



2021 Annual Groundwater Monitoring and Corrective Action Report

For the
Federal Coal Combustion Residuals Rule

Wilson Phase II Landfill
D.B Wilson Generating Station
Ohio County, Kentucky

Prepared for:



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Executive Summary

This report summarizes groundwater monitoring and corrective action activities completed between January 1 and December 31, 2021 at the Big Rivers Electric Corporation (BREC) Wilson Phase II Landfill (the Unit) as required by 40 CFR 257.90(e) of the United States Environmental Protection Agency (USEPA) coal combustion residuals (CCR) Rule. A site figure illustrating the location of the Unit is presented as **Figure 1**. The program monitoring networks for the Unit, including supporting monitoring wells are illustrated on **Figure 2**. Although no additional monitoring wells were installed in 2021 specific to the Phase II Landfill, monitoring well installation activities were initiated in December 2021 in accordance with the Groundwater Assessment Plan recently approved by the Kentucky Department for Environmental Protection, Division of Waste Management (KDMW) for the Phase I Landfill. The data generated from this ongoing assessment are critical to the development of a comprehensive site conceptual model for groundwater, which is needed to evaluate the appropriate remedy for the Phase II landfill groundwater impacts. As part of the ongoing well installation activities, MW-105 was abandoned in December 2021 and will be replaced with MW-105R in 2022.

Results of baseline groundwater monitoring performed in 2016 and 2017 indicated that the Unit would require initiation of Assessment monitoring under the CCR Rule, as most of the Appendix III constituents, excluding fluoride and pH, have downgradient statistically significant increases (SSIs) over background. On February 5, 2018, BREC posted a formal notification that the Unit would transition from Baseline Detection to an Assessment monitoring program.

Groundwater analytical data collected during Assessment monitoring at the Unit indicated that Appendix IV constituents were detected in downgradient monitoring wells at SSIs over background. Per CCR Rule requirements, groundwater protection standards (GWPSs) for each Appendix IV constituent were developed and the data were tested for whether the concentrations represented statistically significant levels (SSLs) above their respective GWPSs. SSLs identified in the current annual reporting period are as follows:

- Cobalt: MW-5, MW-6, and MW-10
- Lithium: MW-6

On January 14, 2019, BREC posted a formal notification that the Wilson Phase II Landfill would initiate an Assessment of Corrective Measures (ACM) per 40 CFR § 257.95(g)(5), fulfilling the requirement of 40 CFR § 257.107(h)(7). In June 2019 BREC finalized the ACM in which applicable remedial technologies to address cobalt impacts in groundwater were identified pursuant to Title 40 CFR Section 257.96. A report summarizing the results of the ACM (AECOM, June 2019) was posted to BREC's publicly accessible CCR reporting website on July 10, 2019.

A public meeting has not been held to date to discuss the results of the ACM for the Wilson Phase II Landfill. BREC is working to establish a comprehensive list of data collection needs to proceed forward with remedy evaluation for this unit and anticipates providing additional data in future semi-annual remedy selection progress reports.

Other activities and conditions for the 2021 annual reporting period include:

- Semi-annual Assessment groundwater monitoring events were performed in May and September 2021;
- No monitoring well installation, repair, or decommissioning was performed; and
- No program transitions (Detection to Assessment or vice versa) were triggered.

Anticipated activities for the next annual reporting period include:

- Completion of two semi-annual Assessment groundwater monitoring events;

- Completion of a Groundwater Assessment for the adjacent Phase I landfill, including the installation and testing of new wells that will generate data for interpretation of the Phase II site conceptual model.
- Progress towards selection of a remedy for the Unit.

1. Introduction

At the request of Big Rivers Electric Corporation (BREC), AECOM Technical Services, Inc. (AECOM) prepared this 2021 Annual Groundwater Monitoring and Corrective Action Report for the BREC D.B. Wilson Phase II Landfill (the Unit), located in Ohio County, Kentucky. This report was prepared in accordance with Part 257.90, Sub-Part (e) of the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule. The CCR Rule was established to regulate the disposal of CCR produced by electricity generating facilities (USEPA, 2015).

This report summarizes all activities related to the CCR Rule groundwater monitoring program at the Unit in 2021. The following sections present a site background summary, a discussion of field activities performed, a summary of laboratory results, statistical evaluation findings, and conclusions regarding groundwater conditions in the aquifer system subject to monitoring under the CCR Rule.

As stated in previous Annual Groundwater Monitoring and Corrective Action Reports, statistical results of the Baseline groundwater data indicated that the Unit required initiation of Assessment monitoring under the CCR Rule, as most of the Appendix III constituents, excluding fluoride and pH, reported statistically significant increases (SSIs) over background. On February 5, 2018, BREC posted a formal notification that the Unit would enter into an Assessment Monitoring Program, fulfilling the requirement of 40 Code of Federal Regulations (CFR) § 257.107(h)(4).

1.1 Site Description

The Wilson Phase II Landfill is located in Ohio County approximately 5 miles northwest of the town of Centertown, Kentucky (**Figure 1**). The property is located northwest and adjacent to the D.B. Wilson Generating Station (Wilson Station). The current Wilson Phase II Landfill footprint is approximately 92 acres (**Figure 2**). Adjacent to the Phase II Landfill on the east is the Wilson Station Phase I Landfill, which is currently being regulated by Special Waste permit by the Kentucky Department for Environmental Protection, Division of Waste Management (KDMW) under Title 401 of the Kentucky Administrative Regulations (KAR) Section 45.

The Wilson Phase II Landfill is currently active and raised above adjacent ground to a maximum elevation of approximately 532 feet above mean sea level (AMSL). The original ground surface within the landfill footprint was an irregular post-mining reclaimed surface.

1.2 Program Monitoring Well Systems

1.2.1 Operating Permit Monitoring Wells

Prior to implementation of the CCR Rule, a groundwater monitoring well network was already present at the Unit in compliance with the requirements of the facility's operating permit. The existing wells are located along the perimeter of the permitted footprint for the Wilson Phase II Landfill and meet the CCR Rule requirements that downgradient monitoring wells must be located at the waste boundary of the (active) CCR unit, or as close as practical.

Under the requirements stated in the operating permit, five (5) monitoring wells (MW-5, MW-6, MW-7, MW-8 and MW-10) were installed adjacent to the Wilson Phase II CCR Landfill to determine the general direction of groundwater movement and to monitoring groundwater at the site. MW-8 is located north of the landfill and is considered upgradient. MW-5, MW-6 (both west of the landfill), MW-7 (southwest of the landfill) and MW-10 (south of the landfill) are considered as downgradient. As-built specifics of each well installation are summarized on **Table 1**. The locations of the groundwater monitoring wells are shown on **Figure 2**. Each well has a dedicated bladder pump and tubing system installed for sampling purposes.

As stated in the CCR monitoring well network certification, the stratigraphic interval considered as the most prominent water-transmitting zone within and adjacent to the Wilson Station is material identified as

reclaimed surface mining spoil material comprised of disrupted consolidated sandstone and shale of the Carbondale Formation. The United States Geological Survey (USGS) Geologic Map of the Equality Quadrangle describes underlying bedrock as “Sandstone, siltstone, shale, coal and underclay: Sandstone, light- to medium-gray, fine-grained, massive, micaceous, locally grades into thin-bedded siltstone. Siltstone, light- to medium-gray and yellowish-brown.” For purposes of compliance with the CCR Rule groundwater monitoring requirements, this disrupted sequence comprising the unconsolidated mine spoil is considered the uppermost aquifer underlying the Wilson Phase II Landfill.

Details about the monitoring network are presented in the *Monitoring Well Completion Report, D.B. Wilson Special Waste Landfill, Solid Waste Permit Number 092-00004, Ohio County, Kentucky* (Associated Engineers, Inc., April 13, 2009). **No changes were made to the Program Monitoring Well System in 2021.** Monitoring wells MW-1, MW-2, MW-3, MW-4, P-9, and P-11 are included in the CCR program as “water level only” monitoring points. Although no additional monitoring wells were installed in 2021 specific to the Phase II Landfill, monitoring well installation activities were initiated in December 2021 in accordance with the Groundwater Assessment Plan recently approved by the KDWM for the Phase I Landfill. The data generated from this ongoing assessment are critical to the development of a comprehensive site conceptual model for groundwater, which is needed to evaluate the appropriate remedy for the Phase II landfill groundwater impacts. As part of the ongoing well installation activities, MW-105 was abandoned in December 2021 and will be replaced with MW-105R in 2022.

1.2.2 Characterization Monitoring Wells

To address the requirements of 40 CFR § 257.95(g)(1), five (5) Characterization monitoring wells (MW-102, MW-104, MW-105, MW-110, and MW-4D) were installed in October 2018 for the characterization of groundwater at locations indicated on **Figure 2**. As-built specifics of each well installation are summarized on **Table 1**.

The Characterization monitoring wells, located at projected downgradient positions east, southeast, south, and southwest of the Unit, were used to assist in the characterization of the existence, quality, quantity, areal extent, and depth of groundwater degradation, and the rate and direction of migration of CCR contaminants in the groundwater.

2. 2021 Activities Summary

The following subsections describe the activities that were performed in 2021 for the Wilson Phase II Landfill related to the CCR Groundwater Monitoring Network.

2.1 Groundwater Sampling

Two groundwater sampling events were conducted at Wilson Phase II Landfill in 2021, fulfilling the sampling requirements for Assessment monitoring and Characterization. The following table summarizes the dates of the sampling events and the wells included in each event.

Event Type	Sampling Event	Dates	Wells Sampled
Assessment	16	May 13, 2021	Background (Upgradient) MW-8 Downgradient MW-5, MW-6, MW-7, MW-10
Characterization	5	May 12, 2021	Characterization Wells MW-4D, MW-102, MW-104, MW-105, MW110
Assessment	17	September 30, 2021	Background (Upgradient) MW-8 Downgradient MW-5, MW-6, MW-7, MW-10
Characterization	6	September 29, 2021	Characterization Wells MW-4D, MW-102, MW-104, MW-105, MW110

Monitoring wells were sampled following low flow sampling techniques developed and incorporated into current operating permits, which are maintained within the operating record at Wilson Station.

Groundwater sampling activities were performed by BREC personnel in May and September 2021. Groundwater samples collected during the May and September 2021 sampling events were submitted to Pace Analytical Services, LLC in Madisonville, Kentucky and were analyzed for Appendix III and Appendix IV parameters, in accordance with 40 CFR § 257.95(b). No filtration of samples was conducted in either the field or laboratory procedures. Laboratory analyses were performed in accordance with approved USEPA methods.

2.2 Groundwater Assessment Plan

The Wilson Phase I Landfill and the Wilson Phase II Landfill are regulated under separate regulatory programs. As a result, groundwater data for each unit is evaluated under separate procedures; under 401 KAR 45:160 for Phase I and under 40 CFR 257 for Phase II.

In August 2021 KDWM conditionally approved a work plan for the assessment of groundwater conditions at the adjacent Phase I Landfill, which will be implemented in 2022. The data generated for that assessment are critical to the development of a comprehensive site conceptual model for groundwater, which is needed to evaluate the appropriate remedy for the Phase II landfill groundwater impacts. Selection of a remedial alternative is anticipated after the assessment data are collected and evaluated.

3. Data Evaluation

3.1 Groundwater Flow

Groundwater level data collected during the 2021 monitoring events are summarized on **Table 2**. The data collected during September 2021 were used to construct a piezometric surface map to illustrate groundwater flow conditions for the uppermost aquifer (see **Figure 3**). These data are representative of general conditions at the Unit.

Overall groundwater flow beneath the footprint of the Wilson Phase II Landfill is to the south and southeast. Groundwater flow beneath the Landfill is influenced by extensive strip-mining and the physical extent of mine spoil deposits. These mine spoil deposits are laterally limited by the remaining bedrock high walls left undisturbed south of the north side of State Route 85 and beyond (west of) the western edge of the Wilson Phase II Landfill.

3.2 Sampling Results

During 2021 a total of two (2) Assessment monitoring and Characterization sampling events were completed. Results from these sampling events are summarized on the tables included in **Appendix A**. Complete analytical laboratory reports are included in **Appendix B**.

3.3 Statistical Evaluation

As part of previous Assessment monitoring performed at the Unit, background and downgradient wells for the Phase II Landfill were sampled for Appendix IV constituents from 2018 through 2019. In accordance with 40 CFR § 257.95, groundwater protection standards (GWPS) were established for detected Appendix IV constituents. Previous Assessment monitoring results indicate the presence of Appendix IV constituents at Statistically Significant Levels (SSL) above their respective GWPSs in the following monitoring wells:

- Cobalt: MW-5, MW-6, and MW-10
- Lithium: MW-6

In accordance with 40 CFR § 257.93(f), 40 CFR § 257.93(h), and 40 CFR § 257.95(d)(2), statistical evaluation of the Assessment groundwater data collected to date was conducted as part of developing this summary report. The evaluation was conducted to identify any SSIs over baseline concentrations for the Appendix III and Appendix IV parameters and any SSLs over established GWPS for detected Appendix IV parameters. A summary of the 2021 statistical evaluation conducted on the Appendix III and Assessment Appendix IV parameters is provided as **Appendix C**.

Statistical methods were chosen in accordance with 40 CFR § 257.93(f) and the rationale behind why each method was selected is outlined in Statistical Methods Certification Document dated June 28, 2016. The Appendix III groundwater quality data were evaluated using an interwell approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at a background monitoring well. For the Unit, monitoring well MW-8 is designated as the background well because it is located upgradient, whereas monitoring wells MW-5, MW-6, MW-7, and MW-10 are designated as compliance wells because they are located downgradient.

The statistical analysis results indicate that the following Appendix III constituents have SSIs over background (see **Appendix C; Table C3**):

- MW-5: boron, calcium, chloride, sulfate, and total dissolved solids (TDS);
- MW-6: boron, calcium, chloride, pH (field), sulfate, and TDS;

- MW-7: boron, calcium, chloride, sulfate, and TDS; and
- MW-10: boron, calcium, chloride, pH (field), and TDS.

SSIs for pH (field) at MW-6 and MW-10 were noted for the first time in 2021. Fluoride did not have any verified SSIs over background. Based on these results, Assessment monitoring is required to continue at the Unit on a semi-annual basis.

The statistical analysis results also indicate that the following Appendix IV constituents have SSIs over background (see **Appendix C; Table C4**):

- MW-5: cobalt and lithium;
- MW-6: cobalt and lithium;
- MW-7: lithium; and
- MW-10: cobalt.

SSIs for chromium at MW-7 and lead at MW-6 and MW-7 did not reoccur in 2021. Inspection of the time series plots for these analytes suggests anomalously high values were reported for the 2020 events.

The Appendix IV constituents were further evaluated to determine whether they are present at SSLs over the GWPS by calculating the lower confidence limit (LCL) at 95% confidence for each well and constituent using all of the Baseline, Detection, and Assessment monitoring results collected to date. For a constituent to be present at an SSL over the GWPS, its LCL must be greater than the GWPS.

Appendix C, Table C5 provides a summary of the LCLs and GWPS for cobalt and lithium at monitoring wells MW-5, MW-6, MW-7, and MW-10. The results indicate that cobalt at monitoring wells MW-5, MW-6, and MW-10 and lithium at monitoring well MW-6 are present at SSLs above the GWPS. The LCLs for the remaining wells and constituents are equal to or less than the GWPS and thus are not considered SSLs.

On December 6, 2018, BREC posted a formal notification that one or more constituent in Appendix IV has been detected at SSLs above the established GWPS as required by 40 CFR Part 257.107(h)(6).

3.4 Conclusions

Based upon the statistical evaluation of Appendix III and Appendix IV parameters collected during Assessment Monitoring at the Wilson Phase II Landfill, BREC will continue Assessment Monitoring in 2022.

4. 2022 Planned Activities

4.1 Groundwater Monitoring

Continued Semi-Annual Assessment monitoring of all operating permit monitoring wells for the Unit is planned for 2022.

4.2 Remedy Selection

As required by 40 CFR Section 257.97, BREC is in the process of selecting a remedy for groundwater impacts at the Unit.

Currently BREC considers four (4) potential corrective action alternatives as viable options to address groundwater impacts at the Unit. To evaluate each alternative, additional data collection will likely be required. BREC is currently evaluating data collection needs in the following areas to assist with remedy selection:

- 1) Nature and Extent of impact – groundwater trends, influence of non-groundwater remedies, etc.
- 2) Physical Characteristics – available data on the physical characteristics of the landfill and the groundwater environment
- 3) Performance Modeling – data needed to develop digital models demonstrating the effectiveness of potential alternatives
- 4) Engineering – feasibility, cost estimates, etc.

BREC is working to establish a comprehensive list of data collection needs to proceed forward with remedy evaluation and anticipates providing additional data in future semi-annual remedy selection progress reports.

The 2022 groundwater monitoring program will continue to assist in evaluating the success of the non-groundwater release remedies implemented at the Unit and will further provide relevant and important information to be considered in the final groundwater remedy selection.

5. References

- AECOM, 2018. Annual Groundwater Monitoring and Corrective Action Report, 2016-2017; D.B. Wilson CCR Landfill, Ohio County, Kentucky.
- AECOM, 2019. Annual Groundwater Monitoring and Corrective Action Report, 2018; D.B. Wilson CCR Landfill, Ohio County, Kentucky.
- AECOM, 2019. Assessment of Corrective Measures under the CCR Rule; Phase II Landfill; D.B. Wilson Generating Station, Ohio County, Kentucky.
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- AECOM, 2021. Annual Groundwater Monitoring and Corrective Action Report, 2020; D.B. Wilson Generating Station, Ohio County, Kentucky.
- Goudarzi, G.H., Geologic Map of the Equality Quadrangle, Western Kentucky, U.S. Geological Survey, 1969.
- USEPA, 40 CFR Part 257. [EPA-HQ-RCRA-2015-0331; FRL-9928-44-OSWER]. RIN-2050-AE81. Technical Amendments to the Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities—Correction of the Effective Date. Federal Register / Vol. 80, No. 127 / Thursday, July 2, 2015 / Rules and Regulations.
- USEPA, 40 CFR Part 257. [EPA-HQ-OLEM-2017-0286; FRL-9973-31-OLEM]. RIN-2050-AG88. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Amendments to the National Minimum Criteria (Phase One); Proposed Rule. Federal Register / Vol. 83, No. 51 / Thursday, March 15, 2018 / Proposed Rules.

Tables

TABLE 1
MONITORING WELL SYSTEM SUMMARY OF MONITORING WELL CONSTRUCTION
WILSON PHASE II LANDFILL
BIG RIVERS ELECTRIC CORPORATION - WILSON STATION
OHIO COUNTY, KENTUCKY

Well No.		Location*		Reference Elevation*		Casing Length (feet, TOIC)	Size / Type (ID / Material)	Filter Pack Interval		Screened Interval		Bottom of Boring (feet, GS)
		Lat	Long	TOIC (feet, NAD27)	GS (feet, NAD27)			(feet, NAD27)		(feet, NAD27)		
Operating Permit Monitoring Wells												
								Top	Bottom	Top	Bottom	
MW-5 (8005-3477)	D	37.4638	-87.0910	469.14	467.42	75.0	2 inch / PVC	404.92	391.42	402.92	392.92	76
MW-6 (8005-3476)	D	37.4614	-87.0910	433.06	431.12	53.5	2 inch / PVC	390.42	377.12	388.12	378.12	54
MW-7 (8005-3479)	D	37.4584	-87.0913	426.14	424.08	50.0	2 inch / PVC	386.58	373.18	384.58	374.58	50.9
MW-8 (8005-3475)	U / B	37.4682	-87.0883	471.60	470.01	63.5	2 inch / PVC	419.53	405.96	417.05	407.05	64.05
MW-10 (8005-3478)	D	37.4544	-87.0902	398.91	396.91	22.4	2 inch / PVC	387.16	373.83	384.99	374.99	23.08
Characterization Wells												
MW-4D (8007-4811)	D / C	37.4542	-87.0851	410.02	407.03	96.4	2 inch / PVC	326.03	313.03	324.03	314.03	111
MW-102 (8007-2995)	D / C	37.4613	-87.0757	399.71	396.46	39.3	2 inch / PVC	372.46	360.46	370.46	360.46	36
MW-104 (8007-2994)	D / C	37.4517	-87.0826	392.87	389.76	43.4	2 inch / PVC	361.76	349.26	359.76	349.76	40
MW-105 (8007-2992)	D / C	37.4516	-87.0973	396.74	393.56	63.3	2 inch / PVC	366.56	333.56	343.56	333.56	60
MW-110 (8007-2996)	D / C	37.4521	-87.0907	393.54	390.56	42.8	2 inch / PVC	362.56	350.56	360.56	350.56	76 / 40
Water Levels Only												
P-9 (8005-3480)	water level only	37.4622	-87.0867	432.37	429.19	38.7	2 inch / PVC	402.99	389.99	400.99	390.99	39.2
P-11 (8005-3472)	water level only	37.4593	-87.0872	446.55	444.03	68.6	2 inch / PVC	388.43	374.90	385.93	375.93	69.13
MW-1 (8002-9621)	water level only	37.4667	-87.0852	443.89	442.31	36.3	4 inch / PVC	419.6	407.6	417.6	407.6	36
MW-2 (8002-9622)	water level only	37.4618	-87.0820	417.11	414.60	36.0	4 inch / PVC	393.3	381.1	391.1	381.1	36
MW-3 (8002-9623)	water level only	37.4576	-87.0845	411.12	408.19	36.2	4 inch / PVC	387.2	374.9	384.9	374.9	36
MW-4 (8002-9624)	water level only	37.4546	-87.0850	408.82	406.55	31.3	4 inch / PVC	389.6	377.5	387.5	377.5	31

Reference elevation of monitoring wells surveyed by Associated Engineers, Inc., Madisonville, Kentucky June 2015 and November 2018

Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, NAD27 datum

PVC = Polyvinyl chloride

ID = Internal Diameter

TOIC = Top of internal casing, or measured from (below) TOIC

GS = Ground Surface, or measured from (below) GS

U / B = Upgradient / Background

D = Downgradient

C = Characterization

TABLE 2
MONITORING WELL NETWORK GROUNDWATER ELEVATIONS
WILSON PHASE II CCR LANDFILL

BIG RIVERS ELECTRIC CORPORATION - WILSON STATION
OHIO COUNTY, KENTUCKY

WILSON PHASE II CCR LANDFILL										
OPERATING PERMIT GROUNDWATER MONITORING WELLS										
Reference Elevation TOIC*(ft, NAD27)	MW-5		MW-6		MW-7		MW-8		MW-10	
	Downgradient 469.14		Downgradient 433.06		Downgradient 426.14		Upgradient/Background 471.60		Downgradient 398.91	
Date Measured	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)
5/13/2021	55.22	413.92	40.97	392.09	39.13	387.01	43.47	428.13	13.06	385.85
9/30/2021	57.88	411.26	42.81	390.25	40.38	385.76	45.80	425.80	13.52	385.39

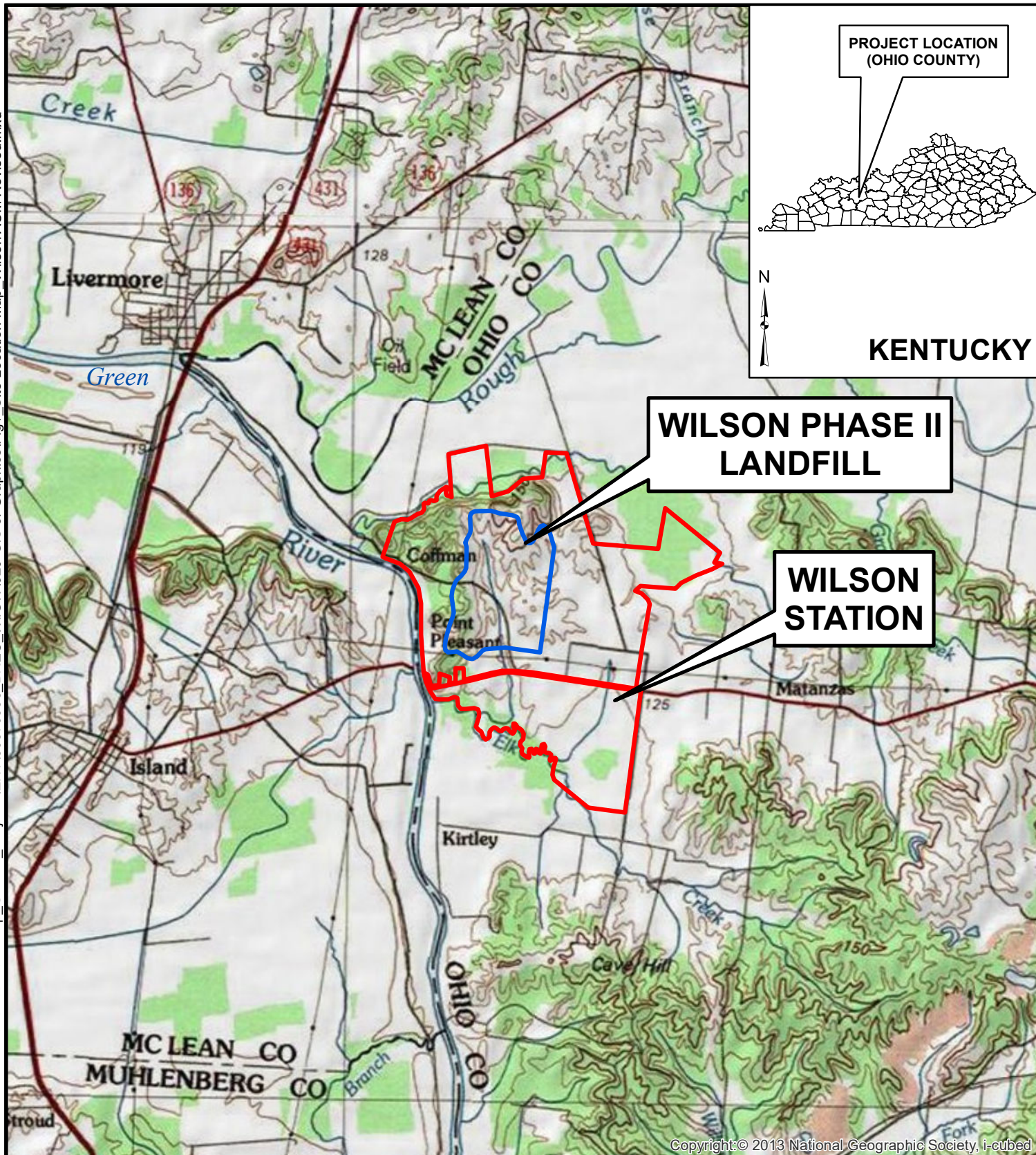
CHARACTERIZATION GROUNDWATER MONITORING WELLS										
Reference Elevation TOIC*(ft, NAD27)	MW-4D		MW-102		MW-104		MW-105		MW-110	
	Characterization 410.02		Characterization 399.71		Characterization 392.87		Characterization 396.74		Characterization 393.54	
Date Measured	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)
5/12/2021	23.20	386.82	14.62	385.09	7.98	384.89	5.98	390.76	8.68	384.86
9/29/2021	24.36	385.66	11.75	387.96	9.66	383.21	7.36	389.38	9.21	384.33

TABLE 2 (continued)
GROUNDWATER ELEVATIONS
SUPPLEMENTAL WATER LEVEL ONLY MONITORING POINTS
BIG RIVERS ELECTRIC CORPORATION - WILSON STATION
OHIO COUNTY, KENTUCKY

Reference Elevation TOIC*(ft, NAD27)	SUPPLEMENTAL WATER LEVEL ONLY MONITORING POINTS								PEIZOMETERS			
	MW-1		MW-2		MW-3		MW-4		North (P9)		South (P11)	
	Water Level Only 443.89		Water Level Only 417.11		Water Level Only 411.12		Water Level Only 408.82		Water Level Only 432.37		Water Level Only 446.55	
Date Measured	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)
5/13/2021	18.42	425.47	18.35	398.76	23.80	387.32	22.14	386.68	24.35	408.02	60.81	385.74
10/1/2021	19.42	424.47	18.84	398.27	25.22	385.90	23.21	385.61	24.9	407.47	60.88	385.67

Reference elevation of monitoring wells surveyed by Associated Engineers, Inc., Madisonville, Kentucky June 2015
Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, NAD27 datum
TOIC = Top of internal casing
GW = Groundwater; GS = Ground Surface; NM = Not measured

Figures



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
EQUALITY QUADRANGLE
(<https://viewer.nationalmap.gov/basic/>)

0 2,500 5,000
Feet



Big Rivers
ELECTRIC CORPORATION

Wilson Station
Ohio County, Kentucky

FIGURE 1
SITE LOCATION MAP

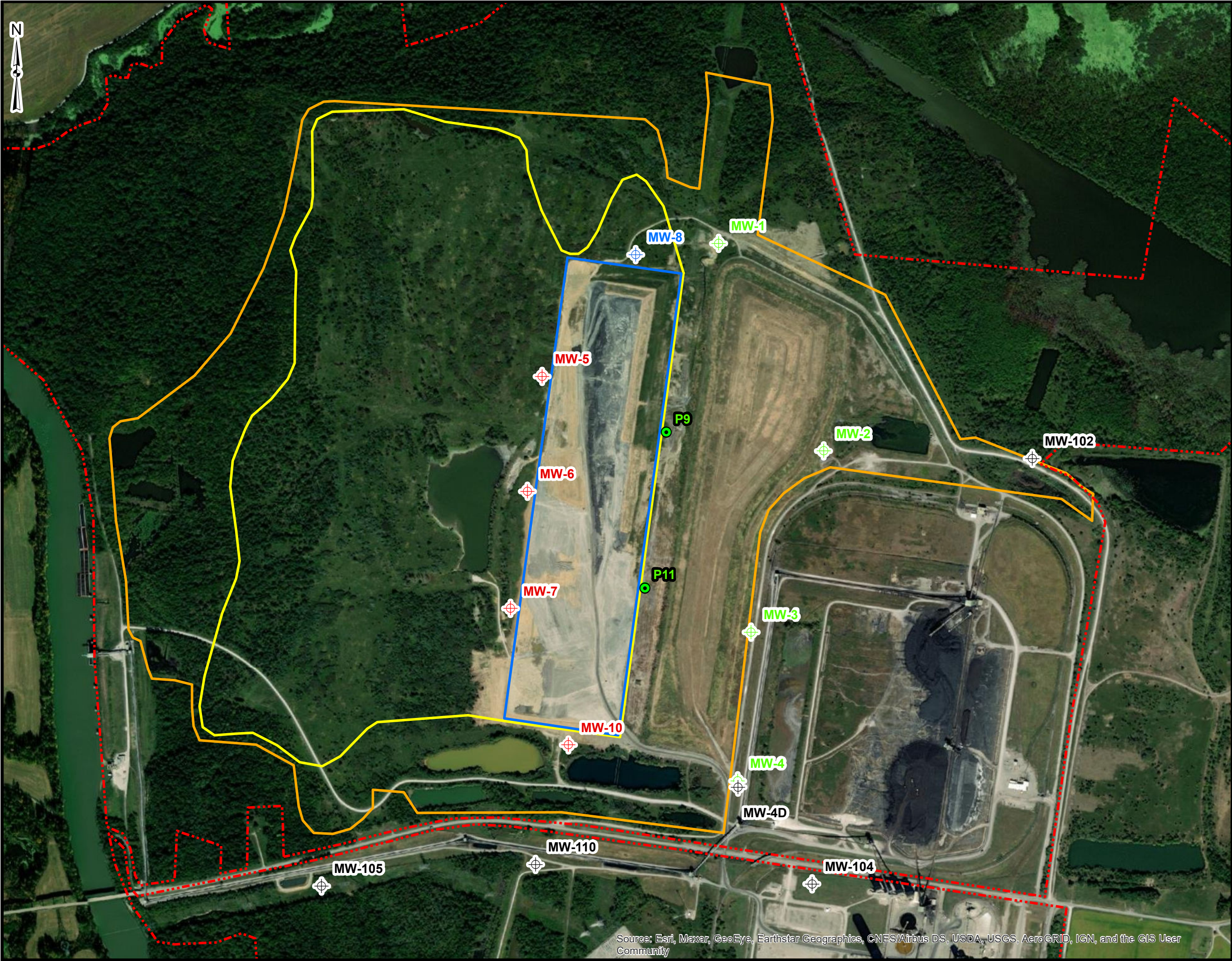
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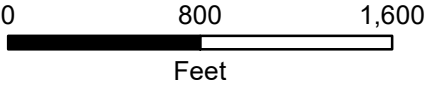
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Legend

- Property Boundary
- CCR Phase 2 Fill
- Bond Increment
- KAR Permit Area
- Downgradient CCR Monitoring Well Location
- Upgradient CCR Monitoring Well Location
- Characterization Monitoring Well Location
- Monitoring Well Location (Water Level Only)
- Piezometer Location (Water Level Only)



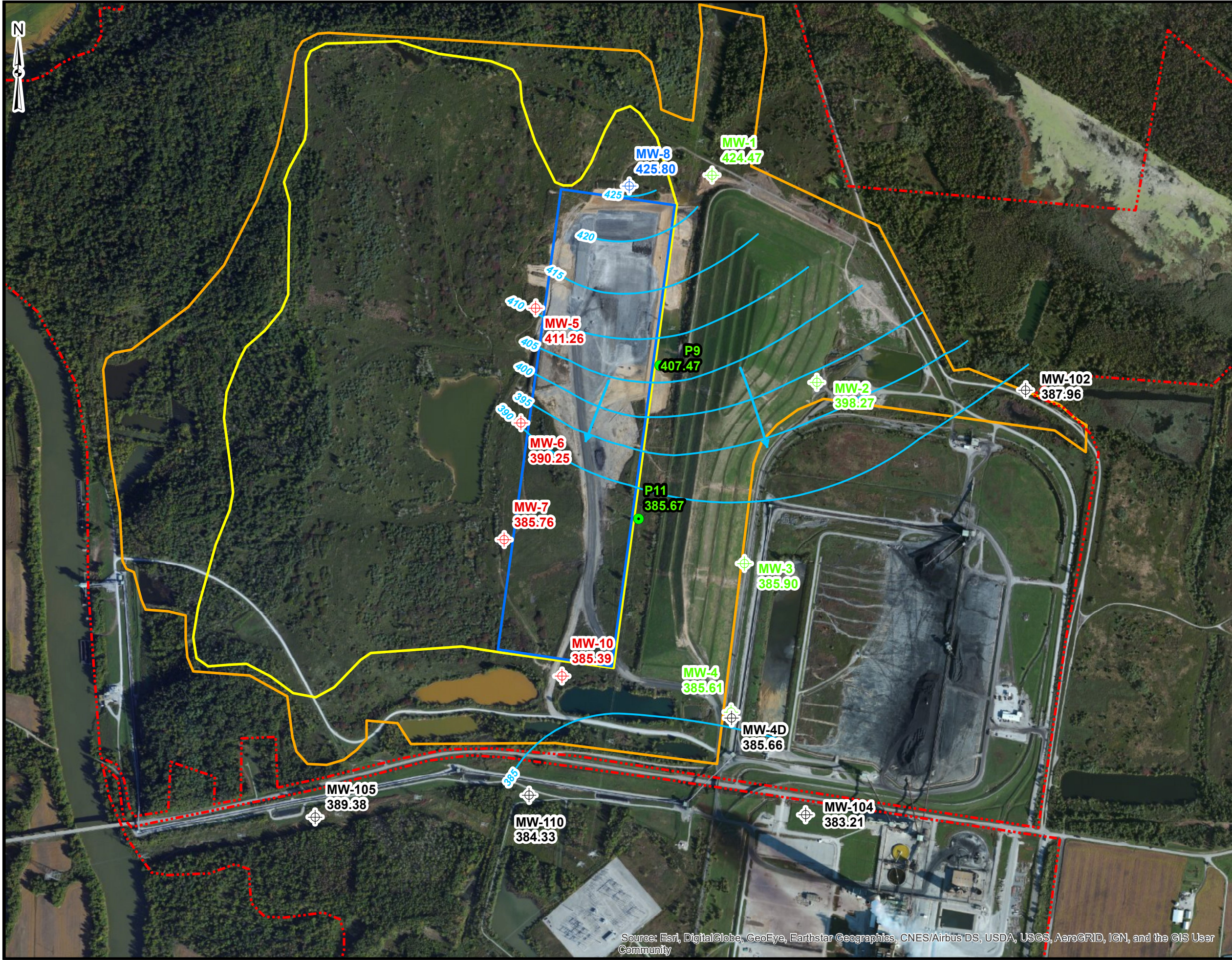
Wilson Station Landfill
Ohio County, Kentucky

FIGURE 2
CCR GROUNDWATER
MONITORING SYSTEM

DATE: 6/2/2021	SCALE: 1IN = 800 FEET
CREATED BY: ALW	
JOB NO. 60579935	

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

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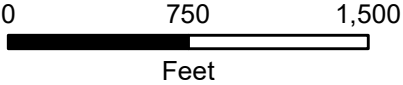
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Downgradient CCR Monitoring Well Location
- Upgradient CCR Monitoring Well Location
- Characterization Monitoring Well Location
- Piezometer Location (Water Level Only)
- Monitoring Well Location (Water Level Only)
- Property Boundary
- Bond Increment
- CCR Phase 2 Fill
- KAR Permit Area
- Water Table Contour (Inferred from Available Monitoring Data)
- Groundwater Flow Direction

387.96 Groundwater Elevation (Feet, NAD27)
Measured September 29, 2021

* Data for P9 and P11
was collected on 09/27/2021



Wilson Landfill
Ohio County, Kentucky

FIGURE 3
GROUNDWATER SURFACE MAP
SEPTEMBER 2021

DATE: 11/18/2021

CREATED BY: TCC

JOB NO. 60579935

SCALE: 1IN = 750 FEET

Appendix A

Analytical Summary Tables

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-5

APPENDIX III CONSTITUENTS	GWPS	DATE																							
		4/4/2016	5/20/2016	8/25/2016	10/4/2016	2/15/2017	5/17/2017	8/16/2017	9/28/2017	10/12/2017	4/13/2018	7/12/2018	10/3/2018	6/30/2019	11/6/2019	4/22/2020	10/13/2020	5/13/2021	9/30/2021						
		Baseline Events										Assessment	Re-sample	Assessment											
Boron		0.387 JB	0.282 JB	0.386 J	0.367 JB	0.839 J	0.981 JB	1.17	0.81 J	1.27			0.667 J	0.755 JB	ND D2 U	ND D2 U	0.66	0.69	0.68	0.70					
Calcium		673	472	509	464	471 B	514 B	480	493	480 B			504	471	670 D1	541 D1	600 D1	571 D1	662 D1	582 D1					
Chloride		49.3 B	60.2 JB	73.5	89.8	160 B	169 B	180	158 B	261			69.3 B	94.0 B	159 D	98.2 D	208 D	199 D	185 D	303 D					
Fluoride		ND J	ND J	ND	0.838	ND J	ND J	ND JB	ND J	2.88			ND J	ND J	ND U	ND U	<0.20	<0.20	<0.20	<0.20					
Sulfate		1630	1950	1670 B	1570 B	1620	1530	2040 B	1860 B	1730 B			1520	1640 B	2060 D	1490 D	2820 D	1800 D	2010 D	2420 D					
pH (Field Measurement)		6.59	6.34	7.17	6.93	5.94	6.92	6.77	6.46	7.18	6.67		6.13	6.25	6.39	6.44	6.71	5.95	6.38	6.19					
Total Dissolved Solids		2840	2960	2940	2930	3000	3100	3220	3090	3040			3210	3200	3440	3290	3460	3770	3790	3830					
APPENDIX IV CONSTITUENTS																									
Antimony	0.006 mg/L	ND	ND	ND J	ND JB	ND	ND JB	ND JB	ND J		ND JB	ND J	NA	ND U	ND U	<0.005	<0.005	<0.005	<0.005						
Arsenic	0.01 mg/L	0.00524 J	0.00523	0.00577 B	ND J	ND J	ND JB	ND J	ND J		ND J	ND J	ND J	0.0025	0.0023	0.0025	0.0029	0.0027	0.0026						
Barium	2 mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J		ND J	ND J	NA	0.010	0.010	0.011	0.011	0.011	0.010						
Beryllium	0.004 mg/L	ND	ND J	ND J	ND J	ND	ND J	ND J	ND		ND	NA	NA	ND U	ND U	<0.0020	<0.0020	<0.0020	<0.0020						
Cadmium	0.005 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	NA	NA	ND U	ND U	<0.0010	<0.0010	<0.0010	<0.0010						
Chromium	0.1 mg/L	ND	ND J	0.00309 B	ND J	ND	ND J	ND J	ND		ND J	ND	NA	ND U	ND U	<0.0020	<0.0020	0.0010 B, J	<0.0020						
Cobalt	0.006 mg/L	0.00909 J	0.00829	0.00659	0.00664	0.00518	0.0057	ND J	0.0051		0.00873	0.00672	0.00660	0.009	0.008	0.008	0.010	0.008	0.008						
Fluoride	4 mg/L	ND J	ND J	ND	0.838	ND J	ND J	ND JB	ND J		ND J	ND J	ND J	ND U	ND U	<0.20	<0.20	<0.20	<0.20						
Lead	0.015 mg/L	ND	ND	ND J	ND JB	ND J	ND J	ND J	ND J		ND J	ND J	NA	ND U	ND U	<0.002	<0.002	<0.002	<0.002						
Lithium	0.040 mg/L	0.0243 J	0.0283 J	0.0374 J	0.0338 J	0.0432	0.042 J	0.0489 J	0.0398		0.0370 J	0.0375 J	0.0382 J	0.03	0.03	0.03	0.03	0.03	0.03						
Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	NA	NA	ND U	ND U	<0.0005	<0.0005	<0.0005	<0.0005						
Molybdenum	0.1 mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J		ND J	ND J	ND J	0.004 J	0.004 J	0.004 J	0.004 J	0.003 J	0.004 J						
Radium 226	5 pCi/L	0.645	0.915	0.714	1.19	1.01	0.967	1.22	1.01		0.783	0.711	1.23	1.8	0.434	1.22	1.70	1.29	1.62						
Radium 228																									
Selenium	0.05 mg/L	ND	ND J	ND J	ND J	ND J	ND JB	ND J	ND		ND J	ND J	NA	ND U	ND U	<0.003	<0.003	<0.003	<0.003						
Thallium	0.002 mg/L	ND	ND J	ND	ND J	ND	ND J	ND J	ND		ND	ND	NA	ND U	ND U	<0.0020	<0.0020	<0.0020	<0.0020						

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)
GWPS = Groundwater Protection Standard
NA = Not Analyzed
NC = Not Collected
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
D = Results reported from dilution
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H3 = Sample received and analyzed past holding time
U = Target analyte was analyzed for, but was below detection limit

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-6

APPENDIX III CONSTITUENTS	GWPS	DATE																																					
		4/5/2016		5/19/2016		8/25/2016		10/4/2016		2/15/2017		5/18/2017		8/16/2017		9/29/2017		10/12/2017		4/13/2018		7/12/2018		10/4/2018		6/30/2019		11/6/2019		4/22/2020		10/13/2020		5/13/2021		9/30/2021			
		Baseline Events												Assessment		Re-sample		Assessment																					
Boron		0.255	JB	0.243	JB	0.27	J	0.228	JB	0.293		0.265	JB	0.298	J	0.328	J	0.286	J			0.250	J	0.272	JB		ND	D2 U		ND	D2 U	0.31		0.34		0.43		0.51	
Calcium		534		466		470		445		414	B	490	B	477		459		438	B			478	J	426		433	D1	482	D1	511	D1	483	D1	568	D1	473	D1		
Chloride		3.65	B	5.09	B	4.1	B	4.63		4.93		4.37	B	5.49	B	5.36	B	5.6				4.79	B	6.16	B	8.2		16.3		10.2		18.9		16.4		33.0	D		
Fluoride		ND	J	ND	JB	ND		ND		ND	J	ND	J	ND	JB	ND	J	2.96				ND	J	ND	J	ND	U	ND	U	0.21		<0.20		0.20		<0.20			
Sulfate		1560		1710		1660	B	1790	B	1610		1570		1840	B	1630	B	1670	B			1730		1590	B	2040	D	1280	D	2370	D1	1750	D	1730	D	2200	D		
pH (Field Measurement)		6.40		6.26		6.56		6.64		6.09		6.35		6.36		6.29		6.4		6.15		6.07		6.08		6.39		6.29		6.21		6.72		7.22		6.13			
Total Dissolved Solids		2740		2780		2790		2800		2620		2820		2950		2900		2920				2920		3050		2700		3170		2750		3030		3020		3120			
APPENDIX IV CONSTIUENTS																																							
Antimony	0.006 mg/L	ND		ND	J	ND	J	ND	JB	ND	J	ND	JB	ND	JB	ND	JB			ND	JB	ND	J	NA		ND	U	ND	U	<0.005		<0.005		<0.005		<0.005			
Arsenic	0.01 mg/L	ND	J	0.00736		ND	JB	0.00534		0.0123		ND	B	0.00598		0.00632				ND	J	0.00683		0.00592		0.0046		0.0060		0.0050		0.0054		0.0047		0.0051			
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	NA		0.010		0.012		0.012		0.013		0.012		0.012			
Beryllium	0.004 mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND				ND		NA		NA		ND	U	ND	U	<0.0020		<0.0020		<0.0020		<0.0020			
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		NA		NA		ND	U	ND	U	<0.0010		<0.0010		<0.0010		<0.0010			
Chromium	0.1 mg/L	ND		ND	J	ND	B	ND		ND		ND		ND		ND	J			ND	J	ND		NA		ND	U	ND	U	<0.0020		0.0007	J	0.0007	B, J	<0.0020			
Cobalt	0.006 mg/L	0.00728	J	0.00713		0.0074		0.00688		0.0054		0.0059		0.00578		0.00686				0.00742		0.00672		0.00666		0.008		0.008		0.009		0.009		0.008		0.008			
Fluoride	4 mg/L	ND	J	ND	J	ND		ND		ND	J	ND	J	ND	JB	ND	J			ND	J	ND	J	ND	J	ND	U	ND	U	0.21		<0.20		0.20		<0.20			
Lead	0.015 mg/L	ND		ND	J	ND	J	ND	JB	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	NA		ND	U	0.0005	J	0.0005	J	0.0006	J	<0.002		<0.002			
Lithium	0.040 mg/L	0.0326	J	0.0419	J	0.0494	J	0.0459	J	0.0508		0.0455	J	0.0495	J	0.0472	J			0.0470	J	0.0496	J	0.0463	J	0.04		0.04		0.04		0.04		0.04		0.05			
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		0.000161	J F1			ND		NA		NA		ND	U	ND	U	<0.0005		<0.0005		<0.0005		<0.0005			
Molybdenum	0.1 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	ND	J	0.006	J	0.007	J	0.006	J	0.007	J	0.006	J	0.007	J		
Radium 226	5 pCi/L	0.596		0.581		0.519		0.847		0.919		0.892		0.82		0.639				0.900		0.795		1.44		0.8		1.42		0.804		0.568		0.758		0.610			
Radium 228																																							
Selenium	0.05 mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND				ND		ND		NA		ND	U	ND	U	<0.003		<0.003		<0.003		<0.003			
Thallium	0.002 mg/L	ND		ND	J	ND	J	ND	J	ND		ND		ND		ND	J			ND	J	ND		NA		ND	U	ND	U	<0.0020		<0.0020		<0.0020		<0.0020			

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)
GWPS = Groundwater Protection Standard
NA = Not Analyzed
NC = Not Collected
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D = Results reported from dilution
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H3 = Sample received and analyzed past holding time
U = Target analyte was analyzed for, but was below detection limit

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-7

APPENDIX III CONSTITUENTS	GWPS	DATE																																				
		4/4/2016		5/19/2016		8/25/2016		10/6/2016		2/15/2017		5/18/2017		8/16/2017		9/29/2017		10/12/2017		4/13/2018		7/12/2018		10/4/2018		6/27/2019		11/7/2019		4/22/2020		10/13/2020		5/13/2021		9/30/2021		
		Baseline Events												Assessment		Re-sample		Assessment																				
Boron		0.241	JB	0.165	JB	0.277	J	0.203	JB	0.293	J	0.232	JB	0.263	J	0.28	J	0.245	J			0.324	J	0.395	JB	1.75	B	1.41	D2	1.58	D1	2.26	D1	2.71	D1	2.37	D1	
Calcium		364		241		287		251		262	B	273	B	268		269		259	B			297		271		329		331	D1	369	D1	350	D1	475	D1	383	D1	
Chloride		3.47	B	5.31	B	5.67	B	5.65	B	6.15		6.91	B	7.91	B	7.54	B	7.77				17.1	B	21.9	B	32.0		30.1		40.0		45.0	D	90.7	D	96.1	D	
Fluoride		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	1.43				ND	J	ND	J	0.222		0.21		0.27		0.22		0.28		0.26		
Sulfate		759		784		813	B	822		850		877		940	B	1780	B	910	B			837		888	B	1030		809	D	1310	D1	1050	D	885	D	2420	D	
pH (Field Measurement)		6.53		6.29		6.60		7.33		5.60		6.55		6.49		6.32		6.50		6.26		6.18		6.23		6.66		6.59		6.90		6.02		6.52		6.30		
Total Dissolved Solids		1450		1450		1520		1560		1540		1550		1600		1590		1610				1720		1750		1820		1890		1910		1950		2240		2230		
APPENDIX IV CONSTIUENTS																																						
Antimony	0.006 mg/L	ND		ND		ND	J	ND	JB	ND		ND	JB	ND	JB	ND	JB				ND	JB	ND	J	NA		0.000242	JB	ND	U	<0.005		<0.005		<0.005		<0.005	
Arsenic	0.01 mg/L	ND		ND	J	ND	JB	ND	J	ND	J	ND	JB	ND	J	ND	J				ND	J	ND	J	ND	J	0.00423	J	0.0034		0.0075		0.0036		0.0039		0.0041	
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J				ND	J	ND	J	NA		0.0164	JB	0.013		0.025		0.013		0.014		0.013	
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND					ND		NA		NA		ND		ND	U	<0.0020		<0.0020		<0.0020		<0.0020	
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND					ND		NA		NA		ND		ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Chromium	0.1 mg/L	ND		ND	J	0.00304	B	ND		ND		ND		ND		ND					ND	J	ND		NA		0.0247	B	ND	U	0.0053		<0.0020		0.0008	B, J	0.0007	J
Cobalt	0.006 mg/L	0.0084	J	0.0058		0.0062		0.00483	J	0.00531		0.00358	J	0.00395	J	0.00454	J				0.00468	J	0.00365	J	0.00346	J	0.00236	JB	ND	U	0.006		<0.004		<0.004		<0.004	
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J				ND	J	ND	J	ND	J	0.222		0.21		0.27		0.22		0.28		0.26	
Lead	0.015 mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND					ND		ND	J	NA		0.000348	J	ND	U	0.004		<0.002		<0.002		<0.002	
Lithium	0.040 mg/L	0.0241	J	0.0241	J	0.0305	J	0.0263	J	0.0318	J	0.0277	J	0.0291	J	0.0278					0.0261	J	0.0271	J	0.0273	J	0.0323	J	0.02		0.03		0.03		0.03		0.03	
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND					ND		NA		NA		ND		ND	U	<0.0005		<0.0005		<0.0005		<0.0005	
Molybdenum	0.1 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J				ND	J	ND	J	ND	J	0.0142		0.006	J	0.003	J	0.005	J	0.005	J	0.005	J
Radium 226	5 pCi/L	0.727		0.558		0.613		0.66		ND		0.817		0.852		0.779				0.572		0.697		0.935		0.597		0.864		1.05		0.967		0.224		1.23		
Radium 228																																						
Selenium	0.05 mg/L	ND		ND		ND		ND		ND		ND		ND		ND					ND		ND		NA		0.000427	J	ND	U	<0.003		<0.003		<0.003		<0.003	
Thallium	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND					ND		ND		NA		ND		ND	U	<0.0020		<0.0020		<0.0020		<0.0020	

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)
GWPS = Groundwater Protection Standard
NA = Not Analyzed
NC = Not Collected
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
HF = Hold time exceedence
D = Results reported from dilution
D1 = Sample required dilution due to high concentration of target analyte

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-8

APPENDIX III CONSTITUENTS	GWPS	DATE																																				
		4/4/2016		5/19/2016		8/25/2016		10/3/2016		2/15/2017		5/17/2017		8/15/2017		9/28/2017		10/12/2017		4/13/2018		7/12/2018		10/3/2018		6/30/2019		11/5/2019		4/22/2020		10/13/2020		5/13/2021		9/30/2021		
		Baseline Events										Assessment		Re-sample		Assessment																						
Boron		ND	JB	ND	JB	ND	J	ND	JB	ND	J	ND	JB	ND	J	ND	J	ND	J			ND	J	0.0388	JB	ND	D2 U	ND	D2 M2 U	<0.10		<0.10		<0.10		<0.10		
Calcium		329		242		237		226		213	B	225	B	230		214		216	B			245		207		248	D1	240	D1 M3	255	D1	249	D1	349	D1	231	D1	
Chloride		4.12	B	5.48	B	4.38	B	4.69		4.7		4.19	B	4.68	B	4.82	B	4.44				3.83	B	4.80	B	4.1		4.7		3.6		3.7		3.8		3.9	M2	
Fluoride		ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J	ND	JB	ND	J	1.210				ND	J	ND	J	0.2		0.27		0.27		0.23		0.30		0.28	M2	
Sulfate		876		910		872	B	854	B	779	B	877		964	B	900	B	894	B			887		799	B	920	D	1480	D	1010	D	992	D	980	D	2180	D, M2, Y2	
pH (Field Measurement)		6.47		6.34		6.64		6.63		4.91		6.47		6.44		6.35		6.50		6.28		6.08		6.25		6.30		6.30		6.18		6.55		6.84		6.35		
Total Dissolved Solids		1530		1590		1550		1520		1450		1560		1590		1520		1560				1690		1560		1640		1570		1500		1680		1750		1630		
APPENDIX IV CONSTIUENTS																																						
Antimony	0.006 mg/L	ND		ND		ND	J	ND	JB	ND		ND	JB	ND	JB	ND	J			ND	JB	ND	J	NA		ND	U	ND	U	<0.005		<0.005		<0.005		<0.005		
Arsenic	0.01 mg/L	0.00931	J	0.00698		0.00709	B	0.00581		0.00799		0.0072	B	0.00548		0.00515			0.00525		0.00558		0.00757		0.0054		0.0056		0.0056		0.0144		0.0052		0.0053			
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	NA		0.024		0.022		0.024		0.070		0.023		0.023		
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND			ND		NA		NA		ND	U	ND	M2 U	<0.0020		<0.0020		<0.0020		<0.0020			
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND			ND		NA		NA		ND	U	ND	U	<0.0010		0.0004	J	<0.0010		<0.0010			
Chromium	0.1 mg/L	ND		ND	J	ND	JB	ND		ND		ND		ND		ND			ND	J	ND	J	NA		ND	U	0.0009	J	0.0008	J	0.0224		0.0011	B, J	0.0018	J		
Cobalt	0.006 mg/L	ND		0.00156	J	0.00118	J	0.0015	J	0.0011	J	0.000739	J	0.000943	J	0.00102	J		0.000800	J	0.00113	J	0.000849	J	ND	U	ND	U	<0.004		0.015		<0.004		<0.004			
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J	ND	JB	ND	J		ND	J	ND	J	ND	J	ND	J	0.2		0.27		0.27		0.23		0.30		0.28	M2
Lead	0.015 mg/L	ND		ND		ND		ND		ND		ND		ND		ND			ND		ND	J	NA		ND	U	0.0005	J	<0.002		0.012		<0.002		0.0008	J		
Lithium	0.040 mg/L	ND		ND		0.0116	J	0.012	J	0.0142	J	0.0103	J	0.0137	J	ND			ND		0.0125	J	0.0129	J	0.009	J	0.009	J	0.009	J	0.02		0.008	J	0.01	V1, J		
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND			ND		NA		NA		ND	U	ND	U	<0.0005		<0.0005		<0.0005		<0.0005			
Molybdenum	0.1 mg/L	0.0187	J	0.0142		0.0145		0.0151		0.0185		0.0137		0.0166		0.0153			0.0123		0.0129		0.0137		0.01		0.01		0.01		0.01		0.01		0.01			
Radium 226	5 pCi/L	1.12		1.31		0.741		1.12		0.854		1.07		1.04		0.901			0.802		1.29		1.69		2.8		0.946		1.07		2.94		0.968		0.859			
Radium 228																																						
Selenium	0.05 mg/L	ND		ND		ND		ND		ND		ND		ND	J	ND			ND		ND	J	NA		ND	U	ND	U	<0.003		<0.003		<0.003		<0.003			
Thallium	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND			ND		ND		NA		ND	U	0.0001	J	<0.0020		<0.0020		<0.0020		<0.0020			

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)
GWPS = Groundwater Protection Standard
NA = Not Analyzed
NC = Not Collected
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
D = Results reported from dilution
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H3 = Sample received and analyzed past holding time
M2 = Matrix spike recovery was low; the method control sample recovery was acceptable.
M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
U = Target analyte was analyzed for, but was below detection limit

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-10

APPENDIX III CONSTITUENTS	GWPS	DATE																			
		4/5/2016	5/18/2016	8/25/2016	10/6/2016	2/17/2017	5/18/2017	8/18/2017	10/2/2017	10/13/2017	4/14/2018	7/13/2018	10/5/2018	6/30/2019	11/4/2019	4/22/2020	10/13/2020	5/13/2021	10/1/2021		
		Baseline Events										Assessment	Re-sample	Assessment							
Boron		0.291 JB	0.217 JB	0.205 J	0.166 JB	0.229 J	0.163 JB	0.196 J	0.181 J	0.251 J		0.144 J	0.286 JB	ND D2 U	ND U D2	0.28	0.39	0.31	0.70		
Calcium		497	390	404	369	440 B	390 B	368	379 B	347 B		378 J	334	369 D1	409 D1	415 D1	404 D1	401 D1	396 D1		
Chloride		53.7 B	85.7 JB	53	44 B	44 B	47.4 B	43.5 B	63.3	83		48.2 B	59.2 B	80.1 D	143 D	68.6 D	89.2 D	73.2 D	98.8 D		
Fluoride		ND JB	ND J	ND	ND J	ND J	ND J	ND JB	ND J	2.8		ND J	ND J	ND U	ND U	<0.20	<0.20	<0.20	<0.20		
Sulfate		2090	2210	2000 B	2030	1980 B	2070	2320 B	2250 B	2080 B		2010	1850 B	2440 D	553 D	3580 D	1380 D	1240 D	1360 D		
pH (Field Measurement)		6.03	5.82	6.05	6.91	4.62	5.88	5.83	5.84	6.00	5.90	5.68	5.44	6.01	5.53	6.26	6.16	6.59	5.84		
Total Dissolved Solids		2980	3300	3240	3230	3050	3240	3200	3300	3120		3270	3120	2980	2960	3170	3290	3300	3310		
APPENDIX IV CONSTIUENTS																					
Antimony	0.006 mg/L	ND	ND	ND J	ND JB	ND	ND JB	0.00396 B	ND JB		ND JB	ND J	NA	ND U	ND U	<0.005	<0.005	<0.005	<0.005		
Arsenic	0.01 mg/L	ND J	ND J	ND JB	ND J	ND J	ND JB	ND J	ND JB		ND J	ND J	ND J	0.0009 J	0.0025	0.0011	0.0009 J	0.0013	0.0036		
Barium	2 mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J		ND J	ND J	NA	0.009	0.01	0.008	0.010	0.010	0.009		
Beryllium	0.004 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND		ND	NA	NA	ND U	ND U	<0.0020	<0.0020	<0.0020	<0.0020		
Cadmium	0.005 mg/L	ND	ND	ND	ND	ND J	ND J	ND	ND		ND	NA	NA	0.0001 J	ND U	<0.0010	<0.0010	<0.0010	<0.0010		
Chromium	0.1 mg/L	ND	ND J	ND JB	ND	ND	ND	ND	ND J		ND J	ND	NA	ND U	ND U	<0.0020	0.0007 J	0.0010 B, J	<0.0020		
Cobalt	0.006 mg/L	0.158	0.113	0.126	0.108	0.0836	0.0602	0.121	0.139		0.0412	0.0704	0.114	0.110	0.108	0.082	0.078	0.064	0.092		
Fluoride	4 mg/L	ND J	ND J	ND	ND J	ND J	ND J	ND JB	ND J		ND J	ND J	ND J	ND U	ND U	<0.20	<0.20	<0.20	<0.20		
Lead	0.015 mg/L	ND	ND J	ND J	ND J	ND J	ND	ND	ND J		ND J	ND J	NA	ND U	ND U	<0.002	<0.002	<0.002	<0.002		
Lithium	0.040 mg/L	ND	ND	0.0141 J	0.0149 J	0.0133 J	0.0109 J	0.0129 J	0.0124 J		ND	0.0102 J	0.0147 J	0.009 J	ND U	0.006 J	0.008 J	0.006 J	0.008 J		
Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	NA	NA	ND U	ND U	<0.0005	<0.0005	<0.0005	<0.0005		
Molybdenum	0.1 mg/L	ND	ND	ND	ND	ND	ND	ND J	ND		ND	ND	ND	ND U	0.003 J	<0.01	<0.01	<0.01	<0.01		
Radium 226	5 pCi/L	ND	ND	ND	ND	ND	0.384	0.372	0.506		0.721	0.472	0.625	1.2	0.11	0.414	0.944	1.40	0.378		
Radium 228																					
Selenium	0.05 mg/L	ND	ND	ND	ND	ND	ND	ND J	ND JB		ND	ND	NA	ND U	ND U	<0.003	<0.003	<0.003	<0.003		
Thallium	0.002 mg/L	ND	ND J	ND J	ND	ND	ND	ND J	ND		ND	ND	NA	ND U	0.0001 J	<0.0020	<0.0020	<0.0020	<0.0020		

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GWPS = Groundwater Protection Standard
NA = Not Analyzed
NC = Not Collected
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value
B = Compound was found in the blank and sample.
D = Results reported from dilution
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H3 = Sample received and analyzed past holding time
U = Target analyte was analyzed for, but was below detection limi

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-4D

APPENDIX III CONSTITUENTS	GWPS	DATE													
		11/2/2018		6/28/2019		11/8/2019		4/22/2020		10/13/2020		5/12/2021		9/29/2021	
		Characterization													
Boron		6.60		8.09	D2	9.11	D2	10.2	D1	9.39	D1	9.29	D1	8.69	D1, M1
Calcium		607		635	D1	628	D1	714	D1	659	D1	711	D1	608	D1, M3
Chloride		676	B	826	D	537	D	1280.0	D	1210	D	819	D	1570	D
Fluoride		ND	J	ND	DU	0.21		0.26		0.23		0.26		0.26	
Sulfate		1720	B	1330	D	1100	D	2650	D	1260	D	1670	D	985	D
pH (Field Measurement)		6.05		6.46		6.34		6.31		6.47		6.22		6.28	
Total Dissolved Solids		4180		4140		3500		4690		4410		4670		4580	C6
APPENDIX IV CONSTITUENTS															
Antimony	0.006 mg/L	ND	JB	ND	U	ND	U	<0.005		<0.005		<0.005		<0.005	
Arsenic	0.01 mg/L	ND	JB	0.0032		0.0032		0.0039		0.0037		0.0031		0.0029	
Barium	2 mg/L	ND	J	0.016		0.016		0.016		0.018		0.016		0.013	
Beryllium	0.004 mg/L	ND	J	ND	U	ND	U	<0.0020		<0.0020		<0.0020		<0.0020	
Cadmium	0.005 mg/L	ND		ND	U	ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Chromium	0.1 mg/L	0.00591	B	0.0006	J	ND	U	<0.0020		0.0010	J	0.0009	B, J	<0.0020	
Cobalt	0.006 mg/L	0.0122		0.010		0.015		0.010		0.012		0.009		0.010	
Fluoride	4 mg/L	ND	J	ND	DU	0.21		0.26		0.23		0.26		0.26	
Lead	0.015 mg/L	ND	J	ND	U	ND	U	<0.002		0.0005	J	<0.002		<0.002	
Lithium	0.040 mg/L	0.181		0.14		0.14		0.16		0.17		0.16		0.13	M1
Mercury	0.002 mg/L	ND		ND	U	ND	U	<0.0005		<0.0005		<0.0005		<0.0005	
Molybdenum	0.1 mg/L	0.0185		0.007	J	0.01		0.02		0.01		0.006	J	0.007	J
Radium 226	5 pCi/L	1.58		2.7		1.86		0.851		1.71		1.07		1.05	
Radium 228															
Selenium	0.05 mg/L	ND	J	0.001	J	0.001	J	0.001	J	<0.003		0.001	J	0.001	J
Thallium	0.002 mg/L	ND	J	ND	U	ND	U	<0.0020		<0.0020		<0.0020		<0.0020	

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)

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NA = Not Analyzed

NC = Not Collected

ND = Not Detected at or above Method Detection Limit

pCi/L = picoCuries per Liter

J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value

B = Compound was found in the blank and sample

D = Results reported from dilution

D1 = Sample required dilution due to high concentration of target analyte

D2 = Sample required dilution due to matrix interference

H3 = Sample received and analyzed past holding time

U = Target analyte was analyzed for, but was below detection limit

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-102

APPENDIX III CONSTITUENTS	GWPS	DATE													
		11/2/2018		6/27/2019		11/8/2019		4/22/2020		10/13/2020		5/12/2021		9/29/2021	
		Characterization													
Boron		ND	J	0.108	JB	ND	D2 M4 U	<0.10		<0.10		<0.10		<0.10	
Calcium		81.3		80.9		85.1	D2	94.5	D1	86.8	D2	82.8	D	84.1	D1
Chloride		33.3	B	33.3		35.3		33.1		32.9	D2	39.7	D	36.2	M2
Fluoride		ND	J	0.343		0.36		0.34		0.30		0.33		0.33	
Sulfate		265	B	279		307	D	259	D	261	D	308	D	433	D, M2
pH (Field Measurement)		6.58		6.7		6.61		6.48		6.33		6.49		6.58	
Total Dissolved Solids		781		760		728		724		836		734		818	
APPENDIX IV CONSTITUENTS															
Antimony	0.006 mg/L	ND	JB	0.000101	JB	ND	U	<0.005		<0.005		<0.005		<0.005	
Arsenic	0.01 mg/L	ND	JB	0.00414	J	0.0031		0.0047		0.0036		0.0038		0.0042	
Barium	2 mg/L	ND	J	0.0596	JB	0.059		0.051		0.058		0.053		0.049	
Beryllium	0.004 mg/L	ND		0.000134	J	ND	U	<0.0020		<0.0020		<0.0020		<0.0020	
Cadmium	0.005 mg/L	ND				ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Chromium	0.1 mg/L	0.00321	B	0.00140	JB	0.0006	J	<0.0020		<0.0020		0.0011	B, J	<0.0020	
Cobalt	0.006 mg/L	0.00263	J	0.00286	JB	ND	U	<0.004		<0.004		<0.004		<0.004	
Fluoride	4 mg/L	ND	J	0.343		0.36		0.34		0.30		0.33		0.33	
Lead	0.015 mg/L	ND	J	0.000164	J	ND	U	<0.002		<0.002		<0.002		<0.002	
Lithium	0.040 mg/L	ND		ND		ND	U	<0.02		<0.02		<0.02		<0.02	
Mercury	0.002 mg/L	ND		ND		ND	U	<0.0005		<0.0005		<0.0005		<0.0005	
Molybdenum	0.1 mg/L	0.0111		0.00112	J	0.002	J	<0.01		<0.01		<0.01		<0.01	
Radium 226	5 pCi/L	1.22		0.187	U	0.425		0.084		0.741		0.497		0.899	
Radium 228															
Selenium	0.05 mg/L	ND		ND		ND	U	<0.003		<0.003		<0.003		<0.003	
Thallium	0.002 mg/L	ND		ND		ND	U	<0.0020		<0.0020		<0.0020		<0.0020	

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pCi/L = picoCuries per Liter

J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

B = Compound was found in the blank and sample.

