994, Rev. 5.4
Calcium	1.80 mg/L	1	0.05	0.02		GES	07/12/2022 22:04	EPA 200.8-1994, Rev. 5.4
Magnesium	2.17 mg/L	1	0.10	0.02		GES	07/12/2022 22:04	EPA 200.8-1994, Rev. 5.4
Potassium	0.91 mg/L	1	0.10	0.02		GES	07/12/2022 22:04	EPA 200.8-1994, Rev. 5.4
Sodium	13.8 mg/L	1	0.20	0.05		GES	07/12/2022 22:04	EPA 200.8-1994, Rev. 5.4
Strontium	0.0171 mg/L	1	0.0020	0.0004		GES	07/12/2022 22:04	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-23

Customer Description:

Lab Number: 222016-003

Preparation:

Date Collected: 06/22/2022 12:17 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.057 mg/L	1	0.050	0.009		GES	07/12/2022 22:09	EPA 200.8-1994, Rev. 5.4
Calcium	0.25 mg/L	1	0.05	0.02		GES	07/12/2022 22:09	EPA 200.8-1994, Rev. 5.4
Magnesium	0.21 mg/L	1	0.10	0.02		GES	07/12/2022 22:09	EPA 200.8-1994, Rev. 5.4
Potassium	2.67 mg/L	1	0.10	0.02		GES	07/12/2022 22:09	EPA 200.8-1994, Rev. 5.4
Sodium	2.72 mg/L	1	0.20	0.05		GES	07/12/2022 22:09	EPA 200.8-1994, Rev. 5.4
Strontium	0.0025 mg/L	1	0.0020	0.0004		GES	07/12/2022 22:09	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 222016

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: AD-27

Customer Description:

Lab Number: 222016-004

Preparation:

Date Collected: 06/22/2022 12:57 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.028	mg/L	1	0.050	0.009	J1	GES	07/12/2022 22:14	EPA 200.8-1994, Rev. 5.4
Calcium	3.88	mg/L	1	0.05	0.02		GES	07/12/2022 22:14	EPA 200.8-1994, Rev. 5.4
Magnesium	5.41	mg/L	1	0.10	0.02		GES	07/12/2022 22:14	EPA 200.8-1994, Rev. 5.4
Potassium	2.10	mg/L	1	0.10	0.02		GES	07/12/2022 22:14	EPA 200.8-1994, Rev. 5.4
Sodium	7.65	mg/L	1	0.20	0.05		GES	07/12/2022 22:14	EPA 200.8-1994, Rev. 5.4
Strontium	0.0590	mg/L	1	0.0020	0.0004		GES	07/12/2022 22:14	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-34

Customer Description:

Lab Number: 222016-005

Preparation:

Date Collected: 06/22/2022 11:48 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.066	mg/L	1	0.050	0.009		GES	07/12/2022 22:19	EPA 200.8-1994, Rev. 5.4
Calcium	45.8	mg/L	1	0.05	0.02		GES	07/12/2022 22:19	EPA 200.8-1994, Rev. 5.4
Magnesium	38.6	mg/L	1	0.10	0.02		GES	07/12/2022 22:19	EPA 200.8-1994, Rev. 5.4
Potassium	7.51	mg/L	1	0.10	0.02		GES	07/12/2022 22:19	EPA 200.8-1994, Rev. 5.4
Sodium	16.2	mg/L	1	0.20	0.05		GES	07/12/2022 22:19	EPA 200.8-1994, Rev. 5.4
Strontium	0.491	mg/L	1	0.0020	0.0004		GES	07/12/2022 22:19	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-36

Customer Description:

Lab Number: 222016-006

Preparation:

Date Collected: 06/22/2022 12:35 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.059	mg/L	1	0.050	0.009		GES	07/12/2022 22:24	EPA 200.8-1994, Rev. 5.4
Calcium	0.38	mg/L	1	0.05	0.02		GES	07/12/2022 22:24	EPA 200.8-1994, Rev. 5.4
Magnesium	1.69	mg/L	1	0.10	0.02		GES	07/12/2022 22:24	EPA 200.8-1994, Rev. 5.4
Potassium	1.46	mg/L	1	0.10	0.02		GES	07/12/2022 22:24	EPA 200.8-1994, Rev. 5.4
Sodium	5.25	mg/L	1	0.20	0.05		GES	07/12/2022 22:24	EPA 200.8-1994, Rev. 5.4
Strontium	0.0068	mg/L	1	0.0020	0.0004		GES	07/12/2022 22:24	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 222016

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Customer Sample ID: Duplicate-3

Customer Description:

Lab Number: 222016-007

Preparation:

Date Collected: 06/22/2022 15:00 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.067 mg/L	1	0.050	0.009		GES	07/12/2022 22:29	EPA 200.8-1994, Rev. 5.4
Calcium	47.0 mg/L	1	0.05	0.02		GES	07/12/2022 22:29	EPA 200.8-1994, Rev. 5.4
Magnesium	39.4 mg/L	1	0.10	0.02		GES	07/12/2022 22:29	EPA 200.8-1994, Rev. 5.4
Potassium	7.57 mg/L	1	0.10	0.02		GES	07/12/2022 22:29	EPA 200.8-1994, Rev. 5.4
Sodium	16.6 mg/L	1	0.20	0.05		GES	07/12/2022 22:29	EPA 200.8-1994, Rev. 5.4
Strontium	0.489 mg/L	1	0.0020	0.0004		GES	07/12/2022 22:29	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: Equipment Blank

Customer Description:

Lab Number: 222016-008

Preparation:

Date Collected: 06/22/2022 11:24 EDT

Date Received: 06/27/2022 13:00 EDT

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	<0.009 mg/L	1	0.050	0.009	U1	GES	07/12/2022 22:34	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02	U1	GES	07/12/2022 22:34	EPA 200.8-1994, Rev. 5.4
Magnesium	<0.02 mg/L	1	0.10	0.02	U1	GES	07/12/2022 22:34	EPA 200.8-1994, Rev. 5.4
Potassium	<0.02 mg/L	1	0.10	0.02	U1	GES	07/12/2022 22:34	EPA 200.8-1994, Rev. 5.4
Sodium	<0.05 mg/L	1	0.20	0.05	U1	GES	07/12/2022 22:34	EPA 200.8-1994, Rev. 5.4
Strontium	<0.0004 mg/L	1	0.0020	0.0004	U1	GES	07/12/2022 22:34	EPA 200.8-1994, Rev. 5.4

222016

Job Comments:

Original report issued 7/29/2022. Report reissued with amended matrix spike precision calculations.



Water Analysis Report

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

Reissued

Job ID: 222016

Customer: Pirkey Power Station

Date Reported: 12/27/2022

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Contacts: Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR-Landfill
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kenny McDonald

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analyt(s) Initials	250 mL bottle, pH<2, HNO ₃	Field-filter 250 mL bottle, then pH<2, HNO ₃	Three (six every 10th) 1 L bottles, pH<2, HNO ₃	125 mL PTFE lined bottle, HCL<2, pH<2	Field Filtered 125 mL PTFE lined bottle, HCL<2, pH<2	Date:		COC/Order #:		
												Site Contact:	For Lab Use Only:			
AD-8	6/22/2022	1216	G	GW	1		B, Ca, K, Mg, Na, Sr	UNRESOLVED B, Cd, Cr, Co, Fe, Mn, Mo, Pb, Se, TL	Ra-226, Ra-228	Mercury	Disolved Mercury				792016	
AD-16	6/22/2022	1005	G	GW	1		X									
AD-23	6/22/2022	1117	G	GW	1		X									
AD-27	6/22/2022	1157	G	GW	1		X									
AD-34	6/22/2022	1048	G	GW	1		X									
AD-36	6/22/2022	1135	G	GW	1		X									
Duplicate - 3	6/22/2022	1400	G	GW	1		X									
Equipment Blank	6/22/2022	1024	G	GW	1		X									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ; F= filter in field													4	F4	2	2
* Six 1L Bottles must be collected for Radium for every 10th sample.																
Special Instructions/QC Requirements & Comments:																
Relinquished by: <i>Ersk</i> Date/Time: 6/23/22 Received by: Date/Time:																
Relinquished by: Date/Time: Received by: Date/Time:																
Relinquished by: Date/Time: Received in Laboratory by: <i>J. Beach</i> Date/Time: 6/27/22 1:00 PM																



WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

Package Type			Delivery Type				
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	<input type="radio"/> PONY	<input type="radio"/> UPS	<input type="radio"/> FedEx	<input type="radio"/> USPS
				Other _____			
Plant/Customer <u>Pukey</u>			Number of Plastic Containers: <u>8</u>				
Opened By <u>JAB/JDB/JWB</u>			Number of Glass Containers: _____				
Date/Time <u>6/27/22 1:00pm</u>			Number of Mercury Containers: _____				
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A Initial: _____ on ice <input checked="" type="radio"/> (no ice)							
(IR Gun Ser# 210441568, Expir. 5/27/2023) - If No, specify each deviation: _____							
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____							
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____							
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____							
pH (15 min)	Cr ⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)			

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: JWB 6/27/22

pH paper (circle one): MQuant pH Cat 1.09535.0001 _____ (OR) Lab rat pH Cat # LRS -4801 ✓
lot HC904495 Lot X000RWDG21

- 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# 292016 Initial & Date & Time : _____

Logged by mbv Comments: _____

Reviewed by Msb _____

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

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Jonathan Barnhill		Lab Supervisor	12-12-2022
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: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12-12-2022
Laboratory Job Number: 222016
Prep Batch Number(s): PB22070101 QC2207105

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?		
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: _____

Reviewer Name: Jonathan Barnhill

LRC Date: 12-12-2022

Laboratory Job Number: 222016

Prep Batch Number(s): PB22070101 QC2207105

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

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12-12-2022
Laboratory Job Number: 222016
Prep Batch Number(s): PB22070101 QC2207105

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 Ca Na Sr on sample 222016-001

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.”



Water Analysis Report

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

Reissued

Job ID: 222847

Customer: Pirkey Power Station

Date Reported: 12/30/2022

Customer Sample ID: AD-3	Customer Description: TG-32
Lab Number: 222847-001	Preparation:
Date Collected: 08/30/2022 11:50 EDT	Date Received: 09/01/2022 10:30 EDT

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	170	mg/L	1	50	20		SDW	09/01/2022 12:04	SM 2540C-2015

Customer Sample ID: AD-23	Customer Description: TG-32
Lab Number: 222847-002	Preparation:
Date Collected: 08/30/2022 11:08 EDT	Date Received: 09/01/2022 10:30 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.032	mg/L	1	0.050	0.009	J1	GES	09/06/2022 18:11	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-34	Customer Description: TG-32
Lab Number: 222847-003	Preparation:
Date Collected: 08/30/2022 09:36 EDT	Date Received: 09/01/2022 10:30 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Calcium	46.0	mg/L	1	0.05	0.02		GES	09/06/2022 18:16	EPA 200.8-1994, Rev. 5.4

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1650	mg/L	2	100	40		SDW	09/01/2022 12:10	SM 2540C-2015

Customer Sample ID: AD-36	Customer Description: TG-32
Lab Number: 222847-004	Preparation:
Date Collected: 08/30/2022 10:05 EDT	Date Received: 09/01/2022 10:30 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.3	mg/L	2	0.04	0.02		CRJ	09/07/2022 13:58	EPA 300.1-1997, Rev. 1.0
Fluoride	0.07	mg/L	2	0.06	0.02		CRJ	09/07/2022 13:58	EPA 300.1-1997, Rev. 1.0
Sulfate	3.00	mg/L	2	0.40	0.06		CRJ	09/07/2022 13:58	EPA 300.1-1997, Rev. 1.0

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Calcium	0.28	mg/L	1	0.05	0.02		GES	09/06/2022 18:21	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

Reissued

Job ID: 222847

Customer: Pirkey Power Station

Date Reported: 12/30/2022

222847

Job Comments:

Original report issued 9/27/2022. Report reissued with amended matrix spike precision calculations.