HF = Hold time exceedence

D = Results reported from dilution

D2 = Sample required dillution due to matrix interference

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-104

APPENDIX III CONSTITUENTS	GWPS	DATE													
		11/2/2018		6/27/2019		11/8/2019		4/22/2020		10/13/2020		5/12/2021		9/29/2021	
		Characterization													
Boron		ND	J	0.0765	JB	ND	U D2	<0.10		<0.10		<0.10		<0.10	
Calcium		227		221		257	D1	258	D1	267	D1	273	D	271	D1
Chloride		11.8	B	12.7		13.2		13.0		11.4		13.5		12.1	
Fluoride		ND	J	0.129	J	ND	U	<0.20		<0.20		<0.20		<0.20	
Sulfate		639	JB	513		587	D M1	662	D	628	D	690	D	1290	D
pH (Field Measurement)		6.43		6.87		6.64		6.50		6.41		6.44		6.51	
Total Dissolved Solids		1410		1360		1490		1380		1590		1460		1610	
APPENDIX IV CONSTITUENTS															
Antimony	0.006 mg/L	ND	JB	0.000173	JB	ND	U	<0.005		<0.005		<0.005		<0.005	
Arsenic	0.01 mg/L	ND	JB	0.00174	J	0.0027		0.0010		0.0006	J	0.0005	J	0.0007	J
Barium	2 mg/L	ND	J	0.0734	JB	0.064		0.050		0.047		0.035		0.034	
Beryllium	0.004 mg/L	ND	J	0.000142	J	ND	U	<0.0020		<0.0020		<0.0020		<0.0020	
Cadmium	0.005 mg/L	ND		ND		ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Chromium	0.1 mg/L	0.00361	B	0.0178	B	0.0037		0.0007	J	<0.0020		0.0010	B, J	<0.0020	
Cobalt	0.006 mg/L	0.00388	J	0.00164	JB	ND	U	<0.004		<0.004		<0.004		<0.004	
Fluoride	4 mg/L	ND	J	0.129	J	ND	U	<0.20		<0.20		<0.20		<0.20	
Lead	0.015 mg/L	ND	J	0.000785	J	0.002		<0.002		<0.002		<0.002		<0.002	
Lithium	0.040 mg/L	0.0326	J	0.0261	J	0.03		0.02		0.03		0.02		0.02	
Mercury	0.002 mg/L	ND		ND		ND	U	<0.0005		<0.0005		<0.0005		<0.0005	
Molybdenum	0.1 mg/L	0.0124		0.00319	J	ND	U	0.003	J	<0.01		<0.01		<0.01	
Radium 226	5 pCi/L	2.16		0.952		1.24		0.823		1.88		1.15		1.78	
Radium 228															
Selenium	0.05 mg/L	ND		ND		ND	U	<0.003		<0.003		<0.003		<0.003	
Thallium	0.002 mg/L	ND		ND		ND	U	<0.0020		<0.0020		<0.0020		<0.0020	

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GWPS = Groundwater Protection Standard

NA = Not Analyzed

NC = Not Collected

ND = Not Detected at or above Method Detection Limit

pCi/L = picoCuries per Liter

J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value

B = Compound was found in the blank and sample

U = Target analyte was analyzed for, but was below detection limit

^ = Instrument related QC is outside acceptance limits

HF = Hold time exceedance

D = Results reported from dilution

D1 = Sample required dilution due to high concentration of target analyte

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-105

APPENDIX III CONSTITUENTS	GWPS	DATE													
		11/2/2018		6/27/2019		11/7/2019		4/22/2020		10/13/2020		5/12/2021		9/29/2021	
		Characterization													
Boron		ND	J	0.348	JB	ND	D2 M4 U	0.33		0.37		0.36		0.34	
Calcium		124		58.6		72.0	D2 M1	60.4	D1	49.2	D2	59.7	D1	59.4	D1
Chloride		10.5	B	9.34		10.1		9.5		8.7		9.0		9.1	
Fluoride		ND	J	0.638		0.55		0.67		0.61		0.60		0.61	
Sulfate		216	JB	37.6		73.7	D	91.8	D	75.4	D	157	D	176	D
pH (Field Measurement)		6.75		7.70		7.51		7.78		8.02		7.21		7.27	
Total Dissolved Solids		747		548		612		398		550		644		626	
APPENDIX IV CONSTITUENTS															
Antimony	0.006 mg/L	ND	JB	0.000186	JB	ND	U	<0.005		<0.005		<0.005		<0.005	
Arsenic	0.01 mg/L	ND	JB	0.00186	J	ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Barium	2 mg/L	0.207		0.288	B	0.326		0.255		0.256		0.267		0.260	
Beryllium	0.004 mg/L	ND	J	0.000398	J	ND	U	<0.0020		<0.0020		<0.0020		<0.0020	
Cadmium	0.005 mg/L	ND		ND		ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Chromium	0.1 mg/L	0.00388	B	0.00784	B	ND	U	<0.0020		<0.0020		0.0011	B, J	<0.0020	
Cobalt	0.006 mg/L	0.00488	J	0.00435	JB	ND	U	<0.004		<0.004		<0.004		<0.004	
Fluoride	4 mg/L	ND	J	0.638		0.55		0.67		0.61		0.60		0.61	
Lead	0.015 mg/L	ND	J	0.00326	J	ND	U	<0.002		<0.002		<0.002		<0.002	
Lithium	0.040 mg/L	0.0141	J	0.0278	J	0.03	M1	0.02		0.02		0.02		0.02	
Mercury	0.002 mg/L	ND		ND		ND	U	<0.0005		<0.0005		<0.0005		<0.0005	
Molybdenum	0.1 mg/L	0.0131		0.00231	J	0.002	J	0.002	J	0.002	J	0.002	J	0.002	J
Radium 226	5 pCi/L	1.08		0.558	U	0.829		1.15		1.30		2.14		0.380	
Radium 228															
Selenium	0.05 mg/L	ND		ND		ND	U	<0.003		<0.003		<0.003		<0.003	
Thallium	0.002 mg/L	ND		0.0000510	J	ND	U	<0.0020		<0.0020		<0.0020		<0.0020	

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)

GWPS = Groundwater Protection Standard

NA = Not Analyzed

NC = Not Collected

ND = Not Detected at or above Method Detection Limit

pCi/L = picoCuries per Liter

J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

B = Compound was found in the blank and sample.

HF = Hold time exceedence

D = Results reported from dilution

D1 = Sample required dilution due to high concentration of target analyte

WILSON LANDFILL - CCR ANALYTICAL SUMMARY
MW-110

APPENDIX III CONSTITUENTS	GWPS	DATE													
		11/2/2018		6/27/2019		11/7/2019		4/22/2020		10/13/2020		5/12/2021		9/29/2021	
		Characterization													
Boron		ND	J	0.0716	JB	ND	U D2	<0.10		<0.10		<0.10		<0.10	
Calcium		33.8		38.9		47.6	D2	39.9	D1	37.9	D2	39.7	D1	33.8	D1
Chloride		14.4	B	11.1		10.0		11.5		10.5		11.2		10.9	
Fluoride		ND	J	0.229		0.23		0.28		0.24		0.26		0.27	
Sulfate		102	B	70.0		61.2	D	71.7	D	56	D	75.2	D	101	D
pH (Field Measurement)		6.93		6.92		6.83		6.89		6.87		6.43		6.88	
Total Dissolved Solids		333		296		348		208		278		302		260	
APPENDIX IV CONSTITUENTS															
Antimony	0.006 mg/L	ND	JB	0.000130	JB	ND	U	<0.005		<0.005		<0.005		<0.005	
Arsenic	0.01 mg/L	ND	JB	0.00118	J	ND	U	0.0019		0.0011		0.0010		0.0018	
Barium	2 mg/L	ND	J	0.0535	JB	0.051		0.051		0.053		0.054		0.046	
Beryllium	0.004 mg/L	ND		ND		ND	U	<0.0020		<0.0020		<0.0020		<0.0020	
Cadmium	0.005 mg/L	ND		ND		ND	U	<0.0010		<0.0010		<0.0010		<0.0010	
Chromium	0.1 mg/L	0.00967	B	0.00217	JB	ND	U	0.0007	J	<0.0020		0.0009	B,J	<0.0020	
Cobalt	0.006 mg/L	0.00240	J	0.000827	JB	ND	U	<0.004		<0.004		<0.004		<0.004	
Fluoride	4 mg/L	ND	J	0.229		0.23		0.28		0.24		0.26		0.27	
Lead	0.015 mg/L	ND	J	0.000539	J	ND	U	<0.002		<0.002		<0.002		<0.002	
Lithium	0.040 mg/L	0.0122	J	ND		0.006	J	<0.02		<0.02		<0.02		<0.02	
Mercury	0.002 mg/L	ND		ND		ND	U	<0.0005		<0.0005		<0.0005		<0.0005	
Molybdenum	0.1 mg/L	ND	J	ND		ND	U	<0.01		<0.01		<0.01		<0.01	
Radium 226	5 pCi/L	1.19		0.816		1.10		1.53		1.49		1.37		1.36	
Radium 228															
Selenium	0.05 mg/L	ND		ND		ND	U	<0.003		<0.003		<0.003		<0.003	
Thallium	0.002 mg/L	ND		ND		ND	U	<0.0020		<0.0020		<0.0020		<0.0020	

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)

GWPS = Groundwater Protection Standard

NA = Not Analyzed

NC = Not Collected

ND = Not Detected at or above Method Detection Limit

pCi/L = picoCuries per Liter

J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

B = Compound was found in the blank and sample.

HF = Hold time exceedence

^ = Instrument related QC is outside acceptance limits

D = Results reported from dilution

D1 = Sample required dilution due to high concentration of target analyte

Appendix B

Analytical Laboratory Reports

Certificate of Analysis 1033790

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:45

Project Name: MW-5 Wilson 092-00004

Workorder: 1033790

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033790-01	MW5/	Groundwater	05/13/2021 08:05	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033790-01	Field Conductance	4020			
	Field pH	6.38			
	Field Temp (C)	16.39			

ANALYTICAL RESULTS

Lab Sample ID: **1033790-01**

Description: **MW5**

Sample Collection Date Time: 05/13/2021 08:05

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Arsenic	0.0027		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Barium	0.011		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Boron	0.68		mg/L	0.10	0.10	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:26	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Calcium	662	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:32	MRW D
Chromium	0.0010	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Cobalt	0.008		mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Iron	6.35		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:26	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Lithium	0.03		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Magnesium	263	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:32	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Molybdenum	0.003	J	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Nickel	0.005		mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Potassium	11.2	D1	mg/L	5.00	2.20	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:29	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Sodium	84.9	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:29	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB
Zinc	0.006	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:20	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	477		mg/L	4		2320 B-2011	05/16/2021 19:11	05/16/2021 19:11	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	05/16/2021 19:11	05/16/2021 19:11	HMF
Total Alkalinity	477		mg/L	4		2320 B-2011	05/16/2021 19:11	05/16/2021 19:11	HMF
Chemical Oxygen Demand	12		mg/L	8	8	HACH 8000	05/18/2021 12:30	05/18/2021 12:30	SLP
Specific Conductance (Lab)	3780		umhos/cm	1	1	2510 B-2011	05/14/2021 13:15	05/14/2021 13:15	CML
Hardness as CaCO3	2340	D	mg/L	5	5	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	3790		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.9		mg/L	0.5	0.4	5310 C-2011	05/16/2021 19:47	05/16/2021 19:47	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.224	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	1.07	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	1.29	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	185	D	mg/L	10.0	7.2	EPA 300.0 REV 2.1	05/23/2021 00:06	05/23/2021 00:06	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	05/22/2021 23:51	05/22/2021 23:51	CSC
Sulfate	2010	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/23/2021 00:21	05/23/2021 00:21	CSC

Notes for work order 1033790

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	U, D2, M4
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND			10		U
Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2746 - Default Prep IC

Blank (BAE2746-BLK1)

Prepared: 5/22/2021 21:07, Analyzed: 5/22/2021 21:07

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

Matrix Spike (BAE2746-MS1) Source: 1033796-01

Prepared: 5/23/2021 3:34, Analyzed: 5/23/2021 3:34

Fluoride	4.82		mg/L	10.0	0.17	46.6	80-120			M2
Chloride	21.1		mg/L	10.0	14.3	67.2	80-120			M2
Sulfate	579		mg/L	10.0	1280	NR	80-120			M2

Matrix Spike Dup (BAE2746-MSD1) Source: 1033796-01

Prepared: 5/23/2021 3:49, Analyzed: 5/23/2021 3:49

Fluoride	5.11		mg/L	10.0	0.17	49.4	80-120	5.80	20	M2
Sulfate	579		mg/L	10.0	1280	NR	80-120	0.0570	20	M2
Chloride	21.2		mg/L	10.0	14.3	68.3	80-120	0.507	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033790

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Project: **MW-5 Wilson 092-00004**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

Invoice To:

Big Rivers Electric Corporation Wilson Station

Brian Edwards

PO Box 24

Henderson, KY 42419

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date

Collection

1033790

(mm/dd/yy):

Time (24 hr):

Sample ID#

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033790-01 A 05-13-21 8:05

Plastic 1L

1

MW5

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033790-01 B 05-13-21 8:05

Plastic 500mL pH<2
w/HNO3

1

MW5

g / c

1033790-01 C 05-13-21 8:05

Plastic 500mL pH<2
w/H2SO4

1

MW5

g / c

COD TOC

1033790-01 D 05-13-21 8:05

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW5

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 8:05

pH 6.38 Cond (umho) 4:02 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.39 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:35:18PM

Page 17 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Project: MW-5 Wilson 092-00004

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: Ky

Invoice To:
Big Rivers Electric Corporation Wilson Station

Brian Edwards
PO Box 24
Henderson, KY 42419

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033790 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033790-01 E	<u>05-13-21</u>	<u>8:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033790-01 F	<u>05-13-21</u>	<u>8:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033790-01 G	<u>05-13-21</u>	<u>8:05</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033790-01 H	<u>05-13-21</u>	<u>8:05</u>	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: T. Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 8:05
pH 6.38 Cond (umho) 4.02 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.39 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Project: **MW-5 Wilson 092-00004**

Report To:

Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

Invoice To:

Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date

Collection

1033790

(mm/dd/yy):

Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

Sample ID#

05-13-21

8:05

Plastic 1L

1

MW5

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033790-01 B

05-13-21

8:05

Plastic 500mL pH<2
w/HNO3

1

MW5

g / c

1033790-01 C

05-13-21

8:05

Plastic 500mL pH<2
w/H2SO4

1

MW5

g / c

COD TOC

1033790-01 D

05-13-21

8:05

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW5

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by: Noy

Field data collected by: Trawls Speed

Date (mm/dd/yy) 05-13-21 Time (24 hr) 8:05

pH 6.38 Cond (umho) 4:02 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.39 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-5 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033790	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033790-01 E	<u>05-13-21</u>	<u>8:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033790-01 F	<u>05-13-21</u>	<u>8:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033790-01 G	<u>05-13-21</u>	<u>8:05</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033790-01 H	<u>05-13-21</u>	<u>8:05</u>	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 8:05
pH 6.38 Cond (umho) 4.02 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.39 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



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Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-5 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): *[Signature]*
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033790	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033790-01 A	05-13-21	8:05	Plastic 1L	1	MW5	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033790-01 B	05-13-21	8:05	Plastic 500mL pH<2 w/HNO3	1	MW5	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033790-01 C	05-13-21	8:05	Plastic 500mL pH<2 w/H2SO4	1	MW5	g / c	COD TOC
1033790-01 D	05-13-21	8:05	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW5	g / c	Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by: *Noy*

Field data collected by: *Travis Smith* Date (mm/dd/yy) 05-13-21 Time (24 hr) 8:05
pH 6.38 Cond (umho) 4:02 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.39 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature] *ahmykai* 5-13-21 1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:35:18PM

Page 21 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-5 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Time (24 hr):					
1033790	(mm/dd/yy):							
Sample ID#								
1033790-01 E	<u>05-13-21</u>	<u>8:05</u>		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
				Preservation Check: pH : _____				
1033790-01 F	<u>05-13-21</u>	<u>8:05</u>		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
				Preservation Check: pH : _____				
1033790-01 G	<u>05-13-21</u>	<u>8:05</u>		Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
				Preservation Check: pH : _____				
1033790-01 H	<u>05-13-21</u>	<u>8:05</u>		AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
				Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Trevor Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 8:05
pH 6.38 Cond (umho) 4.02 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.39 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:35:18PM

Page 22 of 34

June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033790 / Big River Electric C
Pace Project No.: 30422176

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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SAMPLE SUMMARY

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422176001	1033790-01	Water	05/13/21 08:05	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422176001	1033790-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

Sample: 1033790-01		Lab ID: 30422176001	Collected: 05/13/21 08:05	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	06/21/21 14:23	13982-63-3	
	EPA 903.1	0.224 ± 0.440 (0.790) C:NA T:98%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	06/18/21 11:21	15262-20-1	
	EPA 904.0	1.07 ± 0.426 (0.661) C:79% T:94%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	06/21/21 17:52	7440-14-4	
	Total Radium Calculation	1.29 ± 0.866 (1.45)					

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

QC Batch:	451419	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422176001

METHOD BLANK: 2178770 Matrix: Water

Associated Lab Samples: 30422176001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

QC Batch:	451418	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422176001

METHOD BLANK: 2178768 Matrix: Water

Associated Lab Samples: 30422176001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033790 / Big River Electric C

Pace Project No.: 30422176

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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Chain of Custody



Workorder: 1033790

Workorder Name: MW-5 Wilson 092-00004

Owner Received Date: 5/13/2021

Results Requested By:

Report To:		Subcontract To:		Requested Analysis	

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg P/
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1					GW	X	X	001
2	1033790-01		05/13/21 08:05	IR44-McCoy	Water			
3								
4								
5								
6								
7								
8								
9								
10								
Transfers Released By		Date/Time		Received By		Date/Time		Comments
1				TJH		5-18-21		1000
2								
3								

Cooler Temperature on Receipt	N/A °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

30422176

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3888 2886

 Label en
 LIMS Login VPI

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	/			1003801	<u>en</u> 5-24-21
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:	/				
Sampler Name & Signature on COC:		/			
Sample Labels match COC:	/				
-Includes date/time/ID Matrix: <u>W-7</u>					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):		/			
Rush Turn Around Time Requested:		/			
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:		/			
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests			/		
All containers have been checked for preservation.	/				
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	/			Initial when completed <u>en</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed <u>en</u>	Date: <u>5-24-21</u> Survey Meter SN: <u>13-83</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

30422176

Pace KY

Profile Number 11851

Client Site 1033740/Big Rivers Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WG9U	WGKU	ZPLC
1	5											W																
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Container Codes

Glass			
GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unpreserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosulf
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.			
GCUB	1 Gallon Cubitainer	EZI	5g Encore
12GN	1/2 Gallon Cubitainer	VOAK	Kit for Volatile Solid
SP5T	120mL Coliform Na Thiosulfate	I	Wipe/Swab
BP1N	1L plastic HNO3	ZPLC	Ziploc Bag
BP1U	1L plastic unpreserved		
BP3S	250mL plastic H2SO4	WT	Water
BP3N	250mL plastic HNO3	SL	Solid
BP3U	250mL plastic unpreserved	OL	Non-aqueous liquid
BP3C	250ml plastic NaOH	WP	Wipe
BP2S	500mL plastic H2SO4		
BP2U	500mL plastic unpreserved		

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky
1033790

30422176

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033790-01	Water	Sampled:05/13/2021 08:05	Specific Method
Radium Total (sub)	11/09/2021 08:05	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 08:05	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 08:05	EPA 903.1	

Released By Ammy Lami Date 5-17-21 Received By _____ Date _____

Released By _____ Date _____ Received By _____ Date _____

Certificate of Analysis 1033791

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:44

Project Name: MW-6 Wilson 092-00004

Workorder: 1033791

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By

1033791-01	MW6/	Groundwater	05/13/2021 08:20	05/13/2021 13:53	Phillip Hill

<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>
1033791-01	Field Conductance	2970
	Field Dissolved Oxygen	0.69
	Field pH	7.22
	Field Temp (C)	15.08
	Field Turbidity	2.9

ANALYTICAL RESULTS

Lab Sample ID: **1033791-01**

Description: **MW6**

Sample Collection Date Time: 05/13/2021 08:20

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Arsenic	0.0047		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Barium	0.012		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Boron	0.43		mg/L	0.10	0.10	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:35	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Calcium	568	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:51	MRW D
Chromium	0.0007	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Cobalt	0.008		mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Iron	5.20		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:35	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Lithium	0.04		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Magnesium	230	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:51	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Molybdenum	0.006	J	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Nickel	0.014		mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Potassium	9.33	D1	mg/L	5.00	2.20	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:48	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Sodium	35.0	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:48	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB
Zinc	0.01	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:24	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	500		mg/L	4		2320 B-2011	05/16/2021 19:18	05/16/2021 19:18	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	05/16/2021 19:18	05/16/2021 19:18	HMF
Total Alkalinity	500		mg/L	4		2320 B-2011	05/16/2021 19:18	05/16/2021 19:18	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:30	05/18/2021 12:30	SLP
Specific Conductance (Lab)	3030		umhos/cm	1	1	2510 B-2011	05/14/2021 13:16	05/14/2021 13:16	CML
Hardness as CaCO3	2280	D	mg/L	5	5	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	3020		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.6		mg/L	0.5	0.4	5310 C-2011	05/16/2021 20:08	05/16/2021 20:08	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.146	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.612	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	0.758	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	16.4		mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/23/2021 00:36	05/23/2021 00:36	CSC
Fluoride	0.20		mg/L	0.20		EPA 300.0 REV 2.1	05/23/2021 00:36	05/23/2021 00:36	CSC
Sulfate	1730	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/23/2021 00:51	05/23/2021 00:51	CSC

Notes for work order 1033791

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	U, D2, M4
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND			10		U
Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2746 - Default Prep IC

Blank (BAE2746-BLK1)

Prepared: 5/22/2021 21:07, Analyzed: 5/22/2021 21:07

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

Matrix Spike (BAE2746-MS1) Source: 1033796-01

Prepared: 5/23/2021 3:34, Analyzed: 5/23/2021 3:34

Fluoride	4.82		mg/L	10.0	0.17	46.6	80-120			M2
Chloride	21.1		mg/L	10.0	14.3	67.2	80-120			M2
Sulfate	579		mg/L	10.0	1280	NR	80-120			M2

Matrix Spike Dup (BAE2746-MSD1) Source: 1033796-01

Prepared: 5/23/2021 3:49, Analyzed: 5/23/2021 3:49

Fluoride	5.11		mg/L	10.0	0.17	49.4	80-120	5.80	20	M2
Sulfate	579		mg/L	10.0	1280	NR	80-120	0.0570	20	M2
Chloride	21.2		mg/L	10.0	14.3	68.3	80-120	0.507	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033791

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-6 Wilson 092-00004**

Phone: (270) 844-6000
PWS ID#: 44
State:

PO#:
Quote#:

Please Print Legibly

Collected by (Signature): *[Signature]*

Compliance Monitoring? Yes X No

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes No

Influent: Start Date Start time End Date End Time Temp (oC)

Effluent: Start Date Start time End Date End Time Temp (oC)

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Time (24 hr):					
Sample ID#	(mm/dd/yy):							
1033791-01 A	<u>5/13/21</u>	<u>820</u>		Plastic 1L	1	MW6	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033791-01 B	<u>5/13/21</u>	<u>820</u>		Plastic 500mL pH<2 w/HNO3	1	MW6	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
Preservation Check: pH : <u> </u>								
1033791-01 C	<u>5/13/21</u>	<u>820</u>		Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
Preservation Check: pH : <u> </u>								
1033791-01 D	<u>5/13/21</u>	<u>820</u>		Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW6	g / c	Radium 226 (sub)
Preservation Check: pH : <u> </u>								

Preservation Check Performed by: Noy

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 820
pH 7.22 Cond 2.97 Res Cl (mg/L) Tot Cl (mg/L) Free Cl (mg/L)
Temp (oC) 15.08 or (oF) Static Water Level DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) or (CFS) or (g/min)

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
5-13-21

12:12
1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-6 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033791	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033791-01 E	<u>5/13/21</u>	<u>820</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033791-01 F	<u>5/13/21</u>	<u>820</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033791-01 G	<u>5/13/21</u>	<u>820</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033791-01 H	<u>5/13/21</u>	<u>820</u>	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 820
pH 7.22 Cond 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]

5/13/21

12:12



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:39:22PM

Page 18 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-6 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#: KY

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes X No _____

Samples Chlorinated? Yes _____ No _____

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection						
1033791	(mm/dd/yy):	Time (24 hr):						
Sample ID#								
1033791-01 A	<u>5/13/21</u>	<u>820</u>		Plastic 1L	1	MW6	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033791-01 B	<u>5/13/21</u>	<u>820</u>		Plastic 500mL pH<2 w/HNO3	1	MW6	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
Preservation Check: pH : _____								
1033791-01 C	<u>5/13/21</u>	<u>820</u>		Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
Preservation Check: pH : _____								
1033791-01 D	<u>5/13/21</u>	<u>820</u>		Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW6	g / c	Radium 226 (sub)
Preservation Check: pH : _____								

Preservation Check Performed by: Noy

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 820
pH 7.22 Cond (umho) 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
ammy Lari

5/13/21
5-13-21

12:12
1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-6 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033791	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033791-01 E	5/13/21	820	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033791-01 F	5/13/21	820	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033791-01 G	5/13/21	820	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033791-01 H	5/13/21	820	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOV

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 820
pH 7.22 Cond 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature] [Signature] 5/13/21 12:12



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:39:22PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

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Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-6 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes X No

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes No

Influent: Start Date Start time End Date End Time Temp (oC)

Effluent: Start Date Start time End Date End Time Temp (oC)

LAB USE ONLY

required information

Workorder #

1033791

Sample ID#

Date

(mm/dd/yy):

Collection

Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

Sample ID#	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033791-01 A	5/13/21	820	Plastic 1L	1	MW6	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033791-01 B	5/13/21	820	Plastic 500mL pH<2 w/HNO3	1	MW6	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033791-01 C	5/13/21	820	Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
1033791-01 D	5/13/21	820	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW6	g / c	Radium 226 (sub)

Preservation Check: pH :

Preservation Check: pH :

Preservation Check: pH :

Preservation Check Performed by: Noy

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 820
pH 7.22 Cond. (umho) 2.97 Res Cl (mg/L) Tot Cl (mg/L) Free Cl (mg/L)
Temp (oC) 15.08 or (oF) Static Water Level DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) or (CFS) or (g/min)

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
ammy Lari

5/13/21
5-13-21

12:12
1353

Chain of Custody

Scheduled for: **03/01/2021**



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Mike Galbraith
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Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-6 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033791	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033791-01 E	5/13/21	820	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033791-01 F	5/13/21	820	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033791-01 G	5/13/21	820	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033791-01 H	5/13/21	820	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 820
pH 7.22 Cond (umho) 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]

5/13/21

12:12

June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033791 / Big River Electric C
Pace Project No.: 30422171

Dear Rob Whittington:

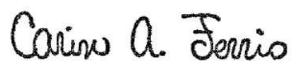
Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422171001	1033791-01	Water	05/13/21 08:20	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422171001	1033791-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

Sample: 1033791-01 **Lab ID: 30422171001** Collected: 05/13/21 08:20 Received: 05/18/21 10:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.146 ± 0.369 (0.685) C:NA T:90%	pCi/L	06/21/21 14:23	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.612 ± 0.360 (0.651) C:76% T:92%	pCi/L	06/18/21 11:20	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.758 ± 0.729 (1.34)	pCi/L	06/21/21 17:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

QC Batch:	451419	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422171001

METHOD BLANK: 2178770 Matrix: Water

Associated Lab Samples: 30422171001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

QC Batch:	451418	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422171001

METHOD BLANK: 2178768 Matrix: Water

Associated Lab Samples: 30422171001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033791 / Big River Electric C

Pace Project No.: 30422171

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1033791

Workorder Name: MW-6 Wilson 092-00004

Owner Received Date: 5/13/2021

Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg P/
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

EPA 904.0 Radium Sum Calc

EPA 903.1

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	LAB USE ONLY
1					GW	
2	1033791-01		05/13/21 08:20	IR44-McCoy	Water	
3						
4						
5						
6						
7						
8						
9						
10						
Transfers	Released By	Date/Time	Received By	Date/Time	Comments	
1			<i>TLF</i>	5-18-21 1000		
2						
3						

Cooler Temperature on Receipt

N/A °C

Custody Seal Y or N

N

Received on Ice Y or N

N

Sample Intact Y or N

Y

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

30422171

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3888 2886

Label RN

LIMS Login UPI

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals Intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot#

Date and Initials of person examining contents: RN 5-24-21

1003801

Comments:

Yes No N/A

Chain of Custody Present: /

1.

Chain of Custody Filled Out: /

2.

Chain of Custody Relinquished: /

3.

Sampler Name & Signature on COC: /

4.

Sample Labels match COC: /

5.

-Includes date/time/ID

Matrix: L-7

Samples Arrived within Hold Time: /

6.

Short Hold Time Analysis (<72hr remaining): /

7.

Rush Turn Around Time Requested: /

8.

Sufficient Volume: /

9.

Correct Containers Used: /

10.

-Pace Containers Used: /

Containers Intact: /

11.

Orthophosphate field filtered /

12.

Hex Cr Aqueous sample field filtered /

13.

Organic Samples checked for dechlorination: /

14.

Filtered volume received for Dissolved tests /

15.

All containers have been checked for preservation. /

16.

Added 2.5ml HNO3 to All Samples

exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix

All containers meet method preservation requirements. /

Initial when completed RN

Date/time of preservation 5-24-21 @ 1250

Lot # of added preservative

0221-0439

Headspace in VOA Vials (>6mm): /

17.

Trip Blank Present: /

18.

Trip Blank Custody Seals Present /

Rad Samples Screened < 0.5 mrem/hr /

Initial when completed: RN

Date: 5-24-21

Survey Meter SN: J503

Client Notification/Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

30422171

Pace KY

Client

Profile Number

11851

Site 1033791/Big River Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGCU	ZPLC
1	5																										
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

Container Codes

Glass		
AG1U	100mL amber glass unprservd	40mL amber VOA vial H2SO4
AG5T	100mL amber glass Na Thiosulfate	40mL clear VOA vial
GJN	Gallon Jug	40mL clear VOA vial Na Thiosulf
AG1S	1L amber glass H2SO4	40mL clear VOA vial HCl
AG1H	1L amber glass HCl	4oz amber wide jar
AG1T	1L amber glass Na Thiosulfate	4oz wide jar unprservd
BG1U	1L clear glass unprservd	500mL clear glass unprservd
AG3S	250mL amber glass H2SO4	500mL amber glass unprservd
AG3U	250mL amber glass unprservd	8oz wide jar unprservd

Plastic / Misc.		
GCUB	1 Gallon Cubitainer	EZI
12GN	1/2 Gallon Cubitainer	VOAK
SP5T	120mL Coliform Na Thiosulfate	I
BP1N	1L plastic HNO3	ZPLC
BP1U	1L plastic unprservd	
BP3S	250mL plastic H2SO4	WT
BP3N	250mL plastic HNO3	SL
BP3U	250mL plastic unprservd	OL
BP3C	250mL plastic NAOH	W/P
BP2S	500mL plastic H2SO4	
BP2U	500mL plastic unprservd	

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1033791

30422171

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033791-01	Water	Sampled:05/13/2021 08:20	Specific Method
Radium Total (sub)	11/09/2021 08:20	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 08:20	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 08:20	EPA 903.1	

ammy Lari 5-17-21

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1033792

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:42

Project Name: MW-7 Wilson 092-00004

Workorder: 1033792

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033792-01	MW7/	Groundwater	05/13/2021 09:25	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033792-01	Field Conductance	2560			
	Field pH	6.52			
	Field Temp (C)	16.37			

ANALYTICAL RESULTS

Lab Sample ID: **1033792-01**

Description: **MW7**

Sample Collection Date Time: 05/13/2021 09:25

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Arsenic	0.0039		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Barium	0.014		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Boron	2.71	D1	mg/L	1.00	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:58	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Calcium	475	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:01	MRW D
Chromium	0.0008	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Iron	4.09		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:54	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Lithium	0.03		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Magnesium	138	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:01	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Molybdenum	0.005	J	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Nickel	0.004		mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Potassium	9.30		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:54	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Sodium	42.9	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:58	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB
Zinc	0.004	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:28	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	320		mg/L	4		2320 B-2011	05/16/2021 19:25	05/16/2021 19:25	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	05/16/2021 19:25	05/16/2021 19:25	HMF
Total Alkalinity	320		mg/L	4		2320 B-2011	05/16/2021 19:25	05/16/2021 19:25	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:30	05/18/2021 12:30	SLP
Specific Conductance (Lab)	2440		umhos/cm	1	1	2510 B-2011	05/14/2021 13:17	05/14/2021 13:17	CML
Hardness as CaCO3	1850	D	mg/L	5	5	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	2240		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.3		mg/L	0.5	0.4	5310 C-2011	05/16/2021 20:29	05/16/2021 20:29	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.138	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.086	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	0.224	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	90.7	D	mg/L	2.5	1.8	EPA 300.0 REV 2.1	05/24/2021 11:18	05/24/2021 11:18	CSC
Fluoride	0.28		mg/L	0.20		EPA 300.0 REV 2.1	05/23/2021 01:05	05/23/2021 01:05	CSC
Sulfate	885	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/24/2021 13:46	05/24/2021 13:46	CSC

Notes for work order 1033792

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	U, D2, M4
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND			10		U
Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2746 - Default Prep IC

Blank (BAE2746-BLK1)

Prepared: 5/22/2021 21:07, Analyzed: 5/22/2021 21:07

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

Matrix Spike (BAE2746-MS1)

Source: 1033796-01

Prepared: 5/23/2021 3:34, Analyzed: 5/23/2021 3:34

Fluoride	4.82		mg/L	10.0	0.17	46.6	80-120			M2
Chloride	21.1		mg/L	10.0	14.3	67.2	80-120			M2
Sulfate	579		mg/L	10.0	1280	NR	80-120			M2

Matrix Spike Dup (BAE2746-MSD1)

Source: 1033796-01

Prepared: 5/23/2021 3:49, Analyzed: 5/23/2021 3:49

Fluoride	5.11		mg/L	10.0	0.17	49.4	80-120	5.80	20	M2
Sulfate	579		mg/L	10.0	1280	NR	80-120	0.0570	20	M2
Chloride	21.2		mg/L	10.0	14.3	68.3	80-120	0.507	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033792

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-7 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Brian Edwards*
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date (mm/dd/yy): _____
Collection Time (24 hr): _____

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033792

Sample ID#

1033792-01 A 05-13-21 9:25

Plastic 1L

1

MW7

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033792-01 B 05-13-21 9:25

Plastic 500mL pH<2
w/HNO3

1

MW7

g / c

1033792-01 C 05-13-21 9:25

Plastic 500mL pH<2
w/H2SO4

1

MW7

g / c

COD TOC

1033792-01 D 05-13-21 9:25

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW7

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed

Date (mm/dd/yy) 05-13-21 Time (24 hr) 9:25

pH 6.52 Cond (umho) 256 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.37 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Brian Edwards

Ammy Lani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:40:29PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-7 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Trevi Sneed

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date Collection
(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033792

Sample ID#

1033792-01 E 05-13-21 9:25

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

MW7

g / c

Radium 228 (sub)

Preservation Check: pH : _____

1033792-01 F 05-13-21 9:25

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

MW7

g / c

Radium 228 (sub)

Preservation Check: pH : _____

1033792-01 G 05-13-21 9:25

Plastic 1L pH<2 w/HNO3
(Sub)

1

MW7

g / c

Radium Total (sub)

Preservation Check: pH : _____

1033792-01 H 05-13-21 9:25

AG 250mL pH<2
w/H2SO4

1

MW7

g / c

TOC

Preservation Check: pH : _____

Preservation Check Performed by: NOY

Field data collected by: Trevi Sneed

Date (mm/dd/yy) 05-13-21

Time (24 hr) 9:25

pH

6.52

Cond (umho)

2.56

Res Cl (mg/L)

Tot Cl (mg/L)

Free Cl (mg/L)

Temp (oC)

16.37

or

(oF)

Static Water Level

DO (mg/L)

Turb. (NTU)

Flow (MGD)

or

(CFS)

or

(g/min)

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Trevi Sneed

Ammy Z...

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:40:29PM

Page 18 of 32

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-7 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date (mm/dd/yy):
Collection Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033792

Sample ID#

1033792-01 A

05-13-21

9:25

Plastic 1L

1

MW7

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033792-01 B

05-13-21

9:25

Plastic 500mL pH<2
w/HNO3

1

MW7

g / c

1033792-01 C

05-13-21

9:25

Plastic 500mL pH<2
w/H2SO4

1

MW7

g / c

COD TOC

1033792-01 D

05-13-21

9:25

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW7

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed

Date (mm/dd/yy) 05-13-21

Time (24 hr) 9:25

pH 6.52 Cond (umho) 2.56 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.37 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

ammy Lani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:40:29PM

Page 19 of 32

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-7 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Trevi's Sneed

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033792 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033792-01 E	<u>05-13-21</u>	<u>9:25</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033792-01 F	<u>05-13-21</u>	<u>9:25</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033792-01 G	<u>05-13-21</u>	<u>9:25</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW7	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033792-01 H	<u>05-13-21</u>	<u>9:25</u>	AG 250mL pH<2 w/H2SO4	1	MW7	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Trevi's Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 9:25
pH 6.52 Cond (umho) 2.56 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.37 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Trevi's Sneed

AMMY ZAM

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:40:29PM

Page 20 of 32

June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033792 / Big River Electric C
Pace Project No.: 30422172

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422172001	1033792-01	Water	05/13/21 09:25	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422172001	1033792-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

Sample: 1033792-01		Lab ID: 30422172001	Collected: 05/13/21 09:25	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.138 ± 0.468	(0.903)	pCi/L	06/21/21 14:23	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.0855 ± 0.328	(0.744)	pCi/L	06/18/21 11:20	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.224 ± 0.796	(1.65)	pCi/L	06/21/21 17:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

QC Batch:	451419	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422172001

METHOD BLANK: 2178770 Matrix: Water

Associated Lab Samples: 30422172001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

QC Batch: 451418

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30422172001

METHOD BLANK: 2178768

Matrix: Water

Associated Lab Samples: 30422172001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033792 / Big River Electric C

Pace Project No.: 30422172

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Chain of Custody

Workorder: 1033792 Workorder Name: MW-7 Wilson 092-00004 Owner Received Date: 5/13/2021 Results Requested By:
Report To: Subcontract To: Requested Analysis:

Pace Analytical Services, LLC Pace Analytical Services LLC Greensburg P/
825 Industrial Road 1638 Rosey Town Rd Suite 2,3,4
Madisonville, KY 42409 Greensburg, PA 15601
270-821-7375 (724) 850-5615
rob.whittington@pacelabs.com

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers				EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY									
1					HW					X											
2	1033792-01		05/13/21 09:25	IR44-McCoy	Water					X											
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
Transfers Released By		Date/Time		Received By		Date/Time		Comments													
1				[Signature]		5-18-21		1000													
2																					
3																					

Cooler Temperature on Receipt 11.1 °C Custody Seal Y or N N Received on Ice Y or N N Sample Intact Y or N Y
***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Page 14

Project # 21722203

Label ren
LIMS Login vpi

Temp should be above freezing to 6°C

pH paper Lot#				Date and Initials of person examining contents: <u>Rn 5-24-21</u>	
Temp should be above freezing to 6°C	Yes	No	N/A	1003801	
Comments:					
Chain of Custody Present:	/			1.	
Chain of Custody Filled Out:	/			2.	
Chain of Custody Relinquished:	/			3.	
Sampler Name & Signature on COC:		/		4.	
Sample Labels match COC:	/			5.	
-Includes date/time/ID				Matrix: <u>6-7</u>	
Samples Arrived within Hold Time:	/			6.	
Short Hold Time Analysis (<72hr remaining):		/		7.	
Rush Turn Around Time Requested:		/		8.	
Sufficient Volume:	/			9.	
Correct Containers Used:	/			10.	
-Pace Containers Used:		/			
Containers Intact:	/			11.	
Orthophosphate field filtered			/	12.	
Hex Cr Aqueous sample field filtered			/	13.	
Organic Samples checked for dechlorination:			/	14.	
Filtered volume received for Dissolved tests			/	15.	
All containers have been checked for preservation.	/			16.	
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	/			Initial when completed <u>Rn</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/	17.	
Trip Blank Present:			/	18.	
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed <u>Rn</u>	Date: <u>5-24-21</u> Survey Meter SN: <u>13-03</u>

Client Notification/Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

30422172

Pace KY

Profile Number

11851

1033792/Big River Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WG9U	WGKU	ZPLC
1	5											W																
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Container Codes

Glass	
GJN	1 Gallon Jug with HNO3
AG5U	100mL amber glass unpreserved
AG5T	100mL amber glass Na Thiosulfate
GJN	1 Gallon Jug
AG1S	1L amber glass H2SO4
AG1H	1L amber glass HCl
AG1T	1L amber glass Na Thiosulfate
BG1U	1L clear glass unpreserved
AG3S	250mL amber glass H2SO4
AG3U	250mL amber glass unpreserved
DG9S	40mL amber VOA vial H2SO4
VG9U	40mL clear VOA vial
VG9T	40mL clear VOA vial Na Thiosulfate
VG9H	40mL clear VOA vial HCl
JGFU	4oz amber wide jar
WG9U	4oz wide jar unpreserved
BG2U	500mL clear glass unpreserved
AG2U	500mL amber glass unpreserved
WGKU	8oz wide jar unpreserved

Plastic / Misc.	
GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250mL plastic NaOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved
EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag
WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1033792

#-30422172

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033792-01	Water	Sampled:05/13/2021 09:25	Specific Method 001
Radium Total (sub)	11/09/2021 09:25	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 09:25	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 09:25	EPA 903.1	

Released By <i>Ammy Lari</i>	Date <i>5-17-21</i>	Received By <i>[Signature]</i>	Date <i>5-18-21</i> (000)
Released By	Date	Received By	Date

Certificate of Analysis 1033793

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:34

Project Name: MW-8 Wilson 092-00004

Workorder: 1033793

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By

1033793-01	MW8/	Groundwater	05/13/2021 07:20	05/13/2021 13:53	Phillip Hill

<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>
1033793-01	Field Conductance	1890
	Field Dissolved Oxygen	0.45
	Field pH	6.84
	Field Temp (C)	13.66
	Field Turbidity	23.3

ANALYTICAL RESULTS

Lab Sample ID: **1033793-01**

Description: **MW8**

Sample Collection Date Time: 05/13/2021 07:20

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Arsenic	0.0052		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Barium	0.023		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:04	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Calcium	349	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:10	MRW D
Chromium	0.0011	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Iron	28.2	D1	mg/L	1.00	0.500	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:07	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Lithium	0.008	J	mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Magnesium	127	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:10	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Molybdenum	0.01		mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Nickel	0.002	J	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Potassium	4.01		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:04	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Sodium	31.5	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:07	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB
Zinc	0.006	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:32	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO₃	238		mg/L	4		2320 B-2011	05/16/2021 19:31	05/16/2021 19:31	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	05/16/2021 19:31	05/16/2021 19:31	HMF
Total Alkalinity	238		mg/L	4		2320 B-2011	05/16/2021 19:31	05/16/2021 19:31	HMF
Chemical Oxygen Demand	15		mg/L	8	8	HACH 8000	05/18/2021 12:30	05/18/2021 12:30	SLP
Specific Conductance (Lab)	1910		umhos/cm	1	1	2510 B-2011	05/14/2021 13:18	05/14/2021 13:18	CML
Hardness as CaCO₃	1020	D	mg/L	2	2	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	1750		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	2.9		mg/L	0.5	0.4	5310 C-2011	05/16/2021 20:50	05/16/2021 20:50	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.544	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx



Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.424	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	0.968	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	3.8		mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/23/2021 01:50	05/23/2021 01:50	CSC
Fluoride	0.30		mg/L	0.20		EPA 300.0 REV 2.1	05/23/2021 01:50	05/23/2021 01:50	CSC
Sulfate	980	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/23/2021 02:05	05/23/2021 02:05	CSC

Notes for work order 1033793

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	U, D2, M4
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	243	4	mg/L	235		103	80-120			
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Total Alkalinity	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2746 - Default Prep IC

Blank (BAE2746-BLK1)

Prepared: 5/22/2021 21:07, Analyzed: 5/22/2021 21:07

Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.20	mg/L							U

Matrix Spike (BAE2746-MS1)

Source: 1033796-01

Prepared: 5/23/2021 3:34, Analyzed: 5/23/2021 3:34

Sulfate	579		mg/L	10.0	1280	NR	80-120			M2
Chloride	21.1		mg/L	10.0	14.3	67.2	80-120			M2
Fluoride	4.82		mg/L	10.0	0.17	46.6	80-120			M2

Matrix Spike Dup (BAE2746-MSD1)

Source: 1033796-01

Prepared: 5/23/2021 3:49, Analyzed: 5/23/2021 3:49

Fluoride	5.11		mg/L	10.0	0.17	49.4	80-120	5.80	20	M2
Sulfate	579		mg/L	10.0	1280	NR	80-120	0.0570	20	M2
Chloride	21.2		mg/L	10.0	14.3	68.3	80-120	0.507	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033793

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-8 Wilson 092-00004

Phone: (270) 844-6000
PWS ID#:
State: KY

PO#:
Quote#

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date Start time End Date End Time Temp (oC)

Effluent: Start Date Start time End Date End Time Temp (oC)

LAB USE ONLY

required information

Workorder #	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033793							
Sample ID#							
1033793-01 A	<u>5/13/21</u>	<u>720</u>	Plastic 1L	1	MW8	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033793-01 B	<u>5/13/21</u>	<u>720</u>	Plastic 500mL pH<2 w/HNO3	1	MW8	g / c	
1033793-01 C	<u>5/13/21</u>	<u>720</u>	Plastic 500mL pH<2 w/H2SO4	1	MW8	g / c	COD TOC
1033793-01 D	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW8	g / c	Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 720
pH 6.84 Cond. (umho) 1.89 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 13.66 or (oF) _____ Static Water Level _____ DO (mg/L) 0.45 Turb. (NTU) 23.3
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature] [Signature] 5/13/21 12:12
[Signature] [Signature] 5-13-21 1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:41:27PM

Page 17 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-8 Wilson 092-00004**

Phone: (270) 844-6000
PWS ID#: LY
State: LY

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes X No _____

Samples Chlorinated? Yes _____ No _____

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033793 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033793-01 E	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033793-01 F	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033793-01 G	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033793-01 H	<u>5/13/21</u>	<u>720</u>	AG 250mL pH<2 w/H2SO4	1	MW8	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NJ

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 720
pH 6.84 Cond (umho) 1.89 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 13.66 or (oF) _____ Static Water Level _____ DO (mg/L) 0.45 Turb. (NTU) 23.7
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

[Signature]
[Signature]

Received by: (Signature)

[Signature]
[Signature]

Date (mm/dd/yy)

5/13/21
513-21

Time (24 hr)

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:41:27PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

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Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature):

[Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033793

Sample ID#

Date (mm/dd/yy):
Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033793-01 A	<u>5/13/21</u>	<u>720</u>	Plastic 1L	1	MW8	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033793-01 B	<u>5/13/21</u>	<u>720</u>	Plastic 500mL pH<2 w/HNO3	1	MW8	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B

Preservation Check: pH : _____

1033793-01 C 5/13/21 720 Plastic 500mL pH<2 w/H2SO4 1 MW8 g / c COD TOC

Preservation Check: pH : _____

1033793-01 D 5/13/21 720 Plastic 1L pH<2 w/HNO3 Rad 226 (Sub) 1 MW8 g / c Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check Performed by: NAY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 720
pH 6.84 Cond. (umho) 1.89 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 13.66 or (oF) _____ Static Water Level _____ DO (mg/L) 0.45 Turb. (NTU) 23.3
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

[Signature]

Received by: (Signature)

[Signature]

Date (mm/dd/yy)

5/13/21
5-13-21

Time (24 hr)

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:41:27PM

Chain of Custody

Scheduled for: 03/01/2021



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Brian Edwards
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Project: **MW-8 Wilson 092-00004**

Phone: (270) 844-6000
PWS ID#: LY
State: LY

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes X No _____

Samples Chlorinated? Yes _____ No _____

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033793 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033793-01 E	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033793-01 F	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033793-01 G	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033793-01 H	<u>5/13/21</u>	<u>720</u>	AG 250mL pH<2 w/H2SO4	1	MW8	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 720
pH 6.84 Cond (umho) 1.89 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 13.66 or (oF) _____ Static Water Level _____ DO (mg/L) 0.45 Turb. (NTU) 23.3
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
513-21

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:41:27PM

Page 20 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

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Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-8 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature):

[Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033793

Sample ID#

Date (mm/dd/yy):

Collection Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033793-01 A

5/13/21

720

Plastic 1L

1

MW8

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033793-01 B

5/13/21

720

Plastic 500mL pH<2
w/HNO3

1

MW8

g / c

1033793-01 C

5/13/21

720

Plastic 500mL pH<2
w/H2SO4

1

MW8

g / c

COD TOC

1033793-01 D

5/13/21

720

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW8

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by:

NOY

Field data collected by:

Phillip Hill

Date (mm/dd/yy)

5/13/21

Time (24 hr)

720

pH

6.84

Cond. (umho)

1.89

Res Cl (mg/L)

Tot Cl (mg/L)

Free Cl (mg/L)

Temp (oC)

13.66

or (oF)

Static Water Level

DO (mg/L)

0.45

Turb. (NTU)

23.3

Flow (MGD)

or (CFS)

or

(g/min)

Relinquished by: (Signature)

[Signature]

Received by: (Signature)

[Signature]

Date (mm/dd/yy)

5/13/21

Time (24 hr)

12:12

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:41:27PM

Page 21 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-8 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#: KY
State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes X No _____

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes _____ No _____

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection						
1033793	(mm/dd/yy):	Time (24 hr):						
Sample ID#								
1033793-01 E	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)	
				Preservation Check: pH : _____				
1033793-01 F	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)	
				Preservation Check: pH : _____				
1033793-01 G	<u>5/13/21</u>	<u>720</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)	
				Preservation Check: pH : _____				
1033793-01 H	<u>5/13/21</u>	<u>720</u>	AG 250mL pH<2 w/H2SO4	1	MW8	g / c	TOC	
				Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 720
pH 6.84 Cond (umho) 1.89 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 13.66 or (oF) _____ Static Water Level _____ DO (mg/L) 0.45 Turb. (NTU) 23.7
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
513-21

12:12
1353

June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033793 / Big River Electric C
Pace Project No.: 30422170

Dear Rob Whittington:

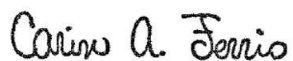
Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422170001	1033793-01	Water	05/13/21 07:20	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422170001	1033793-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

Sample: 1033793-01		Lab ID: 30422170001	Collected: 05/13/21 07:20	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.544 ± 0.526	(0.817)	pCi/L	06/21/21 14:23	13982-63-3	
		C:NA	T:94%				
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	0.424 ± 0.340	(0.674)	pCi/L	06/18/21 11:20	15262-20-1	
		C:75%	T:92%				
Pace Analytical Services - Greensburg							
Total Radium	Total Radium Calculation	0.968 ± 0.866	(1.49)	pCi/L	06/21/21 17:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

QC Batch:	451419	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422170001

METHOD BLANK: 2178770 Matrix: Water

Associated Lab Samples: 30422170001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

QC Batch:	451418	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422170001

METHOD BLANK: 2178768 Matrix: Water

Associated Lab Samples: 30422170001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033793 / Big River Electric C

Pace Project No.: 30422170

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Chain of Custody

Workorder: 1033793

Workorder Name: MW-8 Wilson 092-00004

Owner Received Date: 5/13/2021

Results Requested By:

Report To:	Subcontract To:	Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30422170

30422170

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY									
1					GW			X	X										
2	1033793-01		05/13/21 07:20	IR44-McCoy	Water														
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
Transfers Released By			Date/Time	Received By	Date/Time	Comments													
1				7/28/21	5-18-21	1000													
2																			
3																			

Cooler Temperature on Receipt	NA °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

30422170

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3888 2886

 Label RM
 LIMS Login VPI

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1003801	Date and Initials of person examining contents: <u>Rm 5-24-21</u>	
Chain of Custody Present:	/			1.		
Chain of Custody Filled Out:	/			2.		
Chain of Custody Relinquished:	/			3.		
Sampler Name & Signature on COC:		/		4.		
Sample Labels match COC:	/			5.		
-Includes date/time/ID Matrix: <u>6-7</u>						
Samples Arrived within Hold Time:	/			6.		
Short Hold Time Analysis (<72hr remaining):		/		7.		
Rush Turn Around Time Requested:		/		8.		
Sufficient Volume:	/			9.		
Correct Containers Used:	/			10.		
-Pace Containers Used:		/				
Containers Intact:	/			11.		
Orthophosphate field filtered			/	12.		
Hex Cr Aqueous sample field filtered			/	13.		
Organic Samples checked for dechlorination:			/	14.		
Filtered volume received for Dissolved tests			/	15.		
All containers have been checked for preservation.	/			16.		
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix						
All containers meet method preservation requirements.	/			Initial when completed <u>Rm</u>	Date/time of preservation	
				Lot # of added preservative		
Headspace in VOA Vials (>6mm):			/	17.		
Trip Blank Present:			/	18.		
Trip Blank Custody Seals Present			/			
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>Rm</u>	Date: <u>5-24-21</u>	Survey Meter SN: <u>13563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

Pace KY

30422170

Profile Number

11851

1033793/Big Rivers Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC
1	5																											
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Container Codes

Glass		
GJN	1 Gallon Jug with HNO3	DG9S
AG5U	100mL amber glass unpreserved	VG9U
AG5T	100mL amber glass Na Thiosulfate	VG9T
GJN	1 Gallon Jug	VG9H
AG1S	1L amber glass H2SO4	JGFU
AG1H	1L amber glass HCl	WGFU
AG1T	1L amber glass Na Thiosulfate	BG2U
BG1U	1L clear glass unpreserved	AG2U
AG3S	250mL amber glass H2SO4	WGKU
AG3U	250mL amber glass unpreserved	

Plastic / Misc.		
GCUB	1 Gallon Cubitainer	EZI
12GN	1/2 Gallon Cubitainer	VOAK
SP5T	120mL Coliform Na Thiosulfate	I
BP1N	1L plastic HNO3	ZPLC
BP1U	1L plastic unpreserved	
BP3S	250mL plastic H2SO4	WT
BP3N	250mL plastic HNO3	SL
BP3U	250mL plastic unpreserved	OL
BP3C	250mL plastic NAOH	WP
BP2S	500mL plastic H2SO4	
BP2U	500mL plastic unpreserved	

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky
1033793

30422170

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone :(724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033793-01	Water	Sampled:05/13/2021 07:20	Specific Method
Radium Total (sub)	11/09/2021 07:20	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 07:20	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 07:20	EPA 903.1	

Released By	Date	Received By	Date
<i>Abby Lavi</i>	5-17-21		
Released By	Date	Received By	Date

Certificate of Analysis 1033781

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:12

Project Name: MW-10 Wilson 092-00004

Workorder: 1033781

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By

1033781-01	MW10/	Groundwater	05/13/2021 09:55	05/13/2021 13:53	Phillip Hill

<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>
1033781-01	Field Conductance	2940
	Field Dissolved Oxygen	0.36
	Field pH	6.59
	Field Temp (C)	20.95
	Field Turbidity	10.8

ANALYTICAL RESULTS

Lab Sample ID: **1033781-01**

Description: **MW10**

Sample Collection Date Time: 05/13/2021 09:55

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Arsenic	0.0013		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Barium	0.010		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Boron	0.31		mg/L	0.10	0.10	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:32	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Calcium	401	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:38	MRW D
Chromium	0.0010	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Cobalt	0.064		mg/L	0.004	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Iron	35.6	D1	mg/L	1.00	0.500	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:35	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Lithium	0.006	J	mg/L	0.02	0.005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Magnesium	236	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:38	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Nickel	0.024		mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Potassium	6.42		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:32	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Sodium	166	D1	mg/L	26.0	10.0	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:38	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB
Zinc	0.01	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:27	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO₃	176		mg/L	4		2320 B-2011	05/16/2021 17:51	05/16/2021 17:51	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	05/16/2021 17:51	05/16/2021 17:51	HMF
Total Alkalinity	176		mg/L	4		2320 B-2011	05/16/2021 17:51	05/16/2021 17:51	HMF
Chemical Oxygen Demand	33		mg/L	8	8	HACH 8000	05/18/2021 12:27	05/18/2021 12:27	SLP
Specific Conductance (Lab)	3360		umhos/cm	1	1	2510 B-2011	05/14/2021 12:59	05/14/2021 12:59	CML
Hardness as CaCO₃	1810	D	mg/L	5	5	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	3300		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.7		mg/L	0.5	0.4	5310 C-2011	05/16/2021 14:52	05/16/2021 14:52	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.050	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx



Pace Analytical Services, LLC

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Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	1.35	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx
See Attached Subcontract Report	1.40	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/28/2021 00:00	06/28/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	73.2	D	mg/L	2.5	1.8	EPA 300.0 REV 2.1	05/21/2021 18:55	05/21/2021 18:55	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	05/21/2021 18:40	05/21/2021 18:40	CSC
Sulfate	1240	D	mg/L	200	100	EPA 300.0 REV 2.1	05/22/2021 14:39	05/22/2021 14:39	CSC

Notes for work order 1033781

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Mercury	ND	0.0005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Total Alkalinity	494	4	mg/L		500			1.21	10	
Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2744 - Default Prep IC

Blank (BAE2744-BLK1)

Prepared: 5/21/2021 17:26, Analyzed: 5/21/2021 17:26

Fluoride	ND	0.20	mg/L							U
Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U

Matrix Spike (BAE2744-MS1)

Source: 1033786-01

Prepared: 5/21/2021 22:40, Analyzed: 5/21/2021 22:40

Chloride	24.5		mg/L	10.0	13.5	110	80-120			
Fluoride	11.6		mg/L	10.0	0.28	113	80-120			
Sulfate	54.7		mg/L	10.0	53.5	11.6	80-120			M2

Matrix Spike Dup (BAE2744-MSD1)

Source: 1033786-01

Prepared: 5/21/2021 22:55, Analyzed: 5/21/2021 22:55

Sulfate	54.7		mg/L	10.0	53.5	11.7	80-120	0.0146	20	M2
Fluoride	11.2		mg/L	10.0	0.28	110	80-120	3.12	20	
Chloride	24.3		mg/L	10.0	13.5	108	80-120	0.836	10	

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033781

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **03/01/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-10 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#

Please Print Legibly

Collected by (Signature):

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Sample ID#	(mm/dd/yy):	Time (24 hr):					
1033781-01 A	5/12/21	955	Plastic 1L	1	MW10	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033781-01 B	5/13/21	955	Plastic 500mL pH<2 w/HNO3	1	MW10	g / c	
1033781-01 C	5/13/21	955	Plastic 500mL pH<2 w/H2SO4	1	MW10	g / c	COD TOC
1033781-01 D	5/13/21	955	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW10	g / c	Radium 226 (sub)

Preservation Check: pH: ☒

Preservation Check: pH: ☒

Preservation Check: pH: ☒

Preservation Check Performed by:

NBY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 955
pH 6.59 Cond 2.94 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 20.95 or (oF) _____ Static Water Level _____ DO (mg/L) 0.36 Turb. (NTU) 10.8
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Phillip Hill
Tom Smith

Tom Smith
AMM

5/13/21
5-13-21

12:12
1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Project: **MW-10 Wilson 092-00004**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Time (24 hr):					
Sample ID#	(mm/dd/yy):							
1033781-01 E	5/13/21	955		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
				Preservation Check: pH : _____				
1033781-01 F	5/13/21	955		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
				Preservation Check: pH : _____				
1033781-01 G	5/12/21	955		Plastic 1L pH<2 w/HNO3 (Sub)	1	MW10	g / c	Radium Total (sub)
				Preservation Check: pH : _____				
1033781-01 H	5/13/21	955		AG 250mL pH<2 w/H2SO4	1	MW10	g / c	TOC
				Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 955
pH 6.59 Cond ms/cm 2.94 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 20.95 or (oF) _____ Static Water Level _____ DO (mg/L) 0.36 Turb. (NTU) 10.8
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
ammy

5/13/21
5-13-21

12:12
1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-10 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection					
1033781	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033781-01 A	<u>5/12/21</u>	<u>955</u>	Plastic 1L	1	MW10	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033781-01 B	<u>5/13/21</u>	<u>955</u>	Plastic 500mL pH<2 w/HNO3	1	MW10	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033781-01 C	<u>5/13/21</u>	<u>955</u>	Plastic 500mL pH<2 w/H2SO4	1	MW10	g / c	COD TOC
1033781-01 D	<u>5/13/21</u>	<u>955</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW10	g / c	Radium 226 (sub)

Preservation Check: pH : ☒

Preservation Check: pH : ☒

Preservation Check: pH : ☒

Preservation Check Performed by: NDY

Field data collected by: <u>Phillip Hill</u>	Date (mm/dd/yy) <u>5/13/21</u>	Time (24 hr) <u>955</u>
pH <u>6.59</u>	Cond (umho) <u>2.94</u>	Res Cl (mg/L) _____
Temp (oC) <u>20.95</u>	or (oF) _____	Tot Cl (mg/L) _____
Flow (MGD) _____	or (CFS) _____	Free Cl (mg/L) _____
Static Water Level _____	DO (mg/L) <u>0.36</u>	Turb. (NTU) <u>10.8</u>
or (g/min) _____		

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u>[Signature]</u>	<u>[Signature]</u>	<u>5/13/21</u>	<u>12:12</u>
<u>[Signature]</u>	<u>[Signature]</u>	<u>5-13-21</u>	<u>1353</u>



PACE- Check here if trip charge applied to associated COC

3.6

Printed: 3/16/2021 12:19:14PM

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-10 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033781 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033781-01 E	<u>5/13/21</u>	<u>955</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033781-01 F	<u>5/13/21</u>	<u>955</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033781-01 G	<u>5/12/21</u>	<u>955</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW10	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033781-01 H	<u>5/13/21</u>	<u>955</u>	AG 250mL pH<2 w/H2SO4	1	MW10	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Ndy

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 955
pH 6.59 Cond ms/cm 2.94 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 20.95 or (oF) _____ Static Water Level _____ DO (mg/L) 0.36 Turb. (NTU) 10.8
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
ammy

5/13/21
5-13-21

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:19:14PM

Page 20 of 32

June 28, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033781 / Big River Electric C
Pace Project No.: 30422186

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422186001	1033781-01	Water	05/13/21 09:55	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422186001	1033781-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

Sample: 1033781-01		Lab ID: 30422186001	Collected: 05/13/21 09:55	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.0505 ± 0.328 (0.662) C:NA T:98%		pCi/L	06/21/21 16:10	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.35 ± 0.507 (0.777) C:69% T:90%		pCi/L	06/21/21 11:25	15262-20-1	
Pace Analytical Services - Greensburg							
Total Radium	Total Radium Calculation	1.40 ± 0.835 (1.44)		pCi/L	06/28/21 17:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

QC Batch: 451420

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30422186001

METHOD BLANK: 2178771

Matrix: Water

Associated Lab Samples: 30422186001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.262 (0.554) C:NA T:97%	pCi/L	06/21/21 16:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

QC Batch:	451421	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422186001

METHOD BLANK: 2178773 Matrix: Water

Associated Lab Samples: 30422186001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.892 ± 0.366 (0.565) C:68% T:98%	pCi/L	06/21/21 11:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033781 / Big River Electric C

Pace Project No.: 30422186

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Chain of Custody



Workorder: 1033781

Workorder Name: MW-10 Wilson 092-00004 Owner Received Date: 5/13/2021 Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375

Pace Analytical Services LLC Greensburg P/
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

rob.whittington@pacelabs.com

Preserved Containers

WO#: 30422186



EPA 903.1

EPA 904.0 Radium Sum Calc

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1					GW		X	X	001
2	1033781-01		05/13/21 09:55	IR44-McCoy	Water				
3									
4									
5									
6									
7									
8									
9									
10									
Transfers	Released By	Date/Time	Received By	Date/Time	Comments				
1			TS/JP	5-18-21	1000				
2									
3									

Cooler Temperature on Receipt N/A °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY

Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3888 2886

Label RM
LIMS Login UPI

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# 1003801 Date and Initials of person examining contents: Rp 5-24-21

Comments:

	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:		/		4.
Sample Labels match COC:	/			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:		/		
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Hex Cr Aqueous sample field filtered			/	13.
Organic Samples checked for dechlorination:			/	14.
Filtered volume received for Dissolved tests			/	15.
All containers have been checked for preservation.	/			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				
All containers meet method preservation requirements.	/			
				Initial when completed <u>Rp</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			/	17.
Trip Blank Present:			/	18.
Trip Blank Custody Seals Present			/	
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>Rp</u> Date: <u>5-24-21</u> Survey Meter SN: <u>JJ-83</u>

Client Notification/Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0#: 30422186