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

Chain of Custody Record

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
Contacts: Jonathan Barnhill (318-673-3803)
 Michael Ohlinger (614-836-4184)

Program: Coal Combustion Residuals (CCR)

Site Contact:

Date:

For Lab Use Only:

COC/Order #: 222847

Analysis Turnaround Time (in Calendar Days)

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	# of Cont.	Sampler(s) Initials						Sample Specific Notes	
					Boron	Calcium	TDS	Chloride, Sulfate	Hg	Hg		
AD-3	8/30/2022	1050	G	GW 1			X					
AD-23	8/30/2022	1008	G	GW 1	X							
AD-34	8/30/2022	836	G	GW 2		X	X					
AD-36	8/30/2022	905	G	GW 2		X		X				

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

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>RJM</i>	Company: <i>FRG LLC</i>	Date/Time: 08/31/22 1400	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>T. Shley</i>	Date/Time: 9/1/22 10:30 Am

AEP WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

<p style="text-align: center;"><u>Package Type</u></p> <p>Cooler Box Bag Envelope</p>	<p style="text-align: center;"><u>Delivery Type</u></p> <p>PONY UPS <u>FedEX</u> USPS</p> <p>Other _____</p>
<p>Plant/Customer <u>Pirkey</u></p>	<p>Number of Plastic Containers: <u>6</u></p>
<p>Opened By <u>MGK</u></p>	<p>Number of Glass Containers: <u>-</u></p>
<p>Date/Time <u>9/1/22 10:30AM</u></p>	<p>Number of Mercury Containers: _____</p>
<p>Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / N or N/A Initial: <u>MGK</u> <input checked="" type="radio"/> on ice / no ice (IR Gun Ser# 221368900, Expir. 3/22/2024) - If No, specify each deviation: _____</p>	
<p>Was container in good condition? <input checked="" type="radio"/> Y / N Comments _____</p>	
<p>Was Chain of Custody received? <input checked="" type="radio"/> Y / N Comments _____</p>	
<p>Requested turnaround: _____ If RUSH, who was notified? _____</p>	
<p>pH (15 min)</p>	<p>Cr⁺⁶ (pres) (24 hr)</p>
<p>NO₂ or NO₃ (48 hr)</p>	<p>ortho-PO₄ (48 hr)</p>
<p>Hg-diss (pres) (48 hr)</p>	<p></p>

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 9/1/22

pH paper (circle one): MQuant,PN1.09535.0001,LOT# HC904495 _____ [OR] Lab Rat,PN4801,LOT# X000RWDG2 ✓

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# 222847 Initial & Date & Time : _____

Logged by MSO Comments: _____

Reviewed by MGK _____

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

ICP-MS Laboratory Review Checklist

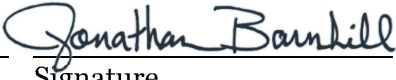
Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Jonathan Barnhill		Lab Supervisor	9/21/2022
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: Pirkey CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 9/21/2022
Laboratory Job Number: 222847
Prep Batch Number(s): PB22090601 QC2209029

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?	NR	
	I	Were MS/MSD RPDs within laboratory QC limits?	NR	
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: Pirkey CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 9/21/2022
Laboratory Job Number: 222847
Prep Batch Number(s): PB22090601 QC2209029

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

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 9/21/2022
Laboratory Job Number: 222847
Prep Batch Number(s): PB22090601 QC2209029

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.”

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Timothy E Arnold		Chemist Prin	9/8/2022
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: Pirkey
Reviewer Name: Timothy E Arnold
LRC Date: 9/8/2022
Laboratory Job Number: 222847
Prep Batch Number(s): QC2209040

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: Pirkey
Reviewer Name: Timothy E Arnold
LRC Date: 9/8/2022
Laboratory Job Number: 222847
Prep Batch Number(s): QC2209040

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: Pirkey
Reviewer Name: Timothy E Arnold
LRC Date: 9/8/2022
Laboratory Job Number: 222847
Prep Batch Number(s): QC2209040

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

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

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

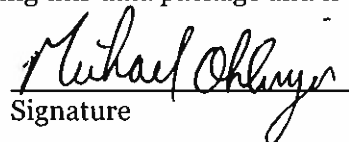
This data package consists of:

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

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

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

Michael Ohlinger
Name (printed)


Signature

Chemist
Official Title

9/6/22
Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh PBAP
Reviewer Name: Michael Ohlinger
LRC Date: 9/6/2022
Laboratory Job Number: 222847
Prep Batch Number(s): QC2209024

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 PBAP

Reviewer Name: Michael Ohlinger

LRC Date: 4/5/22

Laboratory Job Number: 222847

Prep Batch Number(s): QC2209024

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

TDS Laboratory Review Checklist

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

TDS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh PBAP
Reviewer Name: Michael Ohlinger
LRC Date: 9/6/2022
Laboratory Job Number: 222847
Prep Batch Number(s): QC2209024

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-2

Customer Description: TG-32

Lab Number: 223647-001

Preparation:

Date Collected: 11/15/2022 11:05 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.37	mg/L	2	0.10	0.02		CRJ	11/30/2022 14:27	EPA 300.1-1997, Rev. 1.0
Chloride	30.5	mg/L	2	0.04	0.02		CRJ	11/30/2022 14:27	EPA 300.1-1997, Rev. 1.0
Fluoride	0.21	mg/L	2	0.06	0.02		CRJ	11/30/2022 14:27	EPA 300.1-1997, Rev. 1.0
Sulfate	259	mg/L	10	2.0	0.3		CRJ	11/30/2022 13:54	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	480	mg/L	1	50	20		SDW	11/20/2022 10:00	SM 2540C-2015

Customer Sample ID: AD-3

Customer Description: TG-32

Lab Number: 223647-002

Preparation:

Date Collected: 11/16/2022 12:45 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.07	mg/L	2	0.10	0.02	J1	CRJ	11/30/2022 13:21	EPA 300.1-1997, Rev. 1.0
Chloride	7.40	mg/L	2	0.04	0.02		CRJ	11/30/2022 13:21	EPA 300.1-1997, Rev. 1.0
Fluoride	0.18	mg/L	2	0.06	0.02		CRJ	11/30/2022 13:21	EPA 300.1-1997, Rev. 1.0
Sulfate	34.4	mg/L	2	0.40	0.06		CRJ	11/30/2022 13:21	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	29	mg/L	1	20	5		MGK	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	160	mg/L	1	50	20		SDW	11/20/2022 10:05	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-4

Customer Description: TG-32

Lab Number: 223647-003

Preparation:

Date Collected: 11/16/2022 12:32 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.19	mg/L	2	0.10	0.02		CRJ	11/30/2022 15:33	EPA 300.1-1997, Rev. 1.0
Chloride	4.14	mg/L	2	0.04	0.02		CRJ	11/30/2022 15:33	EPA 300.1-1997, Rev. 1.0
Fluoride	<0.02	mg/L	2	0.06	0.02	U1	CRJ	11/30/2022 15:33	EPA 300.1-1997, Rev. 1.0
Sulfate	16.6	mg/L	2	0.40	0.06		CRJ	11/30/2022 15:33	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	130	mg/L	1	50	20		SDW	11/20/2022 10:10	SM 2540C-2015

Customer Sample ID: AD-7

Customer Description: TG-32

Lab Number: 223647-004

Preparation:

Date Collected: 11/16/2022 10:10 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	4.29	mg/L	2	0.10	0.02		CRJ	11/30/2022 17:45	EPA 300.1-1997, Rev. 1.0
Chloride	69.7	mg/L	10	0.2	0.1		CRJ	12/01/2022 08:54	EPA 300.1-1997, Rev. 1.0
Fluoride	0.23	mg/L	2	0.06	0.02		CRJ	11/30/2022 17:45	EPA 300.1-1997, Rev. 1.0
Sulfate	60.5	mg/L	2	0.40	0.06		CRJ	11/30/2022 17:45	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	300	mg/L	1	50	20		SDW	11/20/2022 10:10	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-12

Customer Description: TG-32

Lab Number: 223647-005

Preparation:

Date Collected: 11/15/2022 11:58 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.14	mg/L	2	0.10	0.02		CRJ	11/30/2022 18:17	EPA 300.1-1997, Rev. 1.0
Chloride	8.03	mg/L	2	0.04	0.02		CRJ	11/30/2022 18:17	EPA 300.1-1997, Rev. 1.0
Fluoride	0.08	mg/L	2	0.06	0.02		CRJ	11/30/2022 18:17	EPA 300.1-1997, Rev. 1.0
Sulfate	3.39	mg/L	2	0.40	0.06		CRJ	11/30/2022 18:17	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	70	mg/L	1	50	20		SDW	11/20/2022 10:15	SM 2540C-2015

Customer Sample ID: AD-13

Customer Description: TG-32

Lab Number: 223647-006

Preparation:

Date Collected: 11/15/2022 09:21 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.23	mg/L	2	0.10	0.02		CRJ	11/30/2022 16:39	EPA 300.1-1997, Rev. 1.0
Chloride	41.3	mg/L	2	0.04	0.02		CRJ	11/30/2022 16:39	EPA 300.1-1997, Rev. 1.0
Fluoride	0.36	mg/L	2	0.06	0.02		CRJ	11/30/2022 16:39	EPA 300.1-1997, Rev. 1.0
Sulfate	69.6	mg/L	2	0.40	0.06		CRJ	11/30/2022 16:39	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	66	mg/L	1	20	5		MGK	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	260	mg/L	1	50	20		SDW	11/20/2022 10:15	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-17

Customer Description: TG-32

Lab Number: 223647-007

Preparation:

Date Collected: 11/16/2022 11:58 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.20	mg/L	2	0.10	0.02		CRJ	11/30/2022 18:50	EPA 300.1-1997, Rev. 1.0
Chloride	35.0	mg/L	2	0.04	0.02		CRJ	11/30/2022 18:50	EPA 300.1-1997, Rev. 1.0
Fluoride	0.26	mg/L	2	0.06	0.02		CRJ	11/30/2022 18:50	EPA 300.1-1997, Rev. 1.0
Sulfate	2.91	mg/L	2	0.40	0.06		CRJ	11/30/2022 18:50	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	80	mg/L	1	50	20		SDW	11/20/2022 10:23	SM 2540C-2015

Customer Sample ID: AD-18

Customer Description: TG-32

Lab Number: 223647-008

Preparation:

Date Collected: 11/16/2022 11:13 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.04	mg/L	2	0.10	0.02	J1	CRJ	11/30/2022 19:56	EPA 300.1-1997, Rev. 1.0
Chloride	4.94	mg/L	2	0.04	0.02		CRJ	11/30/2022 19:56	EPA 300.1-1997, Rev. 1.0
Fluoride	<0.02	mg/L	2	0.06	0.02	U1	CRJ	11/30/2022 19:56	EPA 300.1-1997, Rev. 1.0
Sulfate	6.55	mg/L	2	0.40	0.06		CRJ	11/30/2022 19:56	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	90	mg/L	1	50	20		SDW	11/20/2022 10:23	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-22

Customer Description: TG-32

Lab Number: 223647-009

Preparation:

Date Collected: 11/14/2022 12:31 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.79	mg/L	2	0.10	0.02		CRJ	11/30/2022 23:47	EPA 300.1-1997, Rev. 1.0
Chloride	101	mg/L	25	0.5	0.3		CRJ	11/30/2022 23:14	EPA 300.1-1997, Rev. 1.0
Fluoride	0.28	mg/L	2	0.06	0.02		CRJ	11/30/2022 23:47	EPA 300.1-1997, Rev. 1.0
Sulfate	251	mg/L	25	5.0	0.8		CRJ	11/30/2022 23:14	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	570	mg/L	1	50	20		SDW	11/20/2022 10:29	SM 2540C-2015

Customer Sample ID: AD-28

Customer Description: TG-32

Lab Number: 223647-010

Preparation:

Date Collected: 11/16/2022 09:48 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.07	mg/L	2	0.10	0.02	J1	CRJ	12/01/2022 00:53	EPA 300.1-1997, Rev. 1.0
Chloride	4.96	mg/L	2	0.04	0.02		CRJ	12/01/2022 00:53	EPA 300.1-1997, Rev. 1.0
Fluoride	0.48	mg/L	2	0.06	0.02		CRJ	12/01/2022 00:53	EPA 300.1-1997, Rev. 1.0
Sulfate	23.3	mg/L	2	0.40	0.06		CRJ	12/01/2022 00:53	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	80	mg/L	1	50	20		SDW	11/20/2022 10:29	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-30

Customer Description: TG-32

Lab Number: 223647-011

Preparation:

Date Collected: 11/16/2022 10:46 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.37	mg/L	2	0.10	0.02		CRJ	12/01/2022 01:58	EPA 300.1-1997, Rev. 1.0
Chloride	27.4	mg/L	2	0.04	0.02		CRJ	12/01/2022 01:58	EPA 300.1-1997, Rev. 1.0
Fluoride	0.07	mg/L	2	0.06	0.02		CRJ	12/01/2022 01:58	EPA 300.1-1997, Rev. 1.0
Sulfate	177	mg/L	10	2.0	0.3		CRJ	12/01/2022 01:25	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	340	mg/L	1	50	20		SDW	11/20/2022 10:35	SM 2540C-2015

Customer Sample ID: AD-31

Customer Description: TG-32

Lab Number: 223647-012

Preparation:

Date Collected: 11/15/2022 11:02 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.35	mg/L	2	0.10	0.02		CRJ	12/01/2022 03:04	EPA 300.1-1997, Rev. 1.0
Chloride	24.3	mg/L	2	0.04	0.02		CRJ	12/01/2022 03:04	EPA 300.1-1997, Rev. 1.0
Fluoride	0.14	mg/L	2	0.06	0.02		CRJ	12/01/2022 03:04	EPA 300.1-1997, Rev. 1.0
Sulfate	79.1	mg/L	2	0.40	0.06		CRJ	12/01/2022 03:04	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	250	mg/L	1	50	20		SDW	11/20/2022 10:35	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-32

Customer Description: TG-32

Lab Number: 223647-013

Preparation:

Date Collected: 11/15/2022 10:03 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	2.58	mg/L	2	0.10	0.02		CRJ	12/01/2022 05:49	EPA 300.1-1997, Rev. 1.0
Chloride	22.7	mg/L	2	0.04	0.02		CRJ	12/01/2022 05:49	EPA 300.1-1997, Rev. 1.0
Fluoride	0.49	mg/L	2	0.06	0.02		CRJ	12/01/2022 05:49	EPA 300.1-1997, Rev. 1.0
Sulfate	244	mg/L	25	5.0	0.8		CRJ	12/01/2022 05:16	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	450	mg/L	1	50	20		SDW	11/20/2022 10:40	SM 2540C-2015

Customer Sample ID: AD-33

Customer Description: TG-32

Lab Number: 223647-014

Preparation:

Date Collected: 11/15/2022 12:06 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.25	mg/L	2	0.10	0.02		CRJ	12/01/2022 06:55	EPA 300.1-1997, Rev. 1.0
Chloride	9.18	mg/L	2	0.04	0.02		CRJ	12/01/2022 06:55	EPA 300.1-1997, Rev. 1.0
Fluoride	0.16	mg/L	2	0.06	0.02		CRJ	12/01/2022 06:55	EPA 300.1-1997, Rev. 1.0
Sulfate	42.7	mg/L	2	0.40	0.06		CRJ	12/01/2022 06:55	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	140	mg/L	1	50	20		SDW	11/20/2022 10:40	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: Duplicate - 2

Customer Description: TG-32

Lab Number: 223647-015

Preparation:

Date Collected: 11/15/2022 15:00 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.23	mg/L	2	0.10	0.02		CRJ	12/01/2022 04:10	EPA 300.1-1997, Rev. 1.0
Chloride	41.3	mg/L	2	0.04	0.02		CRJ	12/01/2022 04:10	EPA 300.1-1997, Rev. 1.0
Fluoride	0.36	mg/L	2	0.06	0.02		CRJ	12/01/2022 04:10	EPA 300.1-1997, Rev. 1.0
Sulfate	70.2	mg/L	2	0.40	0.06		CRJ	12/01/2022 04:10	EPA 300.1-1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	65	mg/L	1	20	5		MGK	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	270	mg/L	1	50	20		SDW	11/20/2022 10:47	SM 2540C-2015

223647

Job Comments:

Original report issued 12/21/22. Report reissued without P1 flag for alkalinity as sample and duplicate results < RL.

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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



Water Analysis Report

Reissued

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

Job ID: 223647

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Data Qualifier Legend

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

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

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Site Contact:

For Lab Use Only:

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Contacts: Dave Conover (614-836-4219)

Project Name: Pirkey PP Semi-Annual CCR
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton, Kenny McDonald

Date: _____

COC/Order #: **223647**

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

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	# of Matrix Cont.	Sampler(s) Initials	Field/Filter				Sample Specific Notes:
					250 mL bottle, pH<2, HNO3	Field-filter 250 mL bottle, then pH<2, HNO3	1 L bottle, Cool, 0-5C	Three (six every 10th) L bottles, pH<2, HNO3	
11/15/2022	1005	G	1		Mercury				
11/16/2022	1145	G	1						
11/16/2022	1132	G	1						
11/16/2022	910	G	1						
11/15/2022	1058	G	1						
11/15/2022	821	G	1						
11/16/2022	1058	G	1						
11/16/2022	1013	G	1						
11/14/2022	1131	G	1						
11/16/2022	848	G	1						
11/16/2022	946	G	1						
11/15/2022	1002	G	1						
				F= filter in field	4	F4	1	4	

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

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

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

Relinquished by: *Y. A. Hamilton* Date/Time: *11-17-22 13:00* Received by: _____ Date/Time: _____

Relinquished by: _____ Date/Time: _____ Received by: _____ Date/Time: _____

Relinquished by: _____ Date/Time: _____ Received by: *Michael Ohlinger* Date/Time: *10:20 AM 11/18/22*

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
4001 Bixby Road
Groveport, Ohio 43125
Michael Oblinger (614-836-4184)
Contacts: Dave Conover (614-836-4219)

Project Name: Pirk ey PP CCR

Contact Name: Leslie Fuerschbach

Contact Phone: 318-673-2744

Samplers: Matt Hamilton, Kenny McDonald

Sample Identification		Analysis Turnaround Time (in Calendar Days)				Site Contact:		Date:		For Lab Use Only:		
		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	# of Cont.	Matrix	Sampler(s) Initials	250 mL bottle, pH<2, HNO3	Field-filter 250 mL bottle, then pH<2, HNO3	1 L bottle, Cool, 0-6C	Three (six every 10th) L bottles, pH<2, HNO3	COC/Order #:
AD-32	903	G	GW	1			Mercury	Disolved Mercury	T, Cl, SO4, Br, TDS, Alkalinity	Ra-226, Ra-228		
AD-33	1106	G	GW	1								
Duplicate - 2	1400	G	GW	1								
<p>Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ; F= filter in field ; 4 F4 1 4</p> <p>* Six 1L Bottles must be collected for Radium for every 10th sample.</p>												
<p>Special Instructions/QC Requirements & Comments:</p> <p style="font-size: 2em; color: blue; text-align: center;">TG-32 Needed</p>												
Relinquished by: <i>Zolt Zombor</i>		Company: Eagle		Date/Time: 11-17-22 1300		Received by:		Date/Time:		Date/Time:		
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time:		Date/Time:		
Relinquished by:		Company:		Date/Time:		Received in Laboratory by: <i>Matthew Obly</i>		Date/Time: 11/18/22		Date/Time: 10:30AM		



WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

<u>Package Type</u>		<u>Delivery Type</u>		
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	PONY <input type="radio"/> <u>UPS</u> <input type="radio"/> FedEX <input type="radio"/> USPS Other _____
Plant/Customer <u>Pinkey Church Power</u>		Number of Plastic Containers: <u>15</u>		
Opened By <u>MSO</u>		Number of Glass Containers: <u>—</u>		
Date/Time <u>11/18/22 10:20AM</u>		Number of Mercury Containers: <u>—</u>		
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / <input type="radio"/> N or N/A Initial: <u>GAB</u> <input checked="" type="radio"/> on ice / <input type="radio"/> no ice (IR Gun Ser# 221368900, Expir. 3/22/2024) - If No, specify each deviation: _____				
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____				
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____				
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____				
pH (15 min)	Cr ⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: GAB 11/18/22

pH paper (circle one): MQuant,PN1.09535.0001,LOT# HC904495 [OR] Lab Rat,PN4801,LOT# X000RWDG21

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# 223647 Initial & Date & Time : _____

Logged by MSO Comments: TG-32
AD 4 Bottle saving Supp 11:33 C/C 1132

Reviewed by GAB

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

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist


This data package consists of:

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

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

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

Timothy E Arnold
Name (printed)


Signature

Prin Chemist
Official Title

12/21/2022
Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP Semi-Annual CCR
Reviewer Name: Timothy E Arnold
LRC Date: 12/21/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2212004

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: Pirkey PP Semi-Annual CCR
Reviewer Name: Timothy E Arnold
LRC Date: 12/21/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2212004

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: Pirkey PP Semi-Annual CCR
Reviewer Name: Timothy E Arnold
LRC Date: 12/21/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2212004

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

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

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

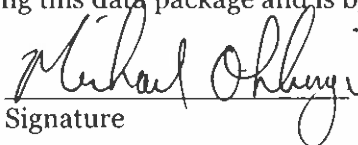
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Michael Ohlinger

Name (printed)

 Michael Ohlinger

Signature

Chemist

Official Title

12/20/22

Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey CCR
Reviewer Name: Michael Ohlinger
LRC Date: 12/20/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2211231

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: Pirkey CCR

Reviewer Name: Michael Ohlinger

LRC Date: 4/5/22

Laboratory Job Number: 223647

Prep Batch Number(s): QC2211231

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

TDS Laboratory Review Checklist

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

TDS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey CCR
Reviewer Name: Michael Ohlinger
LRC Date: 12/20/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2211231

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."

Alkalinity Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

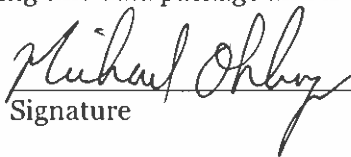
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Michael Ohlinger

Name (printed)



Signature

Chemist

Official Title

12/22/2022

Date

Alkalinity Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR
Reviewer Name: Michael Ohlinger
LRC Date: 12/22/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2211194

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?	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	

Alkalinity 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?	No	ER1
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	

Alkalinity Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR
Reviewer Name: Michael Ohlinger
LRC Date: 12/22/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2211194

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?	Yes	
	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?	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?	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	

Alkalinity 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	

Alkalinity Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR
Reviewer Name: Michael Ohlinger
LRC Date: 12/22/2022
Laboratory Job Number: 223647
Prep Batch Number(s): QC2211194

Exception Report No.	Description
ER1	The RPD between duplicate results > acceptance limits, not flagged as results < MQL.
ER2	CCB acceptance criteria is $CCB < 0.5 * MQL$.