Due Date: 06/09/21

CLIENT: PACE_44_MVKY

Client Pace KY

Site 1033781/Big Rivers Electric Corporation

30422 ~~186~~ Number 11851

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC
1	5											W																
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Container Codes

Glass		
GJN	1 Gallon Jug with HNO3	DG9S
AG5U	100mL amber glass unpreserved	VG9U
AG5T	100mL amber glass Na Thiosulfate	VG9T
GJN	1 Gallon Jug	VG9H
AG1S	1L amber glass H2SO4	JGFU
AG1H	1L amber glass HCl	WGFU
AG1T	1L amber glass Na Thiosulfate	BG2U
BG1U	1L clear glass unpreserved	AG2U
AG3S	250mL amber glass H2SO4	WGKU
AG3U	250mL amber glass unpreserved	

Plastic / Misc.		
GCUB	1 Gallon Cubitainer	
12GN	1/2 Gallon Cubitainer	
SP5T	120mL Coliform Na Thiosulfate	
BP1N	1L plastic HNO3	
BP1U	1L plastic unpreserved	
BP3S	250mL plastic H2SO4	
BP3N	250mL plastic HNO3	
BP3U	250mL plastic unpreserved	
BP3C	250mL plastic NAOH	
BP2S	500mL plastic H2SO4	
BP2U	500mL plastic unpreserved	

Plastic / Misc.		
EZI	5g Encore	
VOAK	Kit for Volatile Solid	
I	Wipe/Swab	
ZPLC	Ziploc Bag	

Plastic / Misc.		
WT	Water	
SL	Solid	
OL	Non-aqueous liquid	
WP	Wipe	

SUBCONTRACT ORDER

**Pace Analytical Services, LLC Kentucky
1033781**

30422186

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033781-01	Water	Sampled:05/13/2021 09:55	Specific Method
Radium Total (sub)	11/09/2021 09:55	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 09:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 09:55	EPA 903.1	

Amy Lavi 5-17-21
Released By Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1033789

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:46

Project Name: MW-4D Wilson 092-00004

Workorder: 1033789

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033789-01	MW4D/	Groundwater	05/12/2021 11:45	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033789-01	Field Conductance	5120			
	Field pH	6.22			
	Field Temp (C)	16.91			

ANALYTICAL RESULTS

Lab Sample ID: **1033789-01**

Description: **MW4D**

Sample Collection Date Time: 05/12/2021 11:45

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Arsenic	0.0031		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Barium	0.016		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Boron	9.29	D1	mg/L	1.00	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:20	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Calcium	711	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:23	MRW D
Chromium	0.0009	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Cobalt	0.009		mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Iron	6.95		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:16	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Lithium	0.16		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Magnesium	243	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:23	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Molybdenum	0.006	J	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Nickel	0.024		mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Potassium	49.4	D1	mg/L	5.00	2.20	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:20	MRW D
Selenium	0.001	J	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Sodium	205	D1	mg/L	26.0	10.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 21:23	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB
Zinc	0.01	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:08	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO ₃	367		mg/L	4		2320 B-2011	05/16/2021 19:05	05/16/2021 19:05	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	05/16/2021 19:05	05/16/2021 19:05	HMF
Total Alkalinity	367		mg/L	4		2320 B-2011	05/16/2021 19:05	05/16/2021 19:05	HMF
Chemical Oxygen Demand	34		mg/L	8	8	HACH 8000	05/18/2021 12:30	05/18/2021 12:30	SLP
Specific Conductance (Lab)	4870		umhos/cm	1	1	2510 B-2011	05/14/2021 13:14	05/14/2021 13:14	CML
Hardness as CaCO ₃	2390	D	mg/L	5	5	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	4670		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	0.8		mg/L	0.5	0.4	5310 C-2011	05/16/2021 19:26	05/16/2021 19:26	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	-0.059	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	1.07	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	1.07	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	819	D	mg/L	50.0	36.0	EPA 300.0 REV 2.1	05/22/2021 23:06	05/22/2021 23:06	CSC
Fluoride	0.26		mg/L	0.20		EPA 300.0 REV 2.1	05/22/2021 22:51	05/22/2021 22:51	CSC
Sulfate	1670	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/22/2021 23:06	05/22/2021 23:06	CSC

Notes for work order 1033789

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			U, D2, M4
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Total Alkalinity	243	4	mg/L	235		103	80-120			
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Total Alkalinity	239	4	mg/L	235		102	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Total Alkalinity	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110		

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110		M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10 M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	ND	1	mg/L						U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	242	1	mg/L	225		108	80-120		

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	72	1	mg/L		76			5.41	10

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	470	1	mg/L	318	76	124	80-120		M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2746 - Default Prep IC

Blank (BAE2746-BLK1)

Prepared: 5/22/2021 21:07, Analyzed: 5/22/2021 21:07

Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U
Fluoride	ND	0.20	mg/L							U

Matrix Spike (BAE2746-MS1)

Source: 1033796-01

Prepared: 5/23/2021 3:34, Analyzed: 5/23/2021 3:34

Chloride	21.1		mg/L	10.0	14.3	67.2	80-120			M2
Sulfate	579		mg/L	10.0	1280	NR	80-120			M2
Fluoride	4.82		mg/L	10.0	0.17	46.6	80-120			M2

Matrix Spike Dup (BAE2746-MSD1)

Source: 1033796-01

Prepared: 5/23/2021 3:49, Analyzed: 5/23/2021 3:49

Sulfate	579		mg/L	10.0	1280	NR	80-120	0.0570	20	M2
Chloride	21.2		mg/L	10.0	14.3	68.3	80-120	0.507	10	M2
Fluoride	5.11		mg/L	10.0	0.17	49.4	80-120	5.80	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033789

Shipped By: Pace Analytical Services LL

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-4D Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): Travis Sneed
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date

Collection

1033789

(mm/dd/yy):

Time (24 hr):

Sample ID#

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

Sample ID#	Date	Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033789-01 A	05-12-21	11:45	Plastic 1L	1	MW4D	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033789-01 B	05-12-21	11:45	Plastic 500mL pH<2 w/HNO3	1	MW4D	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B

Preservation Check: pH: _____

Sample ID#	Date	Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033789-01 C	05-12-21	11:45	Plastic 500mL pH<2 w/H2SO4	1	MW4D	g / c	COD TOC

Preservation Check: pH: _____

Sample ID#	Date	Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033789-01 D	05-12-21	11:45	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW4D	g / c	Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 11:45
pH 6.22 Cond 5.12 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.91 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

<u>Travis Sneed</u>	<u>Johnny Lee</u>	<u>5-13-21</u>	<u>1353</u>
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:32:57PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-4D Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Smith*

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033789 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033789-01 E	<u>05-12-21</u>	<u>11:45</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4D	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033789-01 F	<u>05-12-21</u>	<u>11:45</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4D	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033789-01 G	<u>05-12-21</u>	<u>11:45</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW4D	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033789-01 H	<u>05-12-21</u>	<u>11:45</u>	AG 250mL pH<2 w/H2SO4	1	MW4D	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: No

Field data collected by: Travis Smith Date (mm/dd/yy) 05-12-21 Time (24 hr) 11:45
pH 6.22 Cond 5.12 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.91 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Smith

Johnny Lane

5-13-21

1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

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Project: **MW-4D Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Time (24 hr):					
1033789	(mm/dd/yy):							
Sample ID#								
1033789-01 A	<u>05-12-21</u>	<u>11:45</u>		Plastic 1L	1	MW4D	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033789-01 B	<u>05-12-21</u>	<u>11:45</u>		Plastic 500mL pH<2 w/HNO3	1	MW4D	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
Preservation Check: pH : _____								
1033789-01 C	<u>05-12-21</u>	<u>11:45</u>		Plastic 500mL pH<2 w/H2SO4	1	MW4D	g / c	COD TOC
Preservation Check: pH : _____								
1033789-01 D	<u>05-12-21</u>	<u>11:45</u>		Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW4D	g / c	Radium 226 (sub)
Preservation Check: pH : _____								

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 11:45
pH 6.22 Cond 5.12 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.91 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u>[Signature]</u>	<u>[Signature]</u>	<u>5-13-21</u>	<u>1353</u>
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:32:57PM

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-4D Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Troy Smith

*required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date Collection
(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033789
Sample ID#

1033789-01 E

05-12-21

11:45

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

MW4D

g / c

Radium 228 (sub)

Preservation Check: pH: _____

1033789-01 F

05-12-21

11:45

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

MW4D

g / c

Radium 228 (sub)

Preservation Check: pH: _____

1033789-01 G

05-12-21

11:45

Plastic 1L pH<2 w/HNO3
(Sub)

1

MW4D

g / c

Radium Total (sub)

Preservation Check: pH: _____

1033789-01 H

05-12-21

11:45

AG 250mL pH<2
w/H2SO4

1

MW4D

g / c

TOC

Preservation Check: pH: _____

Preservation Check Performed by: Noy

Field data collected by: Troy Smith

Date (mm/dd/yy) 05-12-21 Time (24 hr) 11:45

pH 6.22 Cond 5.12 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.91 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Troy Smith

Johnny Lane

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:32:57PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-4D Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date Collection

1033789

(mm/dd/yy): Time (24 hr):

Sample ID#

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033789-01 A 05-12-21 11:45

Plastic 1L

1

MW4D

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033789-01 B 05-12-21 11:45

Plastic 500mL pH<2
w/HNO3

1

MW4D

g / c

1033789-01 C 05-12-21 11:45

Plastic 500mL pH<2
w/H2SO4

1

MW4D

g / c

COD TOC

1033789-01 D 05-12-21 11:45

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW4D

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 11:45

pH 6.22 Cond 5.12 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.91 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

Johnny Lee

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:32:57PM

Page 21 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-4D Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Troy Smith

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033789-01 E	05-12-21	11:45	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4D	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033789-01 F	05-12-21	11:45	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4D	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033789-01 G	05-12-21	11:45	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW4D	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033789-01 H	05-12-21	11:45	AG 250mL pH<2 w/H2SO4	1	MW4D	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: Troy Smith Date (mm/dd/yy) 05-12-21 Time (24 hr) 11:45
pH 6.22 Cond 512 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.91 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Troy Smith

Anthony Zani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:32:57PM

June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033789 / Big River Electric C
Pace Project No.: 30422177

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422177001	1033789-01	Water	05/12/21 11:45	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422177001	1033789-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

Sample: 1033789-01		Lab ID: 30422177001	Collected: 05/12/21 11:45	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	06/21/21 14:38	13982-63-3	
	EPA 903.1	-0.0586 ± 0.267 (0.544) C:NA T:92%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	06/18/21 11:21	15262-20-1	
	EPA 904.0	1.07 ± 0.435 (0.686) C:75% T:93%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	06/21/21 17:52	7440-14-4	
	Total Radium Calculation	1.07 ± 0.702 (1.23)					

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

QC Batch:	451419	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422177001

METHOD BLANK: 2178770 Matrix: Water

Associated Lab Samples: 30422177001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

QC Batch: 451418

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30422177001

METHOD BLANK: 2178768

Matrix: Water

Associated Lab Samples: 30422177001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033789 / Big River Electric C

Pace Project No.: 30422177

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Chain of Custody



Workorder: 1033789

Workorder Name: MW-4D Wilson 092-00004 Owner Received Date: 5/13/2021

Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30422177



Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1								
2	1033789-01		05/12/21 11:45	IR44-McCoy	Water	X	X	001
3								
4								
5								
6								
7								
8								
9								
10								
Transfers Released By						Date/Time		
1						5-18-21 1000		
2								
3								
						Comments		

Cooler Temperature on Receipt	NA	C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

30422177

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3888 2886

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no
 Seals intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue None
 Cooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
				1003801	Rn 5-24-21
Chain of Custody Present:	/			1.	
Chain of Custody Filled Out:	/			2.	
Chain of Custody Relinquished:	/			3.	
Sampler Name & Signature on COC:		/		4.	
Sample Labels match COC:	/			5.	
-Includes date/time/ID Matrix: <u>W-7</u>					
Samples Arrived within Hold Time:	/			6.	
Short Hold Time Analysis (<72hr remaining):		/		7.	
Rush Turn Around Time Requested:		/		8.	
Sufficient Volume:	/			9.	
Correct Containers Used:	/			10.	
-Pace Containers Used:		/			
Containers Intact:	/			11.	
Orthophosphate field filtered			/	12.	
Hex Cr Aqueous sample field filtered			/	13.	
Organic Samples checked for dechlorination:			/	14.	
Filtered volume received for Dissolved tests			/	15.	
All containers have been checked for preservation.	/			16.	Added 2.5ml HNO3 to Sample G.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.		/		Initial when completed <u>Rn</u>	Date/time of preservation 5-24-21 @ 1245
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/	17.	
Trip Blank Present:			/	18.	
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>Rn</u>	Date: 5-24-21 Survey Meter SN: J5-83

Client Notification/Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

30422177

Pace KY

Profile Number

11851

1033789/Big Rivers Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC
1	5											W																
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Container Codes

Glass		
GJN	1 Gallon Jug with HNO3	DG9S
AG5U	100mL amber glass unpreserved	VG9U
AG5T	100mL amber glass Na Thiosulfate	VG9T
GJN	1 Gallon Jug	VG9H
AG1S	1L amber glass H2SO4	JGFU
AG1H	1L amber glass HCl	WGFU
AG1T	1L amber glass Na Thiosulfate	BG2U
BG1U	1L clear glass unpreserved	AG2U
AG3S	250mL amber glass H2SO4	WGKU
AG3U	250mL amber glass unpreserved	

Plastic / Misc.		
GCUB	1 Gallon Cubitainer	EZI
12GN	1/2 Gallon Cubitainer	VOAK
SP5T	120mL Coliform Na Thiosulfate	I
BP1N	1L plastic HNO3	ZPLC
BP1U	1L plastic unpreserved	
BP3S	250mL plastic H2SO4	WT
BP3N	250mL plastic HNO3	SL
BP3U	250mL plastic unpreserved	OL
BP3C	250mL plastic NaOH	WP
BP2S	500mL plastic H2SO4	
BP2U	500mL plastic unpreserved	

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1033789

30422177

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone :(724) 850-5615
Fax:

Analysis		Expires	Laboratory ID	Comments
Sample ID: 1033789-01	Water	Sampled:05/12/2021 11:45	Specific Method	
Radium Total (sub)		11/08/2021 11:45	EPA 904.0 Radium Sum C	
Radium 228 (sub)		11/08/2021 11:45	EPA 904.0 Radium Sum C	
Radium 226 (sub)		11/08/2021 11:45	EPA 903.1	

<i>Ammy Lari</i>	5-17-21		
Released By	Date	Received By	Date
Released By	Date	Received By	Date

Certificate of Analysis 1033782

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:10

Project Name: MW-102 Wilson 092-00004

Workorder: 1033782

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033782-01	MW102/	Groundwater	05/12/2021 13:10	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033782-01	Field Conductance	1190			
	Field pH	6.49			
	Field Temp (C)	16.29			

ANALYTICAL RESULTS

Lab Sample ID: **1033782-01**

Description: **MW102**

Sample Collection Date Time: 05/12/2021 13:10

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Arsenic	0.0038		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Barium	0.053		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:41	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Calcium	82.8	D1	mg/L	4.00	1.30	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:54	MRW D
Chromium	0.0011	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Iron	4.34		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:41	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Lithium	ND	u	mg/L	0.02	0.005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Magnesium	38.4	D1	mg/L	2.00	0.900	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:54	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Nickel	0.002	J	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Potassium	2.13		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:41	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Sodium	123	D1	mg/L	26.0	10.0	SW846 6010 B	05/17/2021 10:52	05/18/2021 19:57	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB
Zinc	ND	u	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:31	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO₃	279		mg/L	4		2320 B-2011	05/16/2021 17:55	05/16/2021 17:55	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	05/16/2021 17:55	05/16/2021 17:55	HMF
Total Alkalinity	279		mg/L	4		2320 B-2011	05/16/2021 17:55	05/16/2021 17:55	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:27	05/18/2021 12:27	SLP
Specific Conductance (Lab)	1190		umhos/cm	1	1	2510 B-2011	05/14/2021 13:00	05/14/2021 13:00	CML
Hardness as CaCO₃	382		mg/L	1	1	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	734		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.1		mg/L	0.5	0.4	5310 C-2011	05/16/2021 15:13	05/16/2021 15:13	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	-0.101	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.497	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx
See Attached Subcontract Report	0.497	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/28/2021 00:00	06/28/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	39.7	D	mg/L	1.0	0.7	EPA 300.0 REV 2.1	05/21/2021 19:40	05/21/2021 19:40	CSC
Fluoride	0.33		mg/L	0.20		EPA 300.0 REV 2.1	05/21/2021 19:25	05/21/2021 19:25	CSC
Sulfate	308	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/21/2021 19:55	05/21/2021 19:55	CSC

Notes for work order 1033782

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Mercury	ND	0.0005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1) Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2) Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3) Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Total Alkalinity	494	4	mg/L		500			1.21	10	
Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2744 - Default Prep IC

Blank (BAE2744-BLK1)

Prepared: 5/21/2021 17:26, Analyzed: 5/21/2021 17:26

Fluoride	ND	0.20	mg/L							U
Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U

Matrix Spike (BAE2744-MS1)

Source: 1033786-01

Prepared: 5/21/2021 22:40, Analyzed: 5/21/2021 22:40

Chloride	24.5		mg/L	10.0	13.5	110	80-120			
Fluoride	11.6		mg/L	10.0	0.28	113	80-120			
Sulfate	54.7		mg/L	10.0	53.5	11.6	80-120			M2

Matrix Spike Dup (BAE2744-MSD1)

Source: 1033786-01

Prepared: 5/21/2021 22:55, Analyzed: 5/21/2021 22:55

Sulfate	54.7		mg/L	10.0	53.5	11.7	80-120	0.0146	20	M2
Fluoride	11.2		mg/L	10.0	0.28	110	80-120	3.12	20	
Chloride	24.3		mg/L	10.0	13.5	108	80-120	0.836	10	

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033782

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-102 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#:

Quote# 105

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date (mm/dd/yy):
Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033782

Sample ID#

1033782-01 A 05-12-21 1310

Plastic 1L

1

MW102

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033782-01 B 05-12-21 1310

Plastic 500mL pH<2
w/HNO3

1

MW102

g / c

1033782-01 C 05-12-21 1310

Plastic 500mL pH<2
w/H2SO4

1

MW102

g / c

COD TOC

1033782-01 D 05-12-21 1310

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW102

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: Noy

Field data collected by: Travis Speed Date (mm/dd/yy) 05-12-21 Time (24 hr) 1310

pH 6.49 Cond 1.19 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.29 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:20:10PM

Page 17 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-102 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Speed*
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
Sample ID#	(mm/dd/yy):	Time (24 hr):					
1033782-01 E	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
Preservation Check: pH : _____							
1033782-01 F	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
Preservation Check: pH : _____							
1033782-01 G	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW102	g / c	Radium Total (sub)
Preservation Check: pH : _____							
1033782-01 H	<u>05-12-21</u>	<u>1310</u>	AG 250mL pH<2 w/H2SO4	1	MW102	g / c	TOC
Preservation Check: pH : _____							

Preservation Check Performed by: NOV

Field data collected by: Travis Speed Date (mm/dd/yy) 05-12-21 Time (24 hr) 1310
pH 6.49 Cond 1.19 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.29 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Speed

Ammy Davis

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:20:10PM

Page 18 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-102 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: 183

Quote# 183

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes No

Samples Chlorinated? Yes No

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date Start time End Date End Time Temp (oC)

Effluent: Start Date Start time End Date End Time Temp (oC)

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033782	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033782-01 A	<u>05-12-21</u>	<u>1310</u>	Plastic 1L	1	MW102	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033782-01 B	<u>05-12-21</u>	<u>1310</u>	Plastic 500mL pH<2 w/HNO3	1	MW102	g / c	
1033782-01 C	<u>05-12-21</u>	<u>1310</u>	Plastic 500mL pH<2 w/H2SO4	1	MW102	g / c	COD TOC
1033782-01 D	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW102	g / c	Radium 226 (sub)

Preservation Check: pH :

Preservation Check: pH :

Preservation Check: pH :

Preservation Check Performed by: Noly

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 1310
pH 6.49 Cond 1.19 Res Cl (mg/L) Tot Cl (mg/L) Free Cl (mg/L)
Temp (oC) 16.29 or (oF) Static Water Level DO (mg/L) Turb. (NTU)
Flow (MGD) or (CFS) or (g/min)

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u>[Signature]</u>	<u>Anthony Davis</u>	<u>5-13-21</u>	<u>1353</u>



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:20:10PM

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-102 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Travis Speed

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033782 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033782-01 E	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033782-01 F	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033782-01 G	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW102	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033782-01 H	<u>05-12-21</u>	<u>1310</u>	AG 250mL pH<2 w/H2SO4	1	MW102	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Travis Speed Date (mm/dd/yy) 05-12-21 Time (24 hr) 1310
pH 6.49 Cond ^{MS} 1.19 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.29 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Speed

ahmy fari

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:20:10PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-102 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date (mm/dd/yy): _____
Collection Time (24 hr): _____

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033782

Sample ID#

1033782-01 A

05-12-21 1310

Plastic 1L

1

MW102

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033782-01 B

05-12-21 1310

Plastic 500mL pH<2
w/HNO3

1

MW102

g / c

1033782-01 C

05-12-21 1310

Plastic 500mL pH<2
w/H2SO4

1

MW102

g / c

COD TOC

1033782-01 D

05-12-21 1310

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW102

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed

Date (mm/dd/yy) 05-12-21 Time (24 hr) 1310

pH 6.49 Cond 1.19 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.29 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:20:10PM

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-102 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033782 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033782-01 E	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033782-01 F	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033782-01 G	<u>05-12-21</u>	<u>1310</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW102	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033782-01 H	<u>05-12-21</u>	<u>1310</u>	AG 250mL pH<2 w/H2SO4	1	MW102	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Travis Speed Date (mm/dd/yy) 05-12-21 Time (24 hr) 1310
pH 6.49 Cond 1.19 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.29 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:20:10PM

June 28, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033782 / Big River Electric C
Pace Project No.: 30422185

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422185001	1033782-01	Water	05/12/21 13:10	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422185001	1033782-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

Sample: 1033782-01		Lab ID: 30422185001	Collected: 05/12/21 13:10	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	-0.101 ± 0.231	(0.545)	pCi/L	06/21/21 16:10	13982-63-3	
		C:NA	T:103%				
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	0.497 ± 0.374	(0.742)	pCi/L	06/21/21 11:25	15262-20-1	
		C:70%	T:96%				
Pace Analytical Services - Greensburg							
Total Radium	Total Radium Calculation	0.497 ± 0.605	(1.29)	pCi/L	06/28/21 17:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

QC Batch:	451420	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422185001

METHOD BLANK: 2178771 Matrix: Water

Associated Lab Samples: 30422185001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.262 (0.554) C:NA T:97%	pCi/L	06/21/21 16:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

QC Batch:	451421	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422185001

METHOD BLANK: 2178773 Matrix: Water

Associated Lab Samples: 30422185001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.892 ± 0.366 (0.565) C:68% T:98%	pCi/L	06/21/21 11:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033782 / Big River Electric C

Pace Project No.: 30422185

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Chain of Custody



Workorder: 1033782

Workorder Name: MW-102 Wilson 092-0000

Owner Received Date: 5/13/2021

Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30422185



Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1					AW	X	X	001
2	1033782-01		05/12/21 13:10	IR44-McCoy	Water			
3								
4								
5								
6								
7								
8								
9								
10								
Transfers Released By			Date/Time	Received By	Date/Time	Comments		
1				<i>[Signature]</i>	5-18-21 1000			
2								
3								

Cooler Temperature on Receipt 20 °C Custody Seal Y or N Received on Ice Y or N Sample Intact or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pace KY

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label RM
LIMS Login UPI

Custody Seal on Cooler/Box Present: ☐ yes ☒ no **Seals intact:** ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue ~~None~~

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Comments:			Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:			/			1003801	Rn 5-24-21
Chain of Custody Filled Out:			/				
Chain of Custody Relinquished:			/				
Sampler Name & Signature on COC:				/			
Sample Labels match COC:			/				
-Includes date/time/ID			Matrix: L-7				
Samples Arrived within Hold Time:			/				
Short Hold Time Analysis (<72hr remaining):				/			
Rush Turn Around Time Requested:				/			
Sufficient Volume:			/				
Correct Containers Used:			/				
-Pace Containers Used:				/			
Containers Intact:			/				
Orthophosphate field filtered					/		
Hex Cr Aqueous sample field filtered					/		
Organic Samples checked for dechlorination:					/		
Filtered volume received for Dissolved tests					/		
All containers have been checked for preservation.			/				
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix							
All containers meet method preservation requirements.			/			Initial when completed Rn	Date/time of preservation
						Lot # of added preservative	
Headspace in VOA Vials (>6mm):					/		
Trip Blank Present:					/		
Trip Blank Custody Seals Present					/		
Rad Samples Screened < 0.5 mrem/hr			/			Initial when completed Rn	Date: 5-24-21 Survey Meter SN: 15563

Client Notification/Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

J:\QAQC\17 Master\Document Management\Sample Mgt\Mastercontrol\ENV-FRM-GBUR-0088 00 Sample Condition Upon Receipt

Page 10 of 12
Page 32 of 34

WIO#: 30422185

PM: CAF Due Date: 06/09/21

CLIENT: PACE 44 MVKY



Pace Greensburg Lab -Sample Container Count

Pace KY

Profile Number 11851

1033782/Big River Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGCU	ZPLC
1	5											W															
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

W0# : 30422185

PM: CAF Due Date: 06/09/21

CLIENT : PACE_44_MVKY

WO#: 30422185

PM: CAF Due Date: 06/09/21

CLIENT: PACE_44_MVKY

Container Codes

Glass		
GJN	1 Gallon Jug with HNO3	DG9S 40mL amber VOA vial H2SO4
AG5U	100mL amber glass unpreserved	VG9U 40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T 40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H 40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JG9U 4oz amber wide jar
AG1H	1L amber glass HCl	WG9U 4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U 500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U 500mL amber glass unpreserved
AG3S	250mL amber glass H2SO4	WG9U 8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved	

Plastic / Misc.		
GCUB	1 Gallon Cubitainer	EZI 5g Encore
12GN	1/2 Gallon Cubitainer	VOAK Kit for Volatile Solid
SP5T	120mL Coliform Na Thiosulfate	I Wipe/Swab
BP1N	1L plastic HNO3	ZPLC Ziploc Bag
BP1U	1L plastic unpreserved	
BP3S	250mL plastic H2SO4	WT Water
BP3N	250mL plastic HNO3	SL Solid
BP3U	250mL plastic unpreserved	OL Non-aqueous liquid
BP3C	250mL plastic NAOH	WP Wipe
BP2S	500mL plastic H2SO4	
BP2U	500mL plastic unpreserved	

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky
1033782

30422185

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033782-01	Water	Sampled:05/12/2021 13:10	Specific Method
Radium Total (sub)	11/08/2021 13:10	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/08/2021 13:10	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/08/2021 13:10	EPA 903.1	

Released By Amey Davi Date 5-17-21 Received By _____ Date _____

Released By _____ Date _____ Received By _____ Date _____

Certificate of Analysis 1033783

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:09

Project Name: MW-104 Wilson 092-00004

Workorder: 1033783

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033783-01	MW104/	Groundwater	05/12/2021 08:30	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033783-01	Field Conductance	1840			
	Field pH	6.44			
	Field Temp (C)	15.38			

ANALYTICAL RESULTS

Lab Sample ID: **1033783-01**

Description: **MW104**

Sample Collection Date Time: 05/12/2021 08:30

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Arsenic	0.0005	J	mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Barium	0.035		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:00	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Calcium	273	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:07	MRW D
Chromium	0.0010	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Iron	1.56		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:00	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Lithium	0.02		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Magnesium	79.1	D1	mg/L	2.00	0.900	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:03	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Nickel	0.002	J	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Potassium	4.35		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:00	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Sodium	74.9	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:03	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB
Zinc	ND	u	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:35	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO₃	396		mg/L	4		2320 B-2011	05/16/2021 18:00	05/16/2021 18:00	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	05/16/2021 18:00	05/16/2021 18:00	HMF
Total Alkalinity	396		mg/L	4		2320 B-2011	05/16/2021 18:00	05/16/2021 18:00	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:27	05/18/2021 12:27	SLP
Specific Conductance (Lab)	1770		umhos/cm	1	1	2510 B-2011	05/14/2021 13:01	05/14/2021 13:01	CML
Hardness as CaCO₃	996	D	mg/L	2	2	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	1460		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	0.8		mg/L	0.5	0.4	5310 C-2011	05/16/2021 15:34	05/16/2021 15:34	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.238	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.910	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx
See Attached Subcontract Report	1.15	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/28/2021 00:00	06/28/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	13.5		mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/21/2021 20:40	05/21/2021 20:40	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	05/21/2021 20:40	05/21/2021 20:40	CSC
Sulfate	690	D	mg/L	100	50.0	EPA 300.0 REV 2.1	05/21/2021 20:55	05/21/2021 20:55	CSC

Notes for work order 1033783

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Mercury	ND	0.0005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Total Alkalinity	494	4	mg/L		500			1.21	10	
Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2744 - Default Prep IC

Blank (BAE2744-BLK1)

Prepared: 5/21/2021 17:26, Analyzed: 5/21/2021 17:26

Fluoride	ND	0.20	mg/L							U
Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U

Matrix Spike (BAE2744-MS1)

Source: 1033786-01

Prepared: 5/21/2021 22:40, Analyzed: 5/21/2021 22:40

Chloride	24.5		mg/L	10.0	13.5	110	80-120			
Fluoride	11.6		mg/L	10.0	0.28	113	80-120			
Sulfate	54.7		mg/L	10.0	53.5	11.6	80-120			M2

Matrix Spike Dup (BAE2744-MSD1)

Source: 1033786-01

Prepared: 5/21/2021 22:55, Analyzed: 5/21/2021 22:55

Sulfate	54.7		mg/L	10.0	53.5	11.7	80-120	0.0146	20	M2
Fluoride	11.2		mg/L	10.0	0.28	110	80-120	3.12	20	
Chloride	24.3		mg/L	10.0	13.5	108	80-120	0.836	10	

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033783

Shipped By: Pace Analytical Services LL

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-104 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033783 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033783-01 A	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L	1	MW104	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033783-01 B	<u>5-12-21</u>	<u>8:30</u>	Plastic 500mL pH<2 w/HNO3	1	MW104	g / c	
1033783-01 C	<u>5-12-21</u>	<u>8:30</u>	Plastic 500mL pH<2 w/H2SO4	1	MW104	g / c	COD TOC
1033783-01 D	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW104	g / c	Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by: Nay

Field data collected by: Travis Sneed Date (mm/dd/yy) 5-12-21 Time (24 hr) 8:30
pH 6.44 Cond (umho) 1.84 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.38 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

abney Larr

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:02PM

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
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Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-104 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sneed*

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033783 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033783-01 E	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033783-01 F	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033783-01 G	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW104	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033783-01 H	<u>5-12-21</u>	<u>8:30</u>	AG 250mL pH<2 w/H2SO4	1	MW104	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 5-12-21 Time (24 hr) 8:30
pH 6.44 Cond (umho) 1.84 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.38 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

Army Lani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:02PM

Page 18 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
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Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-104 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033783	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033783-01 A	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L	1	MW104	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033783-01 B	<u>5-12-21</u>	<u>8:30</u>	Plastic 500mL pH<2 w/HNO3	1	MW104	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033783-01 C	<u>5-12-21</u>	<u>8:30</u>	Plastic 500mL pH<2 w/H2SO4	1	MW104	g / c	COD TOC
1033783-01 D	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW104	g / c	Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: Nay

Field data collected by: Travis Sneed Date (mm/dd/yy) 5-12-21 Time (24 hr) 8:70
pH 6.44 Cond (umho) 1.84 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.38 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

abney Larr

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

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Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-104 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sneed*

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033783 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033783-01 E	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033783-01 F	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033783-01 G	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW104	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033783-01 H	<u>5-12-21</u>	<u>8:30</u>	AG 250mL pH<2 w/H2SO4	1	MW104	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 5-12-21 Time (24 hr) 8:30
pH 6.44 Cond (umho) 1.84 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.38 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

Army Lani

5-13-21

1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-104 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sneed*
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033783

Sample ID#

Date Collection

(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033783-01 A 5-12-21 8:30

Plastic 1L

1

MW104

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033783-01 B 5-12-21 8:30

Plastic 500mL pH<2
w/HNO3

1

MW104

g / c

Preservation Check: pH : _____

1033783-01 C 5-12-21 8:30

Plastic 500mL pH<2
w/H2SO4

1

MW104

g / c

COD TOC

Preservation Check: pH : _____

1033783-01 D 5-12-21 8:30

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW104

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check Performed by: *Nay*

Field data collected by: *Travis Sneed* Date (mm/dd/yy) 5-12-21 Time (24 hr) 8:30

pH 6.44 Cond (umho) 1.84 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.38 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Travis Sneed

Received by: (Signature)

Abby Lavi

Date (mm/dd/yy)

5-13-21

Time (24 hr)

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:02PM

Page 21 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-104 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

PO#: _____

State: KY

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sneed*

required information

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033783 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033783-01 E	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033783-01 F	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033783-01 G	<u>5-12-21</u>	<u>8:30</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW104	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033783-01 H	<u>5-12-21</u>	<u>8:30</u>	AG 250mL pH<2 w/H2SO4	1	MW104	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: *NOY*

Field data collected by: *Travis Sneed* Date (mm/dd/yy) 5-12-21 Time (24 hr) 8:30
pH 6.44 Cond (umho) 1.84 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.38 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

Ammy Lane

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:02PM

Page 22 of 34

June 28, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033783 / Big River Electric C
Pace Project No.: 30422184

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422184001	1033783-01	Water	05/12/21 08:30	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422184001	1033783-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

Sample: 1033783-01 **Lab ID: 30422184001** Collected: 05/12/21 08:30 Received: 05/18/21 10:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.238 ± 0.386 (0.672) C:NA T:92%	pCi/L	06/21/21 16:10	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.910 ± 0.485 (0.891) C:67% T:90%	pCi/L	06/21/21 11:31	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.15 ± 0.871 (1.56)	pCi/L	06/28/21 17:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

QC Batch:	451420	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422184001

METHOD BLANK: 2178771 Matrix: Water

Associated Lab Samples: 30422184001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.262 (0.554) C:NA T:97%	pCi/L	06/21/21 16:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

QC Batch:	451421	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422184001

METHOD BLANK: 2178773 Matrix: Water

Associated Lab Samples: 30422184001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.892 ± 0.366 (0.565) C:68% T:98%	pCi/L	06/21/21 11:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033783 / Big River Electric C

Pace Project No.: 30422184

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Chain of Custody



Workorder: 1033783

Workorder Name: MW-104 Wilson 092-0000 Owner Received Date: 5/13/2021 Results Requested By:

Report To:		Subcontract To:		Requested Analysis																									
Pace Analytical Services, LLC 825 Industrial Road Madisonville, KY 42409 270-821-7375 rob.whittington@pacelabs.com		Pace Analytical Services LLC Greensburg P/ 1638 Rosey Town Rd Suite 2,3,4 Greensburg, PA 15601 (724) 850-5615		WO#: 30422184 30422184																									
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY																				
1																													
2	1033783-01		05/12/21 08:30	IR44-McCoy	Water				X	X	001																		
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
Transfers Released By		Date/Time		Received By		Date/Time		Comments																					
1				[Signature]		5-18-21 1000																							
2																													
3																													

Cooler Temperature on Receipt	N/A	°C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

30422184

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3888 2886

Label en
LIMS Login UPICustody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue NoneCooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	/			1003801	<u>en</u> 5-24-21
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:	/				
Sampler Name & Signature on COC:		/			
Sample Labels match COC:	/				
-Includes date/time/ID Matrix: <u>LT</u>					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):		/			
Rush Turn Around Time Requested:		/			
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:		/			
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests			/		
All containers have been checked for preservation.	/				
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.		/		Initial when completed <u>en</u>	Date/time of preservation 5-24-21 @ 1241
				Lot # of added preservative <u>DL21 - 0439</u>	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>en</u>	Date: 5-24-21 Survey Meter SN: <u>15563</u>

Client Notification/Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



30422184

Pace KY

Profile Number 11851

1033783/Big River Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC
1	Matrix																											
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Notes

Container Codes

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unpreserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosulfate
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250mL plastic NaOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky
1033783

30422184

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone :(724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033783-01	Water	Sampled:05/12/2021 08:30	Specific Method
Radium Total (sub)	11/08/2021 08:30	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/08/2021 08:30	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/08/2021 08:30	EPA 903.1	

Released By	Date	Received By	Date
<i>Abmudani</i>	5-17-21		
Released By	Date	Received By	Date

Certificate of Analysis 1033784

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:05

Project Name: MW-105 Wilson 092-00004

Workorder: 1033784

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033784-01	MW105/	Groundwater	05/12/2021 10:30	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033784-01	Field Conductance	941			
	Field pH	7.21			
	Field Temp (C)	16.06			

ANALYTICAL RESULTS

Lab Sample ID: **1033784-01**

Description: **MW105**

Sample Collection Date Time: 05/12/2021 10:30

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Arsenic	ND	u	mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Barium	0.267		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Boron	0.36		mg/L	0.10	0.10	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:10	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Calcium	59.7	D1	mg/L	4.00	1.30	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:13	MRW D
Chromium	0.0011	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Iron	1.59		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:10	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Lithium	0.02		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:39	AKB
Magnesium	19.8	D1	mg/L	2.00	0.900	SW846 6010 B	05/17/2021 10:52	05/18/2021 20:13	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:39	AKB
Molybdenum	0.002	J	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:39	AKB
Nickel	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:39	AKB
Potassium	4.99		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:10	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:39	AKB
Sodium	160	D1	mg/L	26.0	10.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:16	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:39	AKB
Zinc	ND	u	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:39	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	407		mg/L	4		2320 B-2011	05/16/2021 18:07	05/16/2021 18:07	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	05/16/2021 18:07	05/16/2021 18:07	HMF
Total Alkalinity	407		mg/L	4		2320 B-2011	05/16/2021 18:07	05/16/2021 18:07	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:28	05/18/2021 12:28	SLP
Specific Conductance (Lab)	987		umhos/cm	1	1	2510 B-2011	05/14/2021 13:02	05/14/2021 13:02	CML
Hardness as CaCO3	252		mg/L	1	1	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	644		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	0.9		mg/L	0.5	0.4	5310 C-2011	05/16/2021 15:55	05/16/2021 15:55	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.727	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	1.41	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx
See Attached Subcontract Report	2.14	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/28/2021 00:00	06/28/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	9.0		mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/21/2021 21:10	05/21/2021 21:10	CSC
Fluoride	0.60		mg/L	0.20		EPA 300.0 REV 2.1	05/21/2021 21:10	05/21/2021 21:10	CSC
Sulfate	157	D	mg/L	10.0	5.0	EPA 300.0 REV 2.1	05/22/2021 14:54	05/22/2021 14:54	CSC

Notes for work order 1033784

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Mercury	ND	0.0005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1) Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2) Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3) Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Total Alkalinity	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Total Alkalinity	494	4	mg/L		500			1.21	10	
Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO3	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2744 - Default Prep IC

Blank (BAE2744-BLK1)

Prepared: 5/21/2021 17:26, Analyzed: 5/21/2021 17:26

Fluoride	ND	0.20	mg/L							U
Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U

Matrix Spike (BAE2744-MS1)

Source: 1033786-01

Prepared: 5/21/2021 22:40, Analyzed: 5/21/2021 22:40

Chloride	24.5		mg/L	10.0	13.5	110	80-120			
Fluoride	11.6		mg/L	10.0	0.28	113	80-120			
Sulfate	54.7		mg/L	10.0	53.5	11.6	80-120			M2

Matrix Spike Dup (BAE2744-MSD1)

Source: 1033786-01

Prepared: 5/21/2021 22:55, Analyzed: 5/21/2021 22:55

Sulfate	54.7		mg/L	10.0	53.5	11.7	80-120	0.0146	20	M2
Fluoride	11.2		mg/L	10.0	0.28	110	80-120	3.12	20	
Chloride	24.3		mg/L	10.0	13.5	108	80-120	0.836	10	

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033784

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Project: MW-105 Wilson 092-00004

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: Ky

Invoice To:

Big Rivers Electric Corporation Wilson Station

Brian Edwards

PO Box 24

Henderson, KY 42419

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033784

Sample ID#

Date Collection
(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033784-01 A 05-12-21 10:30

Plastic 1L

1

MW105

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033784-01 B 05-12-21 10:30

Plastic 500mL pH<2
w/HNO3

1

MW105

g / c

1033784-01 C 05-12-21 10:30

Plastic 500mL pH<2
w/H2SO4

1

MW105

g / c

COD TOC

1033784-01 D 05-12-21 10:30

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW105

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed

Date (mm/dd/yy) 05-12-21 Time (24 hr) 10:30

pH 7.21 Cond (umho) MS 941 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.66 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:57PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-105 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Smith*

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033784 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033784-01 E	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033784-01 F	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033784-01 G	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW105	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033784-01 H	<u>05-12-21</u>	<u>10:30</u>	AG 250mL pH<2 w/H2SO4	1	MW105	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: *Not*

Field data collected by: *Travis Smith* Date (mm/dd/yy) 05-12-21 Time (24 hr) 10:30
pH 7.21 Cond (umho) 23 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.06 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Smith

Anthony Z...

5-13-21

1353

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-105 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033784	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033784-01 A	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L	1	MW105	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033784-01 B	<u>05-12-21</u>	<u>10:30</u>	Plastic 500mL pH<2 w/HNO3	1	MW105	g / c	
				Preservation Check: pH : _____			
1033784-01 C	<u>05-12-21</u>	<u>10:30</u>	Plastic 500mL pH<2 w/H2SO4	1	MW105	g / c	COD TOC
				Preservation Check: pH : _____			
1033784-01 D	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW105	g / c	Radium 226 (sub)
				Preservation Check: pH : _____			

Preservation Check Performed by: Noy

Field data collected by: T. Davis Date (mm/dd/yy) 05-12-21 Time (24 hr) 10:30
pH 7.21 Cond MS 941 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.66 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u>[Signature]</u>	<u>[Signature]</u>	<u>5-13-21</u>	<u>1353</u>
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:57PM

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Project: **MW-105 Wilson 092-00004**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

Invoice To:
Big Rivers Electric Corporation Wilson Station

Brian Edwards
PO Box 24
Henderson, KY 42419

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Speed*

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033784	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033784-01 E	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033784-01 F	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033784-01 G	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW105	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033784-01 H	<u>05-12-21</u>	<u>10:30</u>	AG 250mL pH<2 w/H2SO4	1	MW105	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: *Not*

Field data collected by: *Travis Speed* Date (mm/dd/yy) *05-12-21* Time (24 hr) *10:30*
pH *7.21* Cond (μ mho) *23* *941* Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) *16.06* or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u><i>Travis Speed</i></u>	<u><i>ammy z...</i></u>	<u><i>5-13-21</i></u>	<u><i>1353</i></u>
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:57PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-105 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sneed*

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033784 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033784-01 A	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L	1	MW105	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033784-01 B	<u>05-12-21</u>	<u>10:30</u>	Plastic 500mL pH<2 w/HNO3	1	MW105	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033784-01 C	<u>05-12-21</u>	<u>10:30</u>	Plastic 500mL pH<2 w/H2SO4	1	MW105	g / c	COD TOC
1033784-01 D	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW105	g / c	Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: *N24*

Field data collected by: *Travis Sneed* Date (mm/dd/yy) 05-12-21 Time (24 hr) 10:30
pH 7.21 Cond (MS) 941 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.66 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

Ammy Zani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

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Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-105 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033784 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033784-01 E	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033784-01 F	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033784-01 G	<u>05-12-21</u>	<u>10:30</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW105	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033784-01 H	<u>05-12-21</u>	<u>10:30</u>	AG 250mL pH<2 w/H2SO4	1	MW105	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Not

Field data collected by: Travis Smith Date (mm/dd/yy) 05-12-21 Time (24 hr) 10:30
pH 7.21 Cond (umho) 25 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.06 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:22:57PM

June 28, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033784 / Big River Electric C
Pace Project No.: 30422182

Dear Rob Whittington:

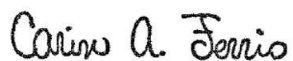
Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422182001	1033784-01	Water	05/12/21 10:30	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422182001	1033784-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

Sample: 1033784-01 **Lab ID: 30422182001** Collected: 05/12/21 10:30 Received: 05/18/21 10:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.727 ± 0.571 (0.794) C:NA T:91%	pCi/L	06/21/21 16:10	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.41 ± 0.623 (1.09) C:65% T:89%	pCi/L	06/21/21 11:31	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	2.14 ± 1.19 (1.88)	pCi/L	06/28/21 17:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

QC Batch:	451420	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422182001

METHOD BLANK: 2178771 Matrix: Water

Associated Lab Samples: 30422182001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.262 (0.554) C:NA T:97%	pCi/L	06/21/21 16:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

QC Batch:	451421	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422182001

METHOD BLANK: 2178773 Matrix: Water

Associated Lab Samples: 30422182001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.892 ± 0.366 (0.565) C:68% T:98%	pCi/L	06/21/21 11:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033784 / Big River Electric C

Pace Project No.: 30422182

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Chain of Custody

Workorder: 1033784	Workorder Name: MW-105 Wilson 092-0000	Owner Received Date: 5/13/2021	Results Requested By:
Report To:	Subcontract To:	Requested Analysis	

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA/
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30422182
30422182

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1								
2	1033784-01		05/12/21 10:30	IR44-McCoy	Water	X	X	001
3								
4								
5								
6								
7								
8								
9								
10								
Transfers	Released By	Date/Time	Received By	Date/Time	Comments			
1				5-18-21	1000			
2								
3								

Cooler Temperature on Receipt	N/A °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N
***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC				
This chain of custody is considered complete as is since this information is available in the owner laboratory.				

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project # 30422182

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3888 2886

 Label RM
 LIMS Login UPI

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	/			1003801	RM 5-24-21
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:	/				
Sampler Name & Signature on COC:		/			
Sample Labels match COC:	/				
-Includes date/time/ID Matrix: <u>LT</u>					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):		/			
Rush Turn Around Time Requested:		/			
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:		/			
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests			/		
All containers have been checked for preservation.	/				
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.		/		Initial when completed <u>RM</u>	Date/time of preservation <u>5-24-21 @ 1244</u>
				Lot # of added preservative <u>DL21-0439</u>	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>RM</u>	Date: <u>5-24-21</u> Survey Meter SN: <u>15-63</u>

Client Notification/ Resolution:

Person Contacted: _____

Date/Time: _____

Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

#-30422182

Profile Number 11851

Notes

Pace KY

1033784/Big Rivers Electric Corporation

Client

Site

Sample Line Item

Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC
1	WT										3																
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

Container Codes

Glass			
GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unpreserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosulfate
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.			
GCUB	1 Gallon Cubitainer	EZI	5g Encore
12GN	1/2 Gallon Cubitainer	VOAK	Kit for Volatile Solid
SP5T	120mL Coliform Na Thiosulfate	I	Wipe/Swab
BP1N	1L plastic HNO3	ZPLC	Ziploc Bag
BP1U	1L plastic unpreserved		
BP3S	250mL plastic H2SO4	WT	Water
BP3N	250mL plastic HNO3	SL	Solid
BP3U	250mL plastic unpreserved	OL	Non-aqueous liquid
BP3C	250ml plastic NaOH	WP	Wipe
BP2S	500mL plastic H2SO4		
BP2U	500mL plastic unpreserved		

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1033784

- 3 0 4 2 2 1 8 2

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033784-01	Water	Sampled:05/12/2021 10:30	Specific Method
Radium Total (sub)	11/08/2021 10:30	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/08/2021 10:30	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/08/2021 10:30	EPA 903.1	

<i>Ammy Kani</i>	5-17-21		
Released By	Date	Received By	Date
Released By	Date	Received By	Date

Certificate of Analysis 1033785

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 11:07

Project Name: MW-110 Wilson 092-00004

Workorder: 1033785

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033785-01	MW110/	Groundwater	05/12/2021 09:40	05/13/2021 13:53	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1033785-01	Field Conductance	458			
	Field pH	6.43			
	Field Temp (C)	16.15			

ANALYTICAL RESULTS

Lab Sample ID: **1033785-01**

Description: **MW110**

Sample Collection Date Time: 05/12/2021 09:40

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Arsenic	0.0010		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Barium	0.054		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:19	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Calcium	39.7	D1	mg/L	4.00	1.30	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:32	MRW D
Chromium	0.0009	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Iron	3.66		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:19	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Lithium	ND	u	mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Magnesium	19.0	D1	mg/L	2.00	0.900	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:32	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Nickel	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Potassium	0.90		mg/L	0.50	0.22	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:19	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Sodium	29.5	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 20:32	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB
Zinc	ND	u	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 13:51	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO₃	142		mg/L	4		2320 B-2011	05/16/2021 18:13	05/16/2021 18:13	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	05/16/2021 18:13	05/16/2021 18:13	HMF
Total Alkalinity	142		mg/L	4		2320 B-2011	05/16/2021 18:13	05/16/2021 18:13	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:28	05/18/2021 12:28	SLP
Specific Conductance (Lab)	481		umhos/cm	1	1	2510 B-2011	05/14/2021 13:05	05/14/2021 13:05	CML
Hardness as CaCO₃	214		mg/L	1	1	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	302		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.7		mg/L	0.5	0.4	5310 C-2011	05/16/2021 16:16	05/16/2021 16:16	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.739	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.628	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	1.37	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	11.2		mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/21/2021 21:40	05/21/2021 21:40	CSC
Fluoride	0.26		mg/L	0.20		EPA 300.0 REV 2.1	05/21/2021 21:40	05/21/2021 21:40	CSC
Sulfate	75.2	D	mg/L	5.0	2.5	EPA 300.0 REV 2.1	05/21/2021 21:55	05/21/2021 21:55	CSC

Notes for work order 1033785

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	239	4	mg/L	235		102	80-120			
Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Total Alkalinity	284	4	mg/L		274			3.87	10	
Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1)

Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2744 - Default Prep IC

Blank (BAE2744-BLK1)

Prepared: 5/21/2021 17:26, Analyzed: 5/21/2021 17:26

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

Matrix Spike (BAE2744-MS1)

Source: 1033786-01

Prepared: 5/21/2021 22:40, Analyzed: 5/21/2021 22:40

Fluoride	11.6		mg/L	10.0	0.28	113	80-120			
Chloride	24.5		mg/L	10.0	13.5	110	80-120			
Sulfate	54.7		mg/L	10.0	53.5	11.6	80-120			M2

Matrix Spike Dup (BAE2744-MSD1)

Source: 1033786-01

Prepared: 5/21/2021 22:55, Analyzed: 5/21/2021 22:55

Fluoride	11.2		mg/L	10.0	0.28	110	80-120	3.12	20	
Chloride	24.3		mg/L	10.0	13.5	108	80-120	0.836	10	
Sulfate	54.7		mg/L	10.0	53.5	11.7	80-120	0.0146	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033785

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-110 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: 191

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *T. Travis Sned*
required information

Compliance Monitoring? Yes ✓ No _____

Samples Chlorinated? Yes _____ No _____

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033785

Sample ID#

Date

(mm/dd/yy):

Collection

Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033785-01 A 05-12-21 9:40

Plastic 1L

1

MW110

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033785-01 B 05-12-21 9:40

Plastic 500mL pH<2
w/HNO3

1

MW110

g / c

1033785-01 C 05-12-21 9:40

Plastic 500mL pH<2
w/H2SO4

1

MW110

g / c

COD TOC

1033785-01 D 05-12-21 9:40

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW110

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check: pH: _____

Preservation Check Performed by: *Noy*

Field data collected by: *T. Travis Sned* Date (mm/dd/yy) 05-12-21 Time (24 hr) 9:40

pH 6.43 Cond (umho) 155 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.65 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

T. Travis Sned

Mary Z...

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:24:36PM

Page 17 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-110 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033785 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033785-01 E	05-12-21	9:40	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033785-01 F	05-12-21	9:40	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033785-01 G	05-12-21	9:40	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW110	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033785-01 H	05-12-21	9:40	AG 250mL pH<2 w/H2SO4	1	MW110	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 9:40
pH 6.43 Cond 25 458 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.15 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature) [Signature]

Received by: (Signature) [Signature]

Date (mm/dd/yy) 5-13-21

Time (24 hr) 1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:24:36PM

Chain of Custody

Scheduled for: 03/01/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-110 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: 191

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): T. Travis Sneed

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033785

Sample ID#

Date

(mm/dd/yy):

Collection

Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

Sample ID#	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033785-01 A	05-12-21	9:40	Plastic 1L	1	MW110	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033785-01 B	05-12-21	9:40	Plastic 500mL pH<2 w/HNO3	1	MW110	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B

Preservation Check: pH: _____

1033785-01 C	05-12-21	9:40	Plastic 500mL pH<2 w/H2SO4	1	MW110	g / c	COD TOC

Preservation Check: pH: _____

1033785-01 D	05-12-21	9:40	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW110	g / c	Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check Performed by: Noy

Field data collected by: T. Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 9:40
pH 6.43 Cond (umho) 158 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.15 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

T. Travis Sneed Mary Z... 5-13-21 1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:24:36PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-110 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033785	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033785-01 E	<u>05-12-21</u>	<u>9:40</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033785-01 F	<u>05-12-21</u>	<u>9:40</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033785-01 G	<u>05-12-21</u>	<u>9:40</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW110	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033785-01 H	<u>05-12-21</u>	<u>9:40</u>	AG 250mL pH<2 w/H2SO4	1	MW110	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 9:40
pH 6.43 Cond 458 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.15 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:24:36PM

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
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Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-110 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection						
1033785	(mm/dd/yy):	Time (24 hr):						
Sample ID#								
1033785-01 A	05-12-21	9:40		Plastic 1L	1	MW110	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033785-01 B	05-12-21	9:40		Plastic 500mL pH<2 w/HNO3	1	MW110	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
Preservation Check: pH : _____								
1033785-01 C	05-12-21	9:40		Plastic 500mL pH<2 w/H2SO4	1	MW110	g / c	COD TOC
Preservation Check: pH : _____								
1033785-01 D	05-12-21	9:40		Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW110	g / c	Radium 226 (sub)
Preservation Check: pH : _____								

Preservation Check Performed by: Noy

Field data collected by: Toqui's Sned Date (mm/dd/yy) 05-12-21 Time (24 hr) 9:40
pH 6.43 Cond (umho) 458 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.15 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u>[Signature]</u>	<u>[Signature]</u>	<u>5-13-21</u>	<u>1353</u>
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:24:36PM

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-110 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033785 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033785-01 E	<u>05-12-21</u>	<u>9:40</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033785-01 F	<u>05-12-21</u>	<u>9:40</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033785-01 G	<u>05-12-21</u>	<u>9:40</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW110	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033785-01 H	<u>05-12-21</u>	<u>9:40</u>	AG 250mL pH<2 w/H2SO4	1	MW110	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-12-21 Time (24 hr) 9:40
pH 6.43 Cond 25 458 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.15 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:24:36PM

Page 22 of 34

June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033785 / Big River Electric C
Pace Project No.: 30422181

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422181001	1033785-01	Water	05/12/21 09:40	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422181001	1033785-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

Sample: 1033785-01 **Lab ID: 30422181001** Collected: 05/12/21 09:40 Received: 05/18/21 10:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.739 ± 0.610 (0.920) C:NA T:94%	pCi/L	06/21/21 14:38	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.628 ± 0.449 (0.872) C:71% T:87%	pCi/L	06/18/21 14:25	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.37 ± 1.06 (1.79)	pCi/L	06/21/21 17:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

QC Batch: 451419

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30422181001

METHOD BLANK: 2178770

Matrix: Water

Associated Lab Samples: 30422181001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

QC Batch:	451418	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422181001

METHOD BLANK: 2178768 Matrix: Water

Associated Lab Samples: 30422181001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033785 / Big River Electric C

Pace Project No.: 30422181

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Chain of Custody



Workorder: 1033785

Workorder Name: MW-110 Wilson 092-0000 Owner Received Date: 5/13/2021 Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA/
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30422181



Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1					GW	X	X	001
2	1033785-01		05/12/21 09:40	IR44-McCoy	Water			
3								
4								
5								
6								
7								
8								
9								
10								
Transfers		Released By	Date/Time	Received By	Date/Time	Comments		
1				MA/B	5-18-21 1000			
2								
3								

Cooler Temperature on Receipt

N/A °C

Custody Seal Y or N

Received on Ice Y or N

Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

30422181

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3888 2886

 Label kn
 LIMS Login UPI

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue NoneCooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents: <u>kn 5-24-21</u>	
				1003801		
Chain of Custody Present:	/			1.		
Chain of Custody Filled Out:	/			2.		
Chain of Custody Relinquished:	/			3.		
Sampler Name & Signature on COC:		/		4.		
Sample Labels match COC:	/			5.		
-Includes date/time/ID Matrix: <u>W-T</u>						
Samples Arrived within Hold Time:	/			6.		
Short Hold Time Analysis (<72hr remaining):		/		7.		
Rush Turn Around Time Requested:		/		8.		
Sufficient Volume:	/			9.		
Correct Containers Used:	/			10.		
-Pace Containers Used:		/				
Containers Intact:	/			11.		
Orthophosphate field filtered			/	12.		
Hex Cr Aqueous sample field filtered			/	13.		
Organic Samples checked for dechlorination:			/	14.		
Filtered volume received for Dissolved tests			/	15.		
All containers have been checked for preservation.	/			16.		
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix						
All containers meet method preservation requirements.	/			Initial when completed <u>kn</u>	Date/time of preservation	
				Lot # of added preservative		
Headspace in VOA Vials (>6mm):			/	17.		
Trip Blank Present:			/	18.		
Trip Blank Custody Seals Present			/			
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>kn</u>	Date: <u>5-24-21</u>	Survey Meter SN: <u>15-03</u>

Client Notification/ Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Pace Greensburg Lab -Sample Container Count

30422181

Client Pace KY

Profile Number 11851

Site 1033785/Big Rivers Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WG9U	WGKU	ZPLC
1	5											W																
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Container Codes

Glass		
GJN	1/2 Gallon Jug with HNO3	DG9S
AG5U	100mL amber glass unpreserved	VG9U
AG5T	100mL amber glass Na Thiosulfate	VG9T
GJN	1/2 Gallon Jug	VG9H
AG1S	1L amber glass H2SO4	JG9U
AG1H	1L amber glass HCl	WG9U
AG1T	1L amber glass Na Thiosulfate	BG2U
BG1U	1L clear glass unpreserved	AG2U
AG3S	250mL amber glass H2SO4	WGKU
AG3U	250mL amber glass unpreserved	

Plastic / Misc.		
GCUB	1 Gallon Cubitainer	EZI
12GN	1/2 Gallon Cubitainer	VOAK
SP5T	120mL Coliform Na Thiosulfate	I
BP1N	1L plastic HNO3	ZPLC
BP1U	1L plastic unpreserved	
BP3S	250mL plastic H2SO4	WT
BP3N	250mL plastic HNO3	SL
BP3U	250mL plastic unpreserved	OL
BP3C	250mL plastic NAOH	WP
BP2S	500mL plastic H2SO4	
BP2U	500mL plastic unpreserved	

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1033785

30422187

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033785-01	Water	Sampled:05/12/2021 09:40	Specific Method
Radium Total (sub)	11/08/2021 09:40	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/08/2021 09:40	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/08/2021 09:40	EPA 903.1	

<i>Ammy Lari</i>	5-17-21		
Released By	Date	Received By	Date
Released By	Date	Received By	Date

Certificate of Analysis 1033796

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:21

Project Name: Well Duplicate Wilson 092-00004

Workorder: 1033796

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By

1033796-01	Well Duplicate/	Groundwater	05/13/2021 08:40	05/13/2021 13:53	Phillip Hill

<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>
1033796-01	Field Conductance	2970
	Field Dissolved Oxygen	0.69
	Field pH	7.22
	Field Temp (C)	15.08
	Field Turbidity	2.9

ANALYTICAL RESULTS

Lab Sample ID: **1033796-01**

Description: **Well Duplicate**

Sample Collection Date Time: 05/13/2021 08:40

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Arsenic	0.0046		mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Barium	0.011		mg/L	0.004	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Boron	0.41		mg/L	0.10	0.10	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:14	MRW D
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Calcium	628	D1	mg/L	40.0	13.0	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:29	MRW D
Chromium	0.0007	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Cobalt	0.007		mg/L	0.004	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Iron	5.14		mg/L	0.100	0.050	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:14	MRW D
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Lithium	0.04		mg/L	0.02	0.005	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Magnesium	242	D1	mg/L	20.0	9.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:29	MRW D
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Molybdenum	0.006	J	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Nickel	0.014		mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Potassium	9.21	D1	mg/L	5.00	2.20	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:26	MRW D
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Sodium	34.8	D1	mg/L	2.60	1.00	SW846 6010 B	05/17/2021 08:21	05/18/2021 22:26	MRW D
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB
Zinc	0.009	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 08:21	05/20/2021 14:36	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	500		mg/L	4		2320 B-2011	05/16/2021 19:36	05/16/2021 19:36	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	05/16/2021 19:36	05/16/2021 19:36	HMF
Total Alkalinity	500	M2	mg/L	4		2320 B-2011	05/16/2021 19:36	05/16/2021 19:36	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	05/18/2021 12:55	05/18/2021 12:55	SLP
Specific Conductance (Lab)	3020		umhos/cm	1	1	2510 B-2011	05/14/2021 13:19	05/14/2021 13:19	CML
Hardness as CaCO3	2000	D	mg/L	5	5	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	2960		mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	1.5		mg/L	0.5	0.4	5310 C-2011	05/16/2021 21:11	05/16/2021 21:11	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.111	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.663	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/18/2021 00:00	06/18/2021 00:00	xxx
See Attached Subcontract Report	0.774	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	15.9	M2	mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/23/2021 02:49	05/23/2021 02:49	CSC
Fluoride	ND	U, M2	mg/L	0.20		EPA 300.0 REV 2.1	05/23/2021 02:49	05/23/2021 02:49	CSC
Sulfate	1420	D, M2	mg/L	200	100	EPA 300.0 REV 2.1	05/24/2021 13:31	05/24/2021 13:31	CSC

Notes for work order 1033796

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Total Alkalinity	239	4	mg/L	235		102	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Total Alkalinity	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2194 - Default Prep Wet Chem										
Blank (BAE2194-BLK1)										
Prepared: 5/18/2021 12:40, Analyzed: 5/18/2021 12:40										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2194 - Default Prep Wet Chem

LCS (BAE2194-BS1)

Prepared: 5/18/2021 12:45, Analyzed: 5/18/2021 12:45

Chemical Oxygen Demand	117	8	mg/L	125		94.0	90-110			

Duplicate (BAE2194-DUP1)

Source: 1033796-01

Prepared: 5/18/2021 13:00, Analyzed: 5/18/2021 13:00

Chemical Oxygen Demand	11	8	mg/L		ND				25	

Matrix Spike (BAE2194-MS1)

Source: 1033796-01

Prepared: 5/18/2021 13:00, Analyzed: 5/18/2021 13:00

Chemical Oxygen Demand	244	8	mg/L	250	ND	97.6	90-110			

Matrix Spike Dup (BAE2194-MSD1)

Source: 1033796-01

Prepared: 5/18/2021 13:00, Analyzed: 5/18/2021 13:00

Chemical Oxygen Demand	241	8	mg/L	250	ND	96.5	90-110	1.15	10	

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1)

Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2746 - Default Prep IC

Blank (BAE2746-BLK1)

Prepared: 5/22/2021 21:07, Analyzed: 5/22/2021 21:07

Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.20	mg/L							U

Matrix Spike (BAE2746-MS1)

Source: 1033796-01

Prepared: 5/23/2021 3:34, Analyzed: 5/23/2021 3:34

Chloride	21.1		mg/L	10.0	14.3	67.2	80-120			M2
Fluoride	4.82		mg/L	10.0	0.17	46.6	80-120			M2
Sulfate	579		mg/L	10.0	1280	NR	80-120			M2

Matrix Spike Dup (BAE2746-MSD1)

Source: 1033796-01

Prepared: 5/23/2021 3:49, Analyzed: 5/23/2021 3:49

Chloride	21.2		mg/L	10.0	14.3	68.3	80-120	0.507	10	M2
Sulfate	579		mg/L	10.0	1280	NR	80-120	0.0570	20	M2
Fluoride	5.11		mg/L	10.0	0.17	49.4	80-120	5.80	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033796

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **Well Duplicate Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature):

[Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date

Collection

1033796

(mm/dd/yy):

Time (24 hr):

Sample ID#

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033796-01 A

5/13/21

840

Plastic 1L

1

Well Duplicate

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033796-01 B

5/13/21

840

Plastic 500mL pH<2
w/HNO3

1

Well Duplicate

g / c

1033796-01 C

5/13/21

840

Plastic 500mL pH<2
w/H2SO4

1

Well Duplicate

g / c

COD TOC

1033796-01 D

5/13/21

840

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

Well Duplicate

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by:

NA

Field data collected by:

Phillip Hill

Date (mm/dd/yy)

5/13/21

Time (24 hr)

pH

7.22

Cond (umho)

2.97

Res Cl (mg/L)

Tot Cl (mg/L)

Free Cl (mg/L)

Temp (oC)

15.08

or

(oF)

Static Water Level

DO (mg/L)

0.69

Turb. (NTU)

2.9

Flow (MGD)

or

(CFS)

or

(g/min)

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

5/13/21

12:12

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:42:39PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: Well Duplicate Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature):

[Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1033796

Sample ID#

Date (mm/dd/yy):
Collection Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033796-01 E

5/13/21 840

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

Well Duplicate

g / c

Radium 228 (sub)

Preservation Check: pH: _____

1033796-01 F

5/13/21 840

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

Well Duplicate

g / c

Radium 228 (sub)

Preservation Check: pH: _____

1033796-01 G

5/13/21 840

Plastic 1L pH<2 w/HNO3
(Sub)

1

Well Duplicate

g / c

Radium Total (sub)

Preservation Check: pH: _____

1033796-01 H

5/13/21 840

AG 250mL pH<2
w/H2SO4

1

Well Duplicate

g / c

TOC

Preservation Check: pH: _____

Preservation Check Performed by: NOI

Field data collected by: Phillip Hill

Date (mm/dd/yy) 5/13/21 Time (24 hr) 840

pH 7.22 Cond (umho/cm) 2.97

Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.08 or (oF) _____

Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
5-13-21

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:42:39PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Well Duplicate Wilson 092-00004**

Phone: (270) 844-6000
PWS ID#: KY
State: KY

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes X No _____

Samples Chlorinated? Yes _____ No _____

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder # 1033796 Sample ID#	Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033796-01 A	<u>5/13/21</u>	<u>840</u>	Plastic 1L	1	Well Duplicate	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1033796-01 B	<u>5/13/21</u>	<u>840</u>	Plastic 500mL pH<2 w/HNO3	1	Well Duplicate	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033796-01 C	<u>5/13/21</u>	<u>840</u>	Plastic 500mL pH<2 w/H2SO4	1	Well Duplicate	g / c	COD TOC
1033796-01 D	<u>5/13/21</u>	<u>840</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	Well Duplicate	g / c	Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: NA

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) _____
pH 7.22 Cond 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
5-13-21

12:12
1353

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Well Duplicate Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#

Please Print Legibly

Collected by (Signature):

[Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033796	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033796-01 E	5/13/21	840	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Well Duplicate	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033796-01 F	5/13/21	840	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Well Duplicate	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033796-01 G	5/13/21	840	Plastic 1L pH<2 w/HNO3 (Sub)	1	Well Duplicate	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033796-01 H	5/13/21	840	AG 250mL pH<2 w/H2SO4	1	Well Duplicate	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOI

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 840
pH 7.22 Cond. 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
5-13-21

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:42:39PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
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Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **Well Duplicate Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature):

required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date (mm/dd/yy):

Collection Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033796

Sample ID#

1033796-01 A

5/13/21

840

Plastic 1L

1

Well Duplicate

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033796-01 B

5/13/21

840

Plastic 500mL pH<2
w/HNO3

1

Well Duplicate

g / c

1033796-01 C

5/13/21

840

Plastic 500mL pH<2
w/H2SO4

1

Well Duplicate

g / c

COD TOC

1033796-01 D

5/13/21

840

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

Well Duplicate

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by:

NOY

Field data collected by:

Phillip Hill

Date (mm/dd/yy)

5/13/21

Time (24 hr)

pH

7.22

Cond (umho)

2.97

Res Cl (mg/L)

Tot Cl (mg/L)

Free Cl (mg/L)

Temp (oC)

15.08

or

(oF)

Static Water Level

DO (mg/L)

0.69

Turb. (NTU)

2.9

Flow (MGD)

or

(CFS)

or

(g/min)

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

PL Hill

Brian Edwards

5/13/21

12:12

PL Hill

Brian Edwards

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:42:39PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Well Duplicate Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State:

PO#:

Quote#:

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033796	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033796-01 E	5/12/21	840	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Well Duplicate	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033796-01 F	5/13/21	840	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Well Duplicate	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033796-01 G	5/13/21	840	Plastic 1L pH<2 w/HNO3 (Sub)	1	Well Duplicate	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033796-01 H	5/13/21	840	AG 250mL pH<2 w/H2SO4	1	Well Duplicate	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/13/21 Time (24 hr) 840
pH 7.22 Cond ^{ms/cm} 2.97 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 15.08 or (oF) _____ Static Water Level _____ DO (mg/L) 0.69 Turb. (NTU) 2.9
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]
[Signature]

[Signature]
[Signature]

5/13/21
5-13-21

12:12
1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:42:39PM

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June 21, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033796 / Big River Electric C
Pace Project No.: 30422169

Dear Rob Whittington:

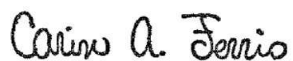
Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422169001	1033796-01	Water	05/13/21 08:40	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422169001	1033796-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

Sample: 1033796-01 **Lab ID: 30422169001** Collected: 05/13/21 08:40 Received: 05/18/21 10:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.111 ± 0.346 (0.669) C:NA T:98%	pCi/L	06/21/21 14:23	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.663 ± 0.362 (0.643) C:76% T:91%	pCi/L	06/18/21 11:20	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.774 ± 0.708 (1.31)	pCi/L	06/21/21 17:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

QC Batch:	451419	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422169001

METHOD BLANK: 2178770 Matrix: Water

Associated Lab Samples: 30422169001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.572 ± 0.370 (0.694) C:75% T:85%	pCi/L	06/18/21 11:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

QC Batch:	451418	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422169001

METHOD BLANK: 2178768 Matrix: Water

Associated Lab Samples: 30422169001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0434 ± 0.307 (0.612) C:NA T:93%	pCi/L	06/21/21 14:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033796 / Big River Electric C

Pace Project No.: 30422169

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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Chain of Custody



Workorder: 1033796

Workorder Name: Well Duplicate Wilson 092

Owner Received Date: 5/13/2021

Results Requested By:

Report To:	Subcontract To:	Requested Analysis
Pace Analytical Services, LLC 825 Industrial Road Madisonville, KY 42409 270-821-7375 rob.whittington@pacelabs.com	Pace Analytical Services LLC Greensburg P/ 1638 Rosey Town Rd Suite 2,3,4 Greensburg, PA 15601 (724) 850-5615	

WO#: 30422169



Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1					GW	X	X	001
2	1033796-01		05/13/21 08:40	IR44-McCoy	Water			
3								
4								
5								
6								
7								
8								
9								
10								
Transfers Released By			Date/Time	Received By	Date/Time	Comments		
1				<i>[Signature]</i>	5-18-21 1:00			
2								
3								

Cooler Temperature on Receipt	11/18 °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

 Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3888 2886

 Label Rn
 LIMS Login UPI

 Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue NoneCooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Comments:

Yes	No	N/A

pH paper Lot#

1003801

Date and Initials of person examining contents: Rn 5-24-21

Chain of Custody Present:

/

1.