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

Reissued

Job ID: 223649

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-8

Customer Description: TG-32

Lab Number: 223649-001

Preparation:

Date Collected: 11/14/2022 11:07 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	1.11	mg/L	2	0.10	0.02		CRJ	12/01/2022 21:00	EPA 300.1-1997, Rev. 1.0
Chloride	23.1	mg/L	2	0.04	0.02		CRJ	12/01/2022 21:00	EPA 300.1-1997, Rev. 1.0
Fluoride	2.04	mg/L	2	0.06	0.02		CRJ	12/01/2022 21:00	EPA 300.1-1997, Rev. 1.0
Sulfate	119	mg/L	10	2.0	0.3		CRJ	12/01/2022 20:27	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	240	mg/L	1	50	20		SDW	11/20/2022 10:47	SM 2540C-2015

Customer Sample ID: AD-16

Customer Description: TG-32

Lab Number: 223649-002

Preparation:

Date Collected: 11/14/2022 11:55 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.17	mg/L	2	0.10	0.02		CRJ	12/01/2022 19:54	EPA 300.1-1997, Rev. 1.0
Chloride	25.2	mg/L	2	0.04	0.02		CRJ	12/01/2022 19:54	EPA 300.1-1997, Rev. 1.0
Fluoride	0.07	mg/L	2	0.06	0.02		CRJ	12/01/2022 19:54	EPA 300.1-1997, Rev. 1.0
Sulfate	6.68	mg/L	2	0.40	0.06		CRJ	12/01/2022 19:54	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	90	mg/L	1	50	20		SDW	11/20/2022 10:54	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223649

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-23

Customer Description: TG-32

Lab Number: 223649-003

Preparation:

Date Collected: 11/14/2022 12:02 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.20	mg/L	2	0.10	0.02		CRJ	12/01/2022 22:06	EPA 300.1-1997, Rev. 1.0
Chloride	7.49	mg/L	2	0.04	0.02		CRJ	12/01/2022 22:06	EPA 300.1-1997, Rev. 1.0
Fluoride	0.06	mg/L	2	0.06	0.02		CRJ	12/01/2022 22:06	EPA 300.1-1997, Rev. 1.0
Sulfate	8.03	mg/L	2	0.40	0.06		CRJ	12/01/2022 22:06	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	80	mg/L	1	50	20		SDW	11/20/2022 10:54	SM 2540C-2015

Customer Sample ID: AD-27

Customer Description: TG-32

Lab Number: 223649-004

Preparation:

Date Collected: 11/14/2022 12:49 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.30	mg/L	2	0.10	0.02		CRJ	12/01/2022 22:39	EPA 300.1-1997, Rev. 1.0
Chloride	12.7	mg/L	2	0.04	0.02		CRJ	12/01/2022 22:39	EPA 300.1-1997, Rev. 1.0
Fluoride	0.20	mg/L	2	0.06	0.02		CRJ	12/01/2022 22:39	EPA 300.1-1997, Rev. 1.0
Sulfate	59.4	mg/L	2	0.40	0.06		CRJ	12/01/2022 22:39	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	180	mg/L	1	50	20		SDW	11/20/2022 11:00	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223649

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-34

Customer Description: TG-32

Lab Number: 223649-005

Preparation:

Date Collected: 11/14/2022 09:19 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.15	mg/L	2	0.10	0.02		CRJ	12/02/2022 00:50	EPA 300.1-1997, Rev. 1.0
Chloride	7.47	mg/L	2	0.04	0.02		CRJ	12/02/2022 00:50	EPA 300.1-1997, Rev. 1.0
Fluoride	0.44	mg/L	2	0.06	0.02		CRJ	12/02/2022 00:50	EPA 300.1-1997, Rev. 1.0
Sulfate	1250	mg/L	50	10	2		CRJ	12/01/2022 23:12	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	1720	mg/L	1	50	20		SDW	11/20/2022 11:00	SM 2540C-2015

Customer Sample ID: AD-36

Customer Description: TG-32

Lab Number: 223649-006

Preparation:

Date Collected: 11/14/2022 10:28 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.38	mg/L	2	0.10	0.02		CRJ	12/02/2022 02:29	EPA 300.1-1997, Rev. 1.0
Chloride	11.1	mg/L	2	0.04	0.02		CRJ	12/02/2022 02:29	EPA 300.1-1997, Rev. 1.0
Fluoride	0.07	mg/L	2	0.06	0.02		CRJ	12/02/2022 02:29	EPA 300.1-1997, Rev. 1.0
Sulfate	2.93	mg/L	2	0.40	0.06		CRJ	12/02/2022 02:29	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	50	mg/L	1	50	20		SDW	11/20/2022 11:27	SM 2540C-2015



Water Analysis Report

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

Reissued

Job ID: 223649

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: Landfill Duplicate

Customer Description: TG-32

Lab Number: 223649-007

Preparation:

Date Collected: 11/14/2022 15:00 EST

Date Received: 11/18/2022 10:20 EST

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.38	mg/L	2	0.10	0.02		CRJ	12/02/2022 01:23	EPA 300.1-1997, Rev. 1.0
Chloride	11.1	mg/L	2	0.04	0.02		CRJ	12/02/2022 01:23	EPA 300.1-1997, Rev. 1.0
Fluoride	0.08	mg/L	2	0.06	0.02		CRJ	12/02/2022 01:23	EPA 300.1-1997, Rev. 1.0
Sulfate	7.38	mg/L	2	0.40	0.06		CRJ	12/02/2022 01:23	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	11/21/2022 10:18	SM 2320B-2011
TDS, Filterable Residue	50	mg/L	1	50	20		SDW	11/20/2022 11:32	SM 2540C-2015

223649

Job Comments:

Original report issued 12/21/22. Report reissued without P1 flag for alkalinity as sample and duplicate results < RL.

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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



Water Analysis Report

Reissued

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

Job ID: 223649

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Data Qualifier Legend

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

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR - Landfill
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kenny McDonald

Site Contact: _____ Date: _____
 Analysis Turnaround Time (in Calendar Days)
 ☞ Routine (28 days for Monitoring Wells)

COC/Order #: **223649**
 For Lab Use Only:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Samplers/ Inlets				Sample Specific Notes
						Mercury	Field-filter 250 mL bottle, then pH<2, HNO3	1 L bottle, Cool, 0-6C	Three (six every 10th) L bottles, pH<2, HNO3	
AD-8	11/14/2022	1007	G	GW	1					
AD-16	11/14/2022	1055	G	GW	1					
AD-23	11/14/2022	1102	G	GW	1					
AD-27	11/14/2022	1149	G	GW	1					
AD-34	11/14/2022	819	G	GW	1					
AD-36	11/14/2022	928	G	GW	1					
Landfill Duplicate	11/14/2022	1400	G	GW	1					
						4	F4	1	4	

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

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by: <i>[Signature]</i>	Company: <i>Esgk</i>	Date/Time: 11-17-22 1300	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: 11/18/22 10:20 AM



WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

<u>Package Type</u> <input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope		<u>Delivery Type</u> PONY <input checked="" type="radio"/> UPS FedEX USPS Other _____	
Plant/Customer <u>Purkey</u>		Number of Plastic Containers: <u>7</u>	
Opened By <u>MSO</u>		Number of Glass Containers: _____	
Date/Time <u>11/18/22 10:20AM</u>		Number of Mercury Containers: _____	
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / N or N/A Initial: <u>GAB</u> <input checked="" type="radio"/> on ice / no ice (IR Gun Ser# 221368900, Expir. 3/22/2024) - If No, specify each deviation: _____			
Was container in good condition? <input checked="" type="radio"/> Y / N Comments _____			
Was Chain of Custody received? <input checked="" type="radio"/> Y / N Comments _____			
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____			
pH (15 min)	Cr ⁺⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr) Hg-diss (pres) (48 hr)

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: GAB 11/18/22

pH paper (circle one): MQuant,PN1.09535.0001,LOT# HC904495 [OR] Lab Rat,PN4801,LOT# X000RWDG21

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# 223649 Initial & Date & Time : _____

Comments: _____

Logged by MSO _____

Reviewed by GAB _____

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

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

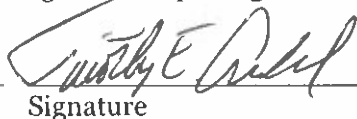
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Timothy E Arnold

Name (printed)


Signature

Chemist Prin

Official Title

12/21/2022

Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR-Landfill
Reviewer Name: Timothy E Arnold
LRC Date: 12/21/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2212023

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: Pirkey PP CCR-Landfill
Reviewer Name: Timothy E Arnold
LRC Date: 12/21/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2212023

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: Pirkey PP CCR-Landfill
Reviewer Name: Timothy E Arnold
LRC Date: 12/21/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2212023

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

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

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

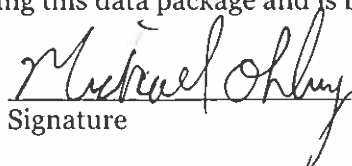
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Michael Ohlinger

Name (printed)



Signature

Chemist

Official Title

12/20/22

Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 12/20/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2211231

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: Pirkey CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 4/5/22
Laboratory Job Number: 223649
Prep Batch Number(s): QC2211231

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

TDS Laboratory Review Checklist

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

TDS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey CCR - Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 12/20/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2211231

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."

Alkalinity Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

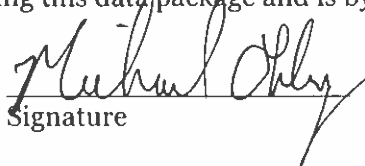
- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference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

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

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

Michael Ohlinger

Name (printed)



Signature

Chemist

Official Title

12/22/2022

Date

Alkalinity Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 12/22/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2211194

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?	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	

Alkalinity 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?	No	ER1
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	

Alkalinity Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 12/22/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2211194

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?	Yes	
	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?	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?	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	

Alkalinity 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	

Alkalinity Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey PP CCR Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 12/22/2022
Laboratory Job Number: 223649
Prep Batch Number(s): QC2211194

Exception Report No.	Description
ER1	The RPD between duplicate results > acceptance limits, not flagged as results < MQL.
ER2	CCB acceptance criteria is $CCB < 0.5 * MQL$.

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: 223668

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-8

Customer Description:

Lab Number: 223668-001

Preparation:

Date Collected: 11/14/2022 11:07 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	1.03	mg/L	1	0.050	0.009		GES	11/30/2022 22:11	EPA 200.8-1994, Rev. 5.4
Calcium	17.9	mg/L	1	0.05	0.02		GES	11/30/2022 22:11	EPA 200.8-1994, Rev. 5.4
Magnesium	2.28	mg/L	1	0.10	0.02		GES	11/30/2022 22:11	EPA 200.8-1994, Rev. 5.4
Potassium	0.61	mg/L	1	0.10	0.02		GES	11/30/2022 22:11	EPA 200.8-1994, Rev. 5.4
Sodium	11.6	mg/L	1	0.20	0.05		GES	11/30/2022 22:11	EPA 200.8-1994, Rev. 5.4
Strontium	0.115	mg/L	1	0.0020	0.0004		GES	11/30/2022 22:11	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-16

Customer Description:

Lab Number: 223668-002

Preparation:

Date Collected: 11/14/2022 11:55 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.024	mg/L	1	0.050	0.009	J1	GES	11/30/2022 22:27	EPA 200.8-1994, Rev. 5.4
Calcium	0.91	mg/L	1	0.05	0.02		GES	11/30/2022 22:27	EPA 200.8-1994, Rev. 5.4
Magnesium	1.78	mg/L	1	0.10	0.02		GES	11/30/2022 22:27	EPA 200.8-1994, Rev. 5.4
Potassium	1.33	mg/L	1	0.10	0.02		GES	11/30/2022 22:27	EPA 200.8-1994, Rev. 5.4
Sodium	12.7	mg/L	1	0.20	0.05		GES	11/30/2022 22:27	EPA 200.8-1994, Rev. 5.4
Strontium	0.0104	mg/L	1	0.0020	0.0004		GES	11/30/2022 22:27	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-23

Customer Description:

Lab Number: 223668-003

Preparation:

Date Collected: 11/14/2022 12:02 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.078	mg/L	1	0.050	0.009		GES	11/30/2022 22:32	EPA 200.8-1994, Rev. 5.4
Calcium	0.24	mg/L	1	0.05	0.02		GES	11/30/2022 22:32	EPA 200.8-1994, Rev. 5.4
Magnesium	0.25	mg/L	1	0.10	0.02		GES	11/30/2022 22:32	EPA 200.8-1994, Rev. 5.4
Potassium	2.85	mg/L	1	0.10	0.02		GES	11/30/2022 22:32	EPA 200.8-1994, Rev. 5.4
Sodium	2.72	mg/L	1	0.20	0.05		GES	11/30/2022 22:32	EPA 200.8-1994, Rev. 5.4
Strontium	0.0035	mg/L	1	0.0020	0.0004		GES	11/30/2022 22:32	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: 223668

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: AD-27

Customer Description:

Lab Number: 223668-004

Preparation:

Date Collected: 11/14/2022 12:49 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.034	mg/L	1	0.050	0.009	J1	GES	11/30/2022 22:37	EPA 200.8-1994, Rev. 5.4
Calcium	3.79	mg/L	1	0.05	0.02		GES	11/30/2022 22:37	EPA 200.8-1994, Rev. 5.4
Magnesium	5.09	mg/L	1	0.10	0.02		GES	11/30/2022 22:37	EPA 200.8-1994, Rev. 5.4
Potassium	2.16	mg/L	1	0.10	0.02		GES	11/30/2022 22:37	EPA 200.8-1994, Rev. 5.4
Sodium	7.57	mg/L	1	0.20	0.05		GES	11/30/2022 22:37	EPA 200.8-1994, Rev. 5.4
Strontium	0.0613	mg/L	1	0.0020	0.0004		GES	11/30/2022 22:37	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-34

Customer Description:

Lab Number: 223668-005

Preparation:

Date Collected: 11/14/2022 09:19 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.067	mg/L	1	0.050	0.009		GES	11/30/2022 22:42	EPA 200.8-1994, Rev. 5.4
Calcium	44.6	mg/L	1	0.05	0.02		GES	11/30/2022 22:42	EPA 200.8-1994, Rev. 5.4
Magnesium	39.2	mg/L	1	0.10	0.02		GES	11/30/2022 22:42	EPA 200.8-1994, Rev. 5.4
Potassium	7.91	mg/L	1	0.10	0.02		GES	11/30/2022 22:42	EPA 200.8-1994, Rev. 5.4
Sodium	15.1	mg/L	1	0.20	0.05		GES	11/30/2022 22:42	EPA 200.8-1994, Rev. 5.4
Strontium	0.481	mg/L	1	0.0020	0.0004		GES	11/30/2022 22:42	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: AD-36

Customer Description:

Lab Number: 223668-006

Preparation:

Date Collected: 11/14/2022 10:28 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.068	mg/L	1	0.050	0.009		GES	11/30/2022 22:47	EPA 200.8-1994, Rev. 5.4
Calcium	0.28	mg/L	1	0.05	0.02		GES	11/30/2022 22:47	EPA 200.8-1994, Rev. 5.4
Magnesium	1.60	mg/L	1	0.10	0.02		GES	11/30/2022 22:47	EPA 200.8-1994, Rev. 5.4
Potassium	1.64	mg/L	1	0.10	0.02		GES	11/30/2022 22:47	EPA 200.8-1994, Rev. 5.4
Sodium	5.27	mg/L	1	0.20	0.05		GES	11/30/2022 22:47	EPA 200.8-1994, Rev. 5.4
Strontium	0.0060	mg/L	1	0.0020	0.0004		GES	11/30/2022 22:47	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: 223668

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Customer Sample ID: Landfill Duplicate

Customer Description:

Lab Number: 223668-007

Preparation:

Date Collected: 11/14/2022 15:00 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	0.068 mg/L	1	0.050	0.009		GES	11/30/2022 22:52	EPA 200.8-1994, Rev. 5.4
Calcium	0.28 mg/L	1	0.05	0.02		GES	11/30/2022 22:52	EPA 200.8-1994, Rev. 5.4
Magnesium	1.57 mg/L	1	0.10	0.02		GES	11/30/2022 22:52	EPA 200.8-1994, Rev. 5.4
Potassium	1.62 mg/L	1	0.10	0.02		GES	11/30/2022 22:52	EPA 200.8-1994, Rev. 5.4
Sodium	5.16 mg/L	1	0.20	0.05		GES	11/30/2022 22:52	EPA 200.8-1994, Rev. 5.4
Strontium	0.0059 mg/L	1	0.0020	0.0004		GES	11/30/2022 22:52	EPA 200.8-1994, Rev. 5.4

Customer Sample ID: Equipment Blank - Landfill

Customer Description:

Lab Number: 223668-008

Preparation:

Date Collected: 11/14/2022 12:19 EST

Date Received: 11/21/2022 12:00 EST

Metals

Parameter	Result Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Boron	<0.009 mg/L	1	0.050	0.009	U1	GES	11/30/2022 22:57	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02	U1	GES	11/30/2022 22:57	EPA 200.8-1994, Rev. 5.4
Magnesium	<0.02 mg/L	1	0.10	0.02	U1	GES	11/30/2022 22:57	EPA 200.8-1994, Rev. 5.4
Potassium	<0.02 mg/L	1	0.10	0.02	U1	GES	11/30/2022 22:57	EPA 200.8-1994, Rev. 5.4
Sodium	<0.05 mg/L	1	0.20	0.05	U1	GES	11/30/2022 22:57	EPA 200.8-1994, Rev. 5.4
Strontium	<0.0004 mg/L	1	0.0020	0.0004	U1	GES	11/30/2022 22:57	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: 223668

Customer: Pirkey Power Station

Date Reported: 12/22/2022

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

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

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Contacts: Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR-Landfill
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kelly McDonald

Site Contact: _____ Date: _____
 Analysis Turnaround Time (in Calendar Days)
 ☞ Routine (28 days for Monitoring Wells)

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	250 mL bottle, pH<2, HNO ₃				Field-filter 250 mL bottle, then pH<2, HNO ₃				Three (six every 10th) 125 mL PTFE lined bottle, HCL**, pH<2				Field Filtered 125 mL PTFE lined bottle, HCL**, pH<2	COC/Order #	For Lab Use Only:
						Ca, K, Mg, Na, Sr	Al, As, Ba, Be, Cd, Cr, Co, Fe, Mn, Mo, Pb, Se, Tl	Ag, Bi, Br, Cu, Li, Ni, Rb, S, Sn, V, Zn	and Na, K, Mn, Sr	Ba-226, Ra-228	Mercury	Disolved Mercury	Sample Specific Notes							
AD-8	11/14/2022	1007	G	GW	1	X												223668		
AD-16	11/14/2022	1055	G	GW	1	X														
AD-23	11/14/2022	1102	G	GW	1	X														
AD-27	11/14/2022	1149	G	GW	1	X														
AD-34	11/14/2022	819	G	GW	1	X														
AD-36	11/14/2022	928	G	GW	1	X														
Landfill Duplicate	11/14/2022	1400	G	GW	1	X														
Equipment Blank - Landfill	11/14/2022	1119	G	GW	1	X														

Preservation Used: 1= Ice, 2= HCl; 3= H₂SO₄; 4=HNO₃; 5=NaOH; 6= Other _____; F= filter in field _____
 * Six 1L Bottles must be collected for Radium for every 10th sample.

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by: *[Signature]* Company: *Fask* Date/Time: *11-17-22 1300* Received by: _____ Date/Time: _____
 Relinquished by: _____ Company: _____ Date/Time: _____ Received by: *[Signature]* Date/Time: *11/21/20 12:00pm*
 Relinquished by: _____ Company: _____ Date/Time: _____ Received by: _____ Date/Time: _____



WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

Package Type				Delivery Type			
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	<input type="radio"/> PONY	<input type="radio"/> UPS	<input checked="" type="radio"/> FedEX	<input type="radio"/> USPS
Other _____				Other _____			
Plant/Customer <u>Ar. Pirkey</u>				Number of Plastic Containers: <u>8</u>			
Opened By <u>MGK</u>				Number of Glass Containers: _____			
Date/Time <u>11/21/22 12:00pm</u>				Number of Mercury Containers: _____			
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A Initial: _____ on ice / <input checked="" type="radio"/> no ice (IR Gun Ser# 210441568, Expir. 5/27/2023) - If No, specify each deviation: _____							
Was container in good condition? <input checked="" type="radio"/> Y / N Comments _____							
Was Chain of Custody received? <input checked="" type="radio"/> Y / N Comments _____							
Requested turnaround: <u>routine</u> If RUSH, who was notified? _____							
pH (15 min)	Cr ⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)			

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: MGK 11/21/22

pH paper (circle one): MQuant pH Cat 1.09535.0001 lot HC904495 (OR) Lab rat pH Cat # LRS -4801 Lot X000RWDG21

- 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# 223668 Initial & Date & Time: _____

Logged by MSD Comments: _____

Reviewed by JAB _____

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

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Jonathan Barnhill		Lab Supervisor	12/14/2022
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: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12/14/2022
Laboratory Job Number: 223668
Prep Batch Number(s): PB22112207 QC2212035

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?		
	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: _____

Reviewer Name: Jonathan Barnhill

LRC Date: 12/14/2022

Laboratory Job Number: 223668

Prep Batch Number(s): PB22112207 QC2212035

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

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12/14/2022
Laboratory Job Number: 223668
Prep Batch Number(s): PB22112207 QC2212035

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

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-2

Customer Description: TG-32

Lab Number: 223664-001

Preparation:

Date Collected: 11/15/2022 11:05 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Arsenic	0.40	µg/L	1	0.10	0.03		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Barium	16.8	µg/L	1	0.20	0.05		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Beryllium	0.561	µg/L	1	0.050	0.007		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Boron	2.83	mg/L	1	0.050	0.009		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Cadmium	0.086	µg/L	1	0.020	0.004		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Calcium	2.80	mg/L	1	0.05	0.02		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Chromium	0.43	µg/L	1	0.20	0.04		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Cobalt	19.6	µg/L	1	0.020	0.003		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Lead	0.60	µg/L	1	0.20	0.05		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Lithium	0.0556	mg/L	1	0.00020	0.00005		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Magnesium	5.23	mg/L	1	0.10	0.02		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Mercury	58	ng/L	2	10	4		JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Potassium	1.43	mg/L	1	0.10	0.02		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Selenium	1.28	µg/L	1	0.50	0.09		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Sodium	90.6	mg/L	1	0.20	0.05	M1	GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Strontium	0.0408	mg/L	1	0.0020	0.0004		GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4
Thallium	0.11	µg/L	1	0.20	0.04	J1	GES	11/30/2022 13:58	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.40	pCi/L	0.12	0.23		ST	12/07/2022 10:18	SW-846 9315-1986, Rev. 0
Carrier Recovery	77.9	%						
Radium-228	1.01	pCi/L	0.13	0.39		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	85.0	%						

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



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-2

Customer Description: TG-32

Lab Number: 223664-001-01

Preparation: Dissolved

Date Collected: 11/15/2022 11:05 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Arsenic	0.41	µg/L	1	0.10	0.03		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Barium	16.8	µg/L	1	0.20	0.05		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Beryllium	0.559	µg/L	1	0.050	0.007		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Cadmium	0.090	µg/L	1	0.020	0.004		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Chromium	0.41	µg/L	1	0.20	0.04		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Cobalt	19.9	µg/L	1	0.020	0.003		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Iron	0.257	mg/L	1	0.020	0.006		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Lead	0.60	µg/L	1	0.20	0.05		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Lithium	0.0554	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Manganese	0.0853	mg/L	1	0.0010	0.0002		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Selenium	1.30	µg/L	1	0.50	0.09		GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4
Thallium	0.13	µg/L	1	0.20	0.04	J1	GES	11/30/2022 14:13	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-3

Customer Description: TG-32

Lab Number: 223664-002

Preparation:

Date Collected: 11/16/2022 12:45 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Arsenic	1.22	µg/L	1	0.10	0.03		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Barium	63.7	µg/L	1	0.20	0.05		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Beryllium	0.186	µg/L	1	0.050	0.007		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Boron	0.063	mg/L	1	0.050	0.009		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Cadmium	0.012	µg/L	1	0.020	0.004	J1	GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Calcium	5.05	mg/L	1	0.05	0.02		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Chromium	0.63	µg/L	1	0.20	0.04		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Cobalt	7.40	µg/L	1	0.020	0.003		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Lead	0.31	µg/L	1	0.20	0.05		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Lithium	0.0837	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Magnesium	4.15	mg/L	1	0.10	0.02		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Potassium	3.44	mg/L	1	0.10	0.02		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Selenium	0.09	µg/L	1	0.50	0.09	J1	GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Sodium	12.3	mg/L	1	0.20	0.05		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Strontium	0.0380	mg/L	1	0.0020	0.0004		GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.04	J1	GES	11/30/2022 14:18	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.72	pCi/L	0.14	0.20		ST	12/07/2022 10:18	SW-846 9315-1986, Rev. 0
Carrier Recovery	89.9	%						
Radium-228	0.79	pCi/L	0.11	0.36		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	99.5	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-3

Customer Description: TG-32

Lab Number: 223664-002-01

Preparation: Dissolved

Date Collected: 11/16/2022 00:45 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Arsenic	0.91	µg/L	1	0.10	0.03		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Barium	61.6	µg/L	1	0.20	0.05		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Beryllium	0.139	µg/L	1	0.050	0.007		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Cadmium	0.012	µg/L	1	0.020	0.004	J1	GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Chromium	0.29	µg/L	1	0.20	0.04		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Cobalt	7.92	µg/L	1	0.020	0.003		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Iron	9.45	mg/L	1	0.020	0.006		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Lithium	0.0933	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Manganese	0.115	mg/L	1	0.0010	0.0002		GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 14:23	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-4