Chain of Custody Filled Out:

/

2.

Chain of Custody Relinquished:

/

3.

Sampler Name & Signature on COC:

/

4.

Sample Labels match COC:

/

5.

-Includes date/time/ID

Matrix: WT

Samples Arrived within Hold Time:

/

6.

Short Hold Time Analysis (<72hr remaining):

/

7.

Rush Turn Around Time Requested:

/

8.

Sufficient Volume:

/

9.

Correct Containers Used:

/

10.

-Pace Containers Used:

/

Containers Intact:

/

11.

Orthophosphate field filtered

/

12.

Hex Cr Aqueous sample field filtered

/

13.

Organic Samples checked for dechlorination:

/

14.

Filtered volume received for Dissolved tests

/

15.

All containers have been checked for preservation.

/

16.

Added 2.5ml HNO3 to samples

 exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon,
 Non-aqueous matrix

5-24-21

1033796-01 G&F

 All containers meet method preservation
 requirements.

/

Initial when completed

Rn

Date/time of preservation

5-24-21 @ 1204

Lot # of added preservative

0L21-0439

Headspace in VOA Vials (>6mm):

/

17.

Trip Blank Present:

/

18.

Trip Blank Custody Seals Present

/

Rad Samples Screened < 0.5 mrem/hr

/

Initial when completed

Rn

Date:

5-24-21

Survey Meter

SN: J503

Client Notification/ Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0#: 30422169

PM: CAF Due Date: 06/09/21

CLIENT: PACE_44_MVKY



Pace Greensburg Lab -Sample Container Count

Pace KY

Profile Number 11851

Client

Site 10337al/Big Rivers Electric Corporation

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC
1	5											W																
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

W0#: 30422169

PM: CAF Due Date: 06/09/21

CLIENT: PACE_44_MVKY

WO#: 30422169

PM: CAF Due Date: 06/09/21

CLIENT: PACE_44_MVKY

Container Codes

Glass	
GJN	1 Gallon Jug with HNO3
AG5U	100mL amber glass unpreserved
AG5T	100mL amber glass Na Thiosulfate
GJN	1 Gallon Jug
AG1S	1L amber glass H2SO4
AG1H	1L amber glass HCl
AG1T	1L amber glass Na Thiosulfate
BG1U	1L clear glass unpreserved
AG3S	250mL amber glass H2SO4
AG3U	250mL amber glass unpreserved
DG9S	40mL amber VOA vial H2SO4
VG9U	40mL clear VOA vial
VG9T	40mL clear VOA vial Na Thiosulfate
VG9H	40mL clear VOA vial HCl
JGFU	4oz amber wide jar
WGFU	4oz wide jar unpreserved
BG2U	500mL clear glass unpreserved
AG2U	500mL amber glass unpreserved
WGKU	8oz wide jar unpreserved

Plastic / Misc.	
GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved
EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag
WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1033796

- 30422169

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033796-01	Water	Sampled:05/13/2021 08:40	Specific Method 001
Radium Total (sub)	11/09/2021 08:40	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 08:40	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 08:40	EPA 903.1	

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1033777

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 06/29/2021 10:18

Project Name: Field Blank Wilson 092-00004

Workorder: 1033777

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 05/13/2021 13:53.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033777-01	Field Blank/	Water	05/13/2021 12:15	05/13/2021 13:53	Travis Sneed

ANALYTICAL RESULTS

Lab Sample ID: **1033777-01**

Description: **Field Blank**

Sample Collection Date Time: 05/13/2021 12:15

Sample Received Date Time: 05/13/2021 13:53

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Boron	ND	M2, M4, U	mg/L	0.10	0.10	SW846 6010 B	05/17/2021 10:52	05/19/2021 13:26	MRW D
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Calcium	ND	M1, M4, U	mg/L	0.40	0.13	SW846 6010 B	05/17/2021 10:52	05/19/2021 13:26	MRW D
Chromium	0.0008	B, J	mg/L	0.0020	0.0006	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Iron	ND	M2, U	mg/L	0.100	0.050	SW846 6010 B	05/17/2021 10:52	05/19/2021 13:26	MRW D
Lead	0.0007	J	mg/L	0.002	0.0005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Magnesium	ND	M4, U	mg/L	0.200	0.090	SW846 6010 B	05/17/2021 10:52	05/19/2021 13:26	MRW D
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Nickel	ND	U	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Potassium	ND	M4, U	mg/L	0.50	0.22	SW846 6010 B	05/17/2021 10:52	05/19/2021 13:26	MRW D
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Sodium	0.12	M2, M4, J	mg/L	0.26	0.10	SW846 6010 B	05/17/2021 10:52	05/19/2021 13:26	MRW D
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB
Zinc	0.004	J	mg/L	0.02	0.004	SW846-6020 A	05/17/2021 10:52	05/20/2021 13:12	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	4		mg/L	4		2320 B-2011	05/16/2021 17:45	05/16/2021 17:45	HMF
Carbonate Alkalinity as CaCO3	ND	U	mg/L	4		2320 B-2011	05/16/2021 17:45	05/16/2021 17:45	HMF
Total Alkalinity	4		mg/L	4		2320 B-2011	05/16/2021 17:45	05/16/2021 17:45	HMF
Chemical Oxygen Demand	ND	U	mg/L	8	8	HACH 8000	05/18/2021 12:27	05/18/2021 12:27	SLP
Specific Conductance (Lab)	5		umhos/cm	1	1	2510 B-2011	05/14/2021 12:57	05/14/2021 12:57	CML
Hardness as CaCO3	18		mg/L	1	1	2340 C (as HACH 8226)	05/19/2021 08:18	05/19/2021 08:18	CLL
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	05/13/2021 19:32	05/13/2021 19:32	DJK
Total Organic Carbon	0.4	J	mg/L	0.5	0.4	5310 C-2011	05/16/2021 14:10	05/16/2021 14:10	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00	_Sub	pCi/L			EPA 903.1	06/21/2021 00:00	06/21/2021 00:00	xxx

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.593	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/21/2021 00:00	06/21/2021 00:00	xxx
See Attached Subcontract Report	0.593	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/28/2021 00:00	06/28/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	u	mg/L	0.5	0.4	EPA 300.0 REV 2.1	05/21/2021 17:41	05/21/2021 17:41	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	05/21/2021 17:41	05/21/2021 17:41	CSC
Sulfate	ND	u	mg/L	1.0	0.5	EPA 300.0 REV 2.1	05/21/2021 17:41	05/21/2021 17:41	CSC

Notes for work order 1033777

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Blank (BAE1707-BLK1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 18:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	0.11	0.26	mg/L							J

Blank (BAE1707-BLK2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:08

Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	0.0022	0.0020	mg/L							B
Cobalt	ND	0.004	mg/L							U
Copper	0.002	0.003	mg/L							J
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAE1707-BS1)

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 19:00

Boron	0.13	0.10	mg/L	0.125		103	85-115
Calcium	6.61	0.40	mg/L	6.25		106	85-115
Iron	6.27	0.100	mg/L	6.25		100	85-115
Magnesium	6.37	0.200	mg/L	6.25		102	85-115
Potassium	6.59	0.50	mg/L	6.25		105	85-115
Sodium	6.62	0.26	mg/L	6.25		106	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

LCS (BAE1707-BS2)

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 13:10

Mercury	0.0024	0.0005	mg/L	0.00250		97.6	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0664	0.0010	mg/L	0.0625		106	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0614	0.0020	mg/L	0.0625		98.2	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0674	0.0020	mg/L	0.0625		108	85-115			B
Cobalt	0.065	0.004	mg/L	0.0625		103	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.061	0.002	mg/L	0.0625		97.9	85-115			
Lithium	0.06	0.02	mg/L	0.0625		99.1	85-115			
Nickel	0.065	0.003	mg/L	0.0625		103	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0618	0.0020	mg/L	0.0625		98.9	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Matrix Spike (BAE1707-MS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:33

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	150	40.0	mg/L	6.25	ND	NR	80-120			D2, M1
Iron	5.72	10.0	mg/L	6.25	ND	91.6	80-120			D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120			D2, M4, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120			D2, M4, U

Matrix Spike (BAE1707-MS2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:39

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	367	40.0	mg/L	6.25	430	NR	80-120			D2, M2
Iron	10.1	10.0	mg/L	6.25	5.20	79.1	80-120			D2, M2
Magnesium	136	20.0	mg/L	6.25	157	NR	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	69.6	26.0	mg/L	6.25	72.6	NR	80-120			D2, M2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike (BAE1707-MS3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:49

Mercury	0.0026	0.0050	mg/L	0.00250	ND	106	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.8	80-120			D2, J
Arsenic	0.0646	0.0100	mg/L	0.0625	ND	103	80-120			D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Beryllium	0.0650	0.0200	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120			D2
Chromium	0.0618	0.0200	mg/L	0.0625	ND	99.0	80-120			D2, B
Cobalt	0.062	0.040	mg/L	0.0625	ND	98.7	80-120			D2
Copper	0.061	0.030	mg/L	0.0625	ND	97.4	80-120			D2
Lead	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120			D2, J
Nickel	0.062	0.030	mg/L	0.0625	ND	98.4	80-120			D2
Selenium	0.068	0.030	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0691	0.0200	mg/L	0.0625	ND	111	80-120			D2
Zinc	0.07	0.20	mg/L	0.0625	ND	108	80-120			D2, J

Matrix Spike (BAE1707-MS4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:53

Molybdenum	0.06	0.10	mg/L	0.0625	ND	96.9	80-120			D2, J
Mercury	0.0025	0.0050	mg/L	0.00250	ND	102	80-120			D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	110	80-120			D2
Arsenic	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Barium	0.080	0.040	mg/L	0.0625	0.013	107	80-120			D2
Beryllium	0.0604	0.0200	mg/L	0.0625	ND	96.6	80-120			D2
Cadmium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Chromium	0.0592	0.0200	mg/L	0.0625	ND	94.6	80-120			D2, B
Cobalt	0.070	0.040	mg/L	0.0625	ND	112	80-120			D2
Copper	0.054	0.030	mg/L	0.0625	ND	86.1	80-120			D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120			D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	181	80-120			D2, M1, J
Nickel	0.076	0.030	mg/L	0.0625	0.019	90.9	80-120			D2
Selenium	0.065	0.030	mg/L	0.0625	ND	104	80-120			D2
Thallium	0.0652	0.0200	mg/L	0.0625	ND	104	80-120			D2
Zinc	0.08	0.20	mg/L	0.0625	ND	121	80-120			D2, M1, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:36

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	ND	40.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Iron	5.47	10.0	mg/L	6.25	ND	87.5	80-120	4.56	20	D2, J
Magnesium	ND	20.0	mg/L	6.25	ND		80-120		20	M4, D2, U
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	ND	26.0	mg/L	6.25	ND		80-120		20	D2, M4, Y2, U

Matrix Spike Dup (BAE1707-MSD2)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:42

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	379	40.0	mg/L	6.25	430	NR	80-120	3.21	20	D2, M2
Iron	10.7	10.0	mg/L	6.25	5.20	88.4	80-120	5.54	20	D2
Magnesium	142	20.0	mg/L	6.25	157	NR	80-120	3.93	20	D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	72.4	26.0	mg/L	6.25	72.6	NR	80-120	3.95	20	D2, M2

Matrix Spike Dup (BAE1707-MSD3)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:51

Molybdenum	0.06	0.10	mg/L	0.0625	ND	98.5	80-120	1.28	20	D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120	1.14	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.15	20	D2
Arsenic	0.0613	0.0100	mg/L	0.0625	ND	98.0	80-120	5.29	20	D2
Barium	0.069	0.040	mg/L	0.0625	ND	110	80-120	0.465	20	D2
Beryllium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.39	20	D2
Cadmium	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.81	20	D2
Chromium	0.0603	0.0200	mg/L	0.0625	ND	96.5	80-120	2.47	20	D2, B
Cobalt	0.060	0.040	mg/L	0.0625	ND	96.1	80-120	2.71	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.7	80-120	3.94	20	D2
Lead	0.068	0.020	mg/L	0.0625	ND	110	80-120	0.800	20	D2
Lithium	0.07	0.20	mg/L	0.0625	ND	106	80-120	0.529	20	D2, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.4	80-120	4.17	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	106	80-120	2.22	20	D2
Thallium	0.0686	0.0200	mg/L	0.0625	ND	110	80-120	0.799	20	D2
Zinc	0.06	0.20	mg/L	0.0625	ND	102	80-120	6.31	20	D2, J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1707 - EPA 200.2

Matrix Spike Dup (BAE1707-MSD4)

Source: 1033788-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:55

Mercury	0.0026	0.0050	mg/L	0.00250	ND	103	80-120	1.56	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	97.5	80-120	0.626	20	D2, J
Antimony	0.069	0.050	mg/L	0.0625	ND	111	80-120	0.579	20	D2
Arsenic	0.0642	0.0100	mg/L	0.0625	ND	103	80-120	1.42	20	D2
Barium	0.080	0.040	mg/L	0.0625	0.013	108	80-120	0.375	20	D2
Beryllium	0.0609	0.0200	mg/L	0.0625	ND	97.4	80-120	0.842	20	D2
Cadmium	0.0631	0.0100	mg/L	0.0625	ND	101	80-120	0.429	20	D2
Chromium	0.0586	0.0200	mg/L	0.0625	ND	93.8	80-120	0.866	20	D2, B
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120	1.46	20	D2
Copper	0.053	0.030	mg/L	0.0625	ND	85.4	80-120	0.783	20	D2
Lead	0.064	0.020	mg/L	0.0625	ND	103	80-120	0.420	20	D2
Lithium	0.11	0.20	mg/L	0.0625	0.05	180	80-120	0.372	20	D2, M1, J
Nickel	0.075	0.030	mg/L	0.0625	0.019	88.5	80-120	1.96	20	D2
Selenium	0.066	0.030	mg/L	0.0625	ND	105	80-120	0.780	20	D2
Thallium	0.0666	0.0200	mg/L	0.0625	ND	107	80-120	2.06	20	D2
Zinc	0.08	0.20	mg/L	0.0625	ND	123	80-120	1.84	20	D2, M1, J

Post Spike (BAE1707-PS1)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/18/2021 22:45

Boron	86.0		ug/L	125	0.01	68.8	75-125			D2, M2
Calcium	7290		ug/L	6250	61.6	116	75-125			D2
Iron	4320		ug/L	6250	1.07	69.2	75-125			D2, M2
Magnesium	5190		ug/L	6250	4.53	83.0	75-125			D2
Potassium	5430		ug/L	6250	12.4	86.7	75-125			D2
Sodium	-702		ug/L	6250	123	NR	75-125			D2, M2, U

Post Spike (BAE1707-PS2)

Source: 1033777-01

Prepared: 5/17/2021 10:52, Analyzed: 5/20/2021 14:57

Mercury	2.63		ug/L	2.50	0.0270	104	75-125			D2
Molybdenum	56.8		ug/L	62.5	0.10	90.6	75-125			D2
Antimony	63.9		ug/L	62.5	0.191	102	75-125			D2
Arsenic	59.1		ug/L	62.5	0.0210	94.6	75-125			D2
Barium	64.8		ug/L	62.5	0.203	103	75-125			D2
Beryllium	59.1		ug/L	62.5	0.0660	94.4	75-125			D2
Cadmium	60.7		ug/L	62.5	0.0620	97.0	75-125			D2
Chromium	57.1		ug/L	62.5	0.809	90.1	75-125			D2, B
Cobalt	56.3		ug/L	62.5	0.022	90.0	75-125			D2
Copper	54.5		ug/L	62.5	0.925	85.7	75-125			D2
Lead	64.6		ug/L	62.5	0.681	102	75-115			D2
Lithium	62.5		ug/L	62.5	0.18	99.7	75-125			D2
Nickel	55.1		ug/L	62.5	0.159	87.9	75-125			D2
Selenium	62.4		ug/L	62.5	0.048	99.7	75-125			D2
Thallium	66.0		ug/L	62.5	0.0600	105	75-125			D2
Zinc	61.6		ug/L	62.5	3.53	93.0	75-125			D2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1734 - Default Prep Wet Chem

Blank (BAE1734-BLK1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAE1734-BS1)

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1480	25	mg/L	1500		98.8	80-120			

Duplicate (BAE1734-DUP1) Source: 1033778-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	3600	50	mg/L		3600			0.222	10	

Duplicate (BAE1734-DUP2) Source: 1033793-01

Prepared: 5/13/2021 19:32, Analyzed: 5/13/2021 19:32

Total Dissolved Solids	1750	50	mg/L		1750			0.343	10	

Batch BAE1817 - Default Prep Wet Chem

Blank (BAE1817-BLK1)

Prepared: 5/14/2021 12:55, Analyzed: 5/14/2021 12:55

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAE1817-BS1)

Prepared: 5/14/2021 12:56, Analyzed: 5/14/2021 12:56

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAE1817-DUP1) Source: 1033788-01

Prepared: 5/14/2021 13:11, Analyzed: 5/14/2021 13:11

Specific Conductance (Lab)	2620	1	umhos/cm		2620			0.0763	0.938	

Duplicate (BAE1817-DUP2) Source: 1053613-01

Prepared: 5/14/2021 13:25, Analyzed: 5/14/2021 13:25

Specific Conductance (Lab)	1690	1	umhos/cm		1690			0.177	0.938	

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK1)

Prepared: 5/16/2021 17:31, Analyzed: 5/16/2021 17:31

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE1964 - Default Prep Wet Chem

Blank (BAE1964-BLK2)

Prepared: 5/16/2021 18:54, Analyzed: 5/16/2021 18:54

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAE1964-BLK3)

Prepared: 5/16/2021 20:03, Analyzed: 5/16/2021 20:03

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

LCS (BAE1964-BS1)

Prepared: 5/16/2021 18:50, Analyzed: 5/16/2021 18:50

Carbonate Alkalinity as CaCO ₃	242	4	mg/L	225		108	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	243	4	mg/L	235		103	80-120			

LCS (BAE1964-BS2)

Prepared: 5/16/2021 19:58, Analyzed: 5/16/2021 19:58

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	230	4	mg/L	225		102	0-200			
Total Alkalinity	239	4	mg/L	235		102	80-120			

Duplicate (BAE1964-DUP1)

Source: 1033788-01

Prepared: 5/16/2021 18:33, Analyzed: 5/16/2021 18:33

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND			10		U
Total Alkalinity	284	4	mg/L		274			3.87	10	
Bicarbonate Alkalinity as CaCO ₃	284	4	mg/L		274			3.87	10	

Duplicate (BAE1964-DUP2)

Source: 1033796-01

Prepared: 5/16/2021 19:43, Analyzed: 5/16/2021 19:43

Bicarbonate Alkalinity as CaCO ₃	494	4	mg/L		500			1.21	10	
Total Alkalinity	494	4	mg/L		500			1.21	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE1964 - Default Prep Wet Chem										
Matrix Spike (BAE1964-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 18:00, Analyzed: 5/16/2021 18:00										
Total Alkalinity	302	4	mg/L	50.0	274	56.0	80-120			M2
Matrix Spike (BAE1964-MS2)		Source: 1033796-01								
Prepared: 5/16/2021 19:51, Analyzed: 5/16/2021 19:51										
Total Alkalinity	501	4	mg/L	50.0	500	1.60	80-120			M2
Batch BAE1969 - Default Prep Wet Chem										
Blank (BAE1969-BLK1)										
Prepared: 5/16/2021 13:28, Analyzed: 5/16/2021 13:28										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE1969-BS1)										
Prepared: 5/16/2021 13:07, Analyzed: 5/16/2021 13:07										
Total Organic Carbon	4.8	0.5	mg/L	5.00		96.9	80-120			
Duplicate (BAE1969-DUP1)		Source: 1033787-01								
Prepared: 5/16/2021 18:44, Analyzed: 5/16/2021 18:44										
Total Organic Carbon	0.6	0.5	mg/L		0.7			11.2	25	
Duplicate (BAE1969-DUP2)		Source: 1050181-01								
Prepared: 5/17/2021 0:01, Analyzed: 5/17/2021 0:01										
Total Organic Carbon	1.2	0.5	mg/L		1.1			4.98	25	
Matrix Spike (BAE1969-MS1)		Source: 1033788-01								
Prepared: 5/16/2021 19:05, Analyzed: 5/16/2021 19:05										
Total Organic Carbon	4.1	0.5	mg/L	2.50	1.4	106	80-120			
Matrix Spike (BAE1969-MS2)		Source: 1050181-02								
Prepared: 5/17/2021 0:22, Analyzed: 5/17/2021 0:22										
Total Organic Carbon	5.9	0.5	mg/L	5.00	0.8	102	80-120			
Batch BAE2192 - Default Prep Wet Chem										
Blank (BAE2192-BLK1)										
Prepared: 5/18/2021 12:04, Analyzed: 5/18/2021 12:04										
Chemical Oxygen Demand	ND	8	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2192 - Default Prep Wet Chem

LCS (BAE2192-BS1)

Prepared: 5/18/2021 12:15, Analyzed: 5/18/2021 12:15

Chemical Oxygen Demand	116	8	mg/L	125		92.7	90-110			

Duplicate (BAE2192-DUP1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	26	8	mg/L		26			0.00454	25	

Matrix Spike (BAE2192-MS1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	232	8	mg/L	250	26	82.1	90-110			M2

Matrix Spike Dup (BAE2192-MSD1) Source: 1051886-01

Prepared: 5/18/2021 12:32, Analyzed: 5/18/2021 12:32

Chemical Oxygen Demand	240	8	mg/L	250	26	85.6	90-110	3.69	10	M2

Batch BAE2354 - Default Prep Wet Chem

Blank (BAE2354-BLK1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAE2354-BS1)

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	242	1	mg/L	225		108	80-120			

Duplicate (BAE2354-DUP1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	72	1	mg/L		76			5.41	10	

Matrix Spike (BAE2354-MS1) Source: 1051802-02

Prepared: 5/19/2021 8:18, Analyzed: 5/19/2021 8:18

Hardness as CaCO ₃	470	1	mg/L	318	76	124	80-120			M1

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAE2744 - Default Prep IC

Blank (BAE2744-BLK1)

Prepared: 5/21/2021 17:26, Analyzed: 5/21/2021 17:26

Fluoride	ND	0.20	mg/L							U
Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U

Matrix Spike (BAE2744-MS1)

Source: 1033786-01

Prepared: 5/21/2021 22:40, Analyzed: 5/21/2021 22:40

Fluoride	11.6		mg/L	10.0	0.28	113	80-120			
Chloride	24.5		mg/L	10.0	13.5	110	80-120			
Sulfate	54.7		mg/L	10.0	53.5	11.6	80-120			M2

Matrix Spike Dup (BAE2744-MSD1)

Source: 1033786-01

Prepared: 5/21/2021 22:55, Analyzed: 5/21/2021 22:55

Fluoride	11.2		mg/L	10.0	0.28	110	80-120	3.12	20	
Chloride	24.3		mg/L	10.0	13.5	108	80-120	0.836	10	
Sulfate	54.7		mg/L	10.0	53.5	11.7	80-120	0.0146	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1033777

Shipped By: Client

Temperature: 3.60° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Field Blank Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date Collection

1033777

(mm/dd/yy): Time (24 hr):

Sample ID#

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033777-01 A 05-13-21 12:15

Plastic 1L

1

Field Blank

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1033777-01 B 05-13-21 12:15

Plastic 500mL pH<2
w/HNO3

1

Field Blank

g / c

1033777-01 C 05-13-21 12:15

Plastic 500mL pH<2
w/H2SO4

1

Field Blank

g / c

COD TOC

1033777-01 D 05-13-21 12:15

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

Field Blank

g / c

Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check: pH : _____

Preservation Check Performed by: Ndy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 12:15

pH _____ Cond (umho) _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) _____ or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

ahmy Lani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:17:12PM

Page 17 of 34

Chain of Custody

Scheduled for: 03/01/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Field Blank Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

Date Collection
(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1033777
Sample ID#

1033777-01 E 05-13-21 12:15

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

Field Blank

g / c

Radium 228 (sub)

Preservation Check: pH: _____

1033777-01 F 05-13-21 12:15

Plastic 1L pH<2 w/HNO3
Rad 228 (Sub)

1

Field Blank

g / c

Radium 228 (sub)

Preservation Check: pH: _____

1033777-01 G 05-13-21 12:15

Plastic 1L pH<2 w/HNO3
(Sub)

1

Field Blank

g / c

Radium Total (sub)

Preservation Check: pH: _____

1033777-01 H 05-13-21 12:15

AG 250mL pH<2
w/H2SO4

1

Field Blank

g / c

TOC

Preservation Check: pH: _____

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 12:15

pH _____ Cond (umho) _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) _____ or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature] [Signature] 5-13-21 1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:17:12PM

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Chain of Custody

Scheduled for: **03/01/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: Field Blank Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033777 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033777-01 A	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L	1	Field Blank	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033777-01 B	<u>05-13-21</u>	<u>12:15</u>	Plastic 500mL pH<2 w/HNO3	1	Field Blank	g / c	
Preservation Check: pH : _____							
1033777-01 C	<u>05-13-21</u>	<u>12:15</u>	Plastic 500mL pH<2 w/H2SO4	1	Field Blank	g / c	COD TOC
Preservation Check: pH : _____							
1033777-01 D	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	Field Blank	g / c	Radium 226 (sub)
Preservation Check: pH : _____							

Preservation Check Performed by: Ndy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 12:15
pH _____ Cond (umho) _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) _____ or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

Anthony Lani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:17:12PM

Page 19 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Field Blank Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1033777	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1033777-01 E	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Field Blank	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033777-01 F	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Field Blank	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033777-01 G	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	Field Blank	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033777-01 H	<u>05-13-21</u>	<u>12:15</u>	AG 250mL pH<2 w/H2SO4	1	Field Blank	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 12:15
pH _____ Cond (umho) _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) _____ or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature] [Signature] 5-13-21 1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:17:12PM

Page 20 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: Big Rivers Electric Corporation Wilson Station

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Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: Field Blank Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033777 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033777-01 A	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L	1	Field Blank	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1033777-01 B	<u>05-13-21</u>	<u>12:15</u>	Plastic 500mL pH<2 w/HNO3	1	Field Blank	g / c	
Preservation Check: pH : _____							
1033777-01 C	<u>05-13-21</u>	<u>12:15</u>	Plastic 500mL pH<2 w/H2SO4	1	Field Blank	g / c	COD TOC
Preservation Check: pH : _____							
1033777-01 D	<u>05-13-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	Field Blank	g / c	Radium 226 (sub)
Preservation Check: pH : _____							

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 12:15
pH _____ Cond (umho) _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) _____ or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

Anthony Lani

5-13-21

1353



PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:17:12PM

Page 21 of 34

Chain of Custody

Scheduled for: **03/01/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **Field Blank Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1033777 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1033777-01 E	05-13-21	12:15	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Field Blank	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033777-01 F	05-13-21	12:15	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	Field Blank	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1033777-01 G	05-13-21	12:15	Plastic 1L pH<2 w/HNO3 (Sub)	1	Field Blank	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1033777-01 H	05-13-21	12:15	AG 250mL pH<2 w/H2SO4	1	Field Blank	g / c	TOC
			Preservation Check: pH : _____				

Preservation Check Performed by: Noy

Field data collected by: Travis Sneed Date (mm/dd/yy) 05-13-21 Time (24 hr) 12:15
pH _____ Cond (umho) _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) _____ or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature) [Signature]

Received by: (Signature) [Signature]

Date (mm/dd/yy) 5-13-21

Time (24 hr) 1353

June 28, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1033777 / Big River Electric C
Pace Project No.: 30422188

Dear Rob Whittington:

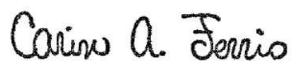
Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carin Ferris
carin.ferris@pacelabs.com
724-850-5615
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30422188001	1033777-01	Water	05/13/21 12:15	05/18/21 10:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30422188001	1033777-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

Sample: 1033777-01		Lab ID: 30422188001	Collected: 05/13/21 12:15	Received: 05/18/21 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC)	Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.000 ± 0.242	(0.493)	pCi/L	06/21/21 16:10	13982-63-3	
		C:NA	T:95%				
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.593 ± 0.355	(0.669)	pCi/L	06/21/21 11:26	15262-20-1	
		C:73%	T:103%				
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.593 ± 0.597	(1.16)	pCi/L	06/28/21 17:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

QC Batch:	451420	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422188001

METHOD BLANK: 2178771 Matrix: Water

Associated Lab Samples: 30422188001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.262 (0.554) C:NA T:97%	pCi/L	06/21/21 16:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

QC Batch:	451421	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30422188001

METHOD BLANK: 2178773 Matrix: Water

Associated Lab Samples: 30422188001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.892 ± 0.366 (0.565) C:68% T:98%	pCi/L	06/21/21 11:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1033777 / Big River Electric C

Pace Project No.: 30422188

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1033777

Workorder Name: Field Blank Wilson 092-000 Owner Received Date: 5/13/2021

Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA/
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30422188
30422188

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers										EPA 903	EPA 904	LAB USE ONLY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Cooler Temperature on Receipt 10 °C Custody Seal Y or N Y Received on Ice Y or N Y Sample Intact Y or N Y

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY

Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3888 2886

Label	<u>RM</u>
LIMS Login	<u>UPI</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	/			<u>1003801</u>	<u>Rm 5-24-21</u>
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:	/				
Sampler Name & Signature on COC:		/			
Sample Labels match COC:	/				
-Includes date/time/ID Matrix: <u>LT</u>					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):		/			
Rush Turn Around Time Requested:		/			
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:		/			
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests			/		
All containers have been checked for preservation.	/				
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	/			Initial when completed <u>Rm</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>Rm</u>	Date: <u>5-24-21</u> Survey Meter SN: <u>J563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

WO#: 30422188

Due Date: 06/09/21

PM: CAF

CLIENT: PACE_44_MVKY



Pace Greensburg Lab -Sample Container Count

30422188
11851

Profile Number

Notes

Pace KY

1033777 Big River Electric Corporation

Client

Site

Sample

Line

Item

Matrix

	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGCU	ZPLC
1											3															
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Container Codes

Glass

GJN	1	Gallon Jug with HNO3	DG9S	40mL	amber VOA vial H2SO4
AG5U	100mL	amber glass unpreserved	VG9U	40mL	clear VOA vial
AG5T	100mL	amber glass Na Thiosulfate	VG9T	40mL	clear VOA vial Na Thiosulfate
GJN	1	Gallon Jug	VG9H	40mL	clear VOA vial HCl
AG1S	1L	amber glass H2SO4	JGFU	4oz	amber wide jar
AG1H	1L	amber glass HCl	WGFU	4oz	wide jar unpreserved
AG1T	1L	amber glass Na Thiosulfate	BG2U	500mL	clear glass unpreserved
BG1U	1L	clear glass unpreserved	AG2U	500mL	amber glass unpreserved
AG3S	250mL	amber glass H2SO4	WGCU	8oz	wide jar unpreserved
AG3U	250mL	amber glass unpreserved			

Plastic / Misc.

GCUB	1	Gallon Cubitainer	EZI	5g	Encore
12GN	1/2	Gallon Cubitainer	VOAK		Kit for Volatile Solid
SP5T	120mL	Coliform Na Thiosulfate	I		Wipe/Swab
BP1N	1L	plastic HNO3	ZPLC		Ziploc Bag
BP1U	1L	plastic unpreserved			
BP3S	250mL	plastic H2SO4	WT		Water
BP3N	250mL	plastic HNO3	SL		Solid
BP3U	250mL	plastic unpreserved	OL		Non-aqueous liquid
BP3C	250mL	plastic NAOH	WP		Wipe
BP2S	500mL	plastic H2SO4			
BP2U	500mL	plastic unpreserved			

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky
1033777

30422188

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone :(724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1033777-01	Water	Sampled:05/13/2021 12:15	Specific Method
Radium Total (sub)	11/09/2021 12:15	EPA 904.0 Radium Sum C	
Radium 228 (sub)	11/09/2021 12:15	EPA 904.0 Radium Sum C	
Radium 226 (sub)	11/09/2021 12:15	EPA 903.1	

Released By *Ammy Lavi* 5-17-21

Received By _____ Date _____

Released By _____ Date _____ Received By _____ Date _____

Certificate of Analysis 1093013

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:25

Project Name: MW-5 Wilson 092-00004

Workorder: 1093013

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/30/2021 15:12.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093013-01	MW5/	Groundwater	09/30/2021 10:25	09/30/2021 15:12	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093013-01	Field Conductance	3900			
	Field pH	6.19			
	Field Temp (C)	18.64			

ANALYTICAL RESULTS

Lab Sample ID: **1093013-01**

Description: **MW5**

Sample Collection Date Time: 09/30/2021 10:25

Sample Received Date Time: 09/30/2021 15:12

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Arsenic	0.0026		mg/L	0.0010	0.0004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Barium	0.010		mg/L	0.004	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Boron	0.70		mg/L	0.10	0.10	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:00	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Calcium	582	D1	mg/L	40.0	13.0	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:25	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Cobalt	0.008		mg/L	0.004	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Copper	ND	u, L1	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Iron	6.95		mg/L	0.100	0.050	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:00	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Lithium	0.03		mg/L	0.02	0.005	SW846-6020 A	10/04/2021 08:57	10/08/2021 10:37	AKB
Magnesium	276	D1	mg/L	20.0	9.00	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:25	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Molybdenum	0.004	J	mg/L	0.01	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Nickel	0.004		mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Potassium	13.2	D1	mg/L	2.50	1.10	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:19	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Sodium	89.9	D1	mg/L	2.60	1.00	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:06	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP
Zinc	0.01	J	mg/L	0.02	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:21	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	490		mg/L	4		2320 B-2011	10/11/2021 14:55	10/11/2021 14:55	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	10/11/2021 14:55	10/11/2021 14:55	HMF
Total Alkalinity	490		mg/L	4		2320 B-2011	10/11/2021 14:55	10/11/2021 14:55	HMF
Chemical Oxygen Demand	20		mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:52	KBZ
Specific Conductance (Lab)	3920		umhos/cm	1	1	2510 B-2011	10/01/2021 09:47	10/01/2021 09:47	JLW
Hardness as CaCO3	2010	D	mg/L	5	5	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	3830		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.8		mg/L	0.5	0.4	5310 C-2011	10/06/2021 13:25	10/12/2021 15:05	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.070	_Sub	pCi/L			EPA 903.1	11/09/2021 09:07	11/09/2021 09:09	RCW
See Attached Subcontract Report	1.55	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/09/2021 09:07	11/09/2021 09:09	RCW
See Attached Subcontract Report	1.62	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/09/2021 09:07	11/09/2021 09:09	RCW



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	303	D	mg/L	10.0	7.2	EPA 300.0 REV 2.1	10/11/2021 13:41	10/11/2021 13:41	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	10/11/2021 13:26	10/11/2021 13:26	CSC
Sulfate	2420	D	mg/L	200	100	EPA 300.0 REV 2.1	10/11/2021 13:56	10/11/2021 13:56	CSC

Notes for work order 1093013

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
E	Concentration exceeds calibration range
J	Estimated value.
L1	The associated blank spike recovery was above method acceptance limits.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Blank (BAJ0081-BLK1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 15:59

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAJ0081-BLK2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:03

Calcium	ND	0.40	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAJ0081-BLK3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:54

Molybdenum	ND	0.01	mg/L							U
Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	0.005	0.02	mg/L							J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

LCS (BAJ0081-BS1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 16:02

Boron	0.12	0.10	mg/L	0.125		97.2	85-115			
Calcium	6.27	0.40	mg/L	6.25		100	85-115			
Iron	6.20	0.100	mg/L	6.25		99.2	85-115			
Magnesium	5.27	0.200	mg/L	6.25		84.3	85-115			L1
Potassium	7.80	0.50	mg/L	6.25		125	85-115			L1
Sodium	6.18	0.26	mg/L	6.25		98.9	85-115			

LCS (BAJ0081-BS2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:06

Calcium	6.21	0.40	mg/L	6.25		99.4	85-115			
Magnesium	6.06	0.200	mg/L	6.25		97.0	85-115			
Potassium	6.22	0.50	mg/L	6.25		99.6	85-115			
Sodium	6.28	0.26	mg/L	6.25		101	85-115			

LCS (BAJ0081-BS3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:56

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0641	0.0010	mg/L	0.0625		103	85-115			
Barium	0.062	0.004	mg/L	0.0625		98.6	85-115			
Beryllium	0.0628	0.0020	mg/L	0.0625		100	85-115			
Cadmium	0.0625	0.0010	mg/L	0.0625		100	85-115			
Chromium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		102	85-115			
Copper	0.073	0.003	mg/L	0.0625		117	85-115			L1
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		98.9	85-115			
Nickel	0.063	0.003	mg/L	0.0625		101	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0636	0.0020	mg/L	0.0625		102	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike (BAJ0081-MS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:47

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120			M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120			M3
Iron	6.43	0.100	mg/L	6.25	58.4	NR	80-120			M1
Magnesium	12.0	0.200	mg/L	6.25	196	NR	80-120			M3
Potassium	2.02	0.50	mg/L	6.25	12.2	NR	80-120			M1
Sodium	11.3	0.26	mg/L	6.25	110	NR	80-120			M3

Matrix Spike (BAJ0081-MS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:29

Antimony	0.062	0.005	mg/L	0.0625	ND	99.6	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	91.3	80-120			
Mercury	0.0025	0.0005	mg/L	0.00250	ND	99.2	80-120			
Arsenic	0.0623	0.0010	mg/L	0.0625	0.0015	97.3	80-120			
Barium	0.064	0.004	mg/L	0.0625	0.007	91.9	80-120			
Beryllium	0.0485	0.0020	mg/L	0.0625	ND	77.6	80-120			M2
Cadmium	0.0580	0.0010	mg/L	0.0625	0.0038	86.7	80-120			
Chromium	0.0588	0.0020	mg/L	0.0625	ND	94.1	80-120			
Cobalt	0.294	0.004	mg/L	0.0625	0.253	66.4	80-120			M2
Copper	0.055	0.003	mg/L	0.0625	ND	87.8	80-120			
Lead	0.054	0.002	mg/L	0.0625	ND	86.8	80-120			
Lithium	0.17	0.02	mg/L	0.0625	0.14	53.0	80-120			M2
Nickel	0.616	0.003	mg/L	0.0625	0.570	74.1	80-120			M3
Selenium	0.061	0.003	mg/L	0.0625	ND	97.9	80-120			
Thallium	0.0548	0.0020	mg/L	0.0625	0.0002	87.5	80-120			
Zinc	0.95	0.02	mg/L	0.0625	0.83	189	80-120			M3, E

Matrix Spike Dup (BAJ0081-MSD1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:50

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120		20	M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120	0.0979	20	M3
Iron	6.53	0.100	mg/L	6.25	58.4	NR	80-120	1.56	20	M1
Magnesium	12.1	0.200	mg/L	6.25	196	NR	80-120	0.784	20	M3
Potassium	2.09	0.50	mg/L	6.25	12.2	NR	80-120	3.60	20	M1
Sodium	11.4	0.26	mg/L	6.25	110	NR	80-120	0.533	20	M3

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike Dup (BAJ0081-MSD2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:31

Molybdenum	0.06	0.01	mg/L	0.0625	0.003	98.8	80-120	7.59	20	
Mercury	0.0026	0.0005	mg/L	0.00250	ND	105	80-120	6.02	20	
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120	8.87	20	
Arsenic	0.0672	0.0010	mg/L	0.0625	0.0015	105	80-120	7.55	20	
Barium	0.071	0.004	mg/L	0.0625	0.007	102	80-120	9.31	20	
Beryllium	0.0522	0.0020	mg/L	0.0625	ND	83.5	80-120	7.31	20	
Cadmium	0.0633	0.0010	mg/L	0.0625	0.0038	95.2	80-120	8.76	20	
Chromium	0.0629	0.0020	mg/L	0.0625	ND	101	80-120	6.67	20	
Cobalt	0.298	0.004	mg/L	0.0625	0.253	72.4	80-120	1.26	20	M2
Copper	0.059	0.003	mg/L	0.0625	ND	94.5	80-120	7.33	20	
Lead	0.059	0.002	mg/L	0.0625	ND	94.5	80-120	8.48	20	
Lithium	0.17	0.02	mg/L	0.0625	0.14	60.5	80-120	2.74	20	M2
Nickel	0.623	0.003	mg/L	0.0625	0.570	85.6	80-120	1.16	20	
Selenium	0.067	0.003	mg/L	0.0625	ND	108	80-120	9.43	20	
Thallium	0.0592	0.0020	mg/L	0.0625	0.0002	94.4	80-120	7.56	20	
Zinc	0.96	0.02	mg/L	0.0625	0.83	198	80-120	0.561	20	M3, E

Post Spike (BAJ0081-PS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:53

Boron	28.6		ug/L	125	166	NR	75-125			M1
Calcium	50400		ug/L	6250	509000	NR	75-125			M3
Iron	6370		ug/L	6250	58400	NR	75-125			M1
Magnesium	11900		ug/L	6250	196000	NR	75-125			M3
Potassium	2020		ug/L	6250	12200	NR	75-125			M1
Sodium	11100		ug/L	6250	110000	NR	75-125			M3

Post Spike (BAJ0081-PS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:33

Antimony	65.0		ug/L	62.5	0.051	104	75-125			
Molybdenum	63.8		ug/L	62.5	2.82	97.6	75-125			
Mercury	2.70		ug/L	2.50	0.0210	107	75-125			
Arsenic	67.2		ug/L	62.5	1.52	105	75-125			
Barium	70.5		ug/L	62.5	6.87	102	75-125			
Beryllium	52.6		ug/L	62.5	0.0260	84.1	75-125			
Cadmium	63.2		ug/L	62.5	3.82	95.1	75-125			
Chromium	62.8		ug/L	62.5	0.379	99.9	75-125			
Cobalt	292		ug/L	62.5	253	63.5	75-125			M2
Copper	59.1		ug/L	62.5	-0.345	94.5	75-125			
Lead	59.2		ug/L	62.5	-0.019	94.7	75-115			
Lithium	171		ug/L	62.5	135	56.3	75-125			M2
Nickel	616		ug/L	62.5	570	74.0	75-125			M3
Selenium	66.8		ug/L	62.5	0.243	107	75-125			
Thallium	59.0		ug/L	62.5	0.182	94.0	75-125			
Zinc	936		ug/L	62.5	832	167	75-125			M3

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3601 - Default Prep Wet Chem										
Blank (BAI3601-BLK1)										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	ND	1	mg/L							U
LCS (BAI3601-BS1)										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			
Duplicate (BAI3601-DUP1) Source: 1093827-02										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	
Matrix Spike (BAI3601-MS1) Source: 1093827-02										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			
Batch BAJ0043 - Default Prep Wet Chem										
Blank (BAJ0043-BLK1)										
Prepared: 10/1/2021 9:42, Analyzed: 10/1/2021 9:42										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BAJ0043-BS1)										
Prepared: 10/1/2021 9:43, Analyzed: 10/1/2021 9:43										
Specific Conductance (Lab)	1420	1	umhos/cm				80-120			
Duplicate (BAJ0043-DUP1) Source: 1093016-01										
Prepared: 10/1/2021 9:58, Analyzed: 10/1/2021 9:58										
Specific Conductance (Lab)	1890	1	umhos/cm		1860			1.23	0.938	Y1
Batch BAJ0539 - Default Prep Wet Chem										
Blank (BAJ0539-BLK1)										
Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37										
Total Dissolved Solids	ND	25	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0539 - Default Prep Wet Chem

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Matrix Spike Dup (BAJ0581-MSD1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Batch BAJ0805 - Default Prep Wet Chem

Blank (BAJ0805-BLK1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:23

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0805 - Default Prep Wet Chem

LCS (BAJ0805-BS1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:02

Total Organic Carbon	4.9	0.5	mg/L	5.00		97.3	80-120			

Duplicate (BAJ0805-DUP1) Source: 1093014-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 18:57

Total Organic Carbon	1.4	0.5	mg/L		1.4			2.11	25	

Duplicate (BAJ0805-DUP2) Source: 1102745-02

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 0:55

Total Organic Carbon	0.6	0.5	mg/L		ND				25	

Matrix Spike (BAJ0805-MS1) Source: 1093015-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 19:18

Total Organic Carbon	4.0	0.5	mg/L	2.50	1.2	109	80-120			

Matrix Spike (BAJ0805-MS2) Source: 1095000-01

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 1:16

Total Organic Carbon	8.7	0.5	mg/L	5.00	3.7	100	80-120			

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK1)

Prepared: 10/11/2021 12:41, Analyzed: 10/11/2021 12:41

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK2)

Prepared: 10/11/2021 15:42, Analyzed: 10/11/2021 15:42

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAJ1329-BLK3)

Prepared: 10/11/2021 16:03, Analyzed: 10/11/2021 16:03

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK4)

Prepared: 10/11/2021 16:21, Analyzed: 10/11/2021 16:21

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAJ1329-BS1)

Prepared: 10/11/2021 15:37, Analyzed: 10/11/2021 15:37

Total Alkalinity	249	4	mg/L	235		106	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	222	4	mg/L	225		98.5	0-200			

LCS (BAJ1329-BS2)

Prepared: 10/11/2021 15:59, Analyzed: 10/11/2021 15:59

Total Alkalinity	249	4	mg/L	235		106	80-120			
Carbonate Alkalinity as CaCO ₃	220	4	mg/L	225		97.6	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

Duplicate (BAJ1329-DUP1)

Source: 1093017-01

Prepared: 10/11/2021 15:26, Analyzed: 10/11/2021 15:26

Total Alkalinity	272	4	mg/L		268			1.56	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	272	4	mg/L		268			1.56	10	

Duplicate (BAJ1329-DUP2)

Source: 1093019-01

Prepared: 10/11/2021 15:53, Analyzed: 10/11/2021 15:53

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Total Alkalinity	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAJ1329-MS1)

Source: 1093017-01

Prepared: 10/11/2021 15:32, Analyzed: 10/11/2021 15:32

Total Alkalinity	292	4	mg/L	50.0	268	48.4	80-120			M3

Matrix Spike (BAJ1329-MS2)

Source: 1093019-01

Prepared: 10/11/2021 15:55, Analyzed: 10/11/2021 15:55

Total Alkalinity	49	4	mg/L	50.0	ND	97.8	80-120			

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1356 - Default Prep IC

Blank (BAJ1356-BLK1)

Prepared: 10/11/2021 12:27, Analyzed: 10/11/2021 12:27

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

LCS (BAJ1356-BS1)

Prepared: 10/11/2021 12:12, Analyzed: 10/11/2021 12:12

Chloride	9.7		mg/L	10.0		96.9	90-110			
Fluoride	9.63		mg/L	10.0		96.3	90-110			
Sulfate	9.9		mg/L	10.0		98.6	90-110			

Matrix Spike (BAJ1356-MS1)

Source: 1093016-01

Prepared: 10/11/2021 16:54, Analyzed: 10/11/2021 16:54

Sulfate	275		mg/L	10.0	1960	NR	80-120			M2
Chloride	10.2		mg/L	10.0	3.5	66.7	80-120			M2
Fluoride	6.14		mg/L	10.0	0.26	58.9	80-120			M2

Matrix Spike Dup (BAJ1356-MSD1)

Source: 1093016-01

Prepared: 10/11/2021 17:09, Analyzed: 10/11/2021 17:09

Chloride	11.4		mg/L	10.0	3.5	78.8	80-120	11.3	10	M2, Y2
Sulfate	275		mg/L	10.0	1960	NR	80-120	0.153	20	M2
Fluoride	7.41		mg/L	10.0	0.26	71.6	80-120	18.7	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093013

Shipped By: Client

Temperature: 1.50° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **09/06/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-5 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Tina Smith
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1093013

Sample ID#

Date

(mm/dd/yy):

Collection

Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

Sample ID#	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093013-01 A	9-30-21	10:25	Plastic 1L	1	MW5	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1093013-01 B	9-30-21	10:25	Plastic 500mL pH<2 w/HNO3	1	MW5	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B

Preservation Check: pH: ☒

Sample ID#	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093013-01 C	9-30-21	10:25	Plastic 500mL pH<2 w/H2SO4	1	MW5	g / c	COD TOC

Preservation Check: pH: ☒

Sample ID#	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093013-01 D	9-30-21	10:25	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW5	g / c	Radium 226 (sub)

Preservation Check: pH: ☒

Thermometer Serial Number

☒ 181390287

☐ 181460057

Temp 1.5 °C

Preservation Check Performed by: ARI

Field data collected by: Tina Smith Date (mm/dd/yy) 9-30-21 Time (24 hr) 10:25
pH 6.19 Cond (umho) 3.90 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 18.64 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Tina Smith

Ammy Lari

9-30-21

1512



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:39AM

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Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-5 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1093013-01 E	<u>9-30-21</u>	<u>10:25</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH: ☒				
1093013-01 F	<u>9-30-21</u>	<u>10:25</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH: ☒				
1093013-01 G	<u>9-30-21</u>	<u>10:25</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH: ☒				
1093013-01 H	<u>9-30-21</u>	<u>10:25</u>	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH: ☒				

Preservation Check Performed by: ACU

Field data collected by: Travis Speed Date (mm/dd/yy) 9-30-21 Time (24 hr) 10:25
pH 6.19 Cond (umho) 3.90 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 18.64 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

9-30-21

1512

☐ PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:39AM

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November 08, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093013/Big Rivers Electric Co
Pace Project No.: 30446189

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: 1093013/Big Rivers Electric Co

Pace Project No.: 30446189

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093013/Big Rivers Electric Co

Pace Project No.: 30446189

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30446189001	1093013-01	Drinking Water	09/30/21 10:25	10/16/21 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093013/Big Rivers Electric Co

Pace Project No.: 30446189

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30446189001	1093013-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093013/Big Rivers Electric Co

Pace Project No.: 30446189

Sample: 1093013-01 **Lab ID: 30446189001** Collected: 09/30/21 10:25 Received: 10/16/21 10:30 Matrix: Drinking Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.0698 ± 0.237 (0.513) C:NA T:106%	pCi/L	10/29/21 12:36	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.55 ± 0.479 (0.785) C:66% T:93%	pCi/L	11/05/21 14:18	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.62 ± 0.716 (1.30)	pCi/L	11/08/21 17:16	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093013/Big Rivers Electric Co

Pace Project No.: 30446189

QC Batch: 470650

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446189001

METHOD BLANK: 2272166

Matrix: Water

Associated Lab Samples: 30446189001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.949 ± 0.482 (0.835) C:67% T:83%	pCi/L	11/05/21 14:16	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093013/Big Rivers Electric Co

Pace Project No.: 30446189

QC Batch: 469038

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446189001

METHOD BLANK: 2264926

Matrix: Water

Associated Lab Samples: 30446189001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.124 ± 0.284 (0.668) C:NA T:100%	pCi/L	10/29/21 12:08	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093013/Big Rivers Electric Co
Pace Project No.: 30446189

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1093013 Workorder Name: MW-5 Wilson 092-00004 Owner Received Date: 9/30/2021 Results Requested By: _____

Report To: _____ Subcontract To: _____

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30446189



Preserved Containers

Item		Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903	EPA 904	LAB USE ONLY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Cooler Temperature on Receipt N/A °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY Project # _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3389 3427

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Label <u>JAG</u>
LIMS Login <u>Rp</u>

Comments:	Yes	No	N/A	pH paper Lot# <u>10D0411</u>	Date and Initials of person examining contents: <u>JAG 10/19/21</u>
Chain of Custody Present:	☒	☐	☐	1.	
Chain of Custody Filled Out:	☒	☐	☐	2.	
Chain of Custody Relinquished:	☒	☐	☐	3.	
Sampler Name & Signature on COC:	☐	☒	☐	4.	
Sample Labels match COC:	☐	☒	☐	5.	<u>no times or dates on bottles</u>
-Includes date/time/ID Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	☒	☐	☐	6.	
Short Hold Time Analysis (<72hr remaining):	☐	☒	☐	7.	
Rush Turn Around Time Requested:	☐	☒	☐	8.	
Sufficient Volume:	☒	☐	☐	9.	
Correct Containers Used:	☒	☐	☐	10.	
-Pace Containers Used:	☐	☒	☐		
Containers Intact:	☒	☐	☐	11.	
Orthophosphate field filtered	☐	☐	☒	12.	
Hex Cr Aqueous sample field filtered	☐	☐	☒	13.	
Organic Samples checked for dechlorination:	☐	☐	☒	14.	
Filtered volume received for Dissolved tests	☐	☐	☒	15.	
All containers have been checked for preservation.	☒	☐	☐	16.	
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	☒	☐	☐	Initial when completed <u>JAG</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	☐	☐	☒	17.	
Trip Blank Present:	☐	☒	☐	18.	
Trip Blank Custody Seals Present	☐	☐	☒		
Rad Samples Screened < 0.5 mrem/hr	☒	☐	☐	Initial when completed: <u>JAG</u>	Date: <u>10/19/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

PM: JLB Due Date: 11/08/21
CLIENT: PACE_44_MVKY

NO#: 30446189

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1093013

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093013-01	Water	Sampled:09/30/2021 10:25	Specific Method 001
Radium Total (sub)	03/29/2022 10:25	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/29/2022 10:25	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/29/2022 10:25	EPA 903.1	

WO# : 30446189

PM: JLB

Due Date: 11/08/21

CLIENT: PACE_44_MVKY

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1093014

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:24

Project Name: MW-6 Wilson 092-00004

Workorder: 1093014

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/30/2021 15:12.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093014-01	MW6/	Groundwater	09/30/2021 12:10	09/30/2021 15:12	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093014-01	Field Conductance	3180			
	Field pH	6.13			
	Field Temp (C)	17.87			

ANALYTICAL RESULTS

Lab Sample ID: **1093014-01**

Description: **MW6**

Sample Collection Date Time: 09/30/2021 12:10

Sample Received Date Time: 09/30/2021 15:12

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Arsenic	0.0051		mg/L	0.0010	0.0004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Barium	0.012		mg/L	0.004	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Boron	0.51		mg/L	0.10	0.10	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:09	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Calcium	473	D1	mg/L	40.0	13.0	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:44	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Cobalt	0.008		mg/L	0.004	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Copper	ND	u, L1	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Iron	5.94		mg/L	0.100	0.050	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:09	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Lithium	0.05		mg/L	0.02	0.005	SW846-6020 A	10/04/2021 08:57	10/08/2021 10:41	AKB
Magnesium	232	D1	mg/L	20.0	9.00	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:44	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Molybdenum	0.007	J	mg/L	0.01	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Nickel	0.014		mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Potassium	11.5	D1	mg/L	2.50	1.10	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:28	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Sodium	41.4	D1	mg/L	1.30	0.50	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:12	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP
Zinc	0.02		mg/L	0.02	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:23	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	499		mg/L	4		2320 B-2011	10/11/2021 15:02	10/11/2021 15:02	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	10/11/2021 15:02	10/11/2021 15:02	HMF
Total Alkalinity	499		mg/L	4		2320 B-2011	10/11/2021 15:02	10/11/2021 15:02	HMF
Chemical Oxygen Demand	8		mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:54	KBZ
Specific Conductance (Lab)	3170		umhos/cm	1	1	2510 B-2011	10/01/2021 09:48	10/01/2021 09:48	JLW
Hardness as CaCO3	2430	D	mg/L	5	5	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	3120		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.4		mg/L	0.5	0.4	5310 C-2011	10/06/2021 13:25	10/12/2021 15:26	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.082	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	0.528	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	0.610	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

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Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	33.0	D	mg/L	1.0	0.7	EPA 300.0 REV 2.1	10/11/2021 14:55	10/11/2021 14:55	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	10/11/2021 14:11	10/11/2021 14:11	CSC
Sulfate	2200	D	mg/L	200	100	EPA 300.0 REV 2.1	10/11/2021 14:25	10/11/2021 14:25	CSC

Notes for work order 1093014

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
E	Concentration exceeds calibration range
J	Estimated value.
L1	The associated blank spike recovery was above method acceptance limits.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Blank (BAJ0081-BLK1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 15:59

Boron	ND	0.10	mg/L						U
Calcium	ND	0.40	mg/L						U
Iron	ND	0.100	mg/L						U
Magnesium	ND	0.200	mg/L						U
Potassium	ND	0.50	mg/L						U
Sodium	ND	0.26	mg/L						U

Blank (BAJ0081-BLK2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:03

Calcium	ND	0.40	mg/L						U
Magnesium	ND	0.200	mg/L						U
Potassium	ND	0.50	mg/L						U
Sodium	ND	0.26	mg/L						U

Blank (BAJ0081-BLK3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:54

Mercury	ND	0.0005	mg/L						U
Molybdenum	ND	0.01	mg/L						U
Antimony	ND	0.005	mg/L						U
Arsenic	ND	0.0010	mg/L						U
Barium	ND	0.004	mg/L						U
Beryllium	ND	0.0020	mg/L						U
Cadmium	ND	0.0010	mg/L						U
Chromium	ND	0.0020	mg/L						U
Cobalt	ND	0.004	mg/L						U
Copper	ND	0.003	mg/L						U
Lead	ND	0.002	mg/L						U
Lithium	ND	0.02	mg/L						U
Nickel	ND	0.003	mg/L						U
Selenium	ND	0.003	mg/L						U
Thallium	ND	0.0020	mg/L						U
Zinc	0.005	0.02	mg/L						J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

LCS (BAJ0081-BS1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 16:02

Boron	0.12	0.10	mg/L	0.125		97.2	85-115			
Calcium	6.27	0.40	mg/L	6.25		100	85-115			
Iron	6.20	0.100	mg/L	6.25		99.2	85-115			
Magnesium	5.27	0.200	mg/L	6.25		84.3	85-115			L1
Potassium	7.80	0.50	mg/L	6.25		125	85-115			L1
Sodium	6.18	0.26	mg/L	6.25		98.9	85-115			

LCS (BAJ0081-BS2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:06

Calcium	6.21	0.40	mg/L	6.25		99.4	85-115			
Magnesium	6.06	0.200	mg/L	6.25		97.0	85-115			
Potassium	6.22	0.50	mg/L	6.25		99.6	85-115			
Sodium	6.28	0.26	mg/L	6.25		101	85-115			

LCS (BAJ0081-BS3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:56

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		106	85-115			
Arsenic	0.0641	0.0010	mg/L	0.0625		103	85-115			
Barium	0.062	0.004	mg/L	0.0625		98.6	85-115			
Beryllium	0.0628	0.0020	mg/L	0.0625		100	85-115			
Cadmium	0.0625	0.0010	mg/L	0.0625		100	85-115			
Chromium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		102	85-115			
Copper	0.073	0.003	mg/L	0.0625		117	85-115			L1
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		98.9	85-115			
Nickel	0.063	0.003	mg/L	0.0625		101	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0636	0.0020	mg/L	0.0625		102	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike (BAJ0081-MS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:47

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120			M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120			M3
Iron	6.43	0.100	mg/L	6.25	58.4	NR	80-120			M1
Magnesium	12.0	0.200	mg/L	6.25	196	NR	80-120			M3
Potassium	2.02	0.50	mg/L	6.25	12.2	NR	80-120			M1
Sodium	11.3	0.26	mg/L	6.25	110	NR	80-120			M3

Matrix Spike (BAJ0081-MS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:29

Antimony	0.062	0.005	mg/L	0.0625	ND	99.6	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	91.3	80-120			
Mercury	0.0025	0.0005	mg/L	0.00250	ND	99.2	80-120			
Arsenic	0.0623	0.0010	mg/L	0.0625	0.0015	97.3	80-120			
Barium	0.064	0.004	mg/L	0.0625	0.007	91.9	80-120			
Beryllium	0.0485	0.0020	mg/L	0.0625	ND	77.6	80-120			M2
Cadmium	0.0580	0.0010	mg/L	0.0625	0.0038	86.7	80-120			
Chromium	0.0588	0.0020	mg/L	0.0625	ND	94.1	80-120			
Cobalt	0.294	0.004	mg/L	0.0625	0.253	66.4	80-120			M2
Copper	0.055	0.003	mg/L	0.0625	ND	87.8	80-120			
Lead	0.054	0.002	mg/L	0.0625	ND	86.8	80-120			
Lithium	0.17	0.02	mg/L	0.0625	0.14	53.0	80-120			M2
Nickel	0.616	0.003	mg/L	0.0625	0.570	74.1	80-120			M3
Selenium	0.061	0.003	mg/L	0.0625	ND	97.9	80-120			
Thallium	0.0548	0.0020	mg/L	0.0625	0.0002	87.5	80-120			
Zinc	0.95	0.02	mg/L	0.0625	0.83	189	80-120			M3, E

Matrix Spike Dup (BAJ0081-MSD1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:50

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120		20	M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120	0.0979	20	M3
Iron	6.53	0.100	mg/L	6.25	58.4	NR	80-120	1.56	20	M1
Magnesium	12.1	0.200	mg/L	6.25	196	NR	80-120	0.784	20	M3
Potassium	2.09	0.50	mg/L	6.25	12.2	NR	80-120	3.60	20	M1
Sodium	11.4	0.26	mg/L	6.25	110	NR	80-120	0.533	20	M3

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike Dup (BAJ0081-MSD2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:31

Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120	8.87	20	
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	98.8	80-120	7.59	20	
Mercury	0.0026	0.0005	mg/L	0.00250	ND	105	80-120	6.02	20	
Arsenic	0.0672	0.0010	mg/L	0.0625	0.0015	105	80-120	7.55	20	
Barium	0.071	0.004	mg/L	0.0625	0.007	102	80-120	9.31	20	
Beryllium	0.0522	0.0020	mg/L	0.0625	ND	83.5	80-120	7.31	20	
Cadmium	0.0633	0.0010	mg/L	0.0625	0.0038	95.2	80-120	8.76	20	
Chromium	0.0629	0.0020	mg/L	0.0625	ND	101	80-120	6.67	20	
Cobalt	0.298	0.004	mg/L	0.0625	0.253	72.4	80-120	1.26	20	M2
Copper	0.059	0.003	mg/L	0.0625	ND	94.5	80-120	7.33	20	
Lead	0.059	0.002	mg/L	0.0625	ND	94.5	80-120	8.48	20	
Lithium	0.17	0.02	mg/L	0.0625	0.14	60.5	80-120	2.74	20	M2
Nickel	0.623	0.003	mg/L	0.0625	0.570	85.6	80-120	1.16	20	
Selenium	0.067	0.003	mg/L	0.0625	ND	108	80-120	9.43	20	
Thallium	0.0592	0.0020	mg/L	0.0625	0.0002	94.4	80-120	7.56	20	
Zinc	0.96	0.02	mg/L	0.0625	0.83	198	80-120	0.561	20	M3, E

Post Spike (BAJ0081-PS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:53

Boron	28.6		ug/L	125	166	NR	75-125			M1
Calcium	50400		ug/L	6250	509000	NR	75-125			M3
Iron	6370		ug/L	6250	58400	NR	75-125			M1
Magnesium	11900		ug/L	6250	196000	NR	75-125			M3
Potassium	2020		ug/L	6250	12200	NR	75-125			M1
Sodium	11100		ug/L	6250	110000	NR	75-125			M3

Post Spike (BAJ0081-PS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:33

Antimony	65.0		ug/L	62.5	0.051	104	75-125			
Molybdenum	63.8		ug/L	62.5	2.82	97.6	75-125			
Mercury	2.70		ug/L	2.50	0.0210	107	75-125			
Arsenic	67.2		ug/L	62.5	1.52	105	75-125			
Barium	70.5		ug/L	62.5	6.87	102	75-125			
Beryllium	52.6		ug/L	62.5	0.0260	84.1	75-125			
Cadmium	63.2		ug/L	62.5	3.82	95.1	75-125			
Chromium	62.8		ug/L	62.5	0.379	99.9	75-125			
Cobalt	292		ug/L	62.5	253	63.5	75-125			M2
Copper	59.1		ug/L	62.5	-0.345	94.5	75-125			
Lead	59.2		ug/L	62.5	-0.019	94.7	75-115			
Lithium	171		ug/L	62.5	135	56.3	75-125			M2
Nickel	616		ug/L	62.5	570	74.0	75-125			M3
Selenium	66.8		ug/L	62.5	0.243	107	75-125			
Thallium	59.0		ug/L	62.5	0.182	94.0	75-125			
Zinc	936		ug/L	62.5	832	167	75-125			M3

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3601 - Default Prep Wet Chem

Blank (BAI3601-BLK1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAI3601-BS1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			

Duplicate (BAI3601-DUP1) Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	

Matrix Spike (BAI3601-MS1) Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			

Batch BAJ0043 - Default Prep Wet Chem

Blank (BAJ0043-BLK1)

Prepared: 10/1/2021 9:42, Analyzed: 10/1/2021 9:42

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAJ0043-BS1)

Prepared: 10/1/2021 9:43, Analyzed: 10/1/2021 9:43

Specific Conductance (Lab)	1420	1	umhos/cm				80-120			

Duplicate (BAJ0043-DUP1) Source: 1093016-01

Prepared: 10/1/2021 9:58, Analyzed: 10/1/2021 9:58

Specific Conductance (Lab)	1890	1	umhos/cm		1860			1.23	0.938	Y1

Batch BAJ0539 - Default Prep Wet Chem

Blank (BAJ0539-BLK1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	ND	25	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0539 - Default Prep Wet Chem

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Matrix Spike Dup (BAJ0581-MSD1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Batch BAJ0805 - Default Prep Wet Chem

Blank (BAJ0805-BLK1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:23

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0805 - Default Prep Wet Chem

LCS (BAJ0805-BS1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:02

Total Organic Carbon	4.9	0.5	mg/L	5.00		97.3	80-120			

Duplicate (BAJ0805-DUP1) Source: 1093014-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 18:57

Total Organic Carbon	1.4	0.5	mg/L		1.4			2.11	25	

Duplicate (BAJ0805-DUP2) Source: 1102745-02

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 0:55

Total Organic Carbon	0.6	0.5	mg/L		ND				25	

Matrix Spike (BAJ0805-MS1) Source: 1093015-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 19:18

Total Organic Carbon	4.0	0.5	mg/L	2.50	1.2	109	80-120			

Matrix Spike (BAJ0805-MS2) Source: 1095000-01

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 1:16

Total Organic Carbon	8.7	0.5	mg/L	5.00	3.7	100	80-120			

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK1)

Prepared: 10/11/2021 12:41, Analyzed: 10/11/2021 12:41

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK2)

Prepared: 10/11/2021 15:42, Analyzed: 10/11/2021 15:42

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK3)

Prepared: 10/11/2021 16:03, Analyzed: 10/11/2021 16:03

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK4)

Prepared: 10/11/2021 16:21, Analyzed: 10/11/2021 16:21

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAJ1329-BS1)

Prepared: 10/11/2021 15:37, Analyzed: 10/11/2021 15:37

Carbonate Alkalinity as CaCO ₃	222	4	mg/L	225		98.5	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	249	4	mg/L	235		106	80-120			

LCS (BAJ1329-BS2)

Prepared: 10/11/2021 15:59, Analyzed: 10/11/2021 15:59

Carbonate Alkalinity as CaCO ₃	220	4	mg/L	225		97.6	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	249	4	mg/L	235		106	80-120			

Duplicate (BAJ1329-DUP1)

Source: 1093017-01

Prepared: 10/11/2021 15:26, Analyzed: 10/11/2021 15:26

Total Alkalinity	272	4	mg/L		268			1.56	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	272	4	mg/L		268			1.56	10	

Duplicate (BAJ1329-DUP2)

Source: 1093019-01

Prepared: 10/11/2021 15:53, Analyzed: 10/11/2021 15:53

Total Alkalinity	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAJ1329-MS1)

Source: 1093017-01

Prepared: 10/11/2021 15:32, Analyzed: 10/11/2021 15:32

Total Alkalinity	292	4	mg/L	50.0	268	48.4	80-120			M3

Matrix Spike (BAJ1329-MS2)

Source: 1093019-01

Prepared: 10/11/2021 15:55, Analyzed: 10/11/2021 15:55

Total Alkalinity	49	4	mg/L	50.0	ND	97.8	80-120			

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1356 - Default Prep IC

Blank (BAJ1356-BLK1)

Prepared: 10/11/2021 12:27, Analyzed: 10/11/2021 12:27

Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.20	mg/L							U

LCS (BAJ1356-BS1)

Prepared: 10/11/2021 12:12, Analyzed: 10/11/2021 12:12

Sulfate	9.9		mg/L	10.0		98.6	90-110			
Chloride	9.7		mg/L	10.0		96.9	90-110			
Fluoride	9.63		mg/L	10.0		96.3	90-110			

Matrix Spike (BAJ1356-MS1)

Source: 1093016-01

Prepared: 10/11/2021 16:54, Analyzed: 10/11/2021 16:54

Fluoride	6.14		mg/L	10.0	0.26	58.9	80-120			M2
Sulfate	275		mg/L	10.0	1960	NR	80-120			M2
Chloride	10.2		mg/L	10.0	3.5	66.7	80-120			M2

Matrix Spike Dup (BAJ1356-MSD1)

Source: 1093016-01

Prepared: 10/11/2021 17:09, Analyzed: 10/11/2021 17:09

Fluoride	7.41		mg/L	10.0	0.26	71.6	80-120	18.7	20	M2
Chloride	11.4		mg/L	10.0	3.5	78.8	80-120	11.3	10	M2, Y2
Sulfate	275		mg/L	10.0	1960	NR	80-120	0.153	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093014

Shipped By: Client

Temperature: 1.50° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-6 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Trevi Speed

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1093014 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1093014-01 A	<u>9-30-21</u>	<u>12:10</u>	Plastic 1L	1	MW6	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1093014-01 B	<u>9-30-21</u>	<u>12:10</u>	Plastic 500mL pH<2 w/HNO3	1	MW6	g / c	

Preservation Check: pH: ✓

1093014-01 C 9-30-21 12:10 Plastic 500mL pH<2 w/H2SO4 1 MW6 g / c COD TOC

Preservation Check: pH: ✓

1093014-01 D 9-30-21 12:10 Plastic 1L pH<2 w/HNO3 Rad 226 (Sub) 1 MW6 g / c Radium 226 (sub)

Preservation Check: pH: ✓

Thermometer Serial Number

✓ 181390287

• 181460057

Temp 1.5 °C

Preservation Check Performed by: ARI

Field data collected by: Trevi Speed Date (mm/dd/yy) 9-30-21 Time (24 hr) 12:10
pH 6.13 Cond (umho/cm) 3.18 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.87 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Trevi Speed

Ammy Lari

9-30-21

1512



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:44AM

Page 16 of 28

Chain of Custody

Scheduled for: 09/06/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-6 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1093014 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1093014-01 E	<u>9-30-21</u>	<u>12:10</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH: <u>✓</u>				
1093014-01 F	<u>9-30-21</u>	<u>12:10</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH: <u>✓</u>				
1093014-01 G	<u>9-30-21</u>	<u>12:10</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH: <u>✓</u>				
1093014-01 H	<u>9-30-21</u>	<u>12:10</u>	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH: <u>✓</u>				

Preservation Check Performed by: ALI

Field data collected by: Tom S. Speed Date (mm/dd/yy) 9-30-21 Time (24 hr) 12:10
pH 6.13 Cond 73 3.18 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.87 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

9-30-21

1512



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:44AM

November 05, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093014/Big Rivers Electric Co
Pace Project No.: 30446190

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1093014/Big Rivers Electric Co

Pace Project No.: 30446190

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093014/Big Rivers Electric Co

Pace Project No.: 30446190

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30446190001	1093014-01	Water	09/30/21 12:10	10/16/21 11:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093014/Big Rivers Electric Co

Pace Project No.: 30446190

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30446190001	1093014-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093014/Big Rivers Electric Co

Pace Project No.: 30446190

Sample: 1093014-01 **Lab ID: 30446190001** Collected: 09/30/21 12:10 Received: 10/16/21 11:30 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.0823 ± 0.567 (0.975) C:NA T:98%	pCi/L	11/05/21 16:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.528 ± 0.445 (0.897) C:71% T:88%	pCi/L	11/03/21 14:24	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.610 ± 1.01 (1.87)	pCi/L	11/05/21 17:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093014/Big Rivers Electric Co

Pace Project No.: 30446190

QC Batch: 469226

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446190001

METHOD BLANK: 2265868

Matrix: Water

Associated Lab Samples: 30446190001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0420 ± 0.214 (0.452) C:NA T:93%	pCi/L	11/05/21 15:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093014/Big Rivers Electric Co

Pace Project No.: 30446190

QC Batch: 469228

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446190001

METHOD BLANK: 2265872

Matrix: Water

Associated Lab Samples: 30446190001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.423 ± 0.323 (0.633) C:78% T:91%	pCi/L	11/03/21 11:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093014/Big Rivers Electric Co
Pace Project No.: 30446190

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1093014

Workorder Name: MW-6 Wilson 092-00004

Owner Received Date: 9/30/2021

Results Requested By:

Report To:

Subcontract To:

Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg P/1
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

WO#: 30446190



Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1						X	X	
2	1093014-01		09/30/21 12:10	IR44-McCoy	Water			001
3								
4								
5								
6								
7								
8								
9								
10								
Transfers Released By		Date/Time		Received By		Date/Time		Comments
1				RAB		10/16/21		1130
2								
3								

Cooler Temperature on Receipt

N/A

°C

Custody Seal Y or N

Received on Ice Y or N

Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3389 3427

Label <u>JAG</u>
LIMS Login <u>W</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# <u>10 D0411</u>	Date and Initials of person examining contents: <u>JAG 10/19/21</u>
Chain of Custody Present:	☒	☐	☐	1.	
Chain of Custody Filled Out:	☒	☐	☐	2.	
Chain of Custody Relinquished:	☒	☐	☐	3.	
Sampler Name & Signature on COC:	☐	☒	☐	4.	
Sample Labels match COC: -Includes date/time/ID Matrix: <u>DW</u>	☐	☒	☐	5.	<u>No Date or time on bottles</u>
Samples Arrived within Hold Time:	☒	☐	☐	6.	
Short Hold Time Analysis (<72hr remaining):	☐	☒	☐	7.	
Rush Turn Around Time Requested:	☐	☒	☐	8.	
Sufficient Volume:	☒	☐	☐	9.	
Correct Containers Used: -Pace Containers Used:	☒	☐	☐	10.	
Containers Intact:	☒	☐	☐	11.	
Orthophosphate field filtered	☐	☐	☒	12.	
Hex Cr Aqueous sample field filtered	☐	☐	☒	13.	
Organic Samples checked for dechlorination:	☐	☐	☒	14.	
Filtered volume received for Dissolved tests	☐	☐	☒	15.	
All containers have been checked for preservation.	☒	☐	☐	16.	
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	☒	☐	☐	Initial when completed <u>JAG</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	☐	☐	☒	17.	
Trip Blank Present:	☐	☒	☐	18.	
Trip Blank Custody Seals Present	☐	☐	☒		
Rad Samples Screened < 0.5 mrem/hr	☒	☐	☐	Initial when completed: <u>JAG</u>	Date: <u>10/19/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

NO# : 30446190
 PM: JLB Due Date: 11/08/21
 CLIENT: PACE_44_MKY

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093014

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093014-01	Water	Sampled: 09/30/2021 12:10	Specific Method 00f
Radium Total (sub)	03/29/2022 12:10	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/29/2022 12:10	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/29/2022 12:10	EPA 903.1	

WO# : 30446190

PM: JLB Due Date: 11/08/21

CLIENT: PACE_44_MVKY

Released By [Signature] Date 10-01-21 Received By [Signature] Date 10/16/21 1130

Released By _____ Date _____ Received By _____ Date _____

Certificate of Analysis 1093015

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:22

Project Name: MW-7 Wilson 092-00004

Workorder: 1093015

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/30/2021 15:12.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093015-01	MW7/	Groundwater	09/30/2021 13:10	09/30/2021 15:12	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093015-01	Field Conductance	2450			
	Field pH	6.30			
	Field Temp (C)	17.98			

ANALYTICAL RESULTS

Lab Sample ID: **1093015-01**

Description: **MW7**

Sample Collection Date Time: 09/30/2021 13:10

Sample Received Date Time: 09/30/2021 15:12

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Arsenic	0.0041		mg/L	0.0010	0.0004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Barium	0.013		mg/L	0.004	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Boron	2.37	D1	mg/L	0.50	0.50	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:31	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Calcium	383	D1	mg/L	40.0	13.0	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:54	MRWD
Chromium	0.0007	J	mg/L	0.0020	0.0006	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Copper	ND	L1, U	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Iron	4.58		mg/L	0.100	0.050	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:18	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Lithium	0.03		mg/L	0.02	0.005	SW846-6020 A	10/04/2021 08:57	10/08/2021 10:44	AKB
Magnesium	141	D1	mg/L	20.0	9.00	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:54	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Molybdenum	0.006	J	mg/L	0.01	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Nickel	0.005		mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Potassium	9.17	D1	mg/L	2.50	1.10	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:47	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Sodium	41.3	D1	mg/L	1.30	0.50	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:31	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP
Zinc	0.01	J	mg/L	0.02	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:25	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	334		mg/L	4		2320 B-2011	10/11/2021 15:10	10/11/2021 15:10	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	10/11/2021 15:10	10/11/2021 15:10	HMF
Total Alkalinity	334		mg/L	4		2320 B-2011	10/11/2021 15:10	10/11/2021 15:10	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:54	KBZ
Specific Conductance (Lab)	2460		umhos/cm	1	1	2510 B-2011	10/01/2021 09:52	10/01/2021 09:52	JLW
Hardness as CaCO3	1320	D	mg/L	5	5	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	2230		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.2		mg/L	0.5	0.4	5310 C-2011	10/06/2021 13:25	10/12/2021 15:47	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.120	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	1.11	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	1.23	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW



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Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	96.1	D	mg/L	2.5	1.8	EPA 300.0 REV 2.1	10/11/2021 15:55	10/11/2021 15:55	CSC
Fluoride	0.26		mg/L	0.20		EPA 300.0 REV 2.1	10/11/2021 15:40	10/11/2021 15:40	CSC
Sulfate	2420	D	mg/L	100	50.0	EPA 300.0 REV 2.1	10/11/2021 16:09	10/11/2021 16:09	CSC

Notes for work order 1093015

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
E	Concentration exceeds calibration range
J	Estimated value.
L1	The associated blank spike recovery was above method acceptance limits.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Blank (BAJ0081-BLK1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 15:59

Boron	ND	0.10	mg/L						U
Calcium	ND	0.40	mg/L						U
Iron	ND	0.100	mg/L						U
Magnesium	ND	0.200	mg/L						U
Potassium	ND	0.50	mg/L						U
Sodium	ND	0.26	mg/L						U

Blank (BAJ0081-BLK2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:03

Calcium	ND	0.40	mg/L						U
Magnesium	ND	0.200	mg/L						U
Potassium	ND	0.50	mg/L						U
Sodium	ND	0.26	mg/L						U

Blank (BAJ0081-BLK3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:54

Mercury	ND	0.0005	mg/L						U
Molybdenum	ND	0.01	mg/L						U
Antimony	ND	0.005	mg/L						U
Arsenic	ND	0.0010	mg/L						U
Barium	ND	0.004	mg/L						U
Beryllium	ND	0.0020	mg/L						U
Cadmium	ND	0.0010	mg/L						U
Chromium	ND	0.0020	mg/L						U
Cobalt	ND	0.004	mg/L						U
Copper	ND	0.003	mg/L						U
Lead	ND	0.002	mg/L						U
Lithium	ND	0.02	mg/L						U
Nickel	ND	0.003	mg/L						U
Selenium	ND	0.003	mg/L						U
Thallium	ND	0.0020	mg/L						U
Zinc	0.005	0.02	mg/L						J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

LCS (BAJ0081-BS1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 16:02

Boron	0.12	0.10	mg/L	0.125		97.2	85-115			
Calcium	6.27	0.40	mg/L	6.25		100	85-115			
Iron	6.20	0.100	mg/L	6.25		99.2	85-115			
Magnesium	5.27	0.200	mg/L	6.25		84.3	85-115			L1
Potassium	7.80	0.50	mg/L	6.25		125	85-115			L1
Sodium	6.18	0.26	mg/L	6.25		98.9	85-115			

LCS (BAJ0081-BS2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:06

Calcium	6.21	0.40	mg/L	6.25		99.4	85-115			
Magnesium	6.06	0.200	mg/L	6.25		97.0	85-115			
Potassium	6.22	0.50	mg/L	6.25		99.6	85-115			
Sodium	6.28	0.26	mg/L	6.25		101	85-115			

LCS (BAJ0081-BS3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:56

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		106	85-115			
Arsenic	0.0641	0.0010	mg/L	0.0625		103	85-115			
Barium	0.062	0.004	mg/L	0.0625		98.6	85-115			
Beryllium	0.0628	0.0020	mg/L	0.0625		100	85-115			
Cadmium	0.0625	0.0010	mg/L	0.0625		100	85-115			
Chromium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		102	85-115			
Copper	0.073	0.003	mg/L	0.0625		117	85-115			L1
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		98.9	85-115			
Nickel	0.063	0.003	mg/L	0.0625		101	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0636	0.0020	mg/L	0.0625		102	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike (BAJ0081-MS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:47

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120			M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120			M3
Iron	6.43	0.100	mg/L	6.25	58.4	NR	80-120			M1
Magnesium	12.0	0.200	mg/L	6.25	196	NR	80-120			M3
Potassium	2.02	0.50	mg/L	6.25	12.2	NR	80-120			M1
Sodium	11.3	0.26	mg/L	6.25	110	NR	80-120			M3

Matrix Spike (BAJ0081-MS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:29

Antimony	0.062	0.005	mg/L	0.0625	ND	99.6	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	91.3	80-120			
Mercury	0.0025	0.0005	mg/L	0.00250	ND	99.2	80-120			
Arsenic	0.0623	0.0010	mg/L	0.0625	0.0015	97.3	80-120			
Barium	0.064	0.004	mg/L	0.0625	0.007	91.9	80-120			
Beryllium	0.0485	0.0020	mg/L	0.0625	ND	77.6	80-120			M2
Cadmium	0.0580	0.0010	mg/L	0.0625	0.0038	86.7	80-120			
Chromium	0.0588	0.0020	mg/L	0.0625	ND	94.1	80-120			
Cobalt	0.294	0.004	mg/L	0.0625	0.253	66.4	80-120			M2
Copper	0.055	0.003	mg/L	0.0625	ND	87.8	80-120			
Lead	0.054	0.002	mg/L	0.0625	ND	86.8	80-120			
Lithium	0.17	0.02	mg/L	0.0625	0.14	53.0	80-120			M2
Nickel	0.616	0.003	mg/L	0.0625	0.570	74.1	80-120			M3
Selenium	0.061	0.003	mg/L	0.0625	ND	97.9	80-120			
Thallium	0.0548	0.0020	mg/L	0.0625	0.0002	87.5	80-120			
Zinc	0.95	0.02	mg/L	0.0625	0.83	189	80-120			M3, E

Matrix Spike Dup (BAJ0081-MSD1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:50

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120		20	M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120	0.0979	20	M3
Iron	6.53	0.100	mg/L	6.25	58.4	NR	80-120	1.56	20	M1
Magnesium	12.1	0.200	mg/L	6.25	196	NR	80-120	0.784	20	M3
Potassium	2.09	0.50	mg/L	6.25	12.2	NR	80-120	3.60	20	M1
Sodium	11.4	0.26	mg/L	6.25	110	NR	80-120	0.533	20	M3

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike Dup (BAJ0081-MSD2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:31

Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120	8.87	20	
Mercury	0.0026	0.0005	mg/L	0.00250	ND	105	80-120	6.02	20	
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	98.8	80-120	7.59	20	
Arsenic	0.0672	0.0010	mg/L	0.0625	0.0015	105	80-120	7.55	20	
Barium	0.071	0.004	mg/L	0.0625	0.007	102	80-120	9.31	20	
Beryllium	0.0522	0.0020	mg/L	0.0625	ND	83.5	80-120	7.31	20	
Cadmium	0.0633	0.0010	mg/L	0.0625	0.0038	95.2	80-120	8.76	20	
Chromium	0.0629	0.0020	mg/L	0.0625	ND	101	80-120	6.67	20	
Cobalt	0.298	0.004	mg/L	0.0625	0.253	72.4	80-120	1.26	20	M2
Copper	0.059	0.003	mg/L	0.0625	ND	94.5	80-120	7.33	20	
Lead	0.059	0.002	mg/L	0.0625	ND	94.5	80-120	8.48	20	
Lithium	0.17	0.02	mg/L	0.0625	0.14	60.5	80-120	2.74	20	M2
Nickel	0.623	0.003	mg/L	0.0625	0.570	85.6	80-120	1.16	20	
Selenium	0.067	0.003	mg/L	0.0625	ND	108	80-120	9.43	20	
Thallium	0.0592	0.0020	mg/L	0.0625	0.0002	94.4	80-120	7.56	20	
Zinc	0.96	0.02	mg/L	0.0625	0.83	198	80-120	0.561	20	M3, E

Post Spike (BAJ0081-PS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:53

Boron	28.6		ug/L	125	166	NR	75-125			M1
Calcium	50400		ug/L	6250	509000	NR	75-125			M3
Iron	6370		ug/L	6250	58400	NR	75-125			M1
Magnesium	11900		ug/L	6250	196000	NR	75-125			M3
Potassium	2020		ug/L	6250	12200	NR	75-125			M1
Sodium	11100		ug/L	6250	110000	NR	75-125			M3

Post Spike (BAJ0081-PS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:33

Antimony	65.0		ug/L	62.5	0.051	104	75-125			
Molybdenum	63.8		ug/L	62.5	2.82	97.6	75-125			
Mercury	2.70		ug/L	2.50	0.0210	107	75-125			
Arsenic	67.2		ug/L	62.5	1.52	105	75-125			
Barium	70.5		ug/L	62.5	6.87	102	75-125			
Beryllium	52.6		ug/L	62.5	0.0260	84.1	75-125			
Cadmium	63.2		ug/L	62.5	3.82	95.1	75-125			
Chromium	62.8		ug/L	62.5	0.379	99.9	75-125			
Cobalt	292		ug/L	62.5	253	63.5	75-125			M2
Copper	59.1		ug/L	62.5	-0.345	94.5	75-125			
Lead	59.2		ug/L	62.5	-0.019	94.7	75-115			
Lithium	171		ug/L	62.5	135	56.3	75-125			M2
Nickel	616		ug/L	62.5	570	74.0	75-125			M3
Selenium	66.8		ug/L	62.5	0.243	107	75-125			
Thallium	59.0		ug/L	62.5	0.182	94.0	75-125			
Zinc	936		ug/L	62.5	832	167	75-125			M3

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3601 - Default Prep Wet Chem										
Blank (BAI3601-BLK1)										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	ND	1	mg/L							U
LCS (BAI3601-BS1)										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			
Duplicate (BAI3601-DUP1) Source: 1093827-02										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	
Matrix Spike (BAI3601-MS1) Source: 1093827-02										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			
Batch BAJ0043 - Default Prep Wet Chem										
Blank (BAJ0043-BLK1)										
Prepared: 10/1/2021 9:42, Analyzed: 10/1/2021 9:42										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BAJ0043-BS1)										
Prepared: 10/1/2021 9:43, Analyzed: 10/1/2021 9:43										
Specific Conductance (Lab)	1420	1	umhos/cm				80-120			
Duplicate (BAJ0043-DUP1) Source: 1093016-01										
Prepared: 10/1/2021 9:58, Analyzed: 10/1/2021 9:58										
Specific Conductance (Lab)	1890	1	umhos/cm		1860			1.23	0.938	Y1
Batch BAJ0539 - Default Prep Wet Chem										
Blank (BAJ0539-BLK1)										
Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37										
Total Dissolved Solids	ND	25	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0539 - Default Prep Wet Chem

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Matrix Spike Dup (BAJ0581-MSD1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Batch BAJ0805 - Default Prep Wet Chem

Blank (BAJ0805-BLK1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:23

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0805 - Default Prep Wet Chem

LCS (BAJ0805-BS1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:02

Total Organic Carbon	4.9	0.5	mg/L	5.00		97.3	80-120			

Duplicate (BAJ0805-DUP1) Source: 1093014-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 18:57

Total Organic Carbon	1.4	0.5	mg/L		1.4			2.11	25	

Duplicate (BAJ0805-DUP2) Source: 1102745-02

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 0:55

Total Organic Carbon	0.6	0.5	mg/L		ND				25	

Matrix Spike (BAJ0805-MS1) Source: 1093015-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 19:18

Total Organic Carbon	4.0	0.5	mg/L	2.50	1.2	109	80-120			

Matrix Spike (BAJ0805-MS2) Source: 1095000-01

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 1:16

Total Organic Carbon	8.7	0.5	mg/L	5.00	3.7	100	80-120			

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK1)

Prepared: 10/11/2021 12:41, Analyzed: 10/11/2021 12:41

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK2)

Prepared: 10/11/2021 15:42, Analyzed: 10/11/2021 15:42

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK3)

Prepared: 10/11/2021 16:03, Analyzed: 10/11/2021 16:03

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK4)

Prepared: 10/11/2021 16:21, Analyzed: 10/11/2021 16:21

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAJ1329-BS1)

Prepared: 10/11/2021 15:37, Analyzed: 10/11/2021 15:37

Carbonate Alkalinity as CaCO ₃	222	4	mg/L	225		98.5	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	249	4	mg/L	235		106	80-120			

LCS (BAJ1329-BS2)

Prepared: 10/11/2021 15:59, Analyzed: 10/11/2021 15:59

Carbonate Alkalinity as CaCO ₃	220	4	mg/L	225		97.6	0-200			
Total Alkalinity	249	4	mg/L	235		106	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

Duplicate (BAJ1329-DUP1)

Source: 1093017-01

Prepared: 10/11/2021 15:26, Analyzed: 10/11/2021 15:26

Total Alkalinity	272	4	mg/L		268			1.56	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	272	4	mg/L		268			1.56	10	

Duplicate (BAJ1329-DUP2)

Source: 1093019-01

Prepared: 10/11/2021 15:53, Analyzed: 10/11/2021 15:53

Total Alkalinity	ND	4	mg/L		ND				10	U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAJ1329-MS1)

Source: 1093017-01

Prepared: 10/11/2021 15:32, Analyzed: 10/11/2021 15:32

Total Alkalinity	292	4	mg/L	50.0	268	48.4	80-120			M3

Matrix Spike (BAJ1329-MS2)

Source: 1093019-01

Prepared: 10/11/2021 15:55, Analyzed: 10/11/2021 15:55

Total Alkalinity	49	4	mg/L	50.0	ND	97.8	80-120			

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1356 - Default Prep IC

Blank (BAJ1356-BLK1)

Prepared: 10/11/2021 12:27, Analyzed: 10/11/2021 12:27

Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.20	mg/L							U

LCS (BAJ1356-BS1)

Prepared: 10/11/2021 12:12, Analyzed: 10/11/2021 12:12

Chloride	9.7		mg/L	10.0		96.9	90-110			
Fluoride	9.63		mg/L	10.0		96.3	90-110			
Sulfate	9.9		mg/L	10.0		98.6	90-110			

Matrix Spike (BAJ1356-MS1)

Source: 1093016-01

Prepared: 10/11/2021 16:54, Analyzed: 10/11/2021 16:54

Sulfate	275		mg/L	10.0	1960	NR	80-120			M2
Chloride	10.2		mg/L	10.0	3.5	66.7	80-120			M2
Fluoride	6.14		mg/L	10.0	0.26	58.9	80-120			M2

Matrix Spike Dup (BAJ1356-MSD1)

Source: 1093016-01

Prepared: 10/11/2021 17:09, Analyzed: 10/11/2021 17:09

Sulfate	275		mg/L	10.0	1960	NR	80-120	0.153	20	M2
Fluoride	7.41		mg/L	10.0	0.26	71.6	80-120	18.7	20	M2
Chloride	11.4		mg/L	10.0	3.5	78.8	80-120	11.3	10	M2, Y2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093015

Shipped By: Client

Temperature: 1.50° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-7 Wilson 092-00004

Phone: (270) 844-6000
PWS ID#:
State: Ky

PO#:
Quote#

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093015							
Sample ID#							
1093015-01 A	<u>9-30-21</u>	<u>13:10</u>	Plastic 1L	1	MW7	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1093015-01 B	<u>9-30-21</u>	<u>13:10</u>	Plastic 500mL pH<2 w/HNO3	1	MW7	g / c	

Preservation Check: pH: ✓

1093015-01 C 9-30-21 13:10 Plastic 500mL pH<2 w/H2SO4 1 MW7 g / c COD TOC

Preservation Check: pH: ✓

1093015-01 D 9-30-21 13:10 Plastic 1L pH<2 w/HNO3 Rad 226 (Sub) 1 MW7 g / c Radium 226 (sub)

Preservation Check: pH: ✓

Thermometer Serial Number

✓ 181390287

181460057

Temp 1.5 °C

Preservation Check Performed by: ACU

Field data collected by: Travis Speed Date (mm/dd/yy) 9-30-21 Time (24 hr) 13:10
pH 6.30 Cond (umho) 2.45 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.98 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

[Signature]

Received by: (Signature)

[Signature]

Date (mm/dd/yy)

9-30-21

Time (24 hr)

1512



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:53AM

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-7 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Wörkorder # 1093015 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1093015-01 E	<u>9-30-21</u>	<u>13:10</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH: <u>✓</u>				
1093015-01 F	<u>9-30-21</u>	<u>13:10</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH: <u>✓</u>				
1093015-01 G	<u>9-30-21</u>	<u>13:10</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW7	g / c	Radium Total (sub)
			Preservation Check: pH: <u>✓</u>				
1093015-01 H	<u>9-30-21</u>	<u>13:10</u>	AG 250mL pH<2 w/H2SO4	1	MW7	g / c	TOC
			Preservation Check: pH: <u>✓</u>				

Preservation Check Performed by: ACU

Field data collected by: Travis Speed Date (mm/dd/yy) 9-30-21 Time (24 hr) 13:10
pH 6.30 Cond (umho) 2.45 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.98 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

9-30-21

1512

October 22, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093015/Big Rivers Electric Co
Pace Project No.: 30444306

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 02, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: 1093015/Big Rivers Electric Co

Pace Project No.: 30444306

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093015/Big Rivers Electric Co

Pace Project No.: 30444306

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30444306001	1093015-01	Water	09/30/21 13:10	10/02/21 11:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093015/Big Rivers Electric Co

Pace Project No.: 30444306

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30444306001	1093015-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093015/Big Rivers Electric Co

Pace Project No.: 30444306

Sample: 1093015-01 **Lab ID: 30444306001** Collected: 09/30/21 13:10 Received: 10/02/21 11:30 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.120 ± 0.549 (0.326) C:NA T:97%	pCi/L	10/19/21 16:48	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.11 ± 0.654 (1.22) C:60% T:88%	pCi/L	10/20/21 14:27	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.23 ± 1.20 (1.55)	pCi/L	10/22/21 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093015/Big Rivers Electric Co

Pace Project No.: 30444306

QC Batch: 467251

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30444306001

METHOD BLANK: 2256290

Matrix: Water

Associated Lab Samples: 30444306001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.357 ± 0.352 (0.536) C:NA T:86%	pCi/L	10/19/21 16:48	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093015/Big Rivers Electric Co

Pace Project No.: 30444306

QC Batch: 467253

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30444306001

METHOD BLANK: 2256292

Matrix: Water

Associated Lab Samples: 30444306001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.967 ± 0.412 (0.666) C:74% T:84%	pCi/L	10/20/21 11:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093015/Big Rivers Electric Co
Pace Project No.: 30444306

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1093015 Workorder Name: MW-7 Wilson 092-00004 Owner Received Date: 9/30/2021 Results Requested By:

Report To:	Subcontract To:	Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg P4
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

Job: whitington@pacelabs.com										Preserved Containers									
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix														
1																			
2	1093015-01		09/30/21 13:10	IR44-McCoy	Water														
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
Transfers		Released By	Date/Time	Received By	Date/Time	Comments													
1				Melinda McCoy	10/21/21 11:30														
2																			
3																			
LAB USE ONLY																			

Cooler Temperature on Receipt	49 °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This cha **MO# : 30444306** is since this information is available in the owner laboratory.

Client Name: paceky

Project #

Label	AT
LIMS Login	MC

Seals Intact: ☐ yes ☒ no

Type of Ice: Wet Blue None

Cooler Temperature 20.3 °C Observed Temp 20.3 °C Correction Factor -0.4 °C Final Temp: 19.9 °C

Temp should be above freezing to 6°C

ph paper Lot#	1000411
Date and Initials of person examining	10/17/21 <u>MC</u>

Chain of Custody Present: ☒ Chain of Custody Filled Out: ☒ Chain of Custody Relinquished: ☒ Sampler Name & Signature on COC: ☒ Sample Labels match COC: ☒ -Includes date/time/ID Matrix: ☒

Samples Arrived within Hold Time: ☒ Short Hold Time Analysis (<24hr remaining): ☒ Rush Turn Around Time Requested: ☒ Sufficient Volume: ☒ Correct Containers Used: ☒ -Pace Containers Used: ☒ Containers Intact: ☒

Orthophosphate field filtered: ☒ Hex Cr Aqueous sample field filtered: ☒ Organic Samples checked for dechlorination: ☒ Filtered volume received for Dissolved tests: ☒ All containers have been checked for preservation: ☒ exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix

All containers meet method preservation requirements: ☒ Initial when completed: MC Date/time of preservation: 10/17/21 Lot # of added preservative: 1503

Headspace in VOA Vials (>6mm): ☒ Trip Blank Present: ☒ Trip Blank Custody Seals Present: ☒ Rad Samples Screened < 0.5 mrem/hr: ☒

Client Notification/ Resolution: _____ Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers) PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0#: 30444306

PM: CAF Due Date: 10/18/21

CLIENT: PACE_44_MVKY

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1093015

RECEIVING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

Analysis

Expires

Laboratory ID

Comments

Sample ID: 1093015-01

Water

Sampled: 09/30/2021 13:10

Specific Method

Radium Total (sub)

03/29/2022 13:10

EPA 904.0 Radium Sum C

Radium 228 (sub)

03/29/2022 13:10

EPA 904.0 Radium Sum C

Radium 226 (sub)

03/29/2022 13:10

EPA 903.1

WO#: 30444306

PM: CAF

Due Date: 10/18/21

CLIENT: PACE_44_MVKY

Released By

Date

Received By

Date

Released By

Date

Received By

Date

10.01.21

Certificate of Analysis 1093016

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:21

Project Name: MW-8 Wilson 092-00004

Workorder: 1093016

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/30/2021 15:12.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093016-01	MW8/	Groundwater	09/30/2021 09:35	09/30/2021 15:12	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093016-01	Field Conductance	1870			
	Field pH	6.35			
	Field Temp (C)	17.04			

ANALYTICAL RESULTS

Lab Sample ID: **1093016-01**

Description: **MW8**

Sample Collection Date Time: 09/30/2021 09:35

Sample Received Date Time: 09/30/2021 15:12

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Arsenic	0.0053		mg/L	0.0010	0.0004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Barium	0.023		mg/L	0.004	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:38	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Calcium	231	D1	mg/L	40.0	13.0	SW846 6010 B	10/04/2021 08:57	10/05/2021 14:03	MRWD
Chromium	0.0018	J	mg/L	0.0020	0.0006	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Copper	0.001	L1, J	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Iron	25.0	D1	mg/L	0.500	0.250	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:41	MRWD
Lead	0.0008	J	mg/L	0.002	0.0005	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Lithium	0.01	V1, J	mg/L	0.02	0.005	SW846-6020 A	10/04/2021 08:57	10/07/2021 18:25	AKB
Magnesium	128	D1	mg/L	20.0	9.00	SW846 6010 B	10/04/2021 08:57	10/05/2021 14:03	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Molybdenum	0.01		mg/L	0.01	0.002	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Nickel	0.003		mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Potassium	3.95	D1	mg/L	2.50	1.10	SW846 6010 B	10/04/2021 08:57	10/05/2021 13:57	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Sodium	35.8	D1	mg/L	1.30	0.50	SW846 6010 B	10/04/2021 08:57	10/04/2021 17:41	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP
Zinc	0.01	J	mg/L	0.02	0.004	SW846-6020 A	10/04/2021 08:57	10/05/2021 14:27	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	277		mg/L	4		2320 B-2011	10/11/2021 15:16	10/11/2021 15:16	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	10/11/2021 15:16	10/11/2021 15:16	HMF
Total Alkalinity	277		mg/L	4		2320 B-2011	10/11/2021 15:16	10/11/2021 15:16	HMF
Chemical Oxygen Demand	19		mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:54	KBZ
Specific Conductance (Lab)	1860		umhos/cm	1	1	2510 B-2011	10/01/2021 09:54	10/01/2021 09:54	JLW
Hardness as CaCO3	900	D	mg/L	2	2	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	1630		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	3.0		mg/L	0.5	0.4	5310 C-2011	10/06/2021 13:25	10/12/2021 16:09	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.472	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	0.387	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	0.859	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW



Pace Analytical Services, LLC

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Madisonville, KY 42431

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Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	3.9	M2	mg/L	0.5	0.4	EPA 300.0 REV 2.1	10/11/2021 16:24	10/11/2021 16:24	CSC
Fluoride	0.28	M2	mg/L	0.20		EPA 300.0 REV 2.1	10/11/2021 16:24	10/11/2021 16:24	CSC
Sulfate	2180	D, M2, Y2	mg/L	100	50.0	EPA 300.0 REV 2.1	10/11/2021 16:39	10/11/2021 16:39	CSC

Notes for work order 1093016

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
E	Concentration exceeds calibration range
J	Estimated value.
L1	The associated blank spike recovery was above method acceptance limits.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
V1	CCV recovery was above method acceptance limits. This target analyte not detected in the sample.
Y1	Sample RPD exceeded the method control limit.
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Blank (BAJ0081-BLK1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 15:59

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAJ0081-BLK2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:03

Calcium	ND	0.40	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAJ0081-BLK3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:54

Molybdenum	ND	0.01	mg/L							U
Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	0.005	0.02	mg/L							J

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

LCS (BAJ0081-BS1)

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 16:02

Boron	0.12	0.10	mg/L	0.125		97.2	85-115			
Calcium	6.27	0.40	mg/L	6.25		100	85-115			
Iron	6.20	0.100	mg/L	6.25		99.2	85-115			
Magnesium	5.27	0.200	mg/L	6.25		84.3	85-115			L1
Potassium	7.80	0.50	mg/L	6.25		125	85-115			L1
Sodium	6.18	0.26	mg/L	6.25		98.9	85-115			

LCS (BAJ0081-BS2)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:06

Calcium	6.21	0.40	mg/L	6.25		99.4	85-115			
Magnesium	6.06	0.200	mg/L	6.25		97.0	85-115			
Potassium	6.22	0.50	mg/L	6.25		99.6	85-115			
Sodium	6.28	0.26	mg/L	6.25		101	85-115			

LCS (BAJ0081-BS3)

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 13:56

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		106	85-115			
Antimony	0.066	0.005	mg/L	0.0625		106	85-115			
Arsenic	0.0641	0.0010	mg/L	0.0625		103	85-115			
Barium	0.062	0.004	mg/L	0.0625		98.6	85-115			
Beryllium	0.0628	0.0020	mg/L	0.0625		100	85-115			
Cadmium	0.0625	0.0010	mg/L	0.0625		100	85-115			
Chromium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		102	85-115			
Copper	0.073	0.003	mg/L	0.0625		117	85-115			L1
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		98.9	85-115			
Nickel	0.063	0.003	mg/L	0.0625		101	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0636	0.0020	mg/L	0.0625		102	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike (BAJ0081-MS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:47

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120			M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120			M3
Iron	6.43	0.100	mg/L	6.25	58.4	NR	80-120			M1
Magnesium	12.0	0.200	mg/L	6.25	196	NR	80-120			M3
Potassium	2.02	0.50	mg/L	6.25	12.2	NR	80-120			M1
Sodium	11.3	0.26	mg/L	6.25	110	NR	80-120			M3

Matrix Spike (BAJ0081-MS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:29

Antimony	0.062	0.005	mg/L	0.0625	ND	99.6	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	91.3	80-120			
Mercury	0.0025	0.0005	mg/L	0.00250	ND	99.2	80-120			
Arsenic	0.0623	0.0010	mg/L	0.0625	0.0015	97.3	80-120			
Barium	0.064	0.004	mg/L	0.0625	0.007	91.9	80-120			
Beryllium	0.0485	0.0020	mg/L	0.0625	ND	77.6	80-120			M2
Cadmium	0.0580	0.0010	mg/L	0.0625	0.0038	86.7	80-120			
Chromium	0.0588	0.0020	mg/L	0.0625	ND	94.1	80-120			
Cobalt	0.294	0.004	mg/L	0.0625	0.253	66.4	80-120			M2
Copper	0.055	0.003	mg/L	0.0625	ND	87.8	80-120			
Lead	0.054	0.002	mg/L	0.0625	ND	86.8	80-120			
Lithium	0.17	0.02	mg/L	0.0625	0.14	53.0	80-120			M2
Nickel	0.616	0.003	mg/L	0.0625	0.570	74.1	80-120			M3
Selenium	0.061	0.003	mg/L	0.0625	ND	97.9	80-120			
Thallium	0.0548	0.0020	mg/L	0.0625	0.0002	87.5	80-120			
Zinc	0.95	0.02	mg/L	0.0625	0.83	189	80-120			M3, E

Matrix Spike Dup (BAJ0081-MSD1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:50

Boron	ND	0.10	mg/L	0.125	0.17	NR	80-120		20	M1, U
Calcium	52.0	0.40	mg/L	6.25	509	NR	80-120	0.0979	20	M3
Iron	6.53	0.100	mg/L	6.25	58.4	NR	80-120	1.56	20	M1
Magnesium	12.1	0.200	mg/L	6.25	196	NR	80-120	0.784	20	M3
Potassium	2.09	0.50	mg/L	6.25	12.2	NR	80-120	3.60	20	M1
Sodium	11.4	0.26	mg/L	6.25	110	NR	80-120	0.533	20	M3

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0081 - EPA 200.2

Matrix Spike Dup (BAJ0081-MSD2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:31

Mercury	0.0026	0.0005	mg/L	0.00250	ND	105	80-120	6.02	20	
Molybdenum	0.06	0.01	mg/L	0.0625	0.003	98.8	80-120	7.59	20	
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120	8.87	20	
Arsenic	0.0672	0.0010	mg/L	0.0625	0.0015	105	80-120	7.55	20	
Barium	0.071	0.004	mg/L	0.0625	0.007	102	80-120	9.31	20	
Beryllium	0.0522	0.0020	mg/L	0.0625	ND	83.5	80-120	7.31	20	
Cadmium	0.0633	0.0010	mg/L	0.0625	0.0038	95.2	80-120	8.76	20	
Chromium	0.0629	0.0020	mg/L	0.0625	ND	101	80-120	6.67	20	
Cobalt	0.298	0.004	mg/L	0.0625	0.253	72.4	80-120	1.26	20	M2
Copper	0.059	0.003	mg/L	0.0625	ND	94.5	80-120	7.33	20	
Lead	0.059	0.002	mg/L	0.0625	ND	94.5	80-120	8.48	20	
Lithium	0.17	0.02	mg/L	0.0625	0.14	60.5	80-120	2.74	20	M2
Nickel	0.623	0.003	mg/L	0.0625	0.570	85.6	80-120	1.16	20	
Selenium	0.067	0.003	mg/L	0.0625	ND	108	80-120	9.43	20	
Thallium	0.0592	0.0020	mg/L	0.0625	0.0002	94.4	80-120	7.56	20	
Zinc	0.96	0.02	mg/L	0.0625	0.83	198	80-120	0.561	20	M3, E

Post Spike (BAJ0081-PS1)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/4/2021 17:53

Boron	28.6		ug/L	125	166	NR	75-125			M1
Calcium	50400		ug/L	6250	509000	NR	75-125			M3
Iron	6370		ug/L	6250	58400	NR	75-125			M1
Magnesium	11900		ug/L	6250	196000	NR	75-125			M3
Potassium	2020		ug/L	6250	12200	NR	75-125			M1
Sodium	11100		ug/L	6250	110000	NR	75-125			M3

Post Spike (BAJ0081-PS2)

Source: 1093003-01

Prepared: 10/4/2021 8:57, Analyzed: 10/5/2021 14:33

Antimony	65.0		ug/L	62.5	0.051	104	75-125			
Mercury	2.70		ug/L	2.50	0.0210	107	75-125			
Molybdenum	63.8		ug/L	62.5	2.82	97.6	75-125			
Arsenic	67.2		ug/L	62.5	1.52	105	75-125			
Barium	70.5		ug/L	62.5	6.87	102	75-125			
Beryllium	52.6		ug/L	62.5	0.0260	84.1	75-125			
Cadmium	63.2		ug/L	62.5	3.82	95.1	75-125			
Chromium	62.8		ug/L	62.5	0.379	99.9	75-125			
Cobalt	292		ug/L	62.5	253	63.5	75-125			M2
Copper	59.1		ug/L	62.5	-0.345	94.5	75-125			
Lead	59.2		ug/L	62.5	-0.019	94.7	75-115			
Lithium	171		ug/L	62.5	135	56.3	75-125			M2
Nickel	616		ug/L	62.5	570	74.0	75-125			M3
Selenium	66.8		ug/L	62.5	0.243	107	75-125			
Thallium	59.0		ug/L	62.5	0.182	94.0	75-125			
Zinc	936		ug/L	62.5	832	167	75-125			M3

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3601 - Default Prep Wet Chem										
Blank (BAI3601-BLK1)										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	ND	1	mg/L							U
LCS (BAI3601-BS1)										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			
Duplicate (BAI3601-DUP1) Source: 1093827-02										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	
Matrix Spike (BAI3601-MS1) Source: 1093827-02										
Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57										
Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			
Batch BAJ0043 - Default Prep Wet Chem										
Blank (BAJ0043-BLK1)										
Prepared: 10/1/2021 9:42, Analyzed: 10/1/2021 9:42										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BAJ0043-BS1)										
Prepared: 10/1/2021 9:43, Analyzed: 10/1/2021 9:43										
Specific Conductance (Lab)	1420	1	umhos/cm				80-120			
Duplicate (BAJ0043-DUP1) Source: 1093016-01										
Prepared: 10/1/2021 9:58, Analyzed: 10/1/2021 9:58										
Specific Conductance (Lab)	1890	1	umhos/cm		1860			1.23	0.938	Y1
Batch BAJ0539 - Default Prep Wet Chem										
Blank (BAJ0539-BLK1)										
Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37										
Total Dissolved Solids	ND	25	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0539 - Default Prep Wet Chem

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Matrix Spike Dup (BAJ0581-MSD1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Batch BAJ0805 - Default Prep Wet Chem

Blank (BAJ0805-BLK1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:23

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0805 - Default Prep Wet Chem

LCS (BAJ0805-BS1)

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 14:02

Total Organic Carbon	4.9	0.5	mg/L	5.00		97.3	80-120			

Duplicate (BAJ0805-DUP1) Source: 1093014-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 18:57

Total Organic Carbon	1.4	0.5	mg/L		1.4			2.11	25	

Duplicate (BAJ0805-DUP2) Source: 1102745-02

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 0:55

Total Organic Carbon	0.6	0.5	mg/L		ND				25	

Matrix Spike (BAJ0805-MS1) Source: 1093015-01

Prepared: 10/6/2021 13:25, Analyzed: 10/12/2021 19:18

Total Organic Carbon	4.0	0.5	mg/L	2.50	1.2	109	80-120			

Matrix Spike (BAJ0805-MS2) Source: 1095000-01

Prepared: 10/6/2021 13:25, Analyzed: 10/13/2021 1:16

Total Organic Carbon	8.7	0.5	mg/L	5.00	3.7	100	80-120			

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK1)

Prepared: 10/11/2021 12:41, Analyzed: 10/11/2021 12:41

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK2)

Prepared: 10/11/2021 15:42, Analyzed: 10/11/2021 15:42

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAJ1329-BLK3)

Prepared: 10/11/2021 16:03, Analyzed: 10/11/2021 16:03

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK4)

Prepared: 10/11/2021 16:21, Analyzed: 10/11/2021 16:21

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAJ1329-BS1)

Prepared: 10/11/2021 15:37, Analyzed: 10/11/2021 15:37

Total Alkalinity	249	4	mg/L	235		106	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	222	4	mg/L	225		98.5	0-200			

LCS (BAJ1329-BS2)

Prepared: 10/11/2021 15:59, Analyzed: 10/11/2021 15:59

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	220	4	mg/L	225		97.6	0-200			
Total Alkalinity	249	4	mg/L	235		106	80-120			

Duplicate (BAJ1329-DUP1)

Source: 1093017-01

Prepared: 10/11/2021 15:26, Analyzed: 10/11/2021 15:26

Total Alkalinity	272	4	mg/L		268			1.56	10	
Bicarbonate Alkalinity as CaCO ₃	272	4	mg/L		268			1.56	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAJ1329-DUP2)

Source: 1093019-01

Prepared: 10/11/2021 15:53, Analyzed: 10/11/2021 15:53

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Total Alkalinity	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAJ1329-MS1)

Source: 1093017-01

Prepared: 10/11/2021 15:32, Analyzed: 10/11/2021 15:32

Total Alkalinity	292	4	mg/L	50.0	268	48.4	80-120			M3

Matrix Spike (BAJ1329-MS2)

Source: 1093019-01

Prepared: 10/11/2021 15:55, Analyzed: 10/11/2021 15:55

Total Alkalinity	49	4	mg/L	50.0	ND	97.8	80-120			

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1356 - Default Prep IC

Blank (BAJ1356-BLK1)

Prepared: 10/11/2021 12:27, Analyzed: 10/11/2021 12:27

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

LCS (BAJ1356-BS1)

Prepared: 10/11/2021 12:12, Analyzed: 10/11/2021 12:12

Chloride	9.7		mg/L	10.0		96.9	90-110			
Fluoride	9.63		mg/L	10.0		96.3	90-110			
Sulfate	9.9		mg/L	10.0		98.6	90-110			

Matrix Spike (BAJ1356-MS1)

Source: 1093016-01

Prepared: 10/11/2021 16:54, Analyzed: 10/11/2021 16:54

Sulfate	275		mg/L	10.0	1960	NR	80-120			M2
Chloride	10.2		mg/L	10.0	3.5	66.7	80-120			M2
Fluoride	6.14		mg/L	10.0	0.26	58.9	80-120			M2

Matrix Spike Dup (BAJ1356-MSD1)

Source: 1093016-01

Prepared: 10/11/2021 17:09, Analyzed: 10/11/2021 17:09

Chloride	11.4		mg/L	10.0	3.5	78.8	80-120	11.3	10	M2, Y2
Sulfate	275		mg/L	10.0	1960	NR	80-120	0.153	20	M2
Fluoride	7.41		mg/L	10.0	0.26	71.6	80-120	18.7	20	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093016

Shipped By: Client

Temperature: 1.50° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: **MW-8 Wilson 092-00004**

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093016							
Sample ID#							
1093016-01 A	<u>9-30-21</u>	<u>9:35</u>	Plastic 1L	1	MW8	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
1093016-01 B	<u>9-30-21</u>	<u>9:35</u>	Plastic 500mL pH<2 w/HNO3	1	MW8	g / c	

Preservation Check: pH: ☒

1093016-01 C 9-30-21 9:35 Plastic 500mL pH<2 w/H2SO4 1 MW8 g / c COD TOC

Preservation Check: pH: ☒

1093016-01 D 9-30-21 9:35 Plastic 1L pH<2 w/HNO3 Rad 226 (Sub) 1 MW8 g / c Radium 226 (sub)

Preservation Check: pH: ☒

Thermometer Serial Number

181390287

181460057

Temp 1.5 °C

Preservation Check Performed by: ACI

Field data collected by: Tavis Sneed Date (mm/dd/yy) 9-30-21 Time (24 hr) 9:35
pH 6.35 Cond (umho) 1.87 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.04 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

9-30-21

1512

Chain of Custody

Scheduled for: 09/06/2021



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-8 Wilson 092-00004**

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sned*

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 1093016 Sample ID#	*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
	Date (mm/dd/yy):	Collection Time (24 hr):					
1093016-01 E	<u>9-30-21</u>	<u>9:35</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH: ☒				
1093016-01 F	<u>9-30-21</u>	<u>9:35</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH: ☒				
1093016-01 G	<u>9-30-21</u>	<u>9:35</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH: ☒				
1093016-01 H	<u>9-30-21</u>	<u>9:35</u>	AG 250mL pH<2 w/H2SO4	1	MW8	g / c	TOC
			Preservation Check: pH: ☒				

Preservation Check Performed by: ALL

Field data collected by: Travis Sned Date (mm/dd/yy) 9-30-21 Time (24 hr) 9:35
pH 6.35 Cond 75 1.87 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.04 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sned

ahmy Lari

9-30-21

1512

November 05, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093016/Big Rivers Electric Co
Pace Project No.: 30446202

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1093016/Big Rivers Electric Co

Pace Project No.: 30446202

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093016/Big Rivers Electric Co

Pace Project No.: 30446202

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30446202001	1093016-01	Water	09/30/21 09:35	10/16/21 11:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093016/Big Rivers Electric Co

Pace Project No.: 30446202

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30446202001	1093016-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093016/Big Rivers Electric Co

Pace Project No.: 30446202

Sample: 1093016-01 **Lab ID: 30446202001** Collected: 09/30/21 09:35 Received: 10/16/21 11:30 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.472 ± 0.447 (0.624) C:NA T:102%	pCi/L	11/05/21 16:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.387 ± 0.406 (0.845) C:72% T:89%	pCi/L	11/03/21 14:24	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.859 ± 0.853 (1.47)	pCi/L	11/05/21 17:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093016/Big Rivers Electric Co

Pace Project No.: 30446202

QC Batch: 469226

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446202001

METHOD BLANK: 2265868

Matrix: Water

Associated Lab Samples: 30446202001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0420 ± 0.214 (0.452) C:NA T:93%	pCi/L	11/05/21 15:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093016/Big Rivers Electric Co

Pace Project No.: 30446202

QC Batch: 469228

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446202001

METHOD BLANK: 2265872

Matrix: Water

Associated Lab Samples: 30446202001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.423 ± 0.323 (0.633) C:78% T:91%	pCi/L	11/03/21 11:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093016/Big Rivers Electric Co
Pace Project No.: 30446202

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1093016 Workorder Name: MW-8 Wilson 092-00004 Owner Received Date: 9/30/2021 Results Requested By:

Report To: Subcontract To:

Pace Analytical Services, LLC
 825 Industrial Road
 Madisonville, KY 42409
 270-821-7375
 rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
 1638 Rosey Town Rd Suite 2,3,4
 Greensburg, PA 15601
 (724) 850-5615

WO# : 30446202



Preserved Containers

30446202																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Cooler Temperature on Receipt N/A °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3389 3427

Label	<u>JAG</u>
LIMS Login	<u>Rm</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# <u>10 D0411</u>	Date and Initials of person examining contents: <u>JAG 10/19/21</u>
Chain of Custody Present:	☒	☐	☐	1.	
Chain of Custody Filled Out:	☒	☐	☐	2.	
Chain of Custody Relinquished:	☒	☐	☐	3.	
Sampler Name & Signature on COC:	☐	☒	☐	4.	
Sample Labels match COC: -Includes date/time/ID Matrix: <u>DW</u>	☐	☒	☐	5.	<u>No Date or time on bottles</u>
Samples Arrived within Hold Time:	☒	☐	☐	6.	
Short Hold Time Analysis (<72hr remaining):	☐	☒	☐	7.	
Rush Turn Around Time Requested:	☐	☒	☐	8.	
Sufficient Volume:	☒	☐	☐	9.	
Correct Containers Used: -Pace Containers Used:	☒	☐	☒	10.	
Containers Intact:	☒	☐	☐	11.	
Orthophosphate field filtered	☐	☐	☒	12.	
Hex Cr Aqueous sample field filtered	☐	☐	☒	13.	
Organic Samples checked for dechlorination:	☐	☐	☒	14.	
Filtered volume received for Dissolved tests	☐	☐	☒	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	☒	☐	☐	16.	
All containers meet method preservation requirements.	☒	☐	☐	Initial when completed <u>JAG</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	☐	☐	☒	17.	
Trip Blank Present:	☐	☒	☐	18.	
Trip Blank Custody Seals Present	☐	☐	☒		
Rad Samples Screened < 0.5 mrem/hr	☒	☐	☐	Initial when completed <u>JAG</u>	Date: <u>10/19/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

PM: JLB
Due Date: 11/08/21
CLIENT: PACE_44_MVKY

W0#: 30446202

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093016

SENDING LABORATORY:

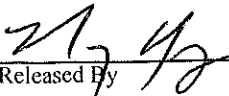
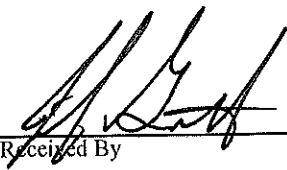
Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093016-01	Water	Sampled:09/30/2021 09:35	Specific Method 001
Radium Total (sub)	03/29/2022 09:35	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/29/2022 09:35	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/29/2022 09:35	EPA 903.1	

WO# : 30446202
PM: JLB Due Date: 11/08/21
CLIENT: PACE_44_MVKY

	10-01-21		10/16/21 1130
Released By	Date	Received By	Date
Released By	Date	Received By	Date

Certificate of Analysis 1093004

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:38

Project Name: MW-10 Wilson 092-00004

Workorder: 1093004

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 10/01/2021 14:13.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093004-01	MW10/	Groundwater	10/01/2021 08:20	10/01/2021 14:13	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093004-01	Field Conductance	3650			
	Field pH	5.84			
	Field Temp (C)	19.48			

ANALYTICAL RESULTS

Lab Sample ID: **1093004-01**

Description: **MW10**

Sample Collection Date Time: 10/01/2021 08:20

Sample Received Date Time: 10/01/2021 14:13

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Arsenic	0.0036		mg/L	0.0010	0.0004	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Barium	0.009		mg/L	0.004	0.001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Boron	0.70		mg/L	0.10	0.10	SW846 6010 B	10/05/2021 08:21	10/05/2021 15:35	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Calcium	396	D1	mg/L	40.0	13.0	SW846 6010 B	10/05/2021 08:21	10/06/2021 14:07	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Cobalt	0.092		mg/L	0.004	0.004	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Iron	38.3	D1	mg/L	0.500	0.250	SW846 6010 B	10/05/2021 08:21	10/05/2021 15:38	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Lithium	0.008	J	mg/L	0.02	0.005	SW846-6020 A	10/05/2021 08:21	10/08/2021 11:11	AKB
Magnesium	231	D1	mg/L	20.0	9.00	SW846 6010 B	10/05/2021 08:21	10/06/2021 14:07	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Nickel	0.040		mg/L	0.003	0.001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Potassium	7.08		mg/L	0.50	0.22	SW846 6010 B	10/05/2021 08:21	10/05/2021 15:35	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Sodium	136	D1	mg/L	26.0	10.0	SW846 6010 B	10/05/2021 08:21	10/06/2021 14:07	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP
Zinc	0.02		mg/L	0.02	0.004	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:02	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	191		mg/L	4		2320 B-2011	10/11/2021 16:12	10/11/2021 16:12	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	10/11/2021 16:12	10/11/2021 16:12	HMF
Total Alkalinity	191		mg/L	4		2320 B-2011	10/11/2021 16:12	10/11/2021 16:12	HMF
Chemical Oxygen Demand	32		mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:51	KBZ
Specific Conductance (Lab)	3420		umhos/cm	1	1	2510 B-2011	10/04/2021 13:27	10/04/2021 13:27	CML
Hardness as CaCO3	1800	D	mg/L	5	5	2340 C (as HACH 8226)	10/07/2021 10:00	10/07/2021 10:00	CLL
Total Dissolved Solids	3310		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.5		mg/L	0.5	0.4	5310 C-2011	10/05/2021 10:28	10/06/2021 14:50	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.056	_Sub	pCi/L			EPA 903.1	11/03/2021 09:31	11/03/2021 09:33	RCW
See Attached Subcontract Report	0.321	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/03/2021 09:31	11/03/2021 09:33	RCW
See Attached Subcontract Report	0.378	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/03/2021 09:31	11/03/2021 09:33	RCW



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	98.8	D	mg/L	5.0	3.6	EPA 300.0 REV 2.1	10/11/2021 19:08	10/11/2021 19:08	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	10/11/2021 18:54	10/11/2021 18:54	CSC
Sulfate	1360	D	mg/L	200	100	EPA 300.0 REV 2.1	10/12/2021 11:48	10/12/2021 11:48	CSC

Notes for work order 1093004

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0356 - EPA 200.2

Blank (BAJ0356-BLK1)

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 15:51

Antimony	ND	0.005	mg/L							U
Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

Blank (BAJ0356-BLK2)

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 14:57

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

LCS (BAJ0356-BS1)

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 15:54

Mercury	0.0026	0.0005	mg/L	0.00250		105	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0644	0.0010	mg/L	0.0625		103	85-115			
Barium	0.062	0.004	mg/L	0.0625		99.7	85-115			
Beryllium	0.0593	0.0020	mg/L	0.0625		94.9	85-115			
Cadmium	0.0631	0.0010	mg/L	0.0625		101	85-115			
Chromium	0.0640	0.0020	mg/L	0.0625		102	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		102	85-115			
Copper	0.065	0.003	mg/L	0.0625		103	85-115			
Lead	0.065	0.002	mg/L	0.0625		104	85-115			
Lithium	0.06	0.02	mg/L	0.0625		89.7	85-115			
Nickel	0.064	0.003	mg/L	0.0625		102	85-115			
Selenium	0.062	0.003	mg/L	0.0625		99.7	85-115			
Thallium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Zinc	0.07	0.02	mg/L	0.0625		106	85-115			

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0356 - EPA 200.2

LCS (BAJ0356-BS2)

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 15:00

Boron	0.13	0.10	mg/L	0.125		100	85-115			
Calcium	6.40	0.40	mg/L	6.25		102	85-115			
Iron	6.44	0.100	mg/L	6.25		103	85-115			
Magnesium	6.18	0.200	mg/L	6.25		98.9	85-115			
Potassium	6.41	0.50	mg/L	6.25		103	85-115			
Sodium	6.31	0.26	mg/L	6.25		101	85-115			

Matrix Spike (BAJ0356-MS1)

Source: 1085859-01

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:22

Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120			
Mercury	0.0027	0.0005	mg/L	0.00250	ND	107	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	ND	106	80-120			
Arsenic	0.0654	0.0010	mg/L	0.0625	0.0007	104	80-120			
Barium	0.601	0.004	mg/L	0.0625	0.542	94.4	80-120			
Beryllium	0.0565	0.0020	mg/L	0.0625	ND	90.4	80-120			
Cadmium	0.0611	0.0010	mg/L	0.0625	0.0001	97.5	80-120			
Chromium	0.0639	0.0020	mg/L	0.0625	ND	102	80-120			
Cobalt	0.062	0.004	mg/L	0.0625	ND	99.9	80-120			
Copper	0.064	0.003	mg/L	0.0625	0.003	98.4	80-120			
Lead	0.063	0.002	mg/L	0.0625	0.001	99.1	80-120			
Lithium	0.09	0.02	mg/L	0.0625	0.04	87.5	80-120			
Nickel	0.063	0.003	mg/L	0.0625	0.001	98.8	80-120			
Selenium	0.062	0.003	mg/L	0.0625	ND	99.7	80-120			
Thallium	0.0618	0.0020	mg/L	0.0625	ND	98.9	80-120			
Zinc	0.07	0.02	mg/L	0.0625	0.007	98.5	80-120			

Matrix Spike (BAJ0356-MS2)

Source: 1085859-01

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:51

Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	38.6	40.0	mg/L	6.25	26.4	196	80-120			D2, M1, J
Iron	7.50	10.0	mg/L	6.25	ND	120	80-120			D2, J
Magnesium	22.5	20.0	mg/L	6.25	14.7	124	80-120			D2, M1
Potassium	ND	50.0	mg/L	6.25	ND		80-120			D2, M4, U
Sodium	211	26.0	mg/L	6.25	181	481	80-120			D2, M1

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0356 - EPA 200.2

Matrix Spike Dup (BAJ0356-MSD1)