Customer Description: TG-32

Lab Number: 223664-003

Preparation:

Date Collected: 11/16/2022 12:32 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Arsenic	0.21	µg/L	1	0.10	0.03		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Barium	128	µg/L	1	0.20	0.05		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Beryllium	0.195	µg/L	1	0.050	0.007		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Boron	0.019	mg/L	1	0.050	0.009	J1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Cadmium	0.019	µg/L	1	0.020	0.004	J1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Calcium	2.25	mg/L	1	0.05	0.02		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Chromium	0.44	µg/L	1	0.20	0.04		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Cobalt	3.00	µg/L	1	0.020	0.003		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Lithium	0.0212	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Magnesium	0.55	mg/L	1	0.10	0.02		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Mercury	5	ng/L	1	5	2		JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Potassium	2.15	mg/L	1	0.10	0.02		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Sodium	6.41	mg/L	1	0.20	0.05		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Strontium	0.0183	mg/L	1	0.0020	0.0004		GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4
Thallium	0.10	µg/L	1	0.20	0.04	J1	GES	11/30/2022 14:29	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.40	pCi/L	0.10	0.17		ST	12/07/2022 10:18	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.5	%						
Radium-228	-0.01	pCi/L	0.13	0.46		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	89.2	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-4

Customer Description: TG-32

Lab Number: 223664-003-01

Preparation: Dissolved

Date Collected: 11/16/2022 12:32 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Arsenic	0.13	µg/L	1	0.10	0.03		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Barium	128	µg/L	1	0.20	0.05		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Beryllium	0.197	µg/L	1	0.050	0.007		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Cadmium	0.021	µg/L	1	0.020	0.004		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Chromium	0.40	µg/L	1	0.20	0.04		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Cobalt	2.98	µg/L	1	0.020	0.003		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Iron	2.40	mg/L	1	0.020	0.006		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Lithium	0.0215	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Manganese	0.0291	mg/L	1	0.0010	0.0002		GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4
Thallium	0.1	µg/L	1	0.20	0.04	J1	GES	11/30/2022 14:34	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-7

Customer Description: TG-32

Lab Number: 223664-004

Preparation:

Date Collected: 11/16/2022 10:10 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Arsenic	0.43	µg/L	1	0.10	0.03		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Barium	55.2	µg/L	1	0.20	0.05		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Beryllium	2.49	µg/L	1	0.050	0.007		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Boron	9.38	mg/L	1	0.050	0.009		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Cadmium	0.880	µg/L	1	0.020	0.004		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Calcium	5.20	mg/L	1	0.05	0.02		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Chromium	0.35	µg/L	1	0.20	0.04		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Cobalt	31.8	µg/L	1	0.020	0.003		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Lead	0.27	µg/L	1	0.20	0.05		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Lithium	0.110	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Magnesium	8.25	mg/L	1	0.10	0.02		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Mercury	37	ng/L	1	5	2		JAB	12/05/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Potassium	3.50	mg/L	1	0.10	0.02		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Selenium	1.49	µg/L	1	0.50	0.09		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Sodium	32.3	mg/L	1	0.20	0.05		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Strontium	0.0575	mg/L	1	0.0020	0.0004		GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4
Thallium	0.19	µg/L	1	0.20	0.04	J1	GES	11/30/2022 14:39	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.65	pCi/L	0.21	0.20		ST	12/07/2022 10:18	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.9	%						
Radium-228	2.48	pCi/L	0.15	0.41		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	98.0	%						

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



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-7

Customer Description: TG-32

Lab Number: 223664-004-01

Preparation: Dissolved

Date Collected: 11/16/2022 10:10 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Arsenic	0.43	µg/L	1	0.10	0.03		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Barium	54.5	µg/L	1	0.20	0.05		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Beryllium	2.55	µg/L	1	0.050	0.007		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Cadmium	0.879	µg/L	1	0.020	0.004		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Chromium	0.35	µg/L	1	0.20	0.04		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Cobalt	31.8	µg/L	1	0.020	0.003		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Iron	10.8	mg/L	1	0.020	0.006		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Lead	0.23	µg/L	1	0.20	0.05		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Lithium	0.110	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Manganese	0.157	mg/L	1	0.0010	0.0002		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Mercury	4	ng/L	1	5	2	J1	JAB	12/05/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Selenium	1.53	µg/L	1	0.50	0.09		GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4
Thallium	0.17	µg/L	1	0.20	0.04	J1	GES	11/30/2022 14:44	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-12

Customer Description: TG-32

Lab Number: 223664-005

Preparation:

Date Collected: 11/15/2022 11:58 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Arsenic	0.06	µg/L	1	0.10	0.03	J1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Barium	30.6	µg/L	1	0.20	0.05		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Beryllium	0.153	µg/L	1	0.050	0.007		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Boron	0.013	mg/L	1	0.050	0.009	J1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Cadmium	0.007	µg/L	1	0.020	0.004	J1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Calcium	0.36	mg/L	1	0.05	0.02		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Chromium	0.45	µg/L	1	0.20	0.04		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Cobalt	1.59	µg/L	1	0.020	0.003		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Lithium	0.0119	mg/L	1	0.00020	0.00005		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Magnesium	0.54	mg/L	1	0.10	0.02		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Potassium	0.81	mg/L	1	0.10	0.02		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Selenium	0.23	µg/L	1	0.50	0.09	J1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Sodium	5.83	mg/L	1	0.20	0.05		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Strontium	0.0035	mg/L	1	0.0020	0.0004		GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 17:44	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.72	pCi/L	0.15	0.19	P1	TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	102	%						
Radium-228	0.74	pCi/L	0.14	0.44		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	95.6	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-12

Customer Description: TG-32

Lab Number: 223664-005-01

Preparation: Dissolved

Date Collected: 11/15/2022 11:58 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Arsenic	0.05	µg/L	1	0.10	0.03	J1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Barium	30.0	µg/L	1	0.20	0.05		GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Beryllium	0.149	µg/L	1	0.050	0.007		GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Cadmium	0.008	µg/L	1	0.020	0.004	J1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Chromium	0.35	µg/L	1	0.20	0.04		GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Cobalt	1.59	µg/L	1	0.020	0.003		GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Iron	<0.006	mg/L	1	0.020	0.006	U1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Lithium	0.0116	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Manganese	0.0061	mg/L	1	0.0010	0.0002		GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Selenium	0.28	µg/L	1	0.50	0.09	J1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.04	J1	GES	11/30/2022 18:00	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-13

Customer Description: TG-32

Lab Number: 223664-006

Preparation:

Date Collected: 11/15/2022 09:21 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Arsenic	1.62	µg/L	1	0.10	0.03		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Barium	44.2	µg/L	1	0.20	0.05		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Beryllium	0.131	µg/L	1	0.050	0.007		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Boron	0.095	mg/L	1	0.050	0.009		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Calcium	8.57	mg/L	1	0.05	0.02		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Chromium	0.35	µg/L	1	0.20	0.04		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Cobalt	45.9	µg/L	1	0.020	0.003		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Lithium	0.141	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Magnesium	12.4	mg/L	1	0.10	0.02		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Potassium	5.16	mg/L	1	0.10	0.02		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Sodium	16.3	mg/L	1	0.20	0.05		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Strontium	0.0402	mg/L	1	0.0020	0.0004		GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 14:49	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.55	pCi/L	0.26	0.35		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	84.9	%						
Radium-228	-0.86	pCi/L	0.14	0.50		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	102	%						

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



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-13

Customer Description: TG-32

Lab Number: 223664-006-01

Preparation: Dissolved

Date Collected: 11/15/2022 09:21 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Arsenic	1.43	µg/L	1	0.10	0.03		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Barium	44.7	µg/L	1	0.20	0.05		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Beryllium	0.116	µg/L	1	0.050	0.007		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.20	0.04		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Cobalt	47.2	µg/L	1	0.020	0.003		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Iron	39.9	mg/L	5	0.10	0.03		GES	12/05/2022 09:18	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Lithium	0.140	mg/L	1	0.00020	0.00005		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Manganese	0.428	mg/L	1	0.0010	0.0002		GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 14:54	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-17

Customer Description: TG-32

Lab Number: 223664-007

Preparation:

Date Collected: 11/16/2022 11:58 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Arsenic	0.13	µg/L	1	0.10	0.03		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Barium	276	µg/L	1	0.20	0.05		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Beryllium	0.662	µg/L	1	0.050	0.007		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Boron	0.026	mg/L	1	0.050	0.009	J1	GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Cadmium	0.061	µg/L	1	0.020	0.004		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Calcium	1.23	mg/L	1	0.05	0.02		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Chromium	0.37	µg/L	1	0.20	0.04		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Cobalt	12.7	µg/L	1	0.020	0.003		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Lead	0.16	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Lithium	0.0267	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Magnesium	4.53	mg/L	1	0.10	0.02		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Mercury	400	ng/L	100	500	200	J1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Potassium	1.40	mg/L	1	0.10	0.02		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Selenium	0.36	µg/L	1	0.50	0.09	J1	GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Sodium	9.35	mg/L	1	0.20	0.05		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Strontium	0.0231	mg/L	1	0.0020	0.0004		GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4
Thallium	0.07	µg/L	1	0.20	0.04	J1	GES	11/30/2022 18:05	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	3.34	pCi/L	0.33	0.23		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	101	%						
Radium-228	3.41	pCi/L	0.19	0.52		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	95.3	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-17

Customer Description: TG-32

Lab Number: 223664-007-01

Preparation: Dissolved

Date Collected: 11/16/2022 11:58 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Arsenic	0.12	µg/L	1	0.10	0.03		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Barium	273	µg/L	1	0.20	0.05		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Beryllium	0.648	µg/L	1	0.050	0.007		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Cadmium	0.053	µg/L	1	0.020	0.004		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Chromium	0.39	µg/L	1	0.20	0.04		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Cobalt	12.3	µg/L	1	0.020	0.003		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Iron	0.269	mg/L	1	0.020	0.006		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Lead	0.16	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Lithium	0.0262	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Manganese	0.0545	mg/L	1	0.0010	0.0002		GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Mercury	<200	ng/L	100	500	200	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Selenium	0.30	µg/L	1	0.50	0.09	J1	GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.04	J1	GES	11/30/2022 18:10	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-18

Customer Description: TG-32

Lab Number: 223664-008

Preparation:

Date Collected: 11/16/2022 11:13 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Arsenic	0.25	µg/L	1	0.10	0.03		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Barium	77.4	µg/L	1	0.20	0.05		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Beryllium	0.071	µg/L	1	0.050	0.007		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Boron	0.011	mg/L	1	0.050	0.009	J1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Cadmium	0.009	µg/L	1	0.020	0.004	J1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Calcium	0.19	mg/L	1	0.05	0.02		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Chromium	0.54	µg/L	1	0.20	0.04		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Cobalt	0.723	µg/L	1	0.020	0.003		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Lithium	0.0125	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Magnesium	0.27	mg/L	1	0.10	0.02		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Mercury	18	ng/L	1	5	2		JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Potassium	0.73	mg/L	1	0.10	0.02		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Selenium	0.12	µg/L	1	0.50	0.09	J1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Sodium	5.46	mg/L	1	0.20	0.05		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Strontium	0.0040	mg/L	1	0.0020	0.0004		GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 18:15	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1	pCi/L	0.18	0.21		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	103	%						
Radium-228	0.61	pCi/L	0.12	0.39		TTP	11/29/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	92.6	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-18

Customer Description: TG-32

Lab Number: 223664-008-01

Preparation: Dissolved

Date Collected: 11/16/2022 11:13 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Arsenic	0.06	µg/L	1	0.10	0.03	J1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Barium	77.2	µg/L	1	0.20	0.05		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Beryllium	0.069	µg/L	1	0.050	0.007		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Cadmium	0.012	µg/L	1	0.020	0.004	J1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Chromium	0.34	µg/L	1	0.20	0.04		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Cobalt	0.719	µg/L	1	0.020	0.003		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Iron	0.060	mg/L	1	0.020	0.006		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Lithium	0.0127	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Manganese	0.0028	mg/L	1	0.0010	0.0002		GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 18:20	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-22

Customer Description: TG-32

Lab Number: 223664-009

Preparation:

Date Collected: 11/14/2022 12:31 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Arsenic	2.40	µg/L	1	0.10	0.03		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Barium	20.8	µg/L	1	0.20	0.05		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Beryllium	2.16	µg/L	1	0.050	0.007		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Boron	0.021	mg/L	1	0.050	0.009	J1	GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Cadmium	0.494	µg/L	1	0.020	0.004		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Calcium	10.5	mg/L	1	0.05	0.02		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Chromium	0.47	µg/L	1	0.20	0.04		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Cobalt	60.3	µg/L	1	0.020	0.003		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Lead	0.22	µg/L	1	0.20	0.05		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Lithium	0.0905	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Magnesium	15.1	mg/L	1	0.10	0.02		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Mercury	410	ng/L	10	50	20		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Potassium	3.37	mg/L	1	0.10	0.02		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Selenium	1.93	µg/L	1	0.50	0.09		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Sodium	83.9	mg/L	1	0.20	0.05		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Strontium	0.0898	mg/L	1	0.0020	0.0004		GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4
Thallium	0.14	µg/L	1	0.20	0.04	J1	GES	11/30/2022 18:25	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.96	pCi/L	0.21	0.31		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	76.7	%						
Radium-228	1.74	pCi/L	0.18	0.53		TTP	12/27/2022 14:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	88.6	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-22

Customer Description: TG-32

Lab Number: 223664-009-01

Preparation: Dissolved

Date Collected: 11/14/2022 12:31 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Arsenic	1.28	µg/L	1	0.10	0.03		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Barium	20.5	µg/L	1	0.20	0.05		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Beryllium	2.04	µg/L	1	0.050	0.007		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Cadmium	0.503	µg/L	1	0.020	0.004		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Chromium	0.46	µg/L	1	0.20	0.04		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Cobalt	60.0	µg/L	1	0.020	0.003		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Iron	29.8	mg/L	1	0.020	0.006		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Lead	0.12	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Lithium	0.0883	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Manganese	0.295	mg/L	1	0.0010	0.0002		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Mercury	51	ng/L	1	5	2		JAB	12/01/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Selenium	2.06	µg/L	1	0.50	0.09		GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4
Thallium	0.13	µg/L	1	0.20	0.04	J1	GES	11/30/2022 18:30	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-28

Customer Description: TG-32

Lab Number: 223664-010

Preparation:

Date Collected: 11/16/2022 09:48 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Arsenic	0.10	µg/L	1	0.10	0.03		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Barium	125	µg/L	1	0.20	0.05		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Beryllium	0.459	µg/L	1	0.050	0.007		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Boron	0.334	mg/L	1	0.050	0.009		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Cadmium	0.046	µg/L	1	0.020	0.004		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Calcium	1.34	mg/L	1	0.05	0.02		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Chromium	0.54	µg/L	1	0.20	0.04		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Cobalt	11.8	µg/L	1	0.020	0.003		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Lead	0.15	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Lithium	0.0270	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Magnesium	2.76	mg/L	1	0.10	0.02		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Mercury	8	ng/L	1	5	2		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Potassium	0.85	mg/L	1	0.10	0.02		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Selenium	0.16	µg/L	1	0.50	0.09	J1	GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Sodium	6.45	mg/L	1	0.20	0.05		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Strontium	0.0182	mg/L	1	0.0020	0.0004		GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 18:36	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	3.79	pCi/L	0.35	0.26		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	95.0	%						
Radium-228	1.36	pCi/L	0.13	0.39		TTP	12/27/2022 14:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	96.6	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-28

Customer Description: TG-32

Lab Number: 223664-010-01

Preparation: Dissolved

Date Collected: 11/16/2022 09:48 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Arsenic	0.06	µg/L	1	0.10	0.03	J1	GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Barium	128	µg/L	1	0.20	0.05		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Beryllium	0.447	µg/L	1	0.050	0.007		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Cadmium	0.045	µg/L	1	0.020	0.004		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Chromium	0.47	µg/L	1	0.20	0.04		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Cobalt	11.8	µg/L	1	0.020	0.003		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Iron	0.493	mg/L	1	0.020	0.006		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Lithium	0.0267	mg/L	1	0.00020	0.00005		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Manganese	0.0556	mg/L	1	0.0010	0.0002		GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Selenium	0.17	µg/L	1	0.50	0.09	J1	GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 18:41	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-30

Customer Description: TG-32

Lab Number: 223664-011

Preparation:

Date Collected: 11/16/2022 10:46 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Arsenic	0.16	µg/L	1	0.10	0.03		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Barium	89.4	µg/L	1	0.20	0.05		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Beryllium	0.108	µg/L	1	0.050	0.007		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Boron	2.86	mg/L	1	0.050	0.009		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Cadmium	0.013	µg/L	1	0.020	0.004	J1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Calcium	0.71	mg/L	1	0.05	0.02		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Chromium	0.55	µg/L	1	0.20	0.04		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Cobalt	4.86	µg/L	1	0.020	0.003		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Lithium	0.0119	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Magnesium	2.58	mg/L	1	0.10	0.02		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Mercury	17	ng/L	2	10	4		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Potassium	1.01	mg/L	1	0.10	0.02		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Selenium	0.35	µg/L	1	0.50	0.09	J1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Sodium	94.0	mg/L	1	0.20	0.05	M1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Strontium	0.0113	mg/L	1	0.0020	0.0004		GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.04	J1	GES	11/30/2022 20:13	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.75	pCi/L	0.16	0.23		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.5	%						
Radium-228	0.77	pCi/L	0.14	0.46		TTP	12/27/2022 14:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	93.5	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-30

Customer Description: TG-32

Lab Number: 223664-011-01

Preparation: Dissolved

Date Collected: 11/16/2022 10:46 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Arsenic	0.14	µg/L	1	0.10	0.03		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Barium	79.7	µg/L	1	0.20	0.05		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Beryllium	0.108	µg/L	1	0.050	0.007		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Cadmium	0.012	µg/L	1	0.020	0.004	J1	GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Chromium	0.50	µg/L	1	0.20	0.04		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Cobalt	4.76	µg/L	1	0.020	0.003		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Iron	0.033	mg/L	1	0.020	0.006		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Lithium	0.0119	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Manganese	0.0215	mg/L	1	0.0010	0.0002		GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Mercury	<4	ng/L	2	10	4	U1	JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Selenium	0.37	µg/L	1	0.50	0.09	J1	GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4
Thallium	0.07	µg/L	1	0.20	0.04	J1	GES	11/30/2022 20:29	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-31

Customer Description: TG-32

Lab Number: 223664-012

Preparation:

Date Collected: 11/15/2022 11:02 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Arsenic	0.30	µg/L	1	0.10	0.03		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Barium	35.8	µg/L	1	0.20	0.05		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Beryllium	0.863	µg/L	1	0.050	0.007		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Boron	0.035	mg/L	1	0.050	0.009	J1	GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Cadmium	0.066	µg/L	1	0.020	0.004		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Calcium	2.63	mg/L	1	0.05	0.02		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Chromium	0.74	µg/L	1	0.20	0.04		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Cobalt	9.41	µg/L	1	0.020	0.003		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Lead	0.34	µg/L	1	0.20	0.05		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Lithium	0.0681	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Magnesium	3.94	mg/L	1	0.10	0.02		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Mercury	610	ng/L	10	50	20		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Potassium	1.67	mg/L	1	0.10	0.02		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Selenium	0.38	µg/L	1	0.50	0.09	J1	GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Sodium	30.6	mg/L	1	0.20	0.05		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Strontium	0.0388	mg/L	1	0.0020	0.0004		GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4
Thallium	0.10	µg/L	1	0.20	0.04	J1	GES	11/30/2022 20:34	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.05	pCi/L	0.18	0.24		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	95.4	%						
Radium-228	2.76	pCi/L	0.18	0.50		TTP	12/27/2022 14:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	94.8	%						

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



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-31

Customer Description: TG-32

Lab Number: 223664-012-01

Preparation: Dissolved

Date Collected: 11/15/2022 11:02 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Arsenic	0.20	µg/L	1	0.10	0.03		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Barium	35.7	µg/L	1	0.20	0.05		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Beryllium	0.868	µg/L	1	0.050	0.007		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Cadmium	0.065	µg/L	1	0.020	0.004		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Chromium	0.44	µg/L	1	0.20	0.04		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Cobalt	9.60	µg/L	1	0.020	0.003		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Iron	0.113	mg/L	1	0.020	0.006		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Lead	0.27	µg/L	1	0.20	0.05		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Lithium	0.0694	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Manganese	0.0262	mg/L	1	0.0010	0.0002		GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Mercury	4	ng/L	1	5	2	J1	JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Selenium	0.35	µg/L	1	0.50	0.09	J1	GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4
Thallium	0.09	µg/L	1	0.20	0.04	J1	GES	11/30/2022 20:39	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-32

Customer Description: TG-32

Lab Number: 223664-013

Preparation:

Date Collected: 11/15/2022 10:03 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Arsenic	1.73	µg/L	1	0.10	0.03		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Barium	24.4	µg/L	1	0.20	0.05		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Beryllium	3.77	µg/L	1	0.050	0.007		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Boron	1.26	mg/L	1	0.050	0.009		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Cadmium	0.404	µg/L	1	0.020	0.004		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Calcium	12.0	mg/L	1	0.05	0.02		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Chromium	0.82	µg/L	1	0.20	0.04		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Cobalt	34.8	µg/L	1	0.020	0.003		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Lead	0.66	µg/L	1	0.20	0.05		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Lithium	0.0812	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Magnesium	12.3	mg/L	1	0.10	0.02		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Mercury	1500	ng/L	100	500	200		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Potassium	3.76	mg/L	1	0.10	0.02		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Selenium	5.95	µg/L	1	0.50	0.09		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Sodium	48.7	mg/L	1	0.20	0.05		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Strontium	0.219	mg/L	1	0.0020	0.0004		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4
Thallium	0.24	µg/L	1	0.20	0.04		GES	11/30/2022 20:44	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.26	pCi/L	0.21	0.24		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	86.8	%						
Radium-228	4.02	pCi/L	0.19	0.46		TTP	12/27/2022 14:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.0	%						

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



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-32

Customer Description: TG-32

Lab Number: 223664-013-01

Preparation: Dissolved

Date Collected: 11/15/2022 10:03 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Arsenic	1.57	µg/L	1	0.10	0.03		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Barium	23.9	µg/L	1	0.20	0.05		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Beryllium	3.79	µg/L	1	0.050	0.007		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Cadmium	0.409	µg/L	1	0.020	0.004		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Chromium	0.67	µg/L	1	0.20	0.04		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Cobalt	34.9	µg/L	1	0.020	0.003		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Iron	2.03	mg/L	1	0.020	0.006		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Lead	0.59	µg/L	1	0.20	0.05		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Lithium	0.0809	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Manganese	0.0661	mg/L	1	0.0010	0.0002		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Mercury	20	ng/L	2	10	4		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Selenium	5.88	µg/L	1	0.50	0.09		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4
Thallium	0.20	µg/L	1	0.20	0.04		GES	11/30/2022 20:49	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Reissued

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

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-33

Customer Description: TG-32

Lab Number: 223664-014

Preparation:

Date Collected: 11/15/2022 12:06 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Arsenic	0.37	µg/L	1	0.10	0.03		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Barium	49.4	µg/L	1	0.20	0.05		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Beryllium	0.945	µg/L	1	0.050	0.007		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Boron	0.086	mg/L	1	0.050	0.009		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Cadmium	0.038	µg/L	1	0.020	0.004		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Calcium	0.90	mg/L	1	0.05	0.02		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Chromium	0.44	µg/L	1	0.20	0.04		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Cobalt	6.83	µg/L	1	0.020	0.003		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Lead	0.22	µg/L	1	0.20	0.05		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Lithium	0.0185	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Magnesium	2.64	mg/L	1	0.10	0.02		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Mercury	5900	ng/L	100	500	200		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Potassium	0.28	mg/L	1	0.10	0.02		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Selenium	0.96	µg/L	1	0.50	0.09		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Sodium	14.9	mg/L	1	0.20	0.05		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Strontium	0.0201	mg/L	1	0.0020	0.0004		GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 20:54	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.68	pCi/L	0.30	0.24		TTP	12/05/2022 11:11	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.9	%						
Radium-228	0.98	pCi/L	0.13	0.40		TTP	12/27/2022 14:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	99.2	%						