Source: 1085859-01

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:25

Molybdenum	0.07	0.01	mg/L	0.0625	ND	104	80-120	1.70	20	
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120	0.464	20	
Mercury	0.0026	0.0005	mg/L	0.00250	ND	103	80-120	3.78	20	
Arsenic	0.0648	0.0010	mg/L	0.0625	0.0007	103	80-120	0.936	20	
Barium	0.596	0.004	mg/L	0.0625	0.542	85.9	80-120	0.890	20	
Beryllium	0.0560	0.0020	mg/L	0.0625	ND	89.6	80-120	0.915	20	
Cadmium	0.0616	0.0010	mg/L	0.0625	0.0001	98.3	80-120	0.817	20	
Chromium	0.0629	0.0020	mg/L	0.0625	ND	101	80-120	1.53	20	
Cobalt	0.062	0.004	mg/L	0.0625	ND	98.7	80-120	1.17	20	
Copper	0.063	0.003	mg/L	0.0625	0.003	96.9	80-120	1.50	20	
Lead	0.062	0.002	mg/L	0.0625	0.001	97.9	80-120	1.19	20	
Lithium	0.09	0.02	mg/L	0.0625	0.04	85.7	80-120	1.24	20	
Nickel	0.063	0.003	mg/L	0.0625	0.001	98.1	80-120	0.769	20	
Selenium	0.063	0.003	mg/L	0.0625	ND	101	80-120	1.30	20	
Thallium	0.0608	0.0020	mg/L	0.0625	ND	97.3	80-120	1.60	20	
Zinc	0.07	0.02	mg/L	0.0625	0.007	99.2	80-120	0.620	20	

Matrix Spike Dup (BAJ0356-MSD2)

Source: 1085859-01

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:54

Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	34.4	40.0	mg/L	6.25	26.4	128	80-120	11.5	20	D2, M1, J
Iron	6.68	10.0	mg/L	6.25	ND	107	80-120	11.6	20	D2, J
Magnesium	20.0	20.0	mg/L	6.25	14.7	83.6	80-120	11.8	20	D2
Potassium	ND	50.0	mg/L	6.25	ND		80-120		20	D2, M4, U
Sodium	189	26.0	mg/L	6.25	181	127	80-120	11.1	20	D2, M1

Post Spike (BAJ0356-PS1)

Source: 1085859-01

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:27

Antimony	64.2		ug/L	62.5	0.326	102	75-125			
Mercury	2.73		ug/L	2.50	0.0730	106	75-125			
Molybdenum	64.2		ug/L	62.5	0.66	102	75-125			
Arsenic	63.5		ug/L	62.5	0.726	100	75-125			
Barium	597		ug/L	62.5	542	89.1	75-125			
Beryllium	55.4		ug/L	62.5	-0.0700	88.7	75-125			
Cadmium	61.2		ug/L	62.5	0.146	97.7	75-125			
Chromium	62.0		ug/L	62.5	0.351	98.6	75-125			
Cobalt	60.8		ug/L	62.5	0.614	96.2	75-125			
Copper	62.0		ug/L	62.5	2.56	95.2	75-125			
Lead	60.9		ug/L	62.5	0.955	96.0	75-115			
Lithium	90.3		ug/L	62.5	37.1	85.1	75-125			
Nickel	61.0		ug/L	62.5	1.43	95.4	75-125			
Selenium	62.6		ug/L	62.5	0.207	99.8	75-125			
Thallium	59.1		ug/L	62.5	0.0570	94.4	75-125			
Zinc	67.6		ug/L	62.5	7.32	96.5	75-125			

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0356 - EPA 200.2

Post Spike (BAJ0356-PS2)

Source: 1085859-01

Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 17:06

Boron	264		ug/L	125	152	89.6	75-125			D2
Calcium	31500		ug/L	6250	26400	82.0	75-125			D2
Iron	6430		ug/L	6250	151	100	75-125			D2
Magnesium	19300		ug/L	6250	14700	72.2	75-125			D2, M2
Potassium	13200		ug/L	6250	9050	66.7	75-125			D2, M2
Sodium	175000		ug/L	6250	181000	NR	75-125			D2, M2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0376 - Default Prep Wet Chem

Blank (BAJ0376-BLK1)

Prepared: 10/4/2021 13:25, Analyzed: 10/4/2021 13:25

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAJ0376-BS1)

Prepared: 10/4/2021 13:26, Analyzed: 10/4/2021 13:26

Specific Conductance (Lab)	1400		umhos/cm	1410		99.4	80-120			

Duplicate (BAJ0376-DUP1) Source: 1094464-01

Prepared: 10/4/2021 13:40, Analyzed: 10/4/2021 13:40

Specific Conductance (Lab)	876	1	umhos/cm		874			0.229	0.938	

Duplicate (BAJ0376-DUP2) Source: 1101792-02

Prepared: 10/4/2021 13:55, Analyzed: 10/4/2021 13:55

Specific Conductance (Lab)	440	1	umhos/cm		442			0.454	0.938	

Batch BAJ0539 - Default Prep Wet Chem

Blank (BAJ0539-BLK1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0556 - Default Prep Wet Chem

Blank (BAJ0556-BLK1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:10

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0556 - Default Prep Wet Chem

LCS (BAJ0556-BS1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:32

Total Organic Carbon	5.2	0.5	mg/L	5.00		103	80-120			

Duplicate (BAJ0556-DUP1) Source: 1091480-14

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 13:47

Total Organic Carbon	5.3	0.5	mg/L		5.3			0.574	25	

Duplicate (BAJ0556-DUP2) Source: 1093010-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:03

Total Organic Carbon	1.0	0.5	mg/L		0.6			42.7	25	Y1

Matrix Spike (BAJ0556-MS1) Source: 1091480-15

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 14:08

Total Organic Carbon	3.8	0.5	mg/L	2.50	1.2	103	80-120			

Matrix Spike (BAJ0556-MS2) Source: 1093011-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:24

Total Organic Carbon	6.2	0.5	mg/L	5.00	1.3	97.0	80-120			

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0581 - Default Prep Wet Chem

Matrix Spike Dup (BAJ0581-MSD1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Batch BAJ0758 - Default Prep Wet Chem

Blank (BAJ0758-BLK1)

Prepared: 10/7/2021 10:00, Analyzed: 10/7/2021 10:00

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAJ0758-BS1)

Prepared: 10/7/2021 10:00, Analyzed: 10/7/2021 10:00

Hardness as CaCO ₃	224	1	mg/L	225		99.6	80-120			

Duplicate (BAJ0758-DUP1) Source: 1101351-01

Prepared: 10/7/2021 10:00, Analyzed: 10/7/2021 10:00

Hardness as CaCO ₃	148	1	mg/L		150			1.34	10	

Matrix Spike (BAJ0758-MS1) Source: 1101351-01

Prepared: 10/7/2021 10:00, Analyzed: 10/7/2021 10:00

Hardness as CaCO ₃	478	1	mg/L	318	150	103	80-120			

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK1)

Prepared: 10/11/2021 12:41, Analyzed: 10/11/2021 12:41

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK2)

Prepared: 10/11/2021 15:42, Analyzed: 10/11/2021 15:42

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1329 - Default Prep Wet Chem

Blank (BAJ1329-BLK3)

Prepared: 10/11/2021 16:03, Analyzed: 10/11/2021 16:03

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAJ1329-BLK4)

Prepared: 10/11/2021 16:21, Analyzed: 10/11/2021 16:21

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAJ1329-BS1)

Prepared: 10/11/2021 15:37, Analyzed: 10/11/2021 15:37

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	222	4	mg/L	225		98.5	0-200			
Total Alkalinity	249	4	mg/L	235		106	80-120			

LCS (BAJ1329-BS2)

Prepared: 10/11/2021 15:59, Analyzed: 10/11/2021 15:59

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Total Alkalinity	249	4	mg/L	235		106	80-120			
Carbonate Alkalinity as CaCO ₃	220	4	mg/L	225		97.6	0-200			

Duplicate (BAJ1329-DUP1)

Source: 1093017-01

Prepared: 10/11/2021 15:26, Analyzed: 10/11/2021 15:26

Bicarbonate Alkalinity as CaCO ₃	272	4	mg/L		268			1.56	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Total Alkalinity	272	4	mg/L		268			1.56	10	

Duplicate (BAJ1329-DUP2)

Source: 1093019-01

Prepared: 10/11/2021 15:53, Analyzed: 10/11/2021 15:53

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Total Alkalinity	ND	4	mg/L		ND				10	U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1329 - Default Prep Wet Chem

Matrix Spike (BAJ1329-MS1)

Source: 1093017-01

Prepared: 10/11/2021 15:32, Analyzed: 10/11/2021 15:32

Total Alkalinity	292	4	mg/L	50.0	268	48.4	80-120			M3

Matrix Spike (BAJ1329-MS2)

Source: 1093019-01

Prepared: 10/11/2021 15:55, Analyzed: 10/11/2021 15:55

Total Alkalinity	49	4	mg/L	50.0	ND	97.8	80-120			

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1443 - Default Prep IC

Blank (BAJ1443-BLK1)

Prepared: 10/11/2021 17:39, Analyzed: 10/11/2021 17:39

Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.20	mg/L							U

LCS (BAJ1443-BS1)

Prepared: 10/11/2021 17:24, Analyzed: 10/11/2021 17:24

Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10.7		mg/L	10.0		107	90-110			
Fluoride	10.0		mg/L	10.0		100	90-110			

Matrix Spike (BAJ1443-MS1)

Source: 1093019-01

Prepared: 10/11/2021 23:51, Analyzed: 10/11/2021 23:51

Chloride	12.1		mg/L	10.0	0.4	118	80-120			
Sulfate	12.0		mg/L	10.0	0.1	119	80-120			
Fluoride	11.8		mg/L	10.0	0.00	118	80-120			

Matrix Spike Dup (BAJ1443-MSD1)

Source: 1093019-01

Prepared: 10/12/2021 0:06, Analyzed: 10/12/2021 0:06

Chloride	12.1		mg/L	10.0	0.4	117	80-120	0.546	10	
Sulfate	12.0		mg/L	10.0	0.1	119	80-120	0.217	20	
Fluoride	11.7		mg/L	10.0	0.00	117	80-120	0.273	20	

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093004

Shipped By: Client

Temperature: 2.10° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: **09/06/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-10 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Travis Speed

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date (mm/dd/yy)	Collection Time (24 hr)	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093004							
Sample ID#							
1093004-01 A	<u>10-1-21</u>	<u>8:20</u>	Plastic 1L	1	MW10	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1093004-01 B	<u>10-1-21</u>	<u>8:20</u>	Plastic 500mL pH<2 w/HNO3	1	MW10	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
Preservation Check: pH : _____							
1093004-01 C	<u>10-1-21</u>	<u>8:20</u>	Plastic 500mL pH<2 w/H2SO4	1	MW10	g / c	COD TOC
Preservation Check: pH : _____							
1093004-01 D	<u>10-1-21</u>	<u>8:20</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW10	g / c	Radium 226 (sub)
Preservation Check: pH : _____							

Preservation Check Performed by: NOY

Field data collected by: Travis Speed Date (mm/dd/yy) 10-1-21 Time (24 hr) 8:20
pH 5.54 Cond (umho) 3.65 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 19.48 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Speed [Signature] 10-01-21 1413



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:21:46AM

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-10 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Tina Smith

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1093004	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1093004-01 E	<u>10-1-21</u>	<u>8:20</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093004-01 F	<u>10-1-21</u>	<u>8:20</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093004-01 G	<u>10-1-21</u>	<u>8:20</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW10	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1093004-01 H	<u>10-1-21</u>	<u>8:20</u>	AG 250mL pH<2 w/H2SO4	1	MW10	g / c	TOC
			Preservation Check: pH : _____				

Thermometer Serial Number

181390287

181460057

Temp 21 °C

Preservation Check Performed by: NOY

Field data collected by: Tina Smith Date (mm/dd/yy) 10-1-21 Time (24 hr) 8:20
pH 5.84 Cond (umho) 3.65 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 19.48 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Tina Smith

NY

10-01-21

1413



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:21:46AM

November 02, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093004/Big Rivers Electric Co
Pace Project No.: 30445890

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1093004/Big Rivers Electric Co

Pace Project No.: 30445890

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093004/Big Rivers Electric Co

Pace Project No.: 30445890

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30445890001	1093004-01	Water	10/01/21 08:20	10/13/21 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093004/Big Rivers Electric Co

Pace Project No.: 30445890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30445890001	1093004-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093004/Big Rivers Electric Co

Pace Project No.: 30445890

Sample: 1093004-01 **Lab ID: 30445890001** Collected: 10/01/21 08:20 Received: 10/13/21 10:00 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.0565 ± 0.368 (0.741) C:NA T:95%	pCi/L	11/02/21 13:44	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.321 ± 0.397 (0.845) C:74% T:96%	pCi/L	10/28/21 14:21	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.378 ± 0.765 (1.59)	pCi/L	11/02/21 17:32	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093004/Big Rivers Electric Co

Pace Project No.: 30445890

QC Batch:	469194	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30445890001

METHOD BLANK: 2265782 Matrix: Water

Associated Lab Samples: 30445890001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0853 ± 0.251 (0.613) C:78% T:92%	pCi/L	10/28/21 14:00	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093004/Big Rivers Electric Co

Pace Project No.: 30445890

QC Batch: 469193

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30445890001

METHOD BLANK: 2265781

Matrix: Water

Associated Lab Samples: 30445890001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.277 ± 0.340 (0.554) C:NA T:93%	pCi/L	11/02/21 13:31	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093004/Big Rivers Electric Co
Pace Project No.: 30445890

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093004

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments

Sample ID: 1093004-01	Water	Sampled: 10/01/2021 08:20	Specific Method
Radium Total (sub)		03/30/2022 08:20	EPA 904.0 Radium Sum C
Radium 228 (sub)		03/30/2022 08:20	EPA 904.0 Radium Sum C
Radium 226 (sub)		03/30/2022 08:20	EPA 903.1

WO# : 30445890



30445890

<i>ammy zai</i>	<i>10-12-21</i>	<i>[Signature]</i>	<i>10/13/21</i>	<i>1000</i>
Released By	Date	Received By	Date	

Released By	Date	Received By	Date	

WO#: 30445890

Due Date: 11/03/21
PM: JLB
CLIENT: PACE_44_MVKY

Chain of Custody



Results Requested By: 10/21/2021

Workorder: 1093004 Workorder Name: MW-10 Wilson 092-00004 Owner Received Date: 10/1/2021 Subcontract To: Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

Preserved Containers

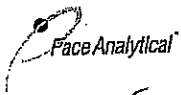
Item		Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903	EPA 904	LAB USE ONLY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Cooler Temperature on Receipt _____ °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY

Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1107 3389 3655

Label <u>AL</u>
LIMS Login <u>VP</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used 13 Type of Ice: Wei Blue None

Cooler Temperature Observed Temp 18.1 °C Correction Factor: -0.1 °C Final Temp: 18.0 °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot# <u>1000411</u>			Date and Initials of person examining contents: <u>AL 10/18/21</u>
	Yes	No	N/A	
Chain of Custody Present:	☒			1.
Chain of Custody Filled Out:		☒		2. <u>no preservative</u>
Chain of Custody Relinquished:	☒			3.
Sampler Name & Signature on COC:		☒		4.
Sample Labels match COC:		☒		5. <u>no date/time on labels</u>
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	☒			6.
Short Hold Time Analysis (<72hr remaining):		☒		7.
Rush Turn Around Time Requested:		☒		8.
Sufficient Volume:	☒			9.
Correct Containers Used:	☒			10.
-Pace Containers Used:		☒		
Containers Intact:	☒			11.
Orthophosphate field filtered			☒	12.
Hex Cr Aqueous sample field filtered			☒	13.
Organic Samples checked for dechlorination:			☒	14.
Filtered volume received for Dissolved tests			☒	15.
All containers have been checked for preservation.	☒			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				
All containers meet method preservation requirements.	☒			Initial when completed: <u>AL</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			☒	17.
Trip Blank Present:			☒	18.
Trip Blank Custody Seals Present			☒	
Rad Samples Screened < 0.5 mrem/hr	☒			Initial when completed: <u>AL</u> Date: <u>10/18/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0#: 30445890
PM: JLB Due Date: 11/03/21
CLIENT: PACE_44_MKY

Pace Greensburg Lab -Sample Container Count



Pace KY

1093004 / Big Rivers Electric

Profile Number 11851

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGCU	ZPLC
1	WT											✓															
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

WO#: 3045890

Due Date: 11/03/21

PM: JLB

CLIENT: PACE_44_MVKY

WO#: 30445890

Due Date: 11/03/21

PM: JLB

CLIENT: PACE_44_MVKY

Container Codes

Glass

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

Plastic / Misc.

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag
WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

Certificate of Analysis 1093012

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:27

Project Name: MW-4D Wilson 092-00004

Workorder: 1093012

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/29/2021 14: 11.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093012-01	MW4D/	Groundwater	09/29/2021 11:05	09/29/2021 14:11	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093012-01	Field Conductance	5210			
	Field pH	6.28			
	Field Temp (C)	17.93			

ANALYTICAL RESULTS

Lab Sample ID: **1093012-01**

Description: **MW4D**

Sample Collection Date Time: 09/29/2021 11:05

Sample Received Date Time: 09/29/2021 14:11

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Arsenic	0.0029		mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Barium	0.013		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Boron	8.69	D1, M1	mg/L	1.00	1.00	SW846 6010 B	10/01/2021 08:15	10/05/2021 19:01	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Calcium	608	D1, M3	mg/L	40.0	13.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:58	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Cobalt	0.010		mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Iron	8.07		mg/L	0.100	0.050	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:55	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Lithium	0.13	M1	mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Magnesium	230	D1, M3	mg/L	20.0	9.00	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:58	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Molybdenum	0.007	J	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Nickel	0.024		mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Potassium	48.1	D1, M2	mg/L	2.50	1.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:58	MRWD
Selenium	0.001	J	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/08/2021 10:18	AKB
Sodium	208	D1, M1	mg/L	26.0	10.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:58	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB
Zinc	0.02	M4	mg/L	0.02	0.02	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:18	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO₃	387		mg/L	4		2320 B-2011	09/30/2021 14:09	09/30/2021 14:09	HMF
Carbonate Alkalinity as CaCO ₃	ND	u	mg/L	4		2320 B-2011	09/30/2021 14:09	09/30/2021 14:09	HMF
Total Alkalinity	387		mg/L	4		2320 B-2011	09/30/2021 14:09	09/30/2021 14:09	HMF
Chemical Oxygen Demand	191		mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 13:14	KBZ
Specific Conductance (Lab)	4850		umhos/cm	1	1	2510 B-2011	09/30/2021 11:25	09/30/2021 11:25	CML
Hardness as CaCO₃	2200	D	mg/L	5	5	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	4580	C6	mg/L	25	25	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG
Total Organic Carbon	0.9		mg/L	0.5	0.4	5310 C-2011	10/05/2021 10:28	10/06/2021 18:42	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.222	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.829	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	1.05	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	1570	D	mg/L	50.0	36.0	EPA 300.0 REV 2.1	10/07/2021 22:00	10/07/2021 22:00	CSC
Fluoride	0.26		mg/L	0.20		EPA 300.0 REV 2.1	10/07/2021 21:45	10/07/2021 21:45	CSC
Sulfate	985	D	mg/L	200	100	EPA 300.0 REV 2.1	10/08/2021 12:52	10/08/2021 12:52	CSC

Notes for work order 1093012

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
C6	Quantitative confirmation performed. Sample ran twice.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Blank (BAI3647-BLK1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:35

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAI3647-BLK2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:18

Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAI3647-BS1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:38

Boron	0.11	0.10	mg/L	0.125		86.2	85-115
Calcium	6.25	0.40	mg/L	6.25		100	85-115
Iron	6.34	0.100	mg/L	6.25		101	85-115
Magnesium	6.01	0.200	mg/L	6.25		96.1	85-115
Potassium	6.10	0.50	mg/L	6.25		97.5	85-115
Sodium	6.34	0.26	mg/L	6.25		101	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

LCS (BAI3647-BS2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:21

Mercury	0.0027	0.0005	mg/L	0.00250		108	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Arsenic	0.0625	0.0010	mg/L	0.0625		100	85-115			
Barium	0.061	0.004	mg/L	0.0625		98.1	85-115			
Beryllium	0.0607	0.0020	mg/L	0.0625		97.2	85-115			
Cadmium	0.0618	0.0010	mg/L	0.0625		98.9	85-115			
Chromium	0.0645	0.0020	mg/L	0.0625		103	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		100	85-115			
Copper	0.062	0.003	mg/L	0.0625		98.6	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.9	85-115			
Nickel	0.062	0.003	mg/L	0.0625		99.4	85-115			
Selenium	0.061	0.003	mg/L	0.0625		97.8	85-115			
Thallium	0.0650	0.0020	mg/L	0.0625		104	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Matrix Spike (BAI3647-MS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:04

Boron	1.85	1.00	mg/L	0.125	1.77	66.3	80-120			D2, M2
Calcium	33.1	4.00	mg/L	6.25	27.0	98.2	80-120			D2
Iron	6.41	1.00	mg/L	6.25	ND	103	80-120			D2
Magnesium	15.7	2.00	mg/L	6.25	8.84	109	80-120			D2
Potassium	13.1	5.00	mg/L	6.25	6.80	100	80-120			D2
Sodium	197	2.60	mg/L	6.25	178	296	80-120			D2, M1

Matrix Spike (BAI3647-MS2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:11

Boron	8.84	1.00	mg/L	0.125	8.69	122	80-120			D2, M1
Calcium	603	4.00	mg/L	6.25	608	NR	80-120			D2
Iron	14.8	1.00	mg/L	6.25	8.07	107	80-120			D2
Magnesium	205	2.00	mg/L	6.25	230	NR	80-120			D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120			D2, M2
Sodium	209	2.60	mg/L	6.25	208	28.5	80-120			D2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike (BAI3647-MS3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:39

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120			D2, J
Antimony	0.064	0.050	mg/L	0.0625	ND	103	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.0	80-120			D2, J
Arsenic	0.0610	0.0100	mg/L	0.0625	ND	97.5	80-120			D2
Barium	0.133	0.040	mg/L	0.0625	0.074	95.3	80-120			D2
Beryllium	0.0654	0.0200	mg/L	0.0625	ND	105	80-120			D2
Cadmium	0.0589	0.0100	mg/L	0.0625	ND	94.2	80-120			D2
Chromium	0.0587	0.0200	mg/L	0.0625	ND	93.9	80-120			D2
Cobalt	0.059	0.040	mg/L	0.0625	ND	94.1	80-120			D2
Copper	0.059	0.030	mg/L	0.0625	ND	94.8	80-120			D2
Lead	0.061	0.020	mg/L	0.0625	ND	97.0	80-120			D2
Lithium	0.10	0.20	mg/L	0.0625	ND	158	80-120			D2, M1, J
Nickel	0.058	0.030	mg/L	0.0625	ND	92.8	80-120			D2
Selenium	0.060	0.030	mg/L	0.0625	ND	96.5	80-120			D2
Thallium	0.0634	0.0200	mg/L	0.0625	ND	101	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Matrix Spike (BAI3647-MS4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:47

Mercury	0.0027	0.0050	mg/L	0.00250	ND	108	80-120			D2, J
Antimony	0.066	0.050	mg/L	0.0625	ND	106	80-120			D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	111	80-120			D2, J
Arsenic	0.0637	0.0100	mg/L	0.0625	ND	102	80-120			D2
Barium	0.073	0.040	mg/L	0.0625	0.013	96.1	80-120			D2
Beryllium	0.0622	0.0200	mg/L	0.0625	ND	99.6	80-120			D2
Cadmium	0.0591	0.0100	mg/L	0.0625	ND	94.6	80-120			D2
Chromium	0.0594	0.0200	mg/L	0.0625	ND	95.0	80-120			D2
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Copper	0.055	0.030	mg/L	0.0625	ND	87.7	80-120			D2
Lead	0.059	0.020	mg/L	0.0625	ND	94.6	80-120			D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	173	80-120			D2, M1
Nickel	0.081	0.030	mg/L	0.0625	0.024	91.1	80-120			D2
Selenium	0.062	0.030	mg/L	0.0625	ND	98.6	80-120			D2
Thallium	0.0625	0.0200	mg/L	0.0625	ND	100	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:07

Boron	1.88	1.00	mg/L	0.125	1.77	87.6	80-120	1.43	20	D2
Calcium	33.5	4.00	mg/L	6.25	27.0	105	80-120	1.35	20	D2
Iron	6.43	1.00	mg/L	6.25	ND	103	80-120	0.308	20	D2
Magnesium	15.8	2.00	mg/L	6.25	8.84	112	80-120	0.922	20	D2
Potassium	13.2	5.00	mg/L	6.25	6.80	102	80-120	1.13	20	D2
Sodium	198	2.60	mg/L	6.25	178	323	80-120	0.871	20	D2, M1

Matrix Spike Dup (BAI3647-MSD2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:23

Boron	8.80	1.00	mg/L	0.125	8.69	87.5	80-120	0.490	20	D2
Calcium	624	4.00	mg/L	6.25	608	264	80-120	3.40	20	D2, M3
Iron	15.3	1.00	mg/L	6.25	8.07	115	80-120	3.20	20	D2
Magnesium	212	2.00	mg/L	6.25	230	NR	80-120	2.97	20	D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120	0.0828	20	D2, M2
Sodium	217	2.60	mg/L	6.25	208	149	80-120	3.53	20	D2, M1

Matrix Spike Dup (BAI3647-MSD3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:43

Antimony	0.065	0.050	mg/L	0.0625	ND	104	80-120	1.27	20	D2
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	5.52	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	102	80-120	2.74	20	D2, J
Arsenic	0.0619	0.0100	mg/L	0.0625	ND	99.0	80-120	1.53	20	D2
Barium	0.136	0.040	mg/L	0.0625	0.074	99.1	80-120	1.77	20	D2
Beryllium	0.0653	0.0200	mg/L	0.0625	ND	104	80-120	0.210	20	D2
Cadmium	0.0597	0.0100	mg/L	0.0625	ND	95.5	80-120	1.41	20	D2
Chromium	0.0598	0.0200	mg/L	0.0625	ND	95.7	80-120	1.82	20	D2
Cobalt	0.060	0.040	mg/L	0.0625	ND	95.3	80-120	1.36	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.6	80-120	1.29	20	D2
Lead	0.060	0.020	mg/L	0.0625	ND	96.6	80-120	0.496	20	D2
Lithium	0.10	0.20	mg/L	0.0625	ND	162	80-120	2.31	20	D2, M1, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.8	80-120	2.14	20	D2
Selenium	0.059	0.030	mg/L	0.0625	ND	94.5	80-120	2.10	20	D2
Thallium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.12	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:51

Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	2.57	20	D2, J
Molybdenum	0.07	0.10	mg/L	0.0625	ND	116	80-120	4.42	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.65	20	D2
Arsenic	0.0674	0.0100	mg/L	0.0625	ND	108	80-120	5.63	20	D2
Barium	0.076	0.040	mg/L	0.0625	0.013	101	80-120	3.96	20	D2
Beryllium	0.0618	0.0200	mg/L	0.0625	ND	98.8	80-120	0.731	20	D2
Cadmium	0.0605	0.0100	mg/L	0.0625	ND	96.7	80-120	2.28	20	D2
Chromium	0.0616	0.0200	mg/L	0.0625	ND	98.6	80-120	3.74	20	D2
Cobalt	0.071	0.040	mg/L	0.0625	ND	114	80-120	3.46	20	D2
Copper	0.058	0.030	mg/L	0.0625	ND	92.2	80-120	5.09	20	D2
Lead	0.061	0.020	mg/L	0.0625	ND	98.0	80-120	3.61	20	D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	167	80-120	1.57	20	D2, M1
Nickel	0.084	0.030	mg/L	0.0625	0.024	96.9	80-120	4.44	20	D2
Selenium	0.062	0.030	mg/L	0.0625	ND	99.5	80-120	0.933	20	D2
Thallium	0.0648	0.0200	mg/L	0.0625	ND	104	80-120	3.62	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Post Spike (BAI3647-PS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:26

Boron	1820		ug/L	125	1770	40.5	75-125			D2, M2
Calcium	28200		ug/L	6250	27000	19.5	75-125			D2, M2
Iron	-21.0		ug/L	6250	7.38	NR	75-125			D2, M2, U
Magnesium	9840		ug/L	6250	8840	16.0	75-125			D2, M2
Potassium	5070		ug/L	6250	6800	NR	75-125			D2, M2
Sodium	201000		ug/L	6250	178000	357	75-125			D2, M1

Post Spike (BAI3647-PS2)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:54

Antimony	0.148		ug/L	62.5	0.184	NR	75-125			D2, M2
Molybdenum	1.91		ug/L	62.5	1.33	0.934	75-125			D2, M2
Mercury	0.173		ug/L	2.50	0.0559	4.70	75-125			D2, M2
Arsenic	0.646		ug/L	62.5	0.329	0.508	75-125			D2, M2
Barium	78.5		ug/L	62.5	73.8	7.64	75-125			D2, M2
Beryllium	-0.0723		ug/L	62.5	0.0019	NR	75-125			D2, M2, U
Cadmium	0.0690		ug/L	62.5	0.0294	0.0633	75-125			D2, M2
Chromium	0.0170		ug/L	62.5	0.224	NR	75-125			D2, M2
Cobalt	0.055		ug/L	62.5	0.045	0.0150	75-125			D2, M2
Copper	-0.112		ug/L	62.5	0.703	NR	75-125			D2, M2, U
Lead	-0.348		ug/L	62.5	-0.045		75-115			D2, M2, U
Lithium	31.7		ug/L	62.5	25.6	9.80	75-125			D2, M2
Nickel	0.391		ug/L	62.5	0.659	NR	75-125			D2, M2
Selenium	0.078		ug/L	62.5	0.053	0.0395	75-125			D2, M2
Thallium	0.463		ug/L	62.5	0.0639	0.638	75-125			D2, M2
Zinc	6.59		ug/L	62.5	7.02	NR	75-125			D2, M2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Blank (BAI3295-BLK1)

Prepared: 9/30/2021 11:01, Analyzed: 9/30/2021 11:01

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK2)

Prepared: 9/30/2021 13:09, Analyzed: 9/30/2021 13:09

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK3)

Prepared: 9/30/2021 14:34, Analyzed: 9/30/2021 14:34

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK4)

Prepared: 9/30/2021 15:09, Analyzed: 9/30/2021 15:09

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAI3295-BS1)

Prepared: 9/30/2021 13:05, Analyzed: 9/30/2021 13:05

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	241	4	mg/L	225		107	0-200			
Total Alkalinity	251	4	mg/L	235		107	80-120			

LCS (BAI3295-BS2)

Prepared: 9/30/2021 14:30, Analyzed: 9/30/2021 14:30

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	227	4	mg/L	225		101	0-200			
Total Alkalinity	236	4	mg/L	235		101	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Duplicate (BAI3295-DUP1)

Source: 1091563-01

Prepared: 9/30/2021 12:57, Analyzed: 9/30/2021 12:57

Total Alkalinity	87	4	mg/L		99			13.4	10	Y1
Bicarbonate Alkalinity as CaCO ₃	87	4	mg/L		99			13.4	10	Y1
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Duplicate (BAI3295-DUP2)

Source: 1093298-01

Prepared: 9/30/2021 14:20, Analyzed: 9/30/2021 14:20

Total Alkalinity	242	4	mg/L		228			5.75	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	242	4	mg/L		228			5.75	10	

Matrix Spike (BAI3295-MS1)

Source: 1091563-01

Prepared: 9/30/2021 13:01, Analyzed: 9/30/2021 13:01

Total Alkalinity	153	4	mg/L	50.0	99	108	80-120			

Matrix Spike (BAI3295-MS2)

Source: 1093298-01

Prepared: 9/30/2021 14:24, Analyzed: 9/30/2021 14:24

Total Alkalinity	262	4	mg/L	50.0	228	67.4	80-120			M3

Batch BAI3601 - Default Prep Wet Chem

Blank (BAI3601-BLK1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAI3601-BS1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			

Duplicate (BAI3601-DUP1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	

Matrix Spike (BAI3601-MS1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3625 - Default Prep Wet Chem

Blank (BAI3625-BLK1)

Prepared: 9/30/2021 10:59, Analyzed: 9/30/2021 10:59

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAI3625-BS1)

Prepared: 9/30/2021 11:00, Analyzed: 9/30/2021 11:00

Specific Conductance (Lab)	1410		umhos/cm	1410		100	80-120			

Duplicate (BAI3625-DUP1) Source: 1091480-10

Prepared: 9/30/2021 11:13, Analyzed: 9/30/2021 11:13

Specific Conductance (Lab)	1440	1	umhos/cm		1440			0.139	0.938	

Duplicate (BAI3625-DUP2) Source: 1093012-01

Prepared: 9/30/2021 11:28, Analyzed: 9/30/2021 11:28

Specific Conductance (Lab)	4850	1	umhos/cm		4850			0.00	0.938	

Batch BAI3743 - Default Prep Wet Chem

Blank (BAI3743-BLK1)

Prepared: 10/1/2021 14:02, Analyzed: 10/1/2021 14:02

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAI3743-BS1)

Prepared: 10/1/2021 14:02, Analyzed: 10/1/2021 14:02

Total Dissolved Solids	1510	25	mg/L	1500		100	80-120			

Duplicate (BAI3743-DUP1) Source: 1091480-01

Prepared: 10/1/2021 14:02, Analyzed: 10/1/2021 14:02

Total Dissolved Solids	404	50	mg/L		400			0.995	10	

Duplicate (BAI3743-DUP2) Source: 1093012-01

Prepared: 10/1/2021 14:02, Analyzed: 10/1/2021 14:02

Total Dissolved Solids	4480	50	mg/L		4450			0.672	10	

Batch BAJ0532 - Default Prep Wet Chem

Blank (BAJ0532-BLK1)

Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57

Total Dissolved Solids	ND	25	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0532 - Default Prep Wet Chem

LCS (BAJ0532-BS1)

Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57

Total Dissolved Solids	1450	25	mg/L	1500		96.9	80-120			

Duplicate (BAJ0532-DUP1) Source: 1085995-01

Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57

Total Dissolved Solids	612	50	mg/L		610			0.327	10	

Duplicate (BAJ0532-DUP2) Source: 1101910-01

Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57

Total Dissolved Solids	510	50	mg/L		512			0.391	10	

Batch BAJ0556 - Default Prep Wet Chem

Blank (BAJ0556-BLK1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:10

Total Organic Carbon	ND	0.5	mg/L							U

LCS (BAJ0556-BS1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:32

Total Organic Carbon	5.2	0.5	mg/L	5.00		103	80-120			

Duplicate (BAJ0556-DUP1) Source: 1091480-14

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 13:47

Total Organic Carbon	5.3	0.5	mg/L		5.3			0.574	25	

Duplicate (BAJ0556-DUP2) Source: 1093010-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:03

Total Organic Carbon	1.0	0.5	mg/L		0.6			42.7	25	Y1

Matrix Spike (BAJ0556-MS1) Source: 1091480-15

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 14:08

Total Organic Carbon	3.8	0.5	mg/L	2.50	1.2	103	80-120			

Matrix Spike (BAJ0556-MS2) Source: 1093011-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:24

Total Organic Carbon	6.2	0.5	mg/L	5.00	1.3	97.0	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Matrix Spike Dup (BAJ0581-MSD1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1085 - Default Prep IC

Blank (BAJ1085-BLK1)

Prepared: 10/7/2021 18:47, Analyzed: 10/7/2021 18:47

Fluoride	ND	0.20	mg/L							U
Sulfate	ND	1.0	mg/L							U
Chloride	ND	0.5	mg/L							U

LCS (BAJ1085-BS1)

Prepared: 10/7/2021 18:32, Analyzed: 10/7/2021 18:32

Fluoride	10.0		mg/L	10.0		100	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10.2		mg/L	10.0		102	90-110			

Matrix Spike (BAJ1085-MS1)

Source: 1093005-01

Prepared: 10/7/2021 23:29, Analyzed: 10/7/2021 23:29

Sulfate	149		mg/L	10.0	390	NR	80-120			M2
Chloride	37.0		mg/L	10.0	32.6	43.9	80-120			
Fluoride	11.2		mg/L	10.0	0.30	109	80-120			

Matrix Spike Dup (BAJ1085-MSD1)

Source: 1093005-01

Prepared: 10/7/2021 23:44, Analyzed: 10/7/2021 23:44

Fluoride	11.9		mg/L	10.0	0.30	116	80-120	5.88	20	
Sulfate	149		mg/L	10.0	390	NR	80-120	0.171	20	M2
Chloride	37.4		mg/L	10.0	32.6	48.2	80-120	1.16	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093012

Shipped By: Client

Temperature: 2.90° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station

Project: MW-4D Wilson 092-00004

Brian Edwards
PO Box 24
Henderson, KY 42419

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY *required information*

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093012	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1093012-01 E	<u>9-29-21</u>	<u>11:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4D	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093012-01 F	<u>9-29-21</u>	<u>11:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4D	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093012-01 G	<u>9-29-21</u>	<u>11:05</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW4D	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1093012-01 H	<u>9-29-21</u>	<u>11:05</u>	AG 250mL pH<2 w/H2SO4	1	MW4D	g / c	TOC
			Preservation Check: pH : _____				

Thermometer Serial Number

181390287

✓ 181460057

Temp 2.9 °C

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 9-29-21 Time (24 hr) 11:05
pH 6.28 Cond 25 5.21 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.93 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

09-29-21

1411

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-4D Wilson 092-00004

Phone: (270) 844-6000
PWS ID#:
State: KY

PO#:
Quote#

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Sample ID#	Date (mm/dd/yy):	Collection Time (24 hr):					
1093012	1093012-01 A	<u>9-29-21</u>	<u>11:05</u>	Plastic 1L	1	MW4D	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1093012-01 B	<u>9-29-21</u>	<u>11:05</u>	Plastic 500mL pH<2 w/HNO3	1	MW4D	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B	
Preservation Check: pH : _____								
1093012-01 C	<u>9-29-21</u>	<u>11:05</u>	Plastic 500mL pH<2 w/H2SO4	1	MW4D	g / c	COD TOC	
Preservation Check: pH : _____								
1093012-01 D	<u>9-29-21</u>	<u>11:05</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW4D	g / c	Radium 226 (sub)	
Preservation Check: pH : _____								

Preservation Check Performed by: NOY

Field data collected by: Travis Speed Date (mm/dd/yy) 9-29-21 Time (24 hr) 11:05
pH 6.28 Cond (µmho) 5.21 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.93 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
<u>[Signature]</u>	<u>[Signature]</u>	<u>09-29-21</u>	<u>1411</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:34AM

November 05, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093012/Big Rivers Electric Co
Pace Project No.: 30446206

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1093012/Big Rivers Electric Co

Pace Project No.: 30446206

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093012/Big Rivers Electric Co

Pace Project No.: 30446206

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30446206001	1093012-01	Water	09/29/21 11:05	10/18/21 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093012/Big Rivers Electric Co

Pace Project No.: 30446206

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30446206001	1093012-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093012/Big Rivers Electric Co

Pace Project No.: 30446206

Sample: 1093012-01 **Lab ID: 30446206001** Collected: 09/29/21 11:05 Received: 10/18/21 10:15 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.222 ± 0.634 (1.04) C:NA T:97%	pCi/L	11/05/21 16:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.829 ± 0.423 (0.747) C:78% T:88%	pCi/L	11/03/21 11:36	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.05 ± 1.06 (1.79)	pCi/L	11/05/21 17:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093012/Big Rivers Electric Co

Pace Project No.: 30446206

QC Batch: 469226

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446206001

METHOD BLANK: 2265868

Matrix: Water

Associated Lab Samples: 30446206001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0420 ± 0.214 (0.452) C:NA T:93%	pCi/L	11/05/21 15:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093012/Big Rivers Electric Co

Pace Project No.: 30446206

QC Batch: 469228

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446206001

METHOD BLANK: 2265872

Matrix: Water

Associated Lab Samples: 30446206001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.423 ± 0.323 (0.633) C:78% T:91%	pCi/L	11/03/21 11:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093012/Big Rivers Electric Co
Pace Project No.: 30446206

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Results Requested By: 10/8/2021

Workorder Name: MW-4D Wilson 092-00004 Owner Received Date: 9/29/2021

Workorder: 1093012

Report To: Subcontract To:

Requested Analysis

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

WO#: 30446206



Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1								
2	1093012-01		09/29/21 11:05	IR44-McCoy	Water	X	X	201
3								
4								
5								
6								
7								
8								
9								
10								
Transfers	Released By	Date/Time	Received By	Date/Time	Comments			
1				10/18/21 1015				
2								
3								

Cooler Temperature on Receipt

NA

°C

Custody Seal

Y or N

Received on Ice

Y or N

Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002 rev.00 24March2009

Page 1 of 1

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 7749 5956 6277

Label <u>JAG</u>
LIMS Login <u>Rjm</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
Chain of Custody Present:	☒	☐	☐	<u>10D0411</u>	<u>JAG 10/19/21</u>
Chain of Custody Filled Out:	☒	☐	☐		
Chain of Custody Relinquished:	☒	☐	☐		
Sampler Name & Signature on COC:	☐	☒	☐		
Sample Labels match COC:	☐	☒	☐		
-Includes date/time/ID Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	☒	☐	☐		
Short Hold Time Analysis (<72hr remaining):	☐	☒	☐		
Rush Turn Around Time Requested:	☐	☒	☐		
Sufficient Volume:	☒	☐	☐		
Correct Containers Used:	☒	☐	☐		
-Pace Containers Used:	☐	☒	☐		
Containers Intact:	☒	☐	☐		
Orthophosphate field filtered	☐	☐	☒		
Hex Cr Aqueous sample field filtered	☐	☐	☒		
Organic Samples checked for dechlorination:	☐	☐	☒		
Filtered volume received for Dissolved tests	☐	☐	☒		
All containers have been checked for preservation.	☒	☐	☐		
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	☒	☐	☐	Initial when completed <u>JAG</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	☐	☐	☒		
Trip Blank Present:	☐	☒	☐		
Trip Blank Custody Seals Present	☐	☐	☒		
Rad Samples Screened < 0.5 mrem/hr	☒	☐	☐	Initial when completed: <u>JAG</u>	Date: <u>10/19/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

PM: JLB Due Date: 11/08/21
CLIENT: PACE_44_MVKY

W0#: 30446206

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1093012

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone :(724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093012-01	Water	Sampled:09/29/2021 11:05	Specific Method
Radium Total (sub)	03/28/2022 11:05	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/28/2022 11:05	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/28/2022 11:05	EPA 903.1	

WO# : 30446206

PM: JLB

Due Date: 11/08/21

CLIENT: PACE_44_MVKY

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1093005

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:37

Project Name: MW-102 Wilson 092-00004

Workorder: 1093005

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/29/2021 14: 11.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093005-01	MW102/	Groundwater	09/29/2021 12:15	09/29/2021 14:11	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093005-01	Field Conductance	1230			
	Field pH	6.58			
	Field Temp (C)	17.50			

ANALYTICAL RESULTS

Lab Sample ID: **1093005-01**

Description: **MW102**

Sample Collection Date Time: 09/29/2021 12:15

Sample Received Date Time: 09/29/2021 14:11

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Arsenic	0.0042		mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Barium	0.049		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:07	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Calcium	84.1	D1	mg/L	4.00	1.30	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:13	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Iron	4.78		mg/L	0.100	0.050	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:07	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Lithium	ND	u	mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Magnesium	39.6	D1	mg/L	1.00	0.450	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:10	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Nickel	0.003		mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Potassium	2.10		mg/L	0.50	0.22	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:07	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Sodium	129	D1	mg/L	26.0	10.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:48	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB
Zinc	ND	u	mg/L	0.02	0.02	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:03	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	288		mg/L	4		2320 B-2011	09/30/2021 13:47	09/30/2021 13:47	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	09/30/2021 13:47	09/30/2021 13:47	HMF
Total Alkalinity	288		mg/L	4		2320 B-2011	09/30/2021 13:47	09/30/2021 13:47	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:51	KBZ
Specific Conductance (Lab)	1250		umhos/cm	1	1	2510 B-2011	09/30/2021 11:22	09/30/2021 11:22	CML
Hardness as CaCO3	376		mg/L	1	1	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	818		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.4		mg/L	0.5	0.4	5310 C-2011	10/05/2021 10:28	10/06/2021 15:11	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.423	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	0.476	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	0.899	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

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Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	36.2	M2	mg/L	1.0	0.7	EPA 300.0 REV 2.1	10/07/2021 19:16	10/07/2021 19:16	CSC
Fluoride	0.33		mg/L	0.20		EPA 300.0 REV 2.1	10/07/2021 19:02	10/07/2021 19:02	CSC
Sulfate	433	D, M2	mg/L	20.0	10.0	EPA 300.0 REV 2.1	10/07/2021 19:31	10/07/2021 19:31	CSC

Notes for work order 1093005

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Blank (BAI3647-BLK1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:35

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAI3647-BLK2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:18

Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAI3647-BS1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:38

Boron	0.11	0.10	mg/L	0.125		86.2	85-115
Calcium	6.25	0.40	mg/L	6.25		100	85-115
Iron	6.34	0.100	mg/L	6.25		101	85-115
Magnesium	6.01	0.200	mg/L	6.25		96.1	85-115
Potassium	6.10	0.50	mg/L	6.25		97.5	85-115
Sodium	6.34	0.26	mg/L	6.25		101	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

LCS (BAI3647-BS2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:21

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		108	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0625	0.0010	mg/L	0.0625		100	85-115			
Barium	0.061	0.004	mg/L	0.0625		98.1	85-115			
Beryllium	0.0607	0.0020	mg/L	0.0625		97.2	85-115			
Cadmium	0.0618	0.0010	mg/L	0.0625		98.9	85-115			
Chromium	0.0645	0.0020	mg/L	0.0625		103	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		100	85-115			
Copper	0.062	0.003	mg/L	0.0625		98.6	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.9	85-115			
Nickel	0.062	0.003	mg/L	0.0625		99.4	85-115			
Selenium	0.061	0.003	mg/L	0.0625		97.8	85-115			
Thallium	0.0650	0.0020	mg/L	0.0625		104	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Matrix Spike (BAI3647-MS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:04

Boron	1.85	1.00	mg/L	0.125	1.77	66.3	80-120			D2, M2
Calcium	33.1	4.00	mg/L	6.25	27.0	98.2	80-120			D2
Iron	6.41	1.00	mg/L	6.25	ND	103	80-120			D2
Magnesium	15.7	2.00	mg/L	6.25	8.84	109	80-120			D2
Potassium	13.1	5.00	mg/L	6.25	6.80	100	80-120			D2
Sodium	197	2.60	mg/L	6.25	178	296	80-120			D2, M1

Matrix Spike (BAI3647-MS2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:11

Boron	8.84	1.00	mg/L	0.125	8.69	122	80-120			D2, M1
Calcium	603	4.00	mg/L	6.25	608	NR	80-120			D2
Iron	14.8	1.00	mg/L	6.25	8.07	107	80-120			D2
Magnesium	205	2.00	mg/L	6.25	230	NR	80-120			D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120			D2, M2
Sodium	209	2.60	mg/L	6.25	208	28.5	80-120			D2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike (BAI3647-MS3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:39

Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120			D2, J
Antimony	0.064	0.050	mg/L	0.0625	ND	103	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.0	80-120			D2, J
Arsenic	0.0610	0.0100	mg/L	0.0625	ND	97.5	80-120			D2
Barium	0.133	0.040	mg/L	0.0625	0.074	95.3	80-120			D2
Beryllium	0.0654	0.0200	mg/L	0.0625	ND	105	80-120			D2
Cadmium	0.0589	0.0100	mg/L	0.0625	ND	94.2	80-120			D2
Chromium	0.0587	0.0200	mg/L	0.0625	ND	93.9	80-120			D2
Cobalt	0.059	0.040	mg/L	0.0625	ND	94.1	80-120			D2
Copper	0.059	0.030	mg/L	0.0625	ND	94.8	80-120			D2
Lead	0.061	0.020	mg/L	0.0625	ND	97.0	80-120			D2
Lithium	0.10	0.20	mg/L	0.0625	ND	158	80-120			D2, M1, J
Nickel	0.058	0.030	mg/L	0.0625	ND	92.8	80-120			D2
Selenium	0.060	0.030	mg/L	0.0625	ND	96.5	80-120			D2
Thallium	0.0634	0.0200	mg/L	0.0625	ND	101	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Matrix Spike (BAI3647-MS4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:47

Antimony	0.066	0.050	mg/L	0.0625	ND	106	80-120			D2
Mercury	0.0027	0.0050	mg/L	0.00250	ND	108	80-120			D2, J
Molybdenum	0.07	0.10	mg/L	0.0625	ND	111	80-120			D2, J
Arsenic	0.0637	0.0100	mg/L	0.0625	ND	102	80-120			D2
Barium	0.073	0.040	mg/L	0.0625	0.013	96.1	80-120			D2
Beryllium	0.0622	0.0200	mg/L	0.0625	ND	99.6	80-120			D2
Cadmium	0.0591	0.0100	mg/L	0.0625	ND	94.6	80-120			D2
Chromium	0.0594	0.0200	mg/L	0.0625	ND	95.0	80-120			D2
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Copper	0.055	0.030	mg/L	0.0625	ND	87.7	80-120			D2
Lead	0.059	0.020	mg/L	0.0625	ND	94.6	80-120			D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	173	80-120			D2, M1
Nickel	0.081	0.030	mg/L	0.0625	0.024	91.1	80-120			D2
Selenium	0.062	0.030	mg/L	0.0625	ND	98.6	80-120			D2
Thallium	0.0625	0.0200	mg/L	0.0625	ND	100	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:07

Boron	1.88	1.00	mg/L	0.125	1.77	87.6	80-120	1.43	20	D2
Calcium	33.5	4.00	mg/L	6.25	27.0	105	80-120	1.35	20	D2
Iron	6.43	1.00	mg/L	6.25	ND	103	80-120	0.308	20	D2
Magnesium	15.8	2.00	mg/L	6.25	8.84	112	80-120	0.922	20	D2
Potassium	13.2	5.00	mg/L	6.25	6.80	102	80-120	1.13	20	D2
Sodium	198	2.60	mg/L	6.25	178	323	80-120	0.871	20	D2, M1

Matrix Spike Dup (BAI3647-MSD2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:23

Boron	8.80	1.00	mg/L	0.125	8.69	87.5	80-120	0.490	20	D2
Calcium	624	4.00	mg/L	6.25	608	264	80-120	3.40	20	D2, M3
Iron	15.3	1.00	mg/L	6.25	8.07	115	80-120	3.20	20	D2
Magnesium	212	2.00	mg/L	6.25	230	NR	80-120	2.97	20	D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120	0.0828	20	D2, M2
Sodium	217	2.60	mg/L	6.25	208	149	80-120	3.53	20	D2, M1

Matrix Spike Dup (BAI3647-MSD3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:43

Antimony	0.065	0.050	mg/L	0.0625	ND	104	80-120	1.27	20	D2
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	5.52	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	102	80-120	2.74	20	D2, J
Arsenic	0.0619	0.0100	mg/L	0.0625	ND	99.0	80-120	1.53	20	D2
Barium	0.136	0.040	mg/L	0.0625	0.074	99.1	80-120	1.77	20	D2
Beryllium	0.0653	0.0200	mg/L	0.0625	ND	104	80-120	0.210	20	D2
Cadmium	0.0597	0.0100	mg/L	0.0625	ND	95.5	80-120	1.41	20	D2
Chromium	0.0598	0.0200	mg/L	0.0625	ND	95.7	80-120	1.82	20	D2
Cobalt	0.060	0.040	mg/L	0.0625	ND	95.3	80-120	1.36	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.6	80-120	1.29	20	D2
Lead	0.060	0.020	mg/L	0.0625	ND	96.6	80-120	0.496	20	D2
Lithium	0.10	0.20	mg/L	0.0625	ND	162	80-120	2.31	20	D2, M1, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.8	80-120	2.14	20	D2
Selenium	0.059	0.030	mg/L	0.0625	ND	94.5	80-120	2.10	20	D2
Thallium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.12	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:51

Molybdenum	0.07	0.10	mg/L	0.0625	ND	116	80-120	4.42	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.65	20	D2
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	2.57	20	D2, J
Arsenic	0.0674	0.0100	mg/L	0.0625	ND	108	80-120	5.63	20	D2
Barium	0.076	0.040	mg/L	0.0625	0.013	101	80-120	3.96	20	D2
Beryllium	0.0618	0.0200	mg/L	0.0625	ND	98.8	80-120	0.731	20	D2
Cadmium	0.0605	0.0100	mg/L	0.0625	ND	96.7	80-120	2.28	20	D2
Chromium	0.0616	0.0200	mg/L	0.0625	ND	98.6	80-120	3.74	20	D2
Cobalt	0.071	0.040	mg/L	0.0625	ND	114	80-120	3.46	20	D2
Copper	0.058	0.030	mg/L	0.0625	ND	92.2	80-120	5.09	20	D2
Lead	0.061	0.020	mg/L	0.0625	ND	98.0	80-120	3.61	20	D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	167	80-120	1.57	20	D2, M1
Nickel	0.084	0.030	mg/L	0.0625	0.024	96.9	80-120	4.44	20	D2
Selenium	0.062	0.030	mg/L	0.0625	ND	99.5	80-120	0.933	20	D2
Thallium	0.0648	0.0200	mg/L	0.0625	ND	104	80-120	3.62	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Post Spike (BAI3647-PS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:26

Boron	1820		ug/L	125	1770	40.5	75-125			D2, M2
Calcium	28200		ug/L	6250	27000	19.5	75-125			D2, M2
Iron	-21.0		ug/L	6250	7.38	NR	75-125			D2, M2, U
Magnesium	9840		ug/L	6250	8840	16.0	75-125			D2, M2
Potassium	5070		ug/L	6250	6800	NR	75-125			D2, M2
Sodium	201000		ug/L	6250	178000	357	75-125			D2, M1

Post Spike (BAI3647-PS2)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:54

Mercury	0.173		ug/L	2.50	0.0559	4.70	75-125			D2, M2
Antimony	0.148		ug/L	62.5	0.184	NR	75-125			D2, M2
Molybdenum	1.91		ug/L	62.5	1.33	0.934	75-125			D2, M2
Arsenic	0.646		ug/L	62.5	0.329	0.508	75-125			D2, M2
Barium	78.5		ug/L	62.5	73.8	7.64	75-125			D2, M2
Beryllium	-0.0723		ug/L	62.5	0.0019	NR	75-125			D2, M2, U
Cadmium	0.0690		ug/L	62.5	0.0294	0.0633	75-125			D2, M2
Chromium	0.0170		ug/L	62.5	0.224	NR	75-125			D2, M2
Cobalt	0.055		ug/L	62.5	0.045	0.0150	75-125			D2, M2
Copper	-0.112		ug/L	62.5	0.703	NR	75-125			D2, M2, U
Lead	-0.348		ug/L	62.5	-0.045		75-115			D2, M2, U
Lithium	31.7		ug/L	62.5	25.6	9.80	75-125			D2, M2
Nickel	0.391		ug/L	62.5	0.659	NR	75-125			D2, M2
Selenium	0.078		ug/L	62.5	0.053	0.0395	75-125			D2, M2
Thallium	0.463		ug/L	62.5	0.0639	0.638	75-125			D2, M2
Zinc	6.59		ug/L	62.5	7.02	NR	75-125			D2, M2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Blank (BAI3295-BLK1)

Prepared: 9/30/2021 11:01, Analyzed: 9/30/2021 11:01

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAI3295-BLK2)

Prepared: 9/30/2021 13:09, Analyzed: 9/30/2021 13:09

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK3)

Prepared: 9/30/2021 14:34, Analyzed: 9/30/2021 14:34

Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK4)

Prepared: 9/30/2021 15:09, Analyzed: 9/30/2021 15:09

Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAI3295-BS1)

Prepared: 9/30/2021 13:05, Analyzed: 9/30/2021 13:05

Total Alkalinity	251	4	mg/L	235		107	80-120			
Carbonate Alkalinity as CaCO ₃	241	4	mg/L	225		107	0-200			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

LCS (BAI3295-BS2)

Prepared: 9/30/2021 14:30, Analyzed: 9/30/2021 14:30

Carbonate Alkalinity as CaCO ₃	227	4	mg/L	225		101	0-200			
Total Alkalinity	236	4	mg/L	235		101	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Duplicate (BAI3295-DUP1)

Source: 1091563-01

Prepared: 9/30/2021 12:57, Analyzed: 9/30/2021 12:57

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	87	4	mg/L		99			13.4	10	Y1
Total Alkalinity	87	4	mg/L		99			13.4	10	Y1

Duplicate (BAI3295-DUP2)

Source: 1093298-01

Prepared: 9/30/2021 14:20, Analyzed: 9/30/2021 14:20

Total Alkalinity	242	4	mg/L		228			5.75	10	
Bicarbonate Alkalinity as CaCO ₃	242	4	mg/L		228			5.75	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAI3295-MS1)

Source: 1091563-01

Prepared: 9/30/2021 13:01, Analyzed: 9/30/2021 13:01

Total Alkalinity	153	4	mg/L	50.0	99	108	80-120			

Matrix Spike (BAI3295-MS2)

Source: 1093298-01

Prepared: 9/30/2021 14:24, Analyzed: 9/30/2021 14:24

Total Alkalinity	262	4	mg/L	50.0	228	67.4	80-120			M3

Batch BAI3601 - Default Prep Wet Chem

Blank (BAI3601-BLK1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAI3601-BS1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			

Duplicate (BAI3601-DUP1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	

Matrix Spike (BAI3601-MS1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3625 - Default Prep Wet Chem

Blank (BAI3625-BLK1)

Prepared: 9/30/2021 10:59, Analyzed: 9/30/2021 10:59

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAI3625-BS1)

Prepared: 9/30/2021 11:00, Analyzed: 9/30/2021 11:00

Specific Conductance (Lab)	1410		umhos/cm	1410		100	80-120			

Duplicate (BAI3625-DUP1) Source: 1091480-10

Prepared: 9/30/2021 11:13, Analyzed: 9/30/2021 11:13

Specific Conductance (Lab)	1440	1	umhos/cm		1440			0.139	0.938	

Duplicate (BAI3625-DUP2) Source: 1093012-01

Prepared: 9/30/2021 11:28, Analyzed: 9/30/2021 11:28

Specific Conductance (Lab)	4850	1	umhos/cm		4850			0.00	0.938	

Batch BAJ0539 - Default Prep Wet Chem

Blank (BAJ0539-BLK1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0556 - Default Prep Wet Chem

Blank (BAJ0556-BLK1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:10

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0556 - Default Prep Wet Chem

LCS (BAJ0556-BS1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:32

Total Organic Carbon	5.2	0.5	mg/L	5.00		103	80-120			

Duplicate (BAJ0556-DUP1) Source: 1091480-14

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 13:47

Total Organic Carbon	5.3	0.5	mg/L		5.3			0.574	25	

Duplicate (BAJ0556-DUP2) Source: 1093010-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:03

Total Organic Carbon	1.0	0.5	mg/L		0.6			42.7	25	Y1

Matrix Spike (BAJ0556-MS1) Source: 1091480-15

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 14:08

Total Organic Carbon	3.8	0.5	mg/L	2.50	1.2	103	80-120			

Matrix Spike (BAJ0556-MS2) Source: 1093011-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:24

Total Organic Carbon	6.2	0.5	mg/L	5.00	1.3	97.0	80-120			

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0581 - Default Prep Wet Chem

Matrix Spike Dup (BAJ0581-MSD1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1085 - Default Prep IC

Blank (BAJ1085-BLK1)

Prepared: 10/7/2021 18:47, Analyzed: 10/7/2021 18:47

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

LCS (BAJ1085-BS1)

Prepared: 10/7/2021 18:32, Analyzed: 10/7/2021 18:32

Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10.2		mg/L	10.0		102	90-110			
Fluoride	10.0		mg/L	10.0		100	90-110			

Matrix Spike (BAJ1085-MS1)

Source: 1093005-01

M2

Prepared: 10/7/2021 23:29, Analyzed: 10/7/2021 23:29

Chloride	37.0		mg/L	10.0	32.6	43.9	80-120			
Sulfate	149		mg/L	10.0	390	NR	80-120			M2
Fluoride	11.2		mg/L	10.0	0.30	109	80-120			

Matrix Spike Dup (BAJ1085-MSD1)

Source: 1093005-01

Prepared: 10/7/2021 23:44, Analyzed: 10/7/2021 23:44

Fluoride	11.9		mg/L	10.0	0.30	116	80-120	5.88	20	
Sulfate	149		mg/L	10.0	390	NR	80-120	0.171	20	M2
Chloride	37.4		mg/L	10.0	32.6	48.2	80-120	1.16	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093005

Shipped By: Client

Temperature: 2.90° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-102 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #
1093005
Sample ID#

Date Collection
(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1093005-01 A 7-29-21 12:15

Plastic 1L

1

MW102

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1093005-01 B 9-29-21 12:15

Plastic 500mL pH<2
w/HNO3

1

MW102

g / c

Preservation Check: pH: _____

1093005-01 C 9-29-21 12:15

Plastic 500mL pH<2
w/H2SO4

1

MW102

g / c

COD TOC

Preservation Check: pH: _____

1093005-01 D 9-29-21 12:15

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW102

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check Performed by: NDY

Field data collected by: Travis Speed

Date (mm/dd/yy) 9-29-21 Time (24 hr) 12:15

pH 6.58 Cond (umho) 1.23 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.50 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

09-29-21

1411



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:21:51AM

Page 18 of 30

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-102 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093005	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1093005-01 E	<u>9-29-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093005-01 F	<u>9-29-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW102	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093005-01 G	<u>9-29-21</u>	<u>12:15</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW102	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1093005-01 H	<u>9-29-21</u>	<u>12:15</u>	AG 250mL pH<2 w/H2SO4	1	MW102	g / c	TOC
			Preservation Check: pH : _____				

Thermometer Serial Number

181390287

☒ 181460057

Temp 29 °C

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 9-29-21 Time (24 hr) 12:15
pH 6.58 Cond (umho) 1.23 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.50 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature) Travis Sneed

Received by: (Signature) W. J. [Signature]

Date (mm/dd/yy) 09-29-21

Time (24 hr) 1411

October 22, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093005/Big Rivers Electric Co
Pace Project No.: 30444300

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 02, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1093005/Big Rivers Electric Co

Pace Project No.: 30444300

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093005/Big Rivers Electric Co

Pace Project No.: 30444300

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30444300001	1093005-01	Water	09/29/21 12:15	10/02/21 11:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093005/Big Rivers Electric Co

Pace Project No.: 30444300

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30444300001	1093005-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093005/Big Rivers Electric Co

Pace Project No.: 30444300

Sample: 1093005-01 **Lab ID: 30444300001** Collected: 09/29/21 12:15 Received: 10/02/21 11:30 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.423 ± 0.362 (0.491) C:NA T:97%	pCi/L	10/19/21 16:48	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.476 ± 0.590 (1.25) C:68% T:82%	pCi/L	10/20/21 14:24	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.899 ± 0.952 (1.74)	pCi/L	10/22/21 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093005/Big Rivers Electric Co

Pace Project No.: 30444300

QC Batch:	467251	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30444300001

METHOD BLANK: 2256290 Matrix: Water

Associated Lab Samples: 30444300001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.357 ± 0.352 (0.536) C:NA T:86%	pCi/L	10/19/21 16:48	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093005/Big Rivers Electric Co

Pace Project No.: 30444300

QC Batch:	467253	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30444300001

METHOD BLANK: 2256292 Matrix: Water

Associated Lab Samples: 30444300001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.967 ± 0.412 (0.666) C:74% T:84%	pCi/L	10/20/21 11:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093005/Big Rivers Electric Co
Pace Project No.: 30444300

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1093005 Workorder Name: MW-102 Wilson 092-0000 Owner Received Date: 9/29/2021 Results Requested By: 10/8/2021

Report To:		Subcontract To:		Requested Analysis					
Pace Analytical Services, LLC 825 Industrial Road Madisonville, KY 42409 270-821-7375 rob.whittington@pacelabs.com		Pace Analytical Services LLC Greensburg PA 1638 Rosey Town Rd Suite 2,3,4 Greensburg, PA 15601 (724) 850-5615							
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY
1									
2	1093005-01		09/29/21 12:15	IR44-McCoy	Water		X	X	
3									
4									
5									
6									
7									
8									
9									
10									
Transfers	Released By	Date/Time	Received By	Date/Time	Comments				
1				10/21/21 11:30					
2									
3									

Cooler Temperature on Receipt	19.9 °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

WO# : 30444300



Pittsburgh Lab Sample Condition Upon Receipt

Client Name: Pace KY

Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____Tracking #: 1107 3389 3045

Label <u>AC</u>
LIMS Login <u>mm</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 12

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 20.3 °C Correction Factor: -0.4 °C Final Temp: 19.9 °C

Temp should be above freezing to 6°C

Comments:

pH paper Lot# 1000411Date and Initials of person examining contents: 10-5-21 de
10/7/21 de

	Yes	No	N/A	
Chain of Custody Present:	☒			1.
Chain of Custody Filled Out:		☒		2. <u>no preservative listed</u>
Chain of Custody Relinquished:		☒		3.
Sampler Name & Signature on COC:		☒		4.
Sample Labels match COC:		☒		5. <u>no date/time on labels</u>
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	☒			6.
Short Hold Time Analysis (<72hr remaining):		☒		7.
Rush Turn Around Time Requested:	☒			8.
Sufficient Volume:	☒			9.
Correct Containers Used:	☒			10.
-Pace Containers Used:		☒		
Containers Intact:	☒			11.
Orthophosphate field filtered			☒	12.
Hex Cr Aqueous sample field filtered			☒	13.
Organic Samples checked for dechlorination:			☒	14.
Filtered volume received for Dissolved tests			☒	15.
All containers have been checked for preservation.	☒			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				
All containers meet method preservation requirements.	☒			Initial when completed: <u>de</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			☒	17.
Trip Blank Present:			☒	18.
Trip Blank Custody Seals Present			☒	
Rad Samples Screened < 0.5 mrem/hr	☒			Initial when completed: <u>de</u> Date: <u>10/7/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution:

number of containers not listed☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

PM: CAF
CLIENT: PACE_44_MKY
Due Date: 10/11/21

WO#: 30444300

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093005

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093005-01	Water	Sampled:09/29/2021 12:15	Specific Method
Radium Total (sub)	03/28/2022 12:15	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/28/2022 12:15	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/28/2022 12:15	EPA 903.1	

WO# : 30444300
PM: CAF
Due Date: 10/11/21
CLIENT: PACE_44_MVKY

Released By 	Date 10-01-21	Received By	Date
Released By	Date	Received By	Date

Certificate of Analysis 1093006

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:35

Project Name: MW-104 Wilson 092-00004

Workorder: 1093006

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/29/2021 14: 11.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093006-01	MW104/	Groundwater	09/29/2021 08:15	09/29/2021 14:11	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093006-01	Field Conductance	2030			
	Field pH	6.51			
	Field Temp (C)	16.94			

ANALYTICAL RESULTS

Lab Sample ID: **1093006-01**

Description: **MW104**

Sample Collection Date Time: 09/29/2021 08:15

Sample Received Date Time: 09/29/2021 14:11

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Arsenic	0.0007	J	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Barium	0.034		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:17	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Calcium	271	D1	mg/L	40.0	13.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:52	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Iron	2.77		mg/L	0.100	0.050	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:17	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Lithium	0.02		mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Magnesium	82.9	D1	mg/L	2.00	0.900	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:23	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Nickel	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Potassium	4.60		mg/L	0.50	0.22	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:17	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Sodium	81.3	D1	mg/L	2.60	1.00	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:23	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB
Zinc	ND	u	mg/L	0.02	0.02	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:07	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	403		mg/L	4		2320 B-2011	09/30/2021 13:52	09/30/2021 13:52	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	09/30/2021 13:52	09/30/2021 13:52	HMF
Total Alkalinity	403		mg/L	4		2320 B-2011	09/30/2021 13:52	09/30/2021 13:52	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:51	KBZ
Specific Conductance (Lab)	1980		umhos/cm	1	1	2510 B-2011	09/30/2021 11:23	09/30/2021 11:23	CML
Hardness as CaCO3	964	D	mg/L	2	2	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	1610		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.1		mg/L	0.5	0.4	5310 C-2011	10/05/2021 10:28	10/06/2021 15:33	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.736	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	1.04	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	1.78	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW



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Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	12.1		mg/L	0.5	0.4	EPA 300.0 REV 2.1	10/07/2021 19:46	10/07/2021 19:46	CSC
Fluoride	ND	u	mg/L	0.20		EPA 300.0 REV 2.1	10/07/2021 19:46	10/07/2021 19:46	CSC
Sulfate	1290	D	mg/L	100	50.0	EPA 300.0 REV 2.1	10/08/2021 11:52	10/08/2021 11:52	CSC

Notes for work order 1093006

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Blank (BAI3647-BLK1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:35

Boron	ND	0.10	mg/L						U
Calcium	ND	0.40	mg/L						U
Iron	ND	0.100	mg/L						U
Magnesium	ND	0.200	mg/L						U
Potassium	ND	0.50	mg/L						U
Sodium	ND	0.26	mg/L						U

Blank (BAI3647-BLK2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:18

Mercury	ND	0.0005	mg/L						U
Molybdenum	ND	0.01	mg/L						U
Antimony	ND	0.005	mg/L						U
Arsenic	ND	0.0010	mg/L						U
Barium	ND	0.004	mg/L						U
Beryllium	ND	0.0020	mg/L						U
Cadmium	ND	0.0010	mg/L						U
Chromium	ND	0.0020	mg/L						U
Cobalt	ND	0.004	mg/L						U
Copper	ND	0.003	mg/L						U
Lead	ND	0.002	mg/L						U
Lithium	ND	0.02	mg/L						U
Nickel	ND	0.003	mg/L						U
Selenium	ND	0.003	mg/L						U
Thallium	ND	0.0020	mg/L						U
Zinc	ND	0.02	mg/L						U

LCS (BAI3647-BS1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:38

Boron	0.11	0.10	mg/L	0.125		86.2	85-115
Calcium	6.25	0.40	mg/L	6.25		100	85-115
Iron	6.34	0.100	mg/L	6.25		101	85-115
Magnesium	6.01	0.200	mg/L	6.25		96.1	85-115
Potassium	6.10	0.50	mg/L	6.25		97.5	85-115
Sodium	6.34	0.26	mg/L	6.25		101	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

LCS (BAI3647-BS2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:21

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		108	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0625	0.0010	mg/L	0.0625		100	85-115			
Barium	0.061	0.004	mg/L	0.0625		98.1	85-115			
Beryllium	0.0607	0.0020	mg/L	0.0625		97.2	85-115			
Cadmium	0.0618	0.0010	mg/L	0.0625		98.9	85-115			
Chromium	0.0645	0.0020	mg/L	0.0625		103	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		100	85-115			
Copper	0.062	0.003	mg/L	0.0625		98.6	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.9	85-115			
Nickel	0.062	0.003	mg/L	0.0625		99.4	85-115			
Selenium	0.061	0.003	mg/L	0.0625		97.8	85-115			
Thallium	0.0650	0.0020	mg/L	0.0625		104	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Matrix Spike (BAI3647-MS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:04

Boron	1.85	1.00	mg/L	0.125	1.77	66.3	80-120			D2, M2
Calcium	33.1	4.00	mg/L	6.25	27.0	98.2	80-120			D2
Iron	6.41	1.00	mg/L	6.25	ND	103	80-120			D2
Magnesium	15.7	2.00	mg/L	6.25	8.84	109	80-120			D2
Potassium	13.1	5.00	mg/L	6.25	6.80	100	80-120			D2
Sodium	197	2.60	mg/L	6.25	178	296	80-120			D2, M1

Matrix Spike (BAI3647-MS2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:11

Boron	8.84	1.00	mg/L	0.125	8.69	122	80-120			D2, M1
Calcium	603	4.00	mg/L	6.25	608	NR	80-120			D2
Iron	14.8	1.00	mg/L	6.25	8.07	107	80-120			D2
Magnesium	205	2.00	mg/L	6.25	230	NR	80-120			D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120			D2, M2
Sodium	209	2.60	mg/L	6.25	208	28.5	80-120			D2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike (BAI3647-MS3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:39

Antimony	0.064	0.050	mg/L	0.0625	ND	103	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.0	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120			D2, J
Arsenic	0.0610	0.0100	mg/L	0.0625	ND	97.5	80-120			D2
Barium	0.133	0.040	mg/L	0.0625	0.074	95.3	80-120			D2
Beryllium	0.0654	0.0200	mg/L	0.0625	ND	105	80-120			D2
Cadmium	0.0589	0.0100	mg/L	0.0625	ND	94.2	80-120			D2
Chromium	0.0587	0.0200	mg/L	0.0625	ND	93.9	80-120			D2
Cobalt	0.059	0.040	mg/L	0.0625	ND	94.1	80-120			D2
Copper	0.059	0.030	mg/L	0.0625	ND	94.8	80-120			D2
Lead	0.061	0.020	mg/L	0.0625	ND	97.0	80-120			D2
Lithium	0.10	0.20	mg/L	0.0625	ND	158	80-120			D2, M1, J
Nickel	0.058	0.030	mg/L	0.0625	ND	92.8	80-120			D2
Selenium	0.060	0.030	mg/L	0.0625	ND	96.5	80-120			D2
Thallium	0.0634	0.0200	mg/L	0.0625	ND	101	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Matrix Spike (BAI3647-MS4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:47

Antimony	0.066	0.050	mg/L	0.0625	ND	106	80-120			D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	111	80-120			D2, J
Mercury	0.0027	0.0050	mg/L	0.00250	ND	108	80-120			D2, J
Arsenic	0.0637	0.0100	mg/L	0.0625	ND	102	80-120			D2
Barium	0.073	0.040	mg/L	0.0625	0.013	96.1	80-120			D2
Beryllium	0.0622	0.0200	mg/L	0.0625	ND	99.6	80-120			D2
Cadmium	0.0591	0.0100	mg/L	0.0625	ND	94.6	80-120			D2
Chromium	0.0594	0.0200	mg/L	0.0625	ND	95.0	80-120			D2
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Copper	0.055	0.030	mg/L	0.0625	ND	87.7	80-120			D2
Lead	0.059	0.020	mg/L	0.0625	ND	94.6	80-120			D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	173	80-120			D2, M1
Nickel	0.081	0.030	mg/L	0.0625	0.024	91.1	80-120			D2
Selenium	0.062	0.030	mg/L	0.0625	ND	98.6	80-120			D2
Thallium	0.0625	0.0200	mg/L	0.0625	ND	100	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:07

Boron	1.88	1.00	mg/L	0.125	1.77	87.6	80-120	1.43	20	D2
Calcium	33.5	4.00	mg/L	6.25	27.0	105	80-120	1.35	20	D2
Iron	6.43	1.00	mg/L	6.25	ND	103	80-120	0.308	20	D2
Magnesium	15.8	2.00	mg/L	6.25	8.84	112	80-120	0.922	20	D2
Potassium	13.2	5.00	mg/L	6.25	6.80	102	80-120	1.13	20	D2
Sodium	198	2.60	mg/L	6.25	178	323	80-120	0.871	20	D2, M1

Matrix Spike Dup (BAI3647-MSD2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:23

Boron	8.80	1.00	mg/L	0.125	8.69	87.5	80-120	0.490	20	D2
Calcium	624	4.00	mg/L	6.25	608	264	80-120	3.40	20	D2, M3
Iron	15.3	1.00	mg/L	6.25	8.07	115	80-120	3.20	20	D2
Magnesium	212	2.00	mg/L	6.25	230	NR	80-120	2.97	20	D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120	0.0828	20	D2, M2
Sodium	217	2.60	mg/L	6.25	208	149	80-120	3.53	20	D2, M1

Matrix Spike Dup (BAI3647-MSD3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:43

Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	5.52	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	102	80-120	2.74	20	D2, J
Antimony	0.065	0.050	mg/L	0.0625	ND	104	80-120	1.27	20	D2
Arsenic	0.0619	0.0100	mg/L	0.0625	ND	99.0	80-120	1.53	20	D2
Barium	0.136	0.040	mg/L	0.0625	0.074	99.1	80-120	1.77	20	D2
Beryllium	0.0653	0.0200	mg/L	0.0625	ND	104	80-120	0.210	20	D2
Cadmium	0.0597	0.0100	mg/L	0.0625	ND	95.5	80-120	1.41	20	D2
Chromium	0.0598	0.0200	mg/L	0.0625	ND	95.7	80-120	1.82	20	D2
Cobalt	0.060	0.040	mg/L	0.0625	ND	95.3	80-120	1.36	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.6	80-120	1.29	20	D2
Lead	0.060	0.020	mg/L	0.0625	ND	96.6	80-120	0.496	20	D2
Lithium	0.10	0.20	mg/L	0.0625	ND	162	80-120	2.31	20	D2, M1, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.8	80-120	2.14	20	D2
Selenium	0.059	0.030	mg/L	0.0625	ND	94.5	80-120	2.10	20	D2
Thallium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.12	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:51

Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.65	20	D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	116	80-120	4.42	20	D2, J
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	2.57	20	D2, J
Arsenic	0.0674	0.0100	mg/L	0.0625	ND	108	80-120	5.63	20	D2
Barium	0.076	0.040	mg/L	0.0625	0.013	101	80-120	3.96	20	D2
Beryllium	0.0618	0.0200	mg/L	0.0625	ND	98.8	80-120	0.731	20	D2
Cadmium	0.0605	0.0100	mg/L	0.0625	ND	96.7	80-120	2.28	20	D2
Chromium	0.0616	0.0200	mg/L	0.0625	ND	98.6	80-120	3.74	20	D2
Cobalt	0.071	0.040	mg/L	0.0625	ND	114	80-120	3.46	20	D2
Copper	0.058	0.030	mg/L	0.0625	ND	92.2	80-120	5.09	20	D2
Lead	0.061	0.020	mg/L	0.0625	ND	98.0	80-120	3.61	20	D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	167	80-120	1.57	20	D2, M1
Nickel	0.084	0.030	mg/L	0.0625	0.024	96.9	80-120	4.44	20	D2
Selenium	0.062	0.030	mg/L	0.0625	ND	99.5	80-120	0.933	20	D2
Thallium	0.0648	0.0200	mg/L	0.0625	ND	104	80-120	3.62	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Post Spike (BAI3647-PS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:26

Boron	1820		ug/L	125	1770	40.5	75-125			D2, M2
Calcium	28200		ug/L	6250	27000	19.5	75-125			D2, M2
Iron	-21.0		ug/L	6250	7.38	NR	75-125			D2, M2, U
Magnesium	9840		ug/L	6250	8840	16.0	75-125			D2, M2
Potassium	5070		ug/L	6250	6800	NR	75-125			D2, M2
Sodium	201000		ug/L	6250	178000	357	75-125			D2, M1

Post Spike (BAI3647-PS2)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:54

Molybdenum	1.91		ug/L	62.5	1.33	0.934	75-125			D2, M2
Antimony	0.148		ug/L	62.5	0.184	NR	75-125			D2, M2
Mercury	0.173		ug/L	2.50	0.0559	4.70	75-125			D2, M2
Arsenic	0.646		ug/L	62.5	0.329	0.508	75-125			D2, M2
Barium	78.5		ug/L	62.5	73.8	7.64	75-125			D2, M2
Beryllium	-0.0723		ug/L	62.5	0.0019	NR	75-125			D2, M2, U
Cadmium	0.0690		ug/L	62.5	0.0294	0.0633	75-125			D2, M2
Chromium	0.0170		ug/L	62.5	0.224	NR	75-125			D2, M2
Cobalt	0.055		ug/L	62.5	0.045	0.0150	75-125			D2, M2
Copper	-0.112		ug/L	62.5	0.703	NR	75-125			D2, M2, U
Lead	-0.348		ug/L	62.5	-0.045		75-115			D2, M2, U
Lithium	31.7		ug/L	62.5	25.6	9.80	75-125			D2, M2
Nickel	0.391		ug/L	62.5	0.659	NR	75-125			D2, M2
Selenium	0.078		ug/L	62.5	0.053	0.0395	75-125			D2, M2
Thallium	0.463		ug/L	62.5	0.0639	0.638	75-125			D2, M2
Zinc	6.59		ug/L	62.5	7.02	NR	75-125			D2, M2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Blank (BAI3295-BLK1)

Prepared: 9/30/2021 11:01, Analyzed: 9/30/2021 11:01

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAI3295-BLK2)

Prepared: 9/30/2021 13:09, Analyzed: 9/30/2021 13:09

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK3)

Prepared: 9/30/2021 14:34, Analyzed: 9/30/2021 14:34

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK4)

Prepared: 9/30/2021 15:09, Analyzed: 9/30/2021 15:09

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAI3295-BS1)

Prepared: 9/30/2021 13:05, Analyzed: 9/30/2021 13:05

Carbonate Alkalinity as CaCO ₃	241	4	mg/L	225		107	0-200			
Total Alkalinity	251	4	mg/L	235		107	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

LCS (BAI3295-BS2)

Prepared: 9/30/2021 14:30, Analyzed: 9/30/2021 14:30

Total Alkalinity	236	4	mg/L	235		101	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	227	4	mg/L	225		101	0-200			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Duplicate (BAI3295-DUP1)

Source: 1091563-01

Prepared: 9/30/2021 12:57, Analyzed: 9/30/2021 12:57

Total Alkalinity	87	4	mg/L		99			13.4	10	Y1
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	87	4	mg/L		99			13.4	10	Y1

Duplicate (BAI3295-DUP2)

Source: 1093298-01

Prepared: 9/30/2021 14:20, Analyzed: 9/30/2021 14:20

Total Alkalinity	242	4	mg/L		228			5.75	10	
Bicarbonate Alkalinity as CaCO ₃	242	4	mg/L		228			5.75	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAI3295-MS1)

Source: 1091563-01

Prepared: 9/30/2021 13:01, Analyzed: 9/30/2021 13:01

Total Alkalinity	153	4	mg/L	50.0	99	108	80-120			

Matrix Spike (BAI3295-MS2)

Source: 1093298-01

Prepared: 9/30/2021 14:24, Analyzed: 9/30/2021 14:24

Total Alkalinity	262	4	mg/L	50.0	228	67.4	80-120			M3

Batch BAI3601 - Default Prep Wet Chem

Blank (BAI3601-BLK1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAI3601-BS1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			

Duplicate (BAI3601-DUP1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	

Matrix Spike (BAI3601-MS1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3625 - Default Prep Wet Chem

Blank (BAI3625-BLK1)

Prepared: 9/30/2021 10:59, Analyzed: 9/30/2021 10:59

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAI3625-BS1)

Prepared: 9/30/2021 11:00, Analyzed: 9/30/2021 11:00

Specific Conductance (Lab)	1410		umhos/cm	1410		100	80-120			

Duplicate (BAI3625-DUP1) Source: 1091480-10

Prepared: 9/30/2021 11:13, Analyzed: 9/30/2021 11:13

Specific Conductance (Lab)	1440	1	umhos/cm		1440			0.139	0.938	

Duplicate (BAI3625-DUP2) Source: 1093012-01

Prepared: 9/30/2021 11:28, Analyzed: 9/30/2021 11:28

Specific Conductance (Lab)	4850	1	umhos/cm		4850			0.00	0.938	

Batch BAJ0539 - Default Prep Wet Chem

Blank (BAJ0539-BLK1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0556 - Default Prep Wet Chem

Blank (BAJ0556-BLK1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:10

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0556 - Default Prep Wet Chem

LCS (BAJ0556-BS1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:32

Total Organic Carbon	5.2	0.5	mg/L	5.00		103	80-120			

Duplicate (BAJ0556-DUP1) Source: 1091480-14

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 13:47

Total Organic Carbon	5.3	0.5	mg/L		5.3			0.574	25	

Duplicate (BAJ0556-DUP2) Source: 1093010-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:03

Total Organic Carbon	1.0	0.5	mg/L		0.6			42.7	25	Y1

Matrix Spike (BAJ0556-MS1) Source: 1091480-15

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 14:08

Total Organic Carbon	3.8	0.5	mg/L	2.50	1.2	103	80-120			

Matrix Spike (BAJ0556-MS2) Source: 1093011-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:24

Total Organic Carbon	6.2	0.5	mg/L	5.00	1.3	97.0	80-120			

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0581 - Default Prep Wet Chem

Matrix Spike Dup (BAJ0581-MSD1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1085 - Default Prep IC

Blank (BAJ1085-BLK1)

Prepared: 10/7/2021 18:47, Analyzed: 10/7/2021 18:47

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

LCS (BAJ1085-BS1)

Prepared: 10/7/2021 18:32, Analyzed: 10/7/2021 18:32

Chloride	10.1		mg/L	10.0		101	90-110			
Fluoride	10.0		mg/L	10.0		100	90-110			
Sulfate	10.2		mg/L	10.0		102	90-110			

Matrix Spike (BAJ1085-MS1)

Source: 1093005-01

Prepared: 10/7/2021 23:29, Analyzed: 10/7/2021 23:29

Fluoride	11.2		mg/L	10.0	0.30	109	80-120			
Chloride	37.0		mg/L	10.0	32.6	43.9	80-120			
Sulfate	149		mg/L	10.0	390	NR	80-120			M2

Matrix Spike Dup (BAJ1085-MSD1)

Source: 1093005-01

Prepared: 10/7/2021 23:44, Analyzed: 10/7/2021 23:44

Fluoride	11.9		mg/L	10.0	0.30	116	80-120	5.88	20	
Sulfate	149		mg/L	10.0	390	NR	80-120	0.171	20	M2
Chloride	37.4		mg/L	10.0	32.6	48.2	80-120	1.16	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093006

Shipped By: Client

Temperature: 2.90° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-104 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Sample ID#	Date (mm/dd/yy)	Collection Time (24 hr)					
1093006								
1093006-01 A		<u>9-29-21</u>	<u>8:15</u>	Plastic 1L	1	MW104	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1093006-01 B		<u>9-29-21</u>	<u>8:15</u>	Plastic 500mL pH<2 w/HNO3	1	MW104	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B
Preservation Check: pH : _____								
1093006-01 C		<u>9-29-21</u>	<u>8:15</u>	Plastic 500mL pH<2 w/H2SO4	1	MW104	g / c	COD TOC
Preservation Check: pH : _____								
1093006-01 D		<u>9-29-21</u>	<u>8:15</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW104	g / c	Radium 226 (sub)
Preservation Check: pH : _____								

Preservation Check Performed by: NOY

Field data collected by: [Signature] Date (mm/dd/yy) 9-29-21 Time (24 hr) 8:15
pH 6.51 Cond 25 2.03 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.94 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

09-29-21

1411

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-104 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#:

Quote#

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093006	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1093006-01 E	<u>9-29-21</u>	<u>8:15</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093006-01 F	<u>9-29-21</u>	<u>8:15</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW104	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093006-01 G	<u>9-29-21</u>	<u>8:15</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW104	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1093006-01 H	<u>9-29-21</u>	<u>8:15</u>	AG 250mL pH<2 w/H2SO4	1	MW104	g / c	TOC
			Preservation Check: pH : _____				

Thermometer Serial Number

181390287

☒ 181460057

Temp 2.9 °C

Preservation Check Performed by: NO

Field data collected by: [Signature] Date (mm/dd/yy) 9-29-21 Time (24 hr) 8:15
pH 6.51 Cond (umho) 2.03 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 16.94 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

09-29-21

1411

October 22, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093006/Big Rivers Electric Co
Pace Project No.: 30444301

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 02, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1093006/Big Rivers Electric Co

Pace Project No.: 30444301

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093006/Big Rivers Electric Co

Pace Project No.: 30444301

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30444301001	1093006-01	Water	09/29/21 08:15	10/02/21 11:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093006/Big Rivers Electric Co

Pace Project No.: 30444301

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30444301001	1093006-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093006/Big Rivers Electric Co

Pace Project No.: 30444301

Sample: 1093006-01 **Lab ID: 30444301001** Collected: 09/29/21 08:15 Received: 10/02/21 11:30 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.736 ± 0.491 (0.609) C:NA T:96%	pCi/L	10/19/21 16:48	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.04 ± 0.541 (0.970) C:66% T:81%	pCi/L	10/20/21 14:27	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.78 ± 1.03 (1.58)	pCi/L	10/22/21 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093006/Big Rivers Electric Co

Pace Project No.: 30444301

QC Batch: 467251

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30444301001

METHOD BLANK: 2256290

Matrix: Water

Associated Lab Samples: 30444301001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.357 ± 0.352 (0.536) C:NA T:86%	pCi/L	10/19/21 16:48	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093006/Big Rivers Electric Co

Pace Project No.: 30444301

QC Batch: 467253

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30444301001

METHOD BLANK: 2256292

Matrix: Water

Associated Lab Samples: 30444301001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.967 ± 0.412 (0.666) C:74% T:84%	pCi/L	10/20/21 11:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093006/Big Rivers Electric Co
Pace Project No.: 30444301

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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30444301

30444301

Results Requested By: 10/8/2021

Workorder Name: MW-104 Wilson 092-0000 Owner Received Date: 9/29/2021

Results Requested By: 10/8/2021

Subcontract To:

Requested Analysis

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

rob.whittington@pacelabs.com

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix		EPA 903	EPA 904	LAB USE ONLY
					Matrix				
1									
2	1093006-01		09/29/21 08:15	IR44-McCoy	Water		X	X	001
3									
4									
5									
6									
7									
8									
9									
10									
Transfers	Released By	Date/Time		Received By		Date/Time		Comments	
1				Duke Dea - 10/2/21		11:30			
2									
3									

Cooler Temperature on Receipt

9-9-30

Custody Seal Y or N

Received on Ice Y or N

Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Friday, June 17, 2016 11:01:34 AM

FMT-ALL-C-002 rev.00 24 March 2009

Page 1 of 1

Client Name: PaceKY

Project

PM: CAF

Due Date: 10/11/21

CLIENT: PACE_44_MVKY

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace OtherTracking #: 1107 3389 3045

LIMS Login

AC/MLCustody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noThermometer Used 12 Type of Ice: Wet Blue NoneCooler Temperature Observed Temp 20.3 °C Correction Factor: -0.4 °C Final Temp: 19.9 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# <u>1000411</u>	Date and Initials of person examining contents: <u>10-5-21</u> <u>AE</u>
Chain of Custody Present:	☒	☐	☐	1.	
Chain of Custody Filled Out:	☐	☒	☐	2.	<u>no preservatives listed, number of containers</u>
Chain of Custody Relinquished:	☐	☒	☐	3.	
Sampler Name & Signature on COC:	☐	☒	☐	4.	
Sample Labels match COC:	☐	☒	☐	5.	<u>no date/time on labels</u>
-Includes date/time/ID Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	☒	☐	☐	6.	
Short Hold Time Analysis (<72hr remaining):	☐	☒	☐	7.	
Rush Turn Around Time Requested:	☒	☐	☐	8.	
Sufficient Volume:	☒	☐	☐	9.	
Correct Containers Used:	☒	☐	☐	10.	
-Pace Containers Used:	☐	☒	☐		
Containers Intact:	☒	☐	☐	11.	
Orthophosphate field filtered	☐	☐	☒	12.	
Hex Cr Aqueous sample field filtered	☐	☐	☒	13.	
Organic Samples checked for dechlorination:	☐	☐	☒	14.	
Filtered volume received for Dissolved tests	☐	☐	☒	15.	
All containers have been checked for preservation.	☒	☐	☐	16.	
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	☒	☐	☐	Initial when completed: <u>AE</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	☐	☐	☒	17.	
Trip Blank Present:	☐	☐	☒	18.	
Trip Blank Custody Seals Present	☐	☐	☒		
Rad Samples Screened < 0.5 mrem/hr	☒	☐	☐	Initial when completed: <u>AE</u>	Date: <u>10/17/21</u> Survey Meter SN: <u>1503</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093006

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093006-01	Water	Sampled:09/29/2021 08:15	Specific Method
Radium Total (sub)	03/28/2022 08:15	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/28/2022 08:15	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/28/2022 08:15	EPA 903.1	

WO# : 30444301
PM: CAF Due Date: 10/11/21
CLIENT: PACE_44_MVKY

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1093007

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:34

Project Name: MW-105 Wilson 092-00004

Workorder: 1093007

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/29/2021 14: 11.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093007-01	MW105/	Groundwater	09/29/2021 09:55	09/29/2021 14:11	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093007-01	Field Conductance	974			
	Field pH	7.27			
	Field Temp (C)	18.20			

ANALYTICAL RESULTS

Lab Sample ID: **1093007-01**

Description: **MW105**

Sample Collection Date Time: 09/29/2021 09:55

Sample Received Date Time: 09/29/2021 14:11

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Arsenic	ND	u	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Barium	0.260		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Boron	0.34		mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:26	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Calcium	59.4	D1	mg/L	4.00	1.30	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:32	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Iron	1.63		mg/L	0.100	0.050	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:26	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Lithium	0.02		mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Magnesium	19.4	D1	mg/L	1.00	0.450	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:29	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Molybdenum	0.002	J	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Nickel	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Potassium	4.97		mg/L	0.50	0.22	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:26	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Sodium	139	D1	mg/L	26.0	10.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:55	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB
Zinc	ND	u	mg/L	0.02	0.02	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:11	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	411		mg/L	4		2320 B-2011	09/30/2021 13:58	09/30/2021 13:58	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	09/30/2021 13:58	09/30/2021 13:58	HMF
Total Alkalinity	411		mg/L	4		2320 B-2011	09/30/2021 13:58	09/30/2021 13:58	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:51	KBZ
Specific Conductance (Lab)	1010		umhos/cm	1	1	2510 B-2011	09/30/2021 12:21	09/30/2021 12:21	JLW
Hardness as CaCO3	246		mg/L	1	1	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	626		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.2		mg/L	0.5	0.4	5310 C-2011	10/05/2021 10:28	10/06/2021 15:54	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	-0.026	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	0.380	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	0.380	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW



Pace Analytical Services, LLC

P.O. Box 907

Madisonville, KY 42431

270.821.7375

www.pacelabs.com

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	9.1		mg/L	0.5	0.4	EPA 300.0 REV 2.1	10/07/2021 20:16	10/07/2021 20:16	CSC
Fluoride	0.61		mg/L	0.20		EPA 300.0 REV 2.1	10/07/2021 20:16	10/07/2021 20:16	CSC
Sulfate	176	D	mg/L	10.0	5.0	EPA 300.0 REV 2.1	10/08/2021 12:22	10/08/2021 12:22	CSC

Notes for work order 1093007

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Blank (BAI3647-BLK1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:35

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAI3647-BLK2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:18

Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAI3647-BS1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:38

Boron	0.11	0.10	mg/L	0.125		86.2	85-115
Calcium	6.25	0.40	mg/L	6.25		100	85-115
Iron	6.34	0.100	mg/L	6.25		101	85-115
Magnesium	6.01	0.200	mg/L	6.25		96.1	85-115
Potassium	6.10	0.50	mg/L	6.25		97.5	85-115
Sodium	6.34	0.26	mg/L	6.25		101	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

LCS (BAI3647-BS2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:21

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		108	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0625	0.0010	mg/L	0.0625		100	85-115			
Barium	0.061	0.004	mg/L	0.0625		98.1	85-115			
Beryllium	0.0607	0.0020	mg/L	0.0625		97.2	85-115			
Cadmium	0.0618	0.0010	mg/L	0.0625		98.9	85-115			
Chromium	0.0645	0.0020	mg/L	0.0625		103	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		100	85-115			
Copper	0.062	0.003	mg/L	0.0625		98.6	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.9	85-115			
Nickel	0.062	0.003	mg/L	0.0625		99.4	85-115			
Selenium	0.061	0.003	mg/L	0.0625		97.8	85-115			
Thallium	0.0650	0.0020	mg/L	0.0625		104	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Matrix Spike (BAI3647-MS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:04

Boron	1.85	1.00	mg/L	0.125	1.77	66.3	80-120			D2, M2
Calcium	33.1	4.00	mg/L	6.25	27.0	98.2	80-120			D2
Iron	6.41	1.00	mg/L	6.25	ND	103	80-120			D2
Magnesium	15.7	2.00	mg/L	6.25	8.84	109	80-120			D2
Potassium	13.1	5.00	mg/L	6.25	6.80	100	80-120			D2
Sodium	197	2.60	mg/L	6.25	178	296	80-120			D2, M1

Matrix Spike (BAI3647-MS2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:11

Boron	8.84	1.00	mg/L	0.125	8.69	122	80-120			D2, M1
Calcium	603	4.00	mg/L	6.25	608	NR	80-120			D2
Iron	14.8	1.00	mg/L	6.25	8.07	107	80-120			D2
Magnesium	205	2.00	mg/L	6.25	230	NR	80-120			D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120			D2, M2
Sodium	209	2.60	mg/L	6.25	208	28.5	80-120			D2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike (BAI3647-MS3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:39

Antimony	0.064	0.050	mg/L	0.0625	ND	103	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.0	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120			D2, J
Arsenic	0.0610	0.0100	mg/L	0.0625	ND	97.5	80-120			D2
Barium	0.133	0.040	mg/L	0.0625	0.074	95.3	80-120			D2
Beryllium	0.0654	0.0200	mg/L	0.0625	ND	105	80-120			D2
Cadmium	0.0589	0.0100	mg/L	0.0625	ND	94.2	80-120			D2
Chromium	0.0587	0.0200	mg/L	0.0625	ND	93.9	80-120			D2
Cobalt	0.059	0.040	mg/L	0.0625	ND	94.1	80-120			D2
Copper	0.059	0.030	mg/L	0.0625	ND	94.8	80-120			D2
Lead	0.061	0.020	mg/L	0.0625	ND	97.0	80-120			D2
Lithium	0.10	0.20	mg/L	0.0625	ND	158	80-120			D2, M1, J
Nickel	0.058	0.030	mg/L	0.0625	ND	92.8	80-120			D2
Selenium	0.060	0.030	mg/L	0.0625	ND	96.5	80-120			D2
Thallium	0.0634	0.0200	mg/L	0.0625	ND	101	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Matrix Spike (BAI3647-MS4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:47

Antimony	0.066	0.050	mg/L	0.0625	ND	106	80-120			D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	111	80-120			D2, J
Mercury	0.0027	0.0050	mg/L	0.00250	ND	108	80-120			D2, J
Arsenic	0.0637	0.0100	mg/L	0.0625	ND	102	80-120			D2
Barium	0.073	0.040	mg/L	0.0625	0.013	96.1	80-120			D2
Beryllium	0.0622	0.0200	mg/L	0.0625	ND	99.6	80-120			D2
Cadmium	0.0591	0.0100	mg/L	0.0625	ND	94.6	80-120			D2
Chromium	0.0594	0.0200	mg/L	0.0625	ND	95.0	80-120			D2
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Copper	0.055	0.030	mg/L	0.0625	ND	87.7	80-120			D2
Lead	0.059	0.020	mg/L	0.0625	ND	94.6	80-120			D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	173	80-120			D2, M1
Nickel	0.081	0.030	mg/L	0.0625	0.024	91.1	80-120			D2
Selenium	0.062	0.030	mg/L	0.0625	ND	98.6	80-120			D2
Thallium	0.0625	0.0200	mg/L	0.0625	ND	100	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD1) Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:07

Boron	1.88	1.00	mg/L	0.125	1.77	87.6	80-120	1.43	20	D2
Calcium	33.5	4.00	mg/L	6.25	27.0	105	80-120	1.35	20	D2
Iron	6.43	1.00	mg/L	6.25	ND	103	80-120	0.308	20	D2
Magnesium	15.8	2.00	mg/L	6.25	8.84	112	80-120	0.922	20	D2
Potassium	13.2	5.00	mg/L	6.25	6.80	102	80-120	1.13	20	D2
Sodium	198	2.60	mg/L	6.25	178	323	80-120	0.871	20	D2, M1

Matrix Spike Dup (BAI3647-MSD2) Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:23

Boron	8.80	1.00	mg/L	0.125	8.69	87.5	80-120	0.490	20	D2
Calcium	624	4.00	mg/L	6.25	608	264	80-120	3.40	20	D2, M3
Iron	15.3	1.00	mg/L	6.25	8.07	115	80-120	3.20	20	D2
Magnesium	212	2.00	mg/L	6.25	230	NR	80-120	2.97	20	D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120	0.0828	20	D2, M2
Sodium	217	2.60	mg/L	6.25	208	149	80-120	3.53	20	D2, M1

Matrix Spike Dup (BAI3647-MSD3) Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:43

Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	5.52	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	102	80-120	2.74	20	D2, J
Antimony	0.065	0.050	mg/L	0.0625	ND	104	80-120	1.27	20	D2
Arsenic	0.0619	0.0100	mg/L	0.0625	ND	99.0	80-120	1.53	20	D2
Barium	0.136	0.040	mg/L	0.0625	0.074	99.1	80-120	1.77	20	D2
Beryllium	0.0653	0.0200	mg/L	0.0625	ND	104	80-120	0.210	20	D2
Cadmium	0.0597	0.0100	mg/L	0.0625	ND	95.5	80-120	1.41	20	D2
Chromium	0.0598	0.0200	mg/L	0.0625	ND	95.7	80-120	1.82	20	D2
Cobalt	0.060	0.040	mg/L	0.0625	ND	95.3	80-120	1.36	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.6	80-120	1.29	20	D2
Lead	0.060	0.020	mg/L	0.0625	ND	96.6	80-120	0.496	20	D2
Lithium	0.10	0.20	mg/L	0.0625	ND	162	80-120	2.31	20	D2, M1, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.8	80-120	2.14	20	D2
Selenium	0.059	0.030	mg/L	0.0625	ND	94.5	80-120	2.10	20	D2
Thallium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.12	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:51

Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.65	20	D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	116	80-120	4.42	20	D2, J
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	2.57	20	D2, J
Arsenic	0.0674	0.0100	mg/L	0.0625	ND	108	80-120	5.63	20	D2
Barium	0.076	0.040	mg/L	0.0625	0.013	101	80-120	3.96	20	D2
Beryllium	0.0618	0.0200	mg/L	0.0625	ND	98.8	80-120	0.731	20	D2
Cadmium	0.0605	0.0100	mg/L	0.0625	ND	96.7	80-120	2.28	20	D2
Chromium	0.0616	0.0200	mg/L	0.0625	ND	98.6	80-120	3.74	20	D2
Cobalt	0.071	0.040	mg/L	0.0625	ND	114	80-120	3.46	20	D2
Copper	0.058	0.030	mg/L	0.0625	ND	92.2	80-120	5.09	20	D2
Lead	0.061	0.020	mg/L	0.0625	ND	98.0	80-120	3.61	20	D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	167	80-120	1.57	20	D2, M1
Nickel	0.084	0.030	mg/L	0.0625	0.024	96.9	80-120	4.44	20	D2
Selenium	0.062	0.030	mg/L	0.0625	ND	99.5	80-120	0.933	20	D2
Thallium	0.0648	0.0200	mg/L	0.0625	ND	104	80-120	3.62	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Post Spike (BAI3647-PS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:26

Boron	1820		ug/L	125	1770	40.5	75-125			D2, M2
Calcium	28200		ug/L	6250	27000	19.5	75-125			D2, M2
Iron	-21.0		ug/L	6250	7.38	NR	75-125			D2, M2, U
Magnesium	9840		ug/L	6250	8840	16.0	75-125			D2, M2
Potassium	5070		ug/L	6250	6800	NR	75-125			D2, M2
Sodium	201000		ug/L	6250	178000	357	75-125			D2, M1

Post Spike (BAI3647-PS2)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:54

Molybdenum	1.91		ug/L	62.5	1.33	0.934	75-125			D2, M2
Antimony	0.148		ug/L	62.5	0.184	NR	75-125			D2, M2
Mercury	0.173		ug/L	2.50	0.0559	4.70	75-125			D2, M2
Arsenic	0.646		ug/L	62.5	0.329	0.508	75-125			D2, M2
Barium	78.5		ug/L	62.5	73.8	7.64	75-125			D2, M2
Beryllium	-0.0723		ug/L	62.5	0.0019	NR	75-125			M2, D2, U
Cadmium	0.0690		ug/L	62.5	0.0294	0.0633	75-125			D2, M2
Chromium	0.0170		ug/L	62.5	0.224	NR	75-125			D2, M2
Cobalt	0.055		ug/L	62.5	0.045	0.0150	75-125			D2, M2
Copper	-0.112		ug/L	62.5	0.703	NR	75-125			D2, M2, U
Lead	-0.348		ug/L	62.5	-0.045		75-115			D2, M2, U
Lithium	31.7		ug/L	62.5	25.6	9.80	75-125			D2, M2
Nickel	0.391		ug/L	62.5	0.659	NR	75-125			D2, M2
Selenium	0.078		ug/L	62.5	0.053	0.0395	75-125			D2, M2
Thallium	0.463		ug/L	62.5	0.0639	0.638	75-125			D2, M2
Zinc	6.59		ug/L	62.5	7.02	NR	75-125			D2, M2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Blank (BAI3295-BLK1)

Prepared: 9/30/2021 11:01, Analyzed: 9/30/2021 11:01

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAI3295-BLK2)

Prepared: 9/30/2021 13:09, Analyzed: 9/30/2021 13:09

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK3)

Prepared: 9/30/2021 14:34, Analyzed: 9/30/2021 14:34

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK4)

Prepared: 9/30/2021 15:09, Analyzed: 9/30/2021 15:09

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAI3295-BS1)

Prepared: 9/30/2021 13:05, Analyzed: 9/30/2021 13:05

Carbonate Alkalinity as CaCO ₃	241	4	mg/L	225		107	0-200			
Total Alkalinity	251	4	mg/L	235		107	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

LCS (BAI3295-BS2)

Prepared: 9/30/2021 14:30, Analyzed: 9/30/2021 14:30

Total Alkalinity	236	4	mg/L	235		101	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	227	4	mg/L	225		101	0-200			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Duplicate (BAI3295-DUP1)

Source: 1091563-01

Prepared: 9/30/2021 12:57, Analyzed: 9/30/2021 12:57

Total Alkalinity	87	4	mg/L		99			13.4	10	Y1
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	87	4	mg/L		99			13.4	10	Y1

Duplicate (BAI3295-DUP2)

Source: 1093298-01

Prepared: 9/30/2021 14:20, Analyzed: 9/30/2021 14:20

Total Alkalinity	242	4	mg/L		228			5.75	10	
Bicarbonate Alkalinity as CaCO ₃	242	4	mg/L		228			5.75	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAI3295-MS1)

Source: 1091563-01

Prepared: 9/30/2021 13:01, Analyzed: 9/30/2021 13:01

Total Alkalinity	153	4	mg/L	50.0	99	108	80-120			

Matrix Spike (BAI3295-MS2)

Source: 1093298-01

Prepared: 9/30/2021 14:24, Analyzed: 9/30/2021 14:24

Total Alkalinity	262	4	mg/L	50.0	228	67.4	80-120			M3

Batch BAI3601 - Default Prep Wet Chem

Blank (BAI3601-BLK1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAI3601-BS1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			

Duplicate (BAI3601-DUP1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	

Matrix Spike (BAI3601-MS1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3628 - Default Prep Wet Chem

Blank (BAI3628-BLK1)

Prepared: 9/30/2021 11:31, Analyzed: 9/30/2021 11:31

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAI3628-BS1)

Prepared: 9/30/2021 11:32, Analyzed: 9/30/2021 11:32

Specific Conductance (Lab)	1420		umhos/cm	1410		101	80-120			

Duplicate (BAI3628-DUP1) Source: 1094775-01

Prepared: 9/30/2021 12:35, Analyzed: 9/30/2021 12:35

Specific Conductance (Lab)	3440	1	umhos/cm		3360			2.35	0.938	Y1

Duplicate (BAI3628-DUP2) Source: 1094856-01

Prepared: 9/30/2021 12:49, Analyzed: 9/30/2021 12:49

Specific Conductance (Lab)	9500	1	umhos/cm		9600			1.05	0.938	Y1

Batch BAJ0539 - Default Prep Wet Chem

Blank (BAJ0539-BLK1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0556 - Default Prep Wet Chem

Blank (BAJ0556-BLK1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:10

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0556 - Default Prep Wet Chem

LCS (BAJ0556-BS1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:32

Total Organic Carbon	5.2	0.5	mg/L	5.00		103	80-120			

Duplicate (BAJ0556-DUP1) Source: 1091480-14

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 13:47

Total Organic Carbon	5.3	0.5	mg/L		5.3			0.574	25	

Duplicate (BAJ0556-DUP2) Source: 1093010-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:03

Total Organic Carbon	1.0	0.5	mg/L		0.6			42.7	25	Y1

Matrix Spike (BAJ0556-MS1) Source: 1091480-15

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 14:08

Total Organic Carbon	3.8	0.5	mg/L	2.50	1.2	103	80-120			

Matrix Spike (BAJ0556-MS2) Source: 1093011-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:24

Total Organic Carbon	6.2	0.5	mg/L	5.00	1.3	97.0	80-120			

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0581 - Default Prep Wet Chem

Matrix Spike Dup (BAJ0581-MSD1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1085 - Default Prep IC

Blank (BAJ1085-BLK1)

Prepared: 10/7/2021 18:47, Analyzed: 10/7/2021 18:47

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

LCS (BAJ1085-BS1)

Prepared: 10/7/2021 18:32, Analyzed: 10/7/2021 18:32

Chloride	10.1		mg/L	10.0		101	90-110			
Fluoride	10.0		mg/L	10.0		100	90-110			
Sulfate	10.2		mg/L	10.0		102	90-110			

Matrix Spike (BAJ1085-MS1)

Source: 1093005-01

Prepared: 10/7/2021 23:29, Analyzed: 10/7/2021 23:29

Fluoride	11.2		mg/L	10.0	0.30	109	80-120			
Chloride	37.0		mg/L	10.0	32.6	43.9	80-120			
Sulfate	149		mg/L	10.0	390	NR	80-120			M2

Matrix Spike Dup (BAJ1085-MSD1)

Source: 1093005-01

Prepared: 10/7/2021 23:44, Analyzed: 10/7/2021 23:44

Fluoride	11.9		mg/L	10.0	0.30	116	80-120	5.88	20	
Sulfate	149		mg/L	10.0	390	NR	80-120	0.171	20	M2
Chloride	37.4		mg/L	10.0	32.6	48.2	80-120	1.16	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093007

Shipped By: Client

Temperature: 2.90° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-105 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sned
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1093007

Sample ID#

Date Collection
(mm/dd/yy): Time (24 hr):

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1093007-01 A 9-29-21 9:55

Plastic 1L

1

MW105

g / c

TDS Alkalinity Carbonate Alkalinity
Total Chloride 300.0 Conductivity
(Lab) Fluoride 300.0 Sulfate 300.0
Alkalinity Bicarbonate
Beryllium Tot 6020 Lead Tot 6020
Antimony Tot 6020 Arsenic Tot 6020
Boron Tot 6010B Barium Tot 6020
Cadmium Tot 6020 Calcium Tot
6010B Chromium Tot 6020 Cobalt
Tot 6020 Copper Tot 6020 Hardness
Titration Iron Tot 6010B Lithium Tot
6020 Magnesium Tot 6010B

1093007-01 B 9-29-21 9:55

Plastic 500mL pH<2
w/HNO3

1

MW105

g / c

Preservation Check: pH: _____

1093007-01 C 9-29-21 9:55

Plastic 500mL pH<2
w/H2SO4

1

MW105

g / c

COD TOC

Preservation Check: pH: _____

1093007-01 D 9-29-21 9:55

Plastic 1L pH<2 w/HNO3
Rad 226 (Sub)

1

MW105

g / c

Radium 226 (sub)

Preservation Check: pH: _____

Preservation Check Performed by: NOY

Field data collected by: Travis Sned Date (mm/dd/yy) 9-29-21 Time (24 hr) 9:55

pH 7.27 Cond (umho) 0.974 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.20 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sned

NOY

09-29-21

1411



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:01AM

Page 18 of 30

Chain of Custody

Scheduled for: **09/06/2021**



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-105 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: Ky

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): [Signature]
required information

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY		*required information*		Containers	Sample Description	Composite	Sample Analysis Requested
Workorder #	Date	Collection	Bottle and Preservative				
1093007	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1093007-01 E	<u>9-29-21</u>	<u>9:55</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093007-01 F	<u>9-29-21</u>	<u>9:55</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW105	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093007-01 G	<u>9-29-21</u>	<u>9:55</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW105	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1093007-01 H	<u>9-29-21</u>	<u>9:55</u>	AG 250mL pH<2 w/H2SO4	1	MW105	g / c	TOC
			Preservation Check: pH : _____				

Thermometer Serial Number

181390287

☒ 181460057

Temp 2.9 °C

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 9-29-21 Time (24 hr) 9:55
pH 7.27 Cond ^{MS} 0.974 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 18.20 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

[Signature]

[Signature]

09-29-21

1411



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:01AM

November 05, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093007/Big Rivers Electric Co
Pace Project No.: 30446204

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1093007/Big Rivers Electric Co

Pace Project No.: 30446204

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093007/Big Rivers Electric Co

Pace Project No.: 30446204

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30446204001	1093007-01	Water	09/29/21 09:55	10/18/21 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093007/Big Rivers Electric Co

Pace Project No.: 30446204

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30446204001	1093007-01	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093007/Big Rivers Electric Co

Pace Project No.: 30446204

Sample: 1093007-01 **Lab ID: 30446204001** Collected: 09/29/21 09:55 Received: 10/18/21 10:15 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.0258 ± 0.513 (0.918) C:NA T:93%	pCi/L	11/05/21 16:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.380 ± 0.405 (0.847) C:74% T:92%	pCi/L	11/03/21 14:24	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.380 ± 0.918 (1.77)	pCi/L	11/05/21 17:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093007/Big Rivers Electric Co

Pace Project No.: 30446204

QC Batch: 469226

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446204001

METHOD BLANK: 2265868

Matrix: Water

Associated Lab Samples: 30446204001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0420 ± 0.214 (0.452) C:NA T:93%	pCi/L	11/05/21 15:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093007/Big Rivers Electric Co

Pace Project No.: 30446204

QC Batch: 469228

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30446204001

METHOD BLANK: 2265872

Matrix: Water

Associated Lab Samples: 30446204001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.423 ± 0.323 (0.633) C:78% T:91%	pCi/L	11/03/21 11:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093007/Big Rivers Electric Co
Pace Project No.: 30446204

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Chain of Custody



Workorder: 1093007 Workorder Name: MW-105 Wilson 092-0000 Owner Received Date: 9/29/2021 Results Requested By: 10/8/2021

Report To: Subcontract To: Requested Analysis:

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

Item		Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		EPA 903.1	EPA 904.0 Radium Sum Calc	LAB USE ONLY									
1																				
2		1093007-01		09/29/21 09:55	IR44-McCoy	Water			X	X										
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
Transfers		Released By		Date/Time		Received By		Date/Time	Comments											
1								10/18/21 1015												
2																				
3																				

Cooler Temperature on Receipt NA °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KY

Project # _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7749 5956 6277

Label <u>JAG</u>
LIMS Login <u>[Signature]</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# <u>10D0411</u>	Date and Initials of person examining contents: <u>JAG 10/19/21</u>
Chain of Custody Present:	☒	☐	☐	1.	
Chain of Custody Filled Out:	☒	☐	☐	2.	
Chain of Custody Relinquished:	☒	☐	☐	3.	
Sampler Name & Signature on COC:	☐	☒	☐	4.	
Sample Labels match COC: -Includes date/time/ID Matrix: <u>WT</u>	☐	☒	☐	5.	<u>No date and time on bottles</u>
Samples Arrived within Hold Time:	☒	☐	☐	6.	
Short Hold Time Analysis (<72hr remaining):	☐	☒	☐	7.	
Rush Turn Around Time Requested:	☐	☒	☐	8.	
Sufficient Volume:	☒	☐	☐	9.	
Correct Containers Used: -Pace Containers Used:	☒	☐	☐	10.	
Containers Intact:	☒	☐	☐	11.	
Orthophosphate field filtered	☐	☐	☒	12.	
Hex Cr Aqueous sample field filtered	☐	☐	☒	13.	
Organic Samples checked for dechlorination:	☐	☐	☒	14.	
Filtered volume received for Dissolved tests	☐	☐	☒	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	☒	☐	☐	16.	
All containers meet method preservation requirements.	☒	☐	☐	Initial when completed <u>JAG</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):	☐	☐	☒	17.	
Trip Blank Present:	☐	☒	☐	18.	
Trip Blank Custody Seals Present	☐	☐	☒		
Rad Samples Screened < 0.5 mrem/hr	☒	☐	☐	Initial when completed <u>JAG</u>	Date: <u>10/19/21</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0#: 30446204
 PM: JLB
 Due Date: 11/08/21
 CLIENT: PACE_44_MVKY

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093007

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093007-01	Water	Sampled: 09/29/2021 09:55	Specific Method
Radium Total (sub)	03/28/2022 09:55	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/28/2022 09:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/28/2022 09:55	EPA 903.1	

WO# : 30446204

PM: JLB

Due Date: 11/08/21

CLIENT: PACE_44_MVKY

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Certificate of Analysis 1093008

Mike Galbraith
Big Rivers Electric Corporation Wilson Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-100168
Report Printed: 11/15/2021 08:32

Project Name: MW-110 Wilson 092-00004

Workorder: 1093008

Dear Mike Galbraith

Enclosed are the analytical results for samples received by the laboratory 09/29/2021 14: 11.

The results relate to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services LLC Kentucky - Madisonville
- Subcontract lab - See Subcontract Lab's report at the end of this report

If you have any questions concerning this report, please feel free to contact me.



#460210 Madisonville, KY
#460291 Pikeville, KY



Rob Whittington, Project Manager

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1093008-01	MW110/	Groundwater	09/29/2021 09:05	09/29/2021 14:11	Travis Sneed
<u>LabNumber</u>	<u>Measurement</u>	<u>Value</u>			
1093008-01	Field Conductance	446			
	Field pH	6.88			
	Field Temp (C)	17.32			

ANALYTICAL RESULTS

Lab Sample ID: **1093008-01**

Description: **MW110**

Sample Collection Date Time: 09/29/2021 09:05

Sample Received Date Time: 09/29/2021 14:11

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Arsenic	0.0018		mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Barium	0.046		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Boron	ND	u	mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:45	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Calcium	33.8	D1	mg/L	2.00	0.65	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:48	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Copper	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Iron	3.61		mg/L	0.100	0.050	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:45	MRWD
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Lithium	ND	u	mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Magnesium	16.1	D1	mg/L	1.00	0.450	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:48	MRWD
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Molybdenum	ND	u	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Nickel	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Potassium	0.81		mg/L	0.50	0.22	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:45	MRWD
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Sodium	28.4	D1	mg/L	1.30	0.50	SW846 6010 B	10/01/2021 08:15	10/05/2021 18:48	MRWD
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB
Zinc	ND	u	mg/L	0.02	0.02	SW846-6020 A	10/01/2021 08:15	10/07/2021 12:14	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Bicarbonate Alkalinity as CaCO3	136		mg/L	4		2320 B-2011	09/30/2021 14:05	09/30/2021 14:05	HMF
Carbonate Alkalinity as CaCO3	ND	u	mg/L	4		2320 B-2011	09/30/2021 14:05	09/30/2021 14:05	HMF
Total Alkalinity	136		mg/L	4		2320 B-2011	09/30/2021 14:05	09/30/2021 14:05	HMF
Chemical Oxygen Demand	ND	u	mg/L	8	8	HACH 8000	10/05/2021 12:03	10/05/2021 12:51	KBZ
Specific Conductance (Lab)	456		umhos/cm	1	1	2510 B-2011	09/30/2021 11:24	09/30/2021 11:24	CML
Hardness as CaCO3	166		mg/L	1	1	2340 C (as HACH 8226)	10/01/2021 10:57	10/01/2021 10:57	CLL
Total Dissolved Solids	260		mg/L	50	50	2540 C-2011	10/05/2021 16:37	10/05/2021 16:37	HAG
Total Organic Carbon	1.8		mg/L	0.5	0.4	5310 C-2011	10/05/2021 10:28	10/06/2021 16:15	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.636	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	0.727	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	1.36	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW



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Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	10.9		mg/L	0.5	0.4	EPA 300.0 REV 2.1	10/07/2021 20:46	10/07/2021 20:46	CSC
Fluoride	0.27		mg/L	0.20		EPA 300.0 REV 2.1	10/07/2021 20:46	10/07/2021 20:46	CSC
Sulfate	101	D	mg/L	5.0	2.5	EPA 300.0 REV 2.1	10/08/2021 12:37	10/08/2021 12:37	CSC

Notes for work order 1093008

- Samples collected by PACE personnel are done so in accordance with procedures set forth in PACE field services SOPs .
 - Results contained in this report are only representative of the samples received.
 - PACE does not provide interpretation of these results unless otherwise stated .
 - All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
 - All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
 - Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
 - The Chain of Custody document is included as part of this report.
 - All Library Search analytes should be regarded as tentative identification based on the presumptive evidence of the mass spectra.
- Concentrations reported are estimated values.

Qualifiers

_Sub	See subcontractors report.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronyms

MDL	Method Detection Limit
MRL	Minimum Reporting Limit
ND	Not Detected
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
% Rec	Percent Recovery
RPD	Relative Percent Difference
>	Greater than
<	Less than

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Blank (BAI3647-BLK1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:35

Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Magnesium	ND	0.200	mg/L							U
Potassium	ND	0.50	mg/L							U
Sodium	ND	0.26	mg/L							U

Blank (BAI3647-BLK2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:18

Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Nickel	ND	0.003	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Zinc	ND	0.02	mg/L							U

LCS (BAI3647-BS1)

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:38

Boron	0.11	0.10	mg/L	0.125		86.2	85-115
Calcium	6.25	0.40	mg/L	6.25		100	85-115
Iron	6.34	0.100	mg/L	6.25		101	85-115
Magnesium	6.01	0.200	mg/L	6.25		96.1	85-115
Potassium	6.10	0.50	mg/L	6.25		97.5	85-115
Sodium	6.34	0.26	mg/L	6.25		101	85-115

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

LCS (BAI3647-BS2)

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:21

Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		108	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0625	0.0010	mg/L	0.0625		100	85-115			
Barium	0.061	0.004	mg/L	0.0625		98.1	85-115			
Beryllium	0.0607	0.0020	mg/L	0.0625		97.2	85-115			
Cadmium	0.0618	0.0010	mg/L	0.0625		98.9	85-115			
Chromium	0.0645	0.0020	mg/L	0.0625		103	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		100	85-115			
Copper	0.062	0.003	mg/L	0.0625		98.6	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.9	85-115			
Nickel	0.062	0.003	mg/L	0.0625		99.4	85-115			
Selenium	0.061	0.003	mg/L	0.0625		97.8	85-115			
Thallium	0.0650	0.0020	mg/L	0.0625		104	85-115			
Zinc	0.07	0.02	mg/L	0.0625		107	85-115			

Matrix Spike (BAI3647-MS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:04

Boron	1.85	1.00	mg/L	0.125	1.77	66.3	80-120			D2, M2
Calcium	33.1	4.00	mg/L	6.25	27.0	98.2	80-120			D2
Iron	6.41	1.00	mg/L	6.25	ND	103	80-120			D2
Magnesium	15.7	2.00	mg/L	6.25	8.84	109	80-120			D2
Potassium	13.1	5.00	mg/L	6.25	6.80	100	80-120			D2
Sodium	197	2.60	mg/L	6.25	178	296	80-120			D2, M1

Matrix Spike (BAI3647-MS2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:11

Boron	8.84	1.00	mg/L	0.125	8.69	122	80-120			D2, M1
Calcium	603	4.00	mg/L	6.25	608	NR	80-120			D2
Iron	14.8	1.00	mg/L	6.25	8.07	107	80-120			D2
Magnesium	205	2.00	mg/L	6.25	230	NR	80-120			D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120			D2, M2
Sodium	209	2.60	mg/L	6.25	208	28.5	80-120			D2

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike (BAI3647-MS3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:39

Antimony	0.064	0.050	mg/L	0.0625	ND	103	80-120			D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.0	80-120			D2, J
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120			D2, J
Arsenic	0.0610	0.0100	mg/L	0.0625	ND	97.5	80-120			D2
Barium	0.133	0.040	mg/L	0.0625	0.074	95.3	80-120			D2
Beryllium	0.0654	0.0200	mg/L	0.0625	ND	105	80-120			D2
Cadmium	0.0589	0.0100	mg/L	0.0625	ND	94.2	80-120			D2
Chromium	0.0587	0.0200	mg/L	0.0625	ND	93.9	80-120			D2
Cobalt	0.059	0.040	mg/L	0.0625	ND	94.1	80-120			D2
Copper	0.059	0.030	mg/L	0.0625	ND	94.8	80-120			D2
Lead	0.061	0.020	mg/L	0.0625	ND	97.0	80-120			D2
Lithium	0.10	0.20	mg/L	0.0625	ND	158	80-120			D2, M1, J
Nickel	0.058	0.030	mg/L	0.0625	ND	92.8	80-120			D2
Selenium	0.060	0.030	mg/L	0.0625	ND	96.5	80-120			D2
Thallium	0.0634	0.0200	mg/L	0.0625	ND	101	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Matrix Spike (BAI3647-MS4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:47

Antimony	0.066	0.050	mg/L	0.0625	ND	106	80-120			D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	111	80-120			D2, J
Mercury	0.0027	0.0050	mg/L	0.00250	ND	108	80-120			D2, J
Arsenic	0.0637	0.0100	mg/L	0.0625	ND	102	80-120			D2
Barium	0.073	0.040	mg/L	0.0625	0.013	96.1	80-120			D2
Beryllium	0.0622	0.0200	mg/L	0.0625	ND	99.6	80-120			D2
Cadmium	0.0591	0.0100	mg/L	0.0625	ND	94.6	80-120			D2
Chromium	0.0594	0.0200	mg/L	0.0625	ND	95.0	80-120			D2
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Copper	0.055	0.030	mg/L	0.0625	ND	87.7	80-120			D2
Lead	0.059	0.020	mg/L	0.0625	ND	94.6	80-120			D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	173	80-120			D2, M1
Nickel	0.081	0.030	mg/L	0.0625	0.024	91.1	80-120			D2
Selenium	0.062	0.030	mg/L	0.0625	ND	98.6	80-120			D2
Thallium	0.0625	0.0200	mg/L	0.0625	ND	100	80-120			D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120			D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:07

Boron	1.88	1.00	mg/L	0.125	1.77	87.6	80-120	1.43	20	D2
Calcium	33.5	4.00	mg/L	6.25	27.0	105	80-120	1.35	20	D2
Iron	6.43	1.00	mg/L	6.25	ND	103	80-120	0.308	20	D2
Magnesium	15.8	2.00	mg/L	6.25	8.84	112	80-120	0.922	20	D2
Potassium	13.2	5.00	mg/L	6.25	6.80	102	80-120	1.13	20	D2
Sodium	198	2.60	mg/L	6.25	178	323	80-120	0.871	20	D2, M1

Matrix Spike Dup (BAI3647-MSD2)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:23

Boron	8.80	1.00	mg/L	0.125	8.69	87.5	80-120	0.490	20	D2
Calcium	624	4.00	mg/L	6.25	608	264	80-120	3.40	20	D2, M3
Iron	15.3	1.00	mg/L	6.25	8.07	115	80-120	3.20	20	D2
Magnesium	212	2.00	mg/L	6.25	230	NR	80-120	2.97	20	D2, M3
Potassium	56.4	5.00	mg/L	6.25	48.1	132	80-120	0.0828	20	D2, M2
Sodium	217	2.60	mg/L	6.25	208	149	80-120	3.53	20	D2, M1

Matrix Spike Dup (BAI3647-MSD3)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:43

Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	5.52	20	D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	102	80-120	2.74	20	D2, J
Antimony	0.065	0.050	mg/L	0.0625	ND	104	80-120	1.27	20	D2
Arsenic	0.0619	0.0100	mg/L	0.0625	ND	99.0	80-120	1.53	20	D2
Barium	0.136	0.040	mg/L	0.0625	0.074	99.1	80-120	1.77	20	D2
Beryllium	0.0653	0.0200	mg/L	0.0625	ND	104	80-120	0.210	20	D2
Cadmium	0.0597	0.0100	mg/L	0.0625	ND	95.5	80-120	1.41	20	D2
Chromium	0.0598	0.0200	mg/L	0.0625	ND	95.7	80-120	1.82	20	D2
Cobalt	0.060	0.040	mg/L	0.0625	ND	95.3	80-120	1.36	20	D2
Copper	0.059	0.030	mg/L	0.0625	ND	93.6	80-120	1.29	20	D2
Lead	0.060	0.020	mg/L	0.0625	ND	96.6	80-120	0.496	20	D2
Lithium	0.10	0.20	mg/L	0.0625	ND	162	80-120	2.31	20	D2, M1, J
Nickel	0.059	0.030	mg/L	0.0625	ND	94.8	80-120	2.14	20	D2
Selenium	0.059	0.030	mg/L	0.0625	ND	94.5	80-120	2.10	20	D2
Thallium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.12	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3647 - EPA 200.2

Matrix Spike Dup (BAI3647-MSD4)

Source: 1093012-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:51

Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.65	20	D2
Molybdenum	0.07	0.10	mg/L	0.0625	ND	116	80-120	4.42	20	D2, J
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	2.57	20	D2, J
Arsenic	0.0674	0.0100	mg/L	0.0625	ND	108	80-120	5.63	20	D2
Barium	0.076	0.040	mg/L	0.0625	0.013	101	80-120	3.96	20	D2
Beryllium	0.0618	0.0200	mg/L	0.0625	ND	98.8	80-120	0.731	20	D2
Cadmium	0.0605	0.0100	mg/L	0.0625	ND	96.7	80-120	2.28	20	D2
Chromium	0.0616	0.0200	mg/L	0.0625	ND	98.6	80-120	3.74	20	D2
Cobalt	0.071	0.040	mg/L	0.0625	ND	114	80-120	3.46	20	D2
Copper	0.058	0.030	mg/L	0.0625	ND	92.2	80-120	5.09	20	D2
Lead	0.061	0.020	mg/L	0.0625	ND	98.0	80-120	3.61	20	D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	167	80-120	1.57	20	D2, M1
Nickel	0.084	0.030	mg/L	0.0625	0.024	96.9	80-120	4.44	20	D2
Selenium	0.062	0.030	mg/L	0.0625	ND	99.5	80-120	0.933	20	D2
Thallium	0.0648	0.0200	mg/L	0.0625	ND	104	80-120	3.62	20	D2
Zinc	ND	0.20	mg/L	0.0625	ND		80-120		20	D2, M4, U

Post Spike (BAI3647-PS1)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:26

Boron	1820		ug/L	125	1770	40.5	75-125			D2, M2
Calcium	28200		ug/L	6250	27000	19.5	75-125			D2, M2
Iron	-21.0		ug/L	6250	7.38	NR	75-125			D2, M2, U
Magnesium	9840		ug/L	6250	8840	16.0	75-125			D2, M2
Potassium	5070		ug/L	6250	6800	NR	75-125			D2, M2
Sodium	201000		ug/L	6250	178000	357	75-125			D2, M1

Post Spike (BAI3647-PS2)

Source: 1085995-01

Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:54

Molybdenum	1.91		ug/L	62.5	1.33	0.934	75-125			D2, M2
Antimony	0.148		ug/L	62.5	0.184	NR	75-125			D2, M2
Mercury	0.173		ug/L	2.50	0.0559	4.70	75-125			D2, M2
Arsenic	0.646		ug/L	62.5	0.329	0.508	75-125			D2, M2
Barium	78.5		ug/L	62.5	73.8	7.64	75-125			D2, M2
Beryllium	-0.0723		ug/L	62.5	0.0019	NR	75-125			D2, M2, U
Cadmium	0.0690		ug/L	62.5	0.0294	0.0633	75-125			D2, M2
Chromium	0.0170		ug/L	62.5	0.224	NR	75-125			M2, D2
Cobalt	0.055		ug/L	62.5	0.045	0.0150	75-125			D2, M2
Copper	-0.112		ug/L	62.5	0.703	NR	75-125			D2, M2, U
Lead	-0.348		ug/L	62.5	-0.045		75-115			D2, M2, U
Lithium	31.7		ug/L	62.5	25.6	9.80	75-125			D2, M2
Nickel	0.391		ug/L	62.5	0.659	NR	75-125			D2, M2
Selenium	0.078		ug/L	62.5	0.053	0.0395	75-125			D2, M2
Thallium	0.463		ug/L	62.5	0.0639	0.638	75-125			D2, M2
Zinc	6.59		ug/L	62.5	7.02	NR	75-125			D2, M2

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Blank (BAI3295-BLK1)

Prepared: 9/30/2021 11:01, Analyzed: 9/30/2021 11:01

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U

Blank (BAI3295-BLK2)

Prepared: 9/30/2021 13:09, Analyzed: 9/30/2021 13:09

Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK3)

Prepared: 9/30/2021 14:34, Analyzed: 9/30/2021 14:34

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

Blank (BAI3295-BLK4)

Prepared: 9/30/2021 15:09, Analyzed: 9/30/2021 15:09

Carbonate Alkalinity as CaCO ₃	ND	4	mg/L							U
Total Alkalinity	ND	4	mg/L							U
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L							U