* 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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: AD-33

Customer Description: TG-32

Lab Number: 223664-014-01

Preparation: Dissolved

Date Collected: 11/15/2022 12:06 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Arsenic	0.29	µg/L	1	0.10	0.03		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Barium	48.7	µg/L	1	0.20	0.05		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Beryllium	0.936	µg/L	1	0.050	0.007		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Cadmium	0.035	µg/L	1	0.020	0.004		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Chromium	0.32	µg/L	1	0.20	0.04		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Cobalt	6.65	µg/L	1	0.020	0.003		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Iron	0.009	mg/L	1	0.020	0.006	J1	GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Lead	0.22	µg/L	1	0.20	0.05		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Lithium	0.0182	mg/L	1	0.00020	0.00005		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Manganese	0.0054	mg/L	1	0.0010	0.0002		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Mercury	47	ng/L	1	5	2		JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Selenium	0.91	µg/L	1	0.50	0.09		GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 20:59	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: Duplicate - 2

Customer Description: TG-32

Lab Number: 223664-015

Preparation:

Date Collected: 11/15/2022 15:00 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Arsenic	1.69	µg/L	1	0.10	0.03		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Barium	45.3	µg/L	1	0.20	0.05		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Beryllium	0.129	µg/L	1	0.050	0.007		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Boron	0.061	mg/L	1	0.050	0.009		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Calcium	8.71	mg/L	1	0.05	0.02		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Chromium	0.40	µg/L	1	0.20	0.04		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Cobalt	46.5	µg/L	1	0.020	0.003		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Lithium	0.139	mg/L	1	0.00020	0.00005		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Magnesium	12.6	mg/L	1	0.10	0.02		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2	µg/L	1	0.5	0.1	J1	GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Potassium	5.32	mg/L	1	0.10	0.02		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Sodium	16.4	mg/L	1	0.20	0.05		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Strontium	0.0419	mg/L	1	0.0020	0.0004		GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 21:05	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: Duplicate - 2

Customer Description: TG-32

Lab Number: 223664-015-01

Preparation: Dissolved

Date Collected: 11/15/2022 15:00 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Arsenic	1.44	µg/L	1	0.10	0.03		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Barium	45.2	µg/L	1	0.20	0.05		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Beryllium	0.115	µg/L	1	0.050	0.007		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Chromium	0.42	µg/L	1	0.20	0.04		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Cobalt	46.3	µg/L	1	0.020	0.003		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Iron	39.7	mg/L	5	0.10	0.03		GES	12/05/2022 09:23	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Lithium	0.140	mg/L	1	0.00020	0.00005		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Manganese	0.420	mg/L	1	0.0010	0.0002		GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 21:10	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Customer Sample ID: Equipment Blank

Customer Description: TG-32

Lab Number: 223664-016

Preparation:

Date Collected: 11/16/2022 11:22 EST

Date Received: 11/21/2022 12:30 EST

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Boron	<0.009	mg/L	1	0.050	0.009	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Chromium	0.47	µg/L	1	0.20	0.04		GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Cobalt	0.143	µg/L	1	0.020	0.003		GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00005	mg/L	1	0.00020	0.00005	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Magnesium	<0.02	mg/L	1	0.10	0.02	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	JAB	12/02/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2	µg/L	1	0.5	0.1	J1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Potassium	<0.02	mg/L	1	0.10	0.02	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	µg/L	1	0.50	0.09	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Sodium	<0.05	mg/L	1	0.20	0.05	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Strontium	<0.0004	mg/L	1	0.0020	0.0004	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04	µg/L	1	0.20	0.04	U1	GES	11/30/2022 22:06	EPA 200.8-1994, Rev. 5.4

223664

Job Comments:

Original report issued 12/29/22 . Report reissued with boron added to TM on 1/23/23.



Water Analysis Report

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

Reissued

Job ID: 223664

Customer: Pirkey Power Station

Date Reported: 01/23/2023

Report Verification

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

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

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

Data Qualifier Legend

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

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

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

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

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Contacts: Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kenny McDonald

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Turnaround Time (in Calendar Days) ☉ Routine (28 days for Monitoring Wells)						Date:	COC/Order #:	For Lab Use Only:
					250 mL bottle, pH<2, HNO ₃	Field-filter 250 mL bottle, then pH<2, HNO ₃	Three (six every 10th) 1 L bottles, pH<2, HNO ₃	250 mL Glass bottle, HCL **, pH<2	250 mL Glass bottle, HCL **, pH<2	250 mL Glass bottle, HCL **, pH<2			
11/15/2022	1005	G	GW	7	Sb, As, B, Ba, Be, Ca, Cd, Cr, Co, K, Li, Mg, Mo, Na, Pb, Se, Sr, Ti	Dissolved Sb, As, Ba, Be, Cd, Cr, Co, Fe, Li, Mn, Mo, Pb, Se, Ti	Ra-226, Ra-228	Mercury	Dissolved Mercury		223664		
11/16/2022	1145	G	GW	7									
11/16/2022	1132	G	GW	7									
11/16/2022	910	G	GW	10									
11/15/2022	1058	G	GW	10									
11/15/2022	821	G	GW	7									
11/16/2022	1058	G	GW	7									
11/16/2022	1013	G	GW	7									
11/14/2022	1131	G	GW	7									
11/16/2022	848	G	GW	7									
11/16/2022	946	G	GW	7									
11/15/2022	1002	G	GW	7									

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

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

Special Instructions/QC Requirements & Comments:

TG-32 needed

Relinquished by: <i>[Signature]</i>	Company: <i>Eask</i>	Date/Time: 11-17-22	Received by: <i>[Signature]</i>	Date/Time: 11/21/22
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: 12:00PM
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Date/Time: 11/21/22

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125
 Michael Ohlinger (614-836-4184)
 Contacts: Dave Conover (614-836-4219)

Project Name: Pirkey PP CCR
 Contact Name: Leslie Fuerschbach
 Contact Phone: 318-673-2744

Sampler(s): Matt Hamilton Kenny McDonald

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

Sample Identification	Analysis Turnaround Time (in Calendar Days)		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Preservation Method						Sample Specific Notes
	⊕ Routine (28 days for Monitoring Wells)	⊙						250 mL bottle, pH<2, HNO ₃	Field-filter 250 mL bottle, then pH<2, HNO ₃	Three (six every 10th*) 1 L bottles, pH<2, HNO ₃	250 mL Glass bottle, HCL ⁺⁺ , pH<2	250 mL Glass bottle, HCL ⁺⁺ , pH<2		
AD-32			11/15/2022	903	G	GW	7	X	X	X	X	X	Disolved Sb, As, Ba, Be, Cd, Cr, Co, Fe, Li, Mn, Mo, Pb, Se, Tl	
AD-33			11/15/2022	1106	G	GW	7	X	X	X	X	X	Mercury	
Duplicate - 2			11/15/2022	1400	G	GW	4	X	X	X	X	X	Ra-226, Ra-228	
Equipment Blank			11/16/2022	1022	G	GW	2	X	X	X	X	X		

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

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

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

Relinquished by:	Company: Engk	Date/Time: 11-17-22	Received by: _____	Date/Time: _____
Relinquished by: _____	Company: _____	Date/Time: _____	Received by: _____	Date/Time: _____
Relinquished by: _____	Company: _____	Date/Time: _____	Received in Laboratory by: _____	Date/Time: _____



WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

<u>Package Type</u>			<u>Delivery Type</u>				
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	PONY	UPS	<input checked="" type="radio"/> FedEx	USPS
				Other _____			
Plant/Customer <u>Pickay</u>			Number of Plastic Containers: <u>79</u>				
Opened By <u>MGK</u>			Number of Glass Containers: <u>31</u>				
Date/Time <u>11/21/22 12:00PM</u>			Number of Mercury Containers: <u>-</u>				
Were all temperatures within 0-6°C? Y/N or <input checked="" type="radio"/> N/A Initial: _____ on ice / <input checked="" type="radio"/> no ice (IR Gun Ser# 210441588, Expir. 5/27/2023) - If No, specify each deviation: _____							
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____							
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____							
Requested turnaround: <u>Routine</u> If RUSH, who was notified? _____							
pH (15 min)	Cr ⁶ (pres) (24 hr)	NO ₂ or NO ₃ (48 hr)	ortho-PO ₄ (48 hr)	Hg-diss (pres) (48 hr)			

Was COC filled out properly? Y / N Comments _____

Were samples labeled properly? Y / N Comments _____

Were correct containers used? Y / N Comments _____

Was pH checked & Color Coding done? Y / N or N/A Initial & Date: MGK 11/21/21

pH paper (circle one): MQuant pH Cat 1.09535.0001 FORG Lab rat pH Cat # LRS-4801
lot HC904495 Lot X000RWDG21

- 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# 223664 Initial & Date & Time: _____

Comments: _____

Logged by MSD _____

Reviewed by JAB _____

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

ICP-MS Laboratory Review Checklist

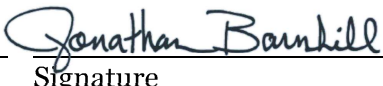
Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

Jonathan Barnhill		Lab Supervisor	12/14/2022
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: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12/14/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112206 PB22112207 QC2212035 QC2212036

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?		
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: _____

Reviewer Name: Jonathan Barnhill

LRC Date: 12/14/2022

Laboratory Job Number: 223664

Prep Batch Number(s): PB22112206 PB22112207 QC2212035 QC2212036

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

ICP-MS Laboratory Review Checklist

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

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: _____
Reviewer Name: Jonathan Barnhill
LRC Date: 12/14/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112206 PB22112207 QC2212035 QC2212036

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 Failure for Na on sample 223664-001
	Matrix Spike Failure for Na on sample 223664-011

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.”

Radium Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

<u>Tamisha Palmer</u>		<u>Chemical Technician, Prin</u>	<u>12/20/2022</u>
Name (printed)	Signature	Official Title	Date

Radium Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Tamisha Palmer
LRC Date: 12/20/2022
Laboratory Job Number: PB22112803
Prep Batch Number(s): 223664

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?	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	

Radium 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?		
	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	

Radium Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Tamisha Palmer
LRC Date: 12/20/2022
Laboratory Job Number: PB22112803
Prep Batch Number(s): 223664

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?	NA	
	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?	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	

Radium 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	

Radium Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power
Reviewer Name: Tamisha Palmer
LRC Date: 12/20/2022
Laboratory Job Number: PB22112803
Prep Batch Number(s): 223664

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.”

Radium Laboratory Review Checklist

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)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Sunita Timsina

Name (printed)


Signature

Chemist Associate

Official Title

12/20/2022

Date

Radium Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 12/20/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112804

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?	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	

Radium 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?	NO	ER1
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	

Radium Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 12/20/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112804

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?	NA	
	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?	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	

Radium 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?	NA	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	NA	
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	

Radium Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 12/20/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112804

Exception Report No.	Description
ER1	RPD for duplicate sample exceeds 25%.

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.”

Radium Laboratory Review Checklist

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)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

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

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

Sunita Timsina

Name (printed)


Signature

Chemist Associate

Official Title

12/29/2022

Date

Radium Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 12/29/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112203, PB22112805

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?	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	

Radium 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?	N/A	
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	

Radium Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 12/29/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112203, PB22112805

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?	NA	
	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?	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	

Radium 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?	NA	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	NA	
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	

Radium Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power Station
Reviewer Name: Sunita Timsina
LRC Date: 12/29/2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112203, PB22112805

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."

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

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

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

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

<u>Susann Sulzmann</u>	<u>S. Sulzmann</u>	<u>Senior Chemist</u>	<u>12-20-2022</u>
Name (printed)	Signature	Official Title	Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Pirkey Power station
Reviewer Name: Susann Sulzmann
LRC Date: 12-20-2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112503,-906,-907,-908

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: Pirkey Power station
Reviewer Name: Susann Sulzmann
LRC Date: 12-20-2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112503,-906,-907,-908

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: Pirkey Power station
Reviewer Name: Susann Sulzmann
LRC Date: 12-20-2022
Laboratory Job Number: 223664
Prep Batch Number(s): PB22112503,-906,-907,-908

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."