LCS (BAI3295-BS1)

Prepared: 9/30/2021 13:05, Analyzed: 9/30/2021 13:05

Carbonate Alkalinity as CaCO ₃	241	4	mg/L	225		107	0-200			
Total Alkalinity	251	4	mg/L	235		107	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U

LCS (BAI3295-BS2)

Prepared: 9/30/2021 14:30, Analyzed: 9/30/2021 14:30

Total Alkalinity	236	4	mg/L	235		101	80-120			
Bicarbonate Alkalinity as CaCO ₃	ND	4	mg/L	0.106			0-200			U
Carbonate Alkalinity as CaCO ₃	227	4	mg/L	225		101	0-200			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3295 - Default Prep Wet Chem

Duplicate (BAI3295-DUP1)

Source: 1091563-01

Prepared: 9/30/2021 12:57, Analyzed: 9/30/2021 12:57

Total Alkalinity	87	4	mg/L		99			13.4	10	Y1
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U
Bicarbonate Alkalinity as CaCO ₃	87	4	mg/L		99			13.4	10	Y1

Duplicate (BAI3295-DUP2)

Source: 1093298-01

Prepared: 9/30/2021 14:20, Analyzed: 9/30/2021 14:20

Total Alkalinity	242	4	mg/L		228			5.75	10	
Bicarbonate Alkalinity as CaCO ₃	242	4	mg/L		228			5.75	10	
Carbonate Alkalinity as CaCO ₃	ND	4	mg/L		ND				10	U

Matrix Spike (BAI3295-MS1)

Source: 1091563-01

Prepared: 9/30/2021 13:01, Analyzed: 9/30/2021 13:01

Total Alkalinity	153	4	mg/L	50.0	99	108	80-120			

Matrix Spike (BAI3295-MS2)

Source: 1093298-01

Prepared: 9/30/2021 14:24, Analyzed: 9/30/2021 14:24

Total Alkalinity	262	4	mg/L	50.0	228	67.4	80-120			M3

Batch BAI3601 - Default Prep Wet Chem

Blank (BAI3601-BLK1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	ND	1	mg/L							U

LCS (BAI3601-BS1)

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	230	1	mg/L	225		102	80-120			

Duplicate (BAI3601-DUP1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	152	1	mg/L		156			2.60	10	

Matrix Spike (BAI3601-MS1)

Source: 1093827-02

Prepared: 10/1/2021 10:57, Analyzed: 10/1/2021 10:57

Hardness as CaCO ₃	422	1	mg/L	318	156	83.6	80-120			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAI3625 - Default Prep Wet Chem

Blank (BAI3625-BLK1)

Prepared: 9/30/2021 10:59, Analyzed: 9/30/2021 10:59

Specific Conductance (Lab)	ND	1	umhos/cm							U

LCS (BAI3625-BS1)

Prepared: 9/30/2021 11:00, Analyzed: 9/30/2021 11:00

Specific Conductance (Lab)	1410		umhos/cm	1410		100	80-120			

Duplicate (BAI3625-DUP1) Source: 1091480-10

Prepared: 9/30/2021 11:13, Analyzed: 9/30/2021 11:13

Specific Conductance (Lab)	1440	1	umhos/cm		1440			0.139	0.938	

Duplicate (BAI3625-DUP2) Source: 1093012-01

Prepared: 9/30/2021 11:28, Analyzed: 9/30/2021 11:28

Specific Conductance (Lab)	4850	1	umhos/cm		4850			0.00	0.938	

Batch BAJ0539 - Default Prep Wet Chem

Blank (BAJ0539-BLK1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	ND	25	mg/L							U

LCS (BAJ0539-BS1)

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1490	25	mg/L	1500		99.6	80-120			

Duplicate (BAJ0539-DUP1) Source: 1093003-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	3550	50	mg/L		3520			0.792	10	

Duplicate (BAJ0539-DUP2) Source: 1093017-01

Prepared: 10/5/2021 16:37, Analyzed: 10/5/2021 16:37

Total Dissolved Solids	1410	50	mg/L		1400			0.285	10	

Batch BAJ0556 - Default Prep Wet Chem

Blank (BAJ0556-BLK1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:10

Total Organic Carbon	ND	0.5	mg/L							U

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0556 - Default Prep Wet Chem

LCS (BAJ0556-BS1)

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 8:32

Total Organic Carbon	5.2	0.5	mg/L	5.00		103	80-120			

Duplicate (BAJ0556-DUP1) Source: 1091480-14

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 13:47

Total Organic Carbon	5.3	0.5	mg/L		5.3			0.574	25	

Duplicate (BAJ0556-DUP2) Source: 1093010-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:03

Total Organic Carbon	1.0	0.5	mg/L		0.6			42.7	25	Y1

Matrix Spike (BAJ0556-MS1) Source: 1091480-15

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 14:08

Total Organic Carbon	3.8	0.5	mg/L	2.50	1.2	103	80-120			

Matrix Spike (BAJ0556-MS2) Source: 1093011-01

Prepared: 10/5/2021 10:28, Analyzed: 10/6/2021 19:24

Total Organic Carbon	6.2	0.5	mg/L	5.00	1.3	97.0	80-120			

Batch BAJ0581 - Default Prep Wet Chem

Blank (BAJ0581-BLK1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	ND	8	mg/L							U

LCS (BAJ0581-BS1)

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:41

Chemical Oxygen Demand	123	8	mg/L	125		98.7	90-110			

Duplicate (BAJ0581-DUP1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	32	8	mg/L		32			0.0961	25	

Matrix Spike (BAJ0581-MS1) Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	279	8	mg/L	250	32	98.6	90-110			

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ0581 - Default Prep Wet Chem

Matrix Spike Dup (BAJ0581-MSD1)

Source: 1093004-01

Prepared: 10/5/2021 12:03, Analyzed: 10/5/2021 12:55

Chemical Oxygen Demand	290	8	mg/L	250	32	103	90-110	3.97	10	

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch BAJ1085 - Default Prep IC

Blank (BAJ1085-BLK1)

Prepared: 10/7/2021 18:47, Analyzed: 10/7/2021 18:47

Fluoride	ND	0.20	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1.0	mg/L							U

LCS (BAJ1085-BS1)

Prepared: 10/7/2021 18:32, Analyzed: 10/7/2021 18:32

Chloride	10.1		mg/L	10.0		101	90-110			
Fluoride	10.0		mg/L	10.0		100	90-110			
Sulfate	10.2		mg/L	10.0		102	90-110			

Matrix Spike (BAJ1085-MS1)

Source: 1093005-01

Prepared: 10/7/2021 23:29, Analyzed: 10/7/2021 23:29

Fluoride	11.2		mg/L	10.0	0.30	109	80-120			
Chloride	37.0		mg/L	10.0	32.6	43.9	80-120			
Sulfate	149		mg/L	10.0	390	NR	80-120			M2

Matrix Spike Dup (BAJ1085-MSD1)

Source: 1093005-01

Prepared: 10/7/2021 23:44, Analyzed: 10/7/2021 23:44

Fluoride	11.9		mg/L	10.0	0.30	116	80-120	5.88	20	
Sulfate	149		mg/L	10.0	390	NR	80-120	0.171	20	M2
Chloride	37.4		mg/L	10.0	32.6	48.2	80-120	1.16	10	M2

Certified Analyses included in this Report

Analyte	Certifications
2320 B-2011 in Water	
Bicarbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Carbonate Alkalinity as CaCO ₃	KY Drinking Water Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
Total Alkalinity	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2340 C (as HACH 8226) in Water	
Hardness as CaCO ₃	KY Drinking Water Mdv (00030) KY Wastewater Mdv (00030) TN Drinking Water (02819) VA NELAC MDV (460210)
2510 B-2011 in Water	
Specific Conductance (Lab)	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
EPA 300.0 REV 2.1 in Water	
Chloride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Fluoride	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) IN Drinking Water Mdv (C-KY-02) KY Wastewater Mdv (00030) WV Drinking Water Mdv (9959 M) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
Sulfate	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1093008

Shipped By: Client

Temperature: 2.90° Celcius

Condition

Check if Custody Seals are Present/Intact	☐
Check if Custody Signatures are Present	☒
Check if Collector Signature Present	☒
Check if bottles are intact	☒
Check if bottles are correct	☒
Check if bottles have sufficient volume	☒
Check if samples received on ice	☒
Check if VOA headspace is acceptable	☐
Check if samples received in holding time.	☒
Check if samples are preserved properly	☒

Chain of Custody

Scheduled for: 09/06/2021



Client: Big Rivers Electric Corporation Wilson Station

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: MW-110 Wilson 092-00004

Phone: (270) 844-6000

PWS ID#:

State: KY

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): Tina Speed

Compliance Monitoring? Yes ☒ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Samples Chlorinated? Yes ☐ No ☐

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #

1093008

Sample ID#

Date (mm/dd/yy): 9-29-21 Time (24 hr): 9:05

Bottle and Preservative

Containers

Sample Description

Composite

Sample Analysis Requested

1093008-01 A	<u>9-29-21</u> <u>9:05</u>	Plastic 1L	1	MW110	g / c	TDS Alkalinity Carbonate Alkalinity Total Chloride 300.0 Conductivity (Lab) Fluoride 300.0 Sulfate 300.0 Alkalinity Bicarbonate
1093008-01 B	<u>9-29-21</u> <u>9:05</u>	Plastic 500mL pH<2 w/HNO3	1	MW110	g / c	Beryllium Tot 6020 Lead Tot 6020 Antimony Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Barium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Hardness Titration Iron Tot 6010B Lithium Tot 6020 Magnesium Tot 6010B

Preservation Check: pH : _____

1093008-01 C	<u>9-29-21</u> <u>9:05</u>	Plastic 500mL pH<2 w/H2SO4	1	MW110	g / c	COD TOC

Preservation Check: pH : _____

1093008-01 D	<u>9-29-21</u> <u>9:05</u>	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW110	g / c	Radium 226 (sub)

Preservation Check: pH : _____

Preservation Check Performed by: No

Field data collected by: Tina Speed Date (mm/dd/yy) 9-29-21 Time (24 hr) 9:05
pH 6.88 Cond (μ mho) 29.446 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.32 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

<u>Tina Speed</u>	<u>[Signature]</u>	<u>9-29-21</u>	<u>1911</u>
_____	_____	_____	_____
_____	_____	_____	_____



PACE- Check here if trip charge applied to associated COC

Printed: 9/13/2021 10:22:05AM

Chain of Custody

Scheduled for: **09/06/2021**



Client: **Big Rivers Electric Corporation Wilson Station**

Report To:
Big Rivers Electric Corporation Wilson Station
Mike Galbraith
PO Box 24
Henderson, KY 42419

Invoice To:
Big Rivers Electric Corporation Wilson Station
Brian Edwards
PO Box 24
Henderson, KY 42419

Project: **MW-110 Wilson 092-00004**

Phone: **(270) 844-6000**

PWS ID#:

State: **KY**

PO#: _____

Quote# _____

Please Print Legibly

Collected by (Signature): *Travis Sneed*

Compliance Monitoring? Yes ☒ No ☐

Samples Chlorinated? Yes ☐ No ☐

*For composite samples please indicate begin time, end time and temp(oC) at end time below:

Influent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

Effluent: Start Date _____ Start time _____ End Date _____ End Time _____ Temp (oC) _____

LAB USE ONLY

required information

Workorder #	Date	Collection	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1093008	(mm/dd/yy):	Time (24 hr):					
Sample ID#							
1093008-01 E	<u>9-29-21</u>	<u>9:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093008-01 F	<u>9-29-21</u>	<u>9:05</u>	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW110	g / c	Radium 228 (sub)
			Preservation Check: pH : _____				
1093008-01 G	<u>9-29-21</u>	<u>9:05</u>	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW110	g / c	Radium Total (sub)
			Preservation Check: pH : _____				
1093008-01 H	<u>9-29-21</u>	<u>9:05</u>	AG 250mL pH<2 w/H2SO4	1	MW110	g / c	TOC
			Preservation Check: pH : _____				

Thermometer Serial Number

181390287
181460057
Temp 2.9 °C

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 9-29-21 Time (24 hr) 9:05
pH 6.88 Cond 23 446 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____
Temp (oC) 17.32 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____
Flow (MGD) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)

Received by: (Signature)

Date (mm/dd/yy)

Time (24 hr)

Travis Sneed

11742

09-29-21

1411

October 22, 2021

Rob Whittington
Pace Analytical Madisonville
825 Industrial Rd
Madisonville, KY 42431

RE: Project: 1093008/Big Rivers Electric Co
Pace Project No.: 30444303

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 02, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1093008/Big Rivers Electric Co

Pace Project No.: 30444303

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1093008/Big Rivers Electric Co

Pace Project No.: 30444303

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30444303001	1093008-01	Water	09/29/21 09:05	10/02/21 11:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1093008/Big Rivers Electric Co

Pace Project No.: 30444303

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30444303001	1093008-01	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1093008/Big Rivers Electric Co

Pace Project No.: 30444303

Sample: 1093008-01 **Lab ID: 30444303001** Collected: 09/29/21 09:05 Received: 10/02/21 11:30 Matrix: Water

PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.636 ± 0.383 (0.157) C:NA T:88%	pCi/L	10/19/21 16:48	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.727 ± 0.449 (0.846) C:71% T:85%	pCi/L	10/20/21 14:27	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.36 ± 0.832 (1.00)	pCi/L	10/22/21 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093008/Big Rivers Electric Co

Pace Project No.: 30444303

QC Batch: 467251

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30444303001

METHOD BLANK: 2256290

Matrix: Water

Associated Lab Samples: 30444303001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.357 ± 0.352 (0.536) C:NA T:86%	pCi/L	10/19/21 16:48	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1093008/Big Rivers Electric Co

Pace Project No.: 30444303

QC Batch: 467253

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30444303001

METHOD BLANK: 2256292

Matrix: Water

Associated Lab Samples: 30444303001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.967 ± 0.412 (0.666) C:74% T:84%	pCi/L	10/20/21 11:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1093008/Big Rivers Electric Co
Pace Project No.: 30444303

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

WO# : 30444303



Workorder: 1073000

Results Requested By: 10/8/2021

Owner Name: MW-110 Wilson 092-0000 Owner Received Date: 9/29/2021

Report To: Subcontract To: Requested Analysis

Pace Analytical Services, LLC
825 Industrial Road
Madisonville, KY 42409
270-821-7375
rob.whittington@pacelabs.com

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
(724) 850-5615

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix											LAB USE ONLY	
1																	
2	1093008-01		09/29/21 09:05	IR44-McCoy	Water											X	EPA 903.1
3																X	EPA 904.0 Radium Sum Calc
4																	
5																	
6																	
7																	
8																	
9																	
10																	
Transfers Released By		Date/Time		Received By		Date/Time		Comments									
1				Muller		10/2/21		11:30									
2																	
3																	

Cooler Temperature on Receipt 19.9 °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

SUBCONTRACT ORDER
Pace Analytical Services, LLC Kentucky
1093008

SENDING LABORATORY:

Pace Analytical Services, LLC Kentucky
PO BOX 907
Madisonville, KY 42431
Phone: (270) 821-7375
Fax: 844-270-7904
Project Manager: Rob Whittington

RECEIVING LABORATORY:

Pace Analytical Services LLC Greensburg PA
1638 Rosey Town Rd Suite 2,3,4
Greensburg, PA 15601
Phone : (724) 850-5615
Fax:

Analysis	Expires	Laboratory ID	Comments
Sample ID: 1093008-01	Water	Sampled:09/29/2021 09:05	Specific Method
Radium Total (sub)	03/28/2022 09:05	EPA 904.0 Radium Sum C	
Radium 228 (sub)	03/28/2022 09:05	EPA 904.0 Radium Sum C	
Radium 226 (sub)	03/28/2022 09:05	EPA 903.1	

WO# : 30444303
PM: CAF Due Date: 10/11/21
CLIENT: PACE_44_MVKY

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Pittsburgh Lab Sample Condition Upon Receipt



Client Name:

Pace KY

Project #

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1107 3389 3045

Label AC

LIMS Login M

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used

12

Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 20.3 °C Correction Factor: -0.4 °C Final Temp: 19.9 °C

Temp should be above freezing to 6°C

pH paper Lot#

10D0411

Date and Initials of person examining

contents: 10-5-21 20e

Comments:

Yes No N/A

Chain of Custody Present:

☒ ☐ ☐

1.

Chain of Custody Filled Out:

☐ ☒ ☐

2.

Chain of Custody Relinquished:

☐ ☒ ☐

3.

Sampler Name & Signature on COC:

☐ ☒ ☐

4.

Sample Labels match COC:

☐ ☒ ☐

5.

-Includes date/time/ID

Matrix: W T

Samples Arrived within Hold Time:

☒ ☐ ☐

6.

Short Hold Time Analysis (<72hr remaining):

☐ ☒ ☐

7.

Rush Turn Around Time Requested:

☒ ☐ ☐

8.

Sufficient Volume:

☒ ☐ ☐

9.

Correct Containers Used:

☒ ☐ ☐

10.

-Pace Containers Used:

☐ ☒ ☐

Containers Intact:

☒ ☐ ☐

11.

Orthophosphate field filtered

☐ ☐ ☒

12.

Hex Cr Aqueous sample field filtered

☐ ☐ ☒

13.

Organic Samples checked for dechlorination:

☐ ☐ ☒

14.

Filtered volume received for Dissolved tests

☐ ☐ ☒

15.

All containers have been checked for preservation.

☒ ☐ ☐

16.

exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix

All containers meet method preservation requirements.

☒ ☐ ☐

Initial when completed

Date/time of preservation

Lot # of added preservative

Headspace in VOA Vials (>6mm):

☐ ☐ ☒

17.

Trip Blank Present:

☐ ☐ ☒

18.

Trip Blank Custody Seals Present

☐ ☐ ☒

Rad Samples Screened < 0.5 mrem/hr

☒ ☐ ☐

Initial when completed

Date:

Survey Meter SN:

Client Notification/ Resolution:

Person Contacted:

Date/Time:

Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0#: 30444303

PM: CAF Due Date: 10/11/21

CLIENT: PACE_44_MVKY

Appendix C

Statistical Evaluation

WILSON PHASE II LANDFILL STATISTICAL ANALYSIS

2021 Annual Groundwater Monitoring Report

1.0 INTRODUCTION

Previous statistical analysis of Wilson Phase II Landfill groundwater monitoring data has indicated that certain 40 CFR Part 257 Appendix III constituents at downgradient monitoring wells MW-5, MW-6, MW-7, and MW-10 occur at statistically significant higher concentrations than in background monitoring well MW-8. Based on these results, assessment monitoring is conducted for both 40 CFR Part 257 Appendix III and IV parameters in 2021.

The 40 CFR Part 257 Appendix III and IV 2021 groundwater monitoring data at the Wilson Phase II Landfill were evaluated to determine the occurrence of any statistically significant increases over background (SSIs) and whether or not any of the SSIs for Appendix IV parameters occurred at a statistically significant level (SSL) above the relevant groundwater protection standards as defined at 40 CFR.95(h).

2.0 STATISTICAL ANALYSIS

A determination of whether SSIs have occurred is required by 40 CFR 257.93(h)(2) for each semiannual monitoring event. The occurrence of SSIs was evaluated using an *interwell* prediction limit approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at the background monitoring well. For the Wilson Phase II Landfill, monitoring well MW-8 is designated as the background well, whereas monitoring wells MW-5, MW-6, MW-7, and MW-10 are designated downgradient detection monitoring wells. In addition, the facility has several characterization wells including MW-102, MW-104, MW-105, MW-110, and MW-4D.

The statistical analyses were performed in accordance with the U.S. Environmental Protection Agency's Final CCR Rule 40 CFR Parts 257.93(f), 257.93(g), and 257.93(h), the Groundwater Monitoring System and Statistical Methods Certification, and following guidance presented in ASTM D6312-17 *Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*, and US EPA (2009) *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. The test procedures were designed to balance facility-wide false positive rate and statistical power.

Site data are maintained in a SanitasTM statistical evaluation database that was used to conduct the analyses presented herein.

2.1 Prediction Limits

Appropriate statistical prediction limits (PLs) were developed for each of the 21 Appendix III and Appendix IV monitoring constituents, as outline below, and followed the following general procedures.

1. Analytical Data Review
2. Goodness-of-Fit Testing
3. Perform adjustments to data based on the frequency on non-detect values
4. Comparison to interstation background

The background data set for the statistical analyses consisted of analytical measurements at MW-8 from April 2016 to May 2021 for the May monitoring event. The background utilized for the September 2021 data analysis was updated to include the data from that event.

2.2 Analytical Data Review

Analytical data were reviewed for consistency with historic data prior to any statistical evaluation. Background data were checked for high or low outliers that were removed following EPA (1989)

procedures and Dixon's outlier test prior to statistical analysis. Outliers include some previous values with elevated detection limits.

2.2.1 Goodness-of-Fit Testing

Four types of background monitoring data sets.

1. Normally distributed (or transformed normal) data sets with the frequency of censored (non-detect) values less than 50 percent
2. Non-normal (or transformed non-normal) data sets with the frequency of censored values less than 50 percent
3. Data sets for which the population distribution is not known due to the frequency of censored values greater than 50 percent
4. Data consisting of 100 percent censored values

The appropriate statistical comparison depends on the type of data set under consideration. Parametric test procedures are utilized wherever possible to increase statistical power. In general, parametric tests are utilized where the data distribution may be assumed to be normal, or transformed normal (data set 1, above). Non-parametric procedures are used where data may not confidently be assumed to be normal (data set 2, above), or where the frequency of non-detect values precludes the testing of normality (data set 3, above). Finally, it is recognized that for 100 percent non-detect data (data set 4, above) no valid statistical comparison may be made, and comparisons must be made to fixed, arbitrary values, such as the analytical method detection or quantitation limit.

To determine the type of dataset, goodness-of-fit testing was performed on both the raw data and natural logarithm of the raw greater than detection limit values using the Shapiro-Wilk W-test as recommended by US EPA (1992) and Gilbert (1987). The tests were conducted at a 95 percent confidence level with outliers removed from the dataset.

Data sets that could not confidently be determined to be normally or log normally distributed were used to determine *nonparametric* prediction limits. Data that were normally or log normally distributed were considered as a basis for calculating *parametric* prediction limits, providing that the percentage of less than detection limit values was greater than 50 percent.

2.2.2 Adjustments to Data Based on the Frequency of Non-Detect Values

After goodness-of-fit testing was completed, the frequency of less than detection limit (left censored) values was evaluated. If the degree of left-censoring was greater than 15%, the Kaplan-Meier adjustment was used to obtain adjusted estimates of the sample mean and standard deviation. These adjusted values were then used to calculate the upper prediction limit for those data determined to be normally or log normally distributed during goodness-of-fit testing. For the statistical analysis, non-detect values were represented as one-half the detection limit.

If the degree of censoring is 50% to 100%, no method exists to reasonably estimate the sample mean and standard deviation. In this case, non-parametric procedures are utilized. If the degree of censoring is 100% as was the case for beryllium and mercury, no statistical limits can be calculated. In this case, a simple comparison to latest reported analytical detection limit is utilized as the statistical evaluation.

2.2.3 Comparison to Background

Based on the results for goodness-of-fit testing and the degree of censoring of the various data sets, comparisons to background were made using prediction limit procedures (US EPA, 2009). Parametric prediction limits were utilized where the data may be assumed to be normally or log normally distributed.

If the data are determined to be not normal or log normal, or the frequency of non-detect values is greater than 50%, nonparametric upper prediction limits were calculated, as recommended by US EPA (2009).

The prediction limit comparisons balance statistical power and false positive rate, as recommended by US EPA (1992, 2009) and ASTM D6312-17 using verification resampling as discussed below.

2.2.4 False Positive Rate Control

A groundwater monitoring event involves a large number of individual statistical comparisons. For normal prediction limits, if the significance level of an individual statistical comparison (test) is α (defined as the *per-test* false positive rate), the *annual* false positive rate (α^*) is given by (Gibbons 1994):

Equation 1

$$\alpha^* = 1 - (1 - \alpha)^r$$

where,

r = the number of annual statistical comparisons to be made
(downgradient monitoring stations $\times$ analytes $\times$ events per year).

For a typical monitoring scenario, the per-test α is held to a value *no less* than 0.01 (40 CFR 257.93(g)(2)). Limiting α to the minimum value of 0.01 guards against an excessive false negative rate, or Type II error, but may result in too large an *event-wide* false positive rate. For each of the 2021 monitoring events there are 21 parameters requiring statistical evaluation (Table C1, $c = 21$). There are four downgradient detection monitoring wells in the evaluation (Table C1, $w = 4$). Assuming two annual statistical evaluations, one associated with each semiannual sample event ($n_E = 2$), the number of annual statistical comparisons (r) is equal to $c \times w \times n_E = 168$. From Equation 1, the annual false positive rate for the two sampling events is about 0.82 (Table C1, Row 1). Thus, during each sampling year there would be about an 82 percent probability that a statistically significant result would be obtained even though no real statistical exceedance occurred.

To limit the annual false positive rate to 0.1, as suggested by EPA (2009) (or to a corresponding event-wide false positive rate of 0.05 for semiannual sampling per 40 CFR 257.93(g)(2)), Equation 1 indicates that individual tests would have to be conducted at a significance levels of about 0.00063 (Table C1, Row 2). Very large statistical limits would have to be employed, and the individual *false negative* rate would be unacceptably high at this significance level.

Alternatively, a *verification resampling* strategy is employed to limit the annual-wide false positive rate while maintaining adequate statistical power (EPA 1992, 2009; Gibbons 1994; ASTM 2017). A *statistically significant increase is not declared until both the original sample and some number of verification resamples fail the statistical test procedures*. For the case of one or two verification resampling events, and assuming independence of measurements, α^* may be calculated as (EPA 2009):

Equation 2

$$\alpha^* = 1 - (1 - \alpha^m)^r$$

where,

m = the sum of the original sample and number of retest verification samples (1 or 2).

Passing any resample passes the statistical evaluation procedure.

Table C1 Row 3 illustrate a single resample strategy with the resample required to pass. Table C1 Row 4 illustrate the case of two verification resamples with one of the two required to pass.

EPA (2009) and 40 CFR 257.93(g)(2) defines two criteria applicable to statistical analysis of groundwater monitoring data:

1. The per-event false positive rate (α^*) shall be no less than 0.05 per event, or 0.1 annually, and,
2. The per-test false positive rate (α) shall be no less than 0.01.

These criteria were deemed by EPA to provide acceptable balance between false positive rate control and statistical power and are used for this project. The single verification sample resampling strategy

(Table C1, Row 3) fits the EPA criteria and minimizes sampling and analytical cost. A single verification resampling strategy (referred to as “Pass 1 of 2”) using a per-test significance level of 0.02504 was therefore used for this statistical analysis. An SSI does not occur unless the original sample and the verification resample both fail the statistical testing.

2.3 Comparison to Groundwater Protection Standard

Appendix IV well / constituents with SSIs indicated by the PL analysis were further evaluated to determine whether they are present at statistically significant levels (SSLs) over the groundwater protection standards (GWPSs). This evaluation was conducted by calculating the parametric or non-parametric 95% confidence limits of the mean / median concentration for each well / constituent identified as an SSI using the baseline, detection, and assessment monitoring results collected to date. For a constituent to be present as an SSL over the GWPS, its 95% lower mean confidence limit must be greater than the GWPS.

3.0 RESULTS

Prediction limit results for the two 2021 sampling events are provided in Tables C2 (May) and C3 (September). Interwell exceedances of the relevant PL values are highlighted in bold type and shaded in the tables. Time series plots showing prediction limit results are provided for each downgradient well / parameter in Attachment 1 (May event) and Attachment 2 (September event). Plots in the attachments are arranged in the constituent order listed in the tables.

Comparison to groundwater protection standard results are provided in Tables C4 and C5 for the May and September events, respectively.

3.1 Exceedances of Background

The following SSIs were noted for the May 2021 event (Table C2) with Appendix IV constituents shown in boldface.

MW-5	boron, calcium, chloride, cobalt , lithium , sulfate, total dissolved solids
MW-6	boron, calcium, chloride, cobalt , lithium , pH (field), sulfate, total dissolved solids
MW-7	boron, calcium, chloride, lithium , total dissolved solids
MW-10	boron, calcium, chloride, cobalt , total dissolved solids

Similar results were noted for the September event with exceedances for the following (Table C3).

MW-5	boron, calcium, chloride, cobalt , lithium , sulfate, total dissolved solids
MW-6	boron, calcium, chloride, cobalt , lithium , sulfate, total dissolved solids
MW-7	boron, calcium, chloride, lithium , sulfate, total dissolved solids
MW-10	boron, calcium, chloride, cobalt , pH (field), total dissolved solids

Results for exceedances of background were generally consistent between the two events and consistent with the 2019 and 2020 results. A number of Appendix III parameters showed 2021 SSIs. Boron, calcium, chloride, and total dissolved solids exceeded the statistical PL at all wells for both sample events. SSIs for sulfate were observed at MW-5 and MW-6, and for pH (field) were observed at MW-6 and MW-10. Inspection of the time series plots indicates apparent increasing values for some of the Appendix III parameters at the downgradient detection wells, most notably for boron, calcium, chloride, sulfate, and total dissolved solids at MW-7.

Appendix IV SSIs were largely similar to 2020. Exceedances of cobalt and / or lithium continue to occur at all downgradient detection monitoring wells. Exceedances for both occurred during both 2021 sample events at MW-5 and MW-6. Lithium exceedances occurred for both events at MW-7, and cobalt exceedances occurred for both events at MW-10. SSIs for chromium at MW-7 and lead at MW-6 and

MW-7 did not reoccur in 2021. Inspection of the time series plots for these analytes suggests anomalously high values were reported for the 2020 events.

3.2 Comparison to Groundwater Protection Standards

Pursuant to 40 CFR 257.95(f) Appendix IV well / parameters with 2021 SSIs were further evaluated to determine whether they are present at a statistically significant level over the groundwater protection standard. This analysis was conducted by calculating the appropriate parametric or nonparametric 95 percent mean / median lower confidence limit (95% LCL) for each well / parameter identified as an SSI for each 2021 event.

The six Appendix IV SSIs occurring in May are listed in Table C4 showing the 95% LCL computation results compared to the relevant GWPS. The six Appendix IV SSIs occurring in September are similarly listed in Table C5. The only exceedances of GWPSs for either 2021 sampling event are for cobalt at MW-5, MW-6, and MW-10, and for lithium at MW-6. The exceedances for cobalt at MW-5 and MW-6 were new in 2020. Cobalt concentrations at these wells have recently been consistently above the GWPS and thereby increasing the 95% LCL values to points where they exceed the GWPS value of 6 ug/L.

For the assessment wells (MW-102, MW-104, MW-105, MW-110, and MW-4D) the only 2021 GWPS exceedances were for cobalt and lithium at MW-4D for both the May and September sampling events.

4.0 REFERENCES

- American Society for Testing and Materials (ASTM), 2017, *Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities*. Designation D 6312-17.
- Gibbons, R.D. 1994. *Statistical Methods in Ground-Water Monitoring*. John Wiley & Sons.
- Gilbert, R.O., 1987, *Statistical Methods for Environmental Pollution Monitoring*: Van Nostrand Reinhold, New York, 320p.
- US EPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*. Office of Solid Waste Management Division, US EPA, Washington, DC.
- , 1992, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities: Addendum to Interim Final Guidance*, Office of Solid Waste, Permits and State Programs Division, July.
- , 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*, Office of Resource Conservation and Recovery, Program Implementation and Information Division, March.

Tables

Table C1
2021 Annual Monitoring Report
BREC Wilson LF
Calculation of False Positive Rates

<i>Row Number</i>	<i>Number of Downgradient Stations (w)</i>	<i>Number of Constituents (c)</i>	<i>Number of Annual Evaluations (n_E)</i>	<i>Number of Annual Comparisons ($r = w \times c \times n_E$)</i>	<i>Target Annual False Positive Rate (α^*)</i>	<i>Retest Strategy (1 of m)</i>	<i>Individual Comparison False Positive Rate (α)</i>
1	4	21	2	168	0.82	1	0.01016
2	4	21	2	168	0.1	1	0.00063
3	4	21	2	168	0.1	2	0.02504
4	4	21	2	168	0.1	3	0.08559

Table C2: 2021 Annual Monitoring Report, BREC Wilson Landfill, May 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Antimony (mg/L)	MW-5	0.001	n/a	5/13/2021	0.001ND	No	15	MW-8	n/a	n/a	53.33	n/a	n/a	0.05738	NP Inter
Antimony (mg/L)	MW-6	0.001	n/a	5/13/2021	0.001ND	No	15	MW-8	n/a	n/a	53.33	n/a	n/a	0.05738	NP Inter
Antimony (mg/L)	MW-7	0.001	n/a	5/13/2021	0.001ND	No	15	MW-8	n/a	n/a	53.33	n/a	n/a	0.05738	NP Inter
Antimony (mg/L)	MW-10	0.001	n/a	5/13/2021	0.001ND	No	15	MW-8	n/a	n/a	53.33	n/a	n/a	0.05738	NP Inter
Arsenic (ug/L)	MW-5	14.4	n/a	5/13/2021	2.7	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Arsenic (ug/L)	MW-6	14.4	n/a	5/13/2021	4.7	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Arsenic (ug/L)	MW-7	14.4	n/a	5/13/2021	3.9	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Arsenic (ug/L)	MW-10	14.4	n/a	5/13/2021	1.3	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Barium (ug/L)	MW-5	26.96	n/a	5/13/2021	11	No	13	MW-8	22.4	2.016	0	None	No	0.02504	Param Inter
Barium (ug/L)	MW-6	26.96	n/a	5/13/2021	12	No	13	MW-8	22.4	2.016	0	None	No	0.02504	Param Inter
Barium (ug/L)	MW-7	26.96	n/a	5/13/2021	14	No	13	MW-8	22.4	2.016	0	None	No	0.02504	Param Inter
Barium (ug/L)	MW-10	26.96	n/a	5/13/2021	10	No	13	MW-8	22.4	2.016	0	None	No	0.02504	Param Inter
Beryllium (ug/L)	MW-5	1	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Beryllium (ug/L)	MW-6	1	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Beryllium (ug/L)	MW-7	1	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Beryllium (ug/L)	MW-10	1	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Boron (ug/L)	MW-5	56	n/a	5/13/2021	680	Yes	14	MW-8	38.33	7.906	21.43	Kaplan-Meier	No	0.02504	Param Inter
Boron (ug/L)	MW-6	56	n/a	5/13/2021	430	Yes	14	MW-8	38.33	7.906	21.43	Kaplan-Meier	No	0.02504	Param Inter
Boron (ug/L)	MW-7	56	n/a	5/13/2021	2710	Yes	14	MW-8	38.33	7.906	21.43	Kaplan-Meier	No	0.02504	Param Inter
Boron (ug/L)	MW-10	56	n/a	5/13/2021	310	Yes	14	MW-8	38.33	7.906	21.43	Kaplan-Meier	No	0.02504	Param Inter
Cadmium (ug/L)	MW-5	0.4	n/a	5/13/2021	0.05ND	No	13	MW-8	n/a	n/a	92.31	n/a	n/a	0.06487	NP Inter (NDs)
Cadmium (ug/L)	MW-6	0.4	n/a	5/13/2021	0.05ND	No	13	MW-8	n/a	n/a	92.31	n/a	n/a	0.06487	NP Inter (NDs)
Cadmium (ug/L)	MW-7	0.4	n/a	5/13/2021	0.05ND	No	13	MW-8	n/a	n/a	92.31	n/a	n/a	0.06487	NP Inter (NDs)
Cadmium (ug/L)	MW-10	0.4	n/a	5/13/2021	0.05ND	No	13	MW-8	n/a	n/a	92.31	n/a	n/a	0.06487	NP Inter (NDs)
Calcium (ug/L)	MW-5	349000	n/a	5/13/2021	662000	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Calcium (ug/L)	MW-6	349000	n/a	5/13/2021	568000	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Calcium (ug/L)	MW-7	349000	n/a	5/13/2021	475000	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Calcium (ug/L)	MW-10	349000	n/a	5/13/2021	401000	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Chloride (mg/L)	MW-5	5.492	n/a	5/13/2021	185	Yes	16	MW-8	4.377	0.5077	0	None	No	0.02504	Param Inter
Chloride (mg/L)	MW-6	5.492	n/a	5/13/2021	16.4	Yes	16	MW-8	4.377	0.5077	0	None	No	0.02504	Param Inter
Chloride (mg/L)	MW-7	5.492	n/a	5/13/2021	90.7	Yes	16	MW-8	4.377	0.5077	0	None	No	0.02504	Param Inter
Chloride (mg/L)	MW-10	5.492	n/a	5/13/2021	73.2	Yes	16	MW-8	4.377	0.5077	0	None	No	0.02504	Param Inter
Chromium (ug/L)	MW-5	2.5	n/a	5/13/2021	1	No	14	MW-8	n/a	n/a	50	n/a	n/a	0.0609	NP Inter
Chromium (ug/L)	MW-6	2.5	n/a	5/13/2021	0.7	No	14	MW-8	n/a	n/a	50	n/a	n/a	0.0609	NP Inter
Chromium (ug/L)	MW-7	2.5	n/a	5/13/2021	0.8	No	14	MW-8	n/a	n/a	50	n/a	n/a	0.0609	NP Inter
Chromium (ug/L)	MW-10	2.5	n/a	5/13/2021	1	No	14	MW-8	n/a	n/a	50	n/a	n/a	0.0609	NP Inter
Cobalt (ug/L)	MW-5	1.664	n/a	5/13/2021	8	Yes	15	MW-8	1.082	0.2627	33.33	Kaplan-Meier	No	0.02504	Param Inter
Cobalt (ug/L)	MW-6	1.664	n/a	5/13/2021	8	Yes	15	MW-8	1.082	0.2627	33.33	Kaplan-Meier	No	0.02504	Param Inter
Cobalt (ug/L)	MW-7	1.664	n/a	5/13/2021	2ND	No	15	MW-8	1.082	0.2627	33.33	Kaplan-Meier	No	0.02504	Param Inter
Cobalt (ug/L)	MW-10	1.664	n/a	5/13/2021	64	Yes	15	MW-8	1.082	0.2627	33.33	Kaplan-Meier	No	0.02504	Param Inter
Fluoride (mg/L)	MW-5	1.21	n/a	5/13/2021	0.09ND	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Fluoride (mg/L)	MW-6	1.21	n/a	5/13/2021	0.2	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Fluoride (mg/L)	MW-7	1.21	n/a	5/13/2021	0.28	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Fluoride (mg/L)	MW-10	1.21	n/a	5/13/2021	0.09ND	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Lead (ug/L)	MW-5	0.5	n/a	5/13/2021	0.25ND	No	13	MW-8	n/a	n/a	84.62	n/a	n/a	0.06487	NP Inter
Lead (ug/L)	MW-6	0.5	n/a	5/13/2021	0.25ND	No	13	MW-8	n/a	n/a	84.62	n/a	n/a	0.06487	NP Inter
Lead (ug/L)	MW-7	0.5	n/a	5/13/2021	0.25ND	No	13	MW-8	n/a	n/a	84.62	n/a	n/a	0.06487	NP Inter
Lead (ug/L)	MW-10	0.5	n/a	5/13/2021	0.25ND	No	13	MW-8	n/a	n/a	84.62	n/a	n/a	0.06487	NP Inter

Table C2: 2021 Annual Monitoring Report, BREC Wilson Landfill, May 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Lithium (ug/L)	MW-5	17.95	n/a	5/13/2021	30	Yes	16	MW-8	10.8	3.256	25	Kaplan-Meier	No	0.02504	Param Inter
Lithium (ug/L)	MW-6	17.95	n/a	5/13/2021	40	Yes	16	MW-8	10.8	3.256	25	Kaplan-Meier	No	0.02504	Param Inter
Lithium (ug/L)	MW-7	17.95	n/a	5/13/2021	30	Yes	16	MW-8	10.8	3.256	25	Kaplan-Meier	No	0.02504	Param Inter
Lithium (ug/L)	MW-10	17.95	n/a	5/13/2021	6	No	16	MW-8	10.8	3.256	25	Kaplan-Meier	No	0.02504	Param Inter
Mercury (ug/L)	MW-5	0.2	n/a	5/13/2021	0.1ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Mercury (ug/L)	MW-6	0.2	n/a	5/13/2021	0.1ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Mercury (ug/L)	MW-7	0.2	n/a	5/13/2021	0.1ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Mercury (ug/L)	MW-10	0.2	n/a	5/13/2021	0.1ND	No	14	MW-8	n/a	n/a	100	n/a	n/a	0.0609	NP Inter (NDs)
Molybdenum (ug/L)	MW-5	19.99	n/a	5/13/2021	3	No	16	MW-8	13.47	2.967	0	None	No	0.02504	Param Inter
Molybdenum (ug/L)	MW-6	19.99	n/a	5/13/2021	6	No	16	MW-8	13.47	2.967	0	None	No	0.02504	Param Inter
Molybdenum (ug/L)	MW-7	19.99	n/a	5/13/2021	5	No	16	MW-8	13.47	2.967	0	None	No	0.02504	Param Inter
Molybdenum (ug/L)	MW-10	19.99	n/a	5/13/2021	1ND	No	16	MW-8	13.47	2.967	0	None	No	0.02504	Param Inter
pH [Field] (SU)	MW-5	6.909	5.919	5/13/2021	6.38	No	16	MW-8	6.414	0.193	0	None	No	0.01252	Param Inter
pH [Field] (SU)	MW-6	6.909	5.919	5/13/2021	7.22	Yes	16	MW-8	6.414	0.193	0	None	No	0.01252	Param Inter
pH [Field] (SU)	MW-7	6.909	5.919	5/13/2021	6.52	No	16	MW-8	6.414	0.193	0	None	No	0.01252	Param Inter
pH [Field] (SU)	MW-10	6.909	5.919	5/13/2021	6.59	No	16	MW-8	6.414	0.193	0	None	No	0.01252	Param Inter
Radium 226 + 228 (pCi/L)	MW-5	2.94	n/a	5/13/2021	1.29	No	15	MW-8	n/a	n/a	0	n/a	n/a	0.05738	NP Inter
Radium 226 + 228 (pCi/L)	MW-6	2.94	n/a	5/13/2021	0.758	No	15	MW-8	n/a	n/a	0	n/a	n/a	0.05738	NP Inter
Radium 226 + 228 (pCi/L)	MW-7	2.94	n/a	5/13/2021	0.224	No	15	MW-8	n/a	n/a	0	n/a	n/a	0.05738	NP Inter
Radium 226 + 228 (pCi/L)	MW-10	2.94	n/a	5/13/2021	1.4	No	15	MW-8	n/a	n/a	0	n/a	n/a	0.05738	NP Inter
Selenium (ug/L)	MW-5	0.501	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter (NDs)
Selenium (ug/L)	MW-6	0.501	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter (NDs)
Selenium (ug/L)	MW-7	0.501	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter (NDs)
Selenium (ug/L)	MW-10	0.501	n/a	5/13/2021	0.5ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter (NDs)
Sulfate (mg/L)	MW-5	1480	n/a	5/13/2021	2010	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Sulfate (mg/L)	MW-6	1480	n/a	5/13/2021	1730	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Sulfate (mg/L)	MW-7	1480	n/a	5/13/2021	885	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Sulfate (mg/L)	MW-10	1480	n/a	5/13/2021	1240	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Thallium (ug/L)	MW-5	0.2	n/a	5/13/2021	0.05ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter
Thallium (ug/L)	MW-6	0.2	n/a	5/13/2021	0.05ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter
Thallium (ug/L)	MW-7	0.2	n/a	5/13/2021	0.05ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter
Thallium (ug/L)	MW-10	0.2	n/a	5/13/2021	0.05ND	No	14	MW-8	n/a	n/a	85.71	n/a	n/a	0.0609	NP Inter
Total Dissolved Solids (mg/L)	MW-5	1749	n/a	5/13/2021	3790	Yes	16	MW-8	1579	77.45	0	None	No	0.02504	Param Inter
Total Dissolved Solids (mg/L)	MW-6	1749	n/a	5/13/2021	3020	Yes	16	MW-8	1579	77.45	0	None	No	0.02504	Param Inter
Total Dissolved Solids (mg/L)	MW-7	1749	n/a	5/13/2021	2240	Yes	16	MW-8	1579	77.45	0	None	No	0.02504	Param Inter
Total Dissolved Solids (mg/L)	MW-10	1749	n/a	5/13/2021	3300	Yes	16	MW-8	1579	77.45	0	None	No	0.02504	Param Inter

Notes:

Concentration units are as specified in Column 1.

mg/L - milligram per liter

ug/L - microgram per liter

Inter - Parametric interstation prediction limit

n/a - not applicable

ND - Compound not detected, preceding number is one-half the reporting limit.

NP Inter - Non-parametric interstation prediction limit. Text in parenthesis indicates reason for non-parametric determination, as follows.

NDs - background data contain too high a percentage of non-detect values.

Param - Parametric Prediction Limit

Table C3: 2021 Annual Monitoring Report, BREC Wilson Landfill, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Antimony (mg/L)	MW-5	0.001	n/a	9/30/2021	0.001ND	No	16	MW-8	n/a	n/a	56.25	n/a	n/a	0.05426	NP Inter
Antimony (mg/L)	MW-6	0.001	n/a	9/30/2021	0.001ND	No	16	MW-8	n/a	n/a	56.25	n/a	n/a	0.05426	NP Inter
Antimony (mg/L)	MW-7	0.001	n/a	9/30/2021	0.001ND	No	16	MW-8	n/a	n/a	56.25	n/a	n/a	0.05426	NP Inter
Antimony (mg/L)	MW-10	0.001	n/a	10/1/2021	0.001ND	No	16	MW-8	n/a	n/a	56.25	n/a	n/a	0.05426	NP Inter
Arsenic (ug/L)	MW-5	14.4	n/a	9/30/2021	2.6	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Arsenic (ug/L)	MW-6	14.4	n/a	9/30/2021	5.1	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Arsenic (ug/L)	MW-7	14.4	n/a	9/30/2021	4.1	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Arsenic (ug/L)	MW-10	14.4	n/a	10/1/2021	3.6	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Barium (ug/L)	MW-5	26.64	n/a	9/30/2021	10	No	15	MW-8	22.29	1.968	0	None	No	0.02504	Param Inter
Barium (ug/L)	MW-6	26.64	n/a	9/30/2021	12	No	15	MW-8	22.29	1.968	0	None	No	0.02504	Param Inter
Barium (ug/L)	MW-7	26.64	n/a	9/30/2021	13	No	15	MW-8	22.29	1.968	0	None	No	0.02504	Param Inter
Barium (ug/L)	MW-10	26.64	n/a	10/1/2021	9	No	15	MW-8	22.29	1.968	0	None	No	0.02504	Param Inter
Beryllium (ug/L)	MW-5	1	n/a	9/30/2021	0.5ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter
Beryllium (ug/L)	MW-6	1	n/a	9/30/2021	0.5ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter
Beryllium (ug/L)	MW-7	1	n/a	9/30/2021	0.5ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter
Beryllium (ug/L)	MW-10	1	n/a	10/1/2021	0.5ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter
Boron (ug/L)	MW-5	51.8	n/a	9/30/2021	700	Yes	15	MW-8	n/a	n/a	26.67	n/a	n/a	0.05738	NP Inter
Boron (ug/L)	MW-6	51.8	n/a	9/30/2021	510	Yes	15	MW-8	n/a	n/a	26.67	n/a	n/a	0.05738	NP Inter
Boron (ug/L)	MW-7	51.8	n/a	9/30/2021	2370	Yes	15	MW-8	n/a	n/a	26.67	n/a	n/a	0.05738	NP Inter
Boron (ug/L)	MW-10	51.8	n/a	10/1/2021	700	Yes	15	MW-8	n/a	n/a	26.67	n/a	n/a	0.05738	NP Inter
Cadmium (ug/L)	MW-5	0.4	n/a	9/30/2021	0.05ND	No	14	MW-8	n/a	n/a	92.86	n/a	n/a	0.0609	NP Inter (NDs)
Cadmium (ug/L)	MW-6	0.4	n/a	9/30/2021	0.05ND	No	14	MW-8	n/a	n/a	92.86	n/a	n/a	0.0609	NP Inter (NDs)
Cadmium (ug/L)	MW-7	0.4	n/a	9/30/2021	0.05ND	No	14	MW-8	n/a	n/a	92.86	n/a	n/a	0.0609	NP Inter (NDs)
Cadmium (ug/L)	MW-10	0.4	n/a	10/1/2021	0.05ND	No	14	MW-8	n/a	n/a	92.86	n/a	n/a	0.0609	NP Inter (NDs)
Calcium (ug/L)	MW-5	349000	n/a	9/30/2021	582000	Yes	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Calcium (ug/L)	MW-6	349000	n/a	9/30/2021	473000	Yes	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Calcium (ug/L)	MW-7	349000	n/a	9/30/2021	383000	Yes	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Calcium (ug/L)	MW-10	349000	n/a	10/1/2021	396000	Yes	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Chloride (mg/L)	MW-5	5.45	n/a	9/30/2021	303	Yes	17	MW-8	4.349	0.505	0	None	No	0.02504	Param Inter
Chloride (mg/L)	MW-6	5.45	n/a	9/30/2021	33	Yes	17	MW-8	4.349	0.505	0	None	No	0.02504	Param Inter
Chloride (mg/L)	MW-7	5.45	n/a	9/30/2021	96.1	Yes	17	MW-8	4.349	0.505	0	None	No	0.02504	Param Inter
Chloride (mg/L)	MW-10	5.45	n/a	10/1/2021	98.8	Yes	17	MW-8	4.349	0.505	0	None	No	0.02504	Param Inter
Chromium (ug/L)	MW-5	22.4	n/a	9/30/2021	0.3ND	No	16	MW-8	n/a	n/a	43.75	n/a	n/a	0.05426	NP Inter
Chromium (ug/L)	MW-6	22.4	n/a	9/30/2021	0.3ND	No	16	MW-8	n/a	n/a	43.75	n/a	n/a	0.05426	NP Inter
Chromium (ug/L)	MW-7	22.4	n/a	9/30/2021	0.7	No	16	MW-8	n/a	n/a	43.75	n/a	n/a	0.05426	NP Inter
Chromium (ug/L)	MW-10	22.4	n/a	10/1/2021	0.3ND	No	16	MW-8	n/a	n/a	43.75	n/a	n/a	0.05426	NP Inter
Cobalt (ug/L)	MW-5	1.659	n/a	9/30/2021	8	Yes	16	MW-8	1.082	0.2627	37.5	Kaplan-Meier	No	0.02504	Param Inter
Cobalt (ug/L)	MW-6	1.659	n/a	9/30/2021	8	Yes	16	MW-8	1.082	0.2627	37.5	Kaplan-Meier	No	0.02504	Param Inter
Cobalt (ug/L)	MW-7	1.659	n/a	9/30/2021	2ND	No	16	MW-8	1.082	0.2627	37.5	Kaplan-Meier	No	0.02504	Param Inter
Cobalt (ug/L)	MW-10	1.659	n/a	10/1/2021	92	Yes	16	MW-8	1.082	0.2627	37.5	Kaplan-Meier	No	0.02504	Param Inter
Fluoride (mg/L)	MW-5	0.4407	n/a	9/30/2021	0.09ND	No	17	MW-8	-1.291	0.2162	0	None	ln(x)	0.02504	Param Inter
Fluoride (mg/L)	MW-6	0.4407	n/a	9/30/2021	0.09ND	No	17	MW-8	-1.291	0.2162	0	None	ln(x)	0.02504	Param Inter
Fluoride (mg/L)	MW-7	0.4407	n/a	9/30/2021	0.26	No	17	MW-8	-1.291	0.2162	0	None	ln(x)	0.02504	Param Inter
Fluoride (mg/L)	MW-10	0.4407	n/a	10/1/2021	0.09ND	No	17	MW-8	-1.291	0.2162	0	None	ln(x)	0.02504	Param Inter
Lead (ug/L)	MW-5	12	n/a	9/30/2021	0.25ND	No	16	MW-8	n/a	n/a	75	n/a	n/a	0.05426	NP Inter (NDs)
Lead (ug/L)	MW-6	12	n/a	9/30/2021	0.25ND	No	16	MW-8	n/a	n/a	75	n/a	n/a	0.05426	NP Inter (NDs)
Lead (ug/L)	MW-7	12	n/a	9/30/2021	0.25ND	No	16	MW-8	n/a	n/a	75	n/a	n/a	0.05426	NP Inter (NDs)
Lead (ug/L)	MW-10	12	n/a	10/1/2021	0.25ND	No	16	MW-8	n/a	n/a	75	n/a	n/a	0.05426	NP Inter (NDs)

Table C3: 2021 Annual Monitoring Report, BREC Wilson Landfill, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Lithium (ug/L)	MW-5	17.65	n/a	9/30/2021	30	Yes	17	MW-8	10.75	3.164	23.53	Kaplan-Meier	No	0.02504	Param Inter
Lithium (ug/L)	MW-6	17.65	n/a	9/30/2021	50	Yes	17	MW-8	10.75	3.164	23.53	Kaplan-Meier	No	0.02504	Param Inter
Lithium (ug/L)	MW-7	17.65	n/a	9/30/2021	30	Yes	17	MW-8	10.75	3.164	23.53	Kaplan-Meier	No	0.02504	Param Inter
Lithium (ug/L)	MW-10	17.65	n/a	10/1/2021	8	No	17	MW-8	10.75	3.164	23.53	Kaplan-Meier	No	0.02504	Param Inter
Mercury (ug/L)	MW-5	0.2	n/a	9/30/2021	0.1ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter (NDs)
Mercury (ug/L)	MW-6	0.2	n/a	9/30/2021	0.1ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter (NDs)
Mercury (ug/L)	MW-7	0.2	n/a	9/30/2021	0.1ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter (NDs)
Mercury (ug/L)	MW-10	0.2	n/a	10/1/2021	0.1ND	No	15	MW-8	n/a	n/a	100	n/a	n/a	0.05738	NP Inter (NDs)
Molybdenum (ug/L)	MW-5	18.7	n/a	9/30/2021	4	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Molybdenum (ug/L)	MW-6	18.7	n/a	9/30/2021	7	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Molybdenum (ug/L)	MW-7	18.7	n/a	9/30/2021	6	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
Molybdenum (ug/L)	MW-10	18.7	n/a	10/1/2021	1ND	No	17	MW-8	n/a	n/a	0	n/a	n/a	0.05146	NP Inter
pH [Field] (SU)	MW-5	6.887	5.933	9/30/2021	6.19	No	17	MW-8	6.41	0.1875	0	None	No	0.01252	Param Inter
pH [Field] (SU)	MW-6	6.887	5.933	9/30/2021	6.13	No	17	MW-8	6.41	0.1875	0	None	No	0.01252	Param Inter
pH [Field] (SU)	MW-7	6.887	5.933	9/30/2021	6.3	No	17	MW-8	6.41	0.1875	0	None	No	0.01252	Param Inter
pH [Field] (SU)	MW-10	6.887	5.933	10/1/2021	5.84	Yes	17	MW-8	6.41	0.1875	0	None	No	0.01252	Param Inter
Radium 226 + 228 (pCi/L)	MW-5	2.728	n/a	9/30/2021	1.62	No	16	MW-8	1.264	0.6663	0	None	No	0.02504	Param Inter
Radium 226 + 228 (pCi/L)	MW-6	2.728	n/a	9/30/2021	0.61	No	16	MW-8	1.264	0.6663	0	None	No	0.02504	Param Inter
Radium 226 + 228 (pCi/L)	MW-7	2.728	n/a	9/30/2021	1.23	No	16	MW-8	1.264	0.6663	0	None	No	0.02504	Param Inter
Radium 226 + 228 (pCi/L)	MW-10	2.728	n/a	10/1/2021	0.378	No	16	MW-8	1.264	0.6663	0	None	No	0.02504	Param Inter
Selenium (ug/L)	MW-5	0.501	n/a	9/30/2021	0.5ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Selenium (ug/L)	MW-6	0.501	n/a	9/30/2021	0.5ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Selenium (ug/L)	MW-7	0.501	n/a	9/30/2021	0.5ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Selenium (ug/L)	MW-10	0.501	n/a	10/1/2021	0.5ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Sulfate (mg/L)	MW-5	1480	n/a	9/30/2021	2420	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Sulfate (mg/L)	MW-6	1480	n/a	9/30/2021	2200	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Sulfate (mg/L)	MW-7	1480	n/a	9/30/2021	2420	Yes	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Sulfate (mg/L)	MW-10	1480	n/a	10/1/2021	1360	No	16	MW-8	n/a	n/a	0	n/a	n/a	0.05426	NP Inter
Thallium (ug/L)	MW-5	0.2	n/a	9/30/2021	0.05ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Thallium (ug/L)	MW-6	0.2	n/a	9/30/2021	0.05ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Thallium (ug/L)	MW-7	0.2	n/a	9/30/2021	0.05ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Thallium (ug/L)	MW-10	0.2	n/a	10/1/2021	0.05ND	No	15	MW-8	n/a	n/a	86.67	n/a	n/a	0.05738	NP Inter (NDs)
Total Dissolved Solids (mg/L)	MW-5	1748	n/a	9/30/2021	3830	Yes	17	MW-8	1582	76.01	0	None	No	0.02504	Param Inter
Total Dissolved Solids (mg/L)	MW-6	1748	n/a	9/30/2021	3120	Yes	17	MW-8	1582	76.01	0	None	No	0.02504	Param Inter
Total Dissolved Solids (mg/L)	MW-7	1748	n/a	9/30/2021	2230	Yes	17	MW-8	1582	76.01	0	None	No	0.02504	Param Inter
Total Dissolved Solids (mg/L)	MW-10	1748	n/a	10/1/2021	3310	Yes	17	MW-8	1582	76.01	0	None	No	0.02504	Param Inter

Notes:

Concentration units are as specified in Column 1.

mg/L - milligram per liter

ug/L - microgram per liter

Inter - Parametric interstation prediction limit

n/a - not applicable

ND - Compound not detected, preceding number is one-half the reporting limit.

NP Inter - Non-parametric interstation prediction limit. Text in parenthesis indicates reason for non-parametric determination, as follows.

NDs - background data contain too high a percentage of non-detect values.

Param - Parametric Prediction Limit

Table C4: 2021 Annual Monitoring Report, BREC Wilson Landfill, May 2021 Comparison of 95% LCL to GWPS

Constituent Name	Well	Upper Limit	Lower Limit	GWPS	Exceeds	N	Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transform	Alpha	Method
Cobalt (ug/L)	MW-5	7.974	6.589	6	Yes	16	7.282	1.58	0	None	No	0.05	Param.
Cobalt (ug/L)	MW-6	7.67	6.759	6	Yes	16	7.214	1.039	0	None	No	0.05	Param.
Cobalt (ug/L)	MW-10	112.3	84.74	6	Yes	16	98.53	31.47	0	None	No	0.05	Param.
Lithium (ug/L)	MW-5	37.9	32.15	40	No	16	35.03	6.555	0	None	No	0.05	Param.
Lithium (ug/L)	MW-6	46.32	41.9	40	Yes	16	44.11	5.044	0	None	No	0.05	Param.
Lithium (ug/L)	MW-7	29.17	26.36	40	No	16	27.76	3.202	0	None	No	0.05	Param.

Notes:

Concentration units are as specified in Column 1.

ug/L - microgram per liter

Param - Parametric Confidence Limit

Table C5: 2021 Annual Monitoring Report, BREC Wilson Landfill, September 2021 Comparison of 95% LCL to GWPS

Constituent Name	Well	Upper Limit	Lower Limit	GWPS	Exceeds	N	Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transform	Alpha	Method
Cobalt (ug/L)	MW-5	7.976	6.672	6	Yes	17	7.324	1.54	0	None	No	0.05	Param.
Cobalt (ug/L)	MW-6	7.694	6.827	6	Yes	17	7.261	1.024	0	None	No	0.05	Param.
Cobalt (ug/L)	MW-10	111.1	85.22	6	Yes	17	98.14	30.51	0	None	No	0.05	Param.
Lithium (ug/L)	MW-5	37.47	31.99	40	No	17	34.73	6.463	0	None	No	0.05	Param.
Lithium (ug/L)	MW-6	46.61	42.3	40	Yes	17	44.45	5.088	0	None	No	0.05	Param.
Lithium (ug/L)	MW-7	29.23	26.56	40	No	17	27.89	3.148	0	None	No	0.05	Param.

Notes:

Concentration units are as specified in Column 1.

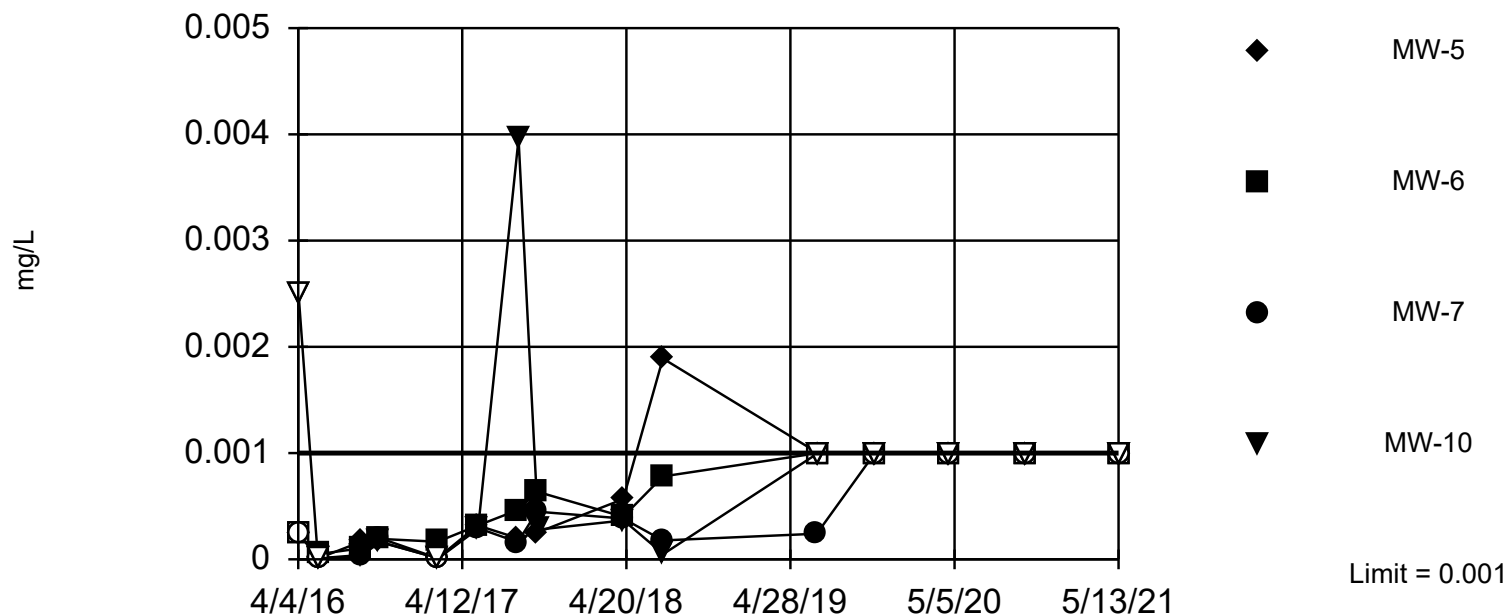
ug/L - microgram per liter

Param - Parametric Confidence Limit

Attachment 1
May 2021 Time Series Plots
and Prediction Limit Results

Within Limit

Prediction Limit
Interwell Non-parametric



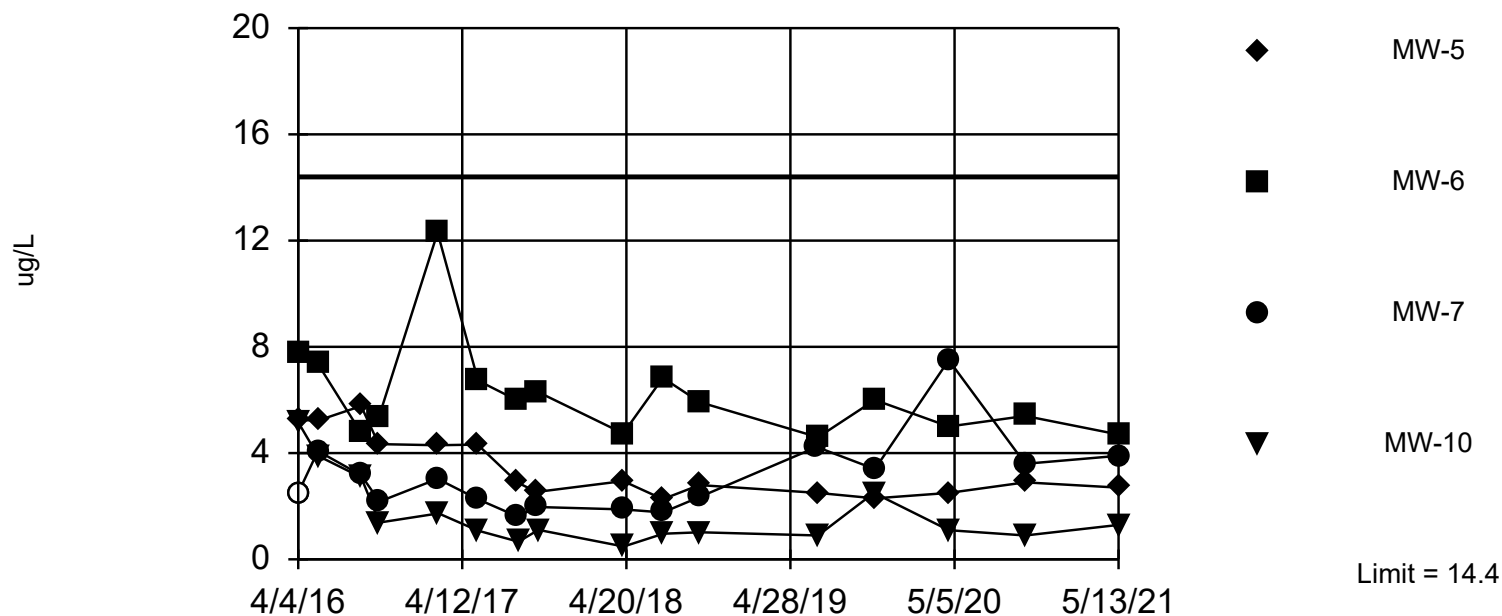
NP test selected by user. Limit is highest of 15 background values. 53.33% NDs. Report alpha = 0.2105. Individual comparison alpha = 0.05738. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Antimony Analysis Run 7/19/2021 2:03 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



NP test selected by user. Limit is highest of 16 background values. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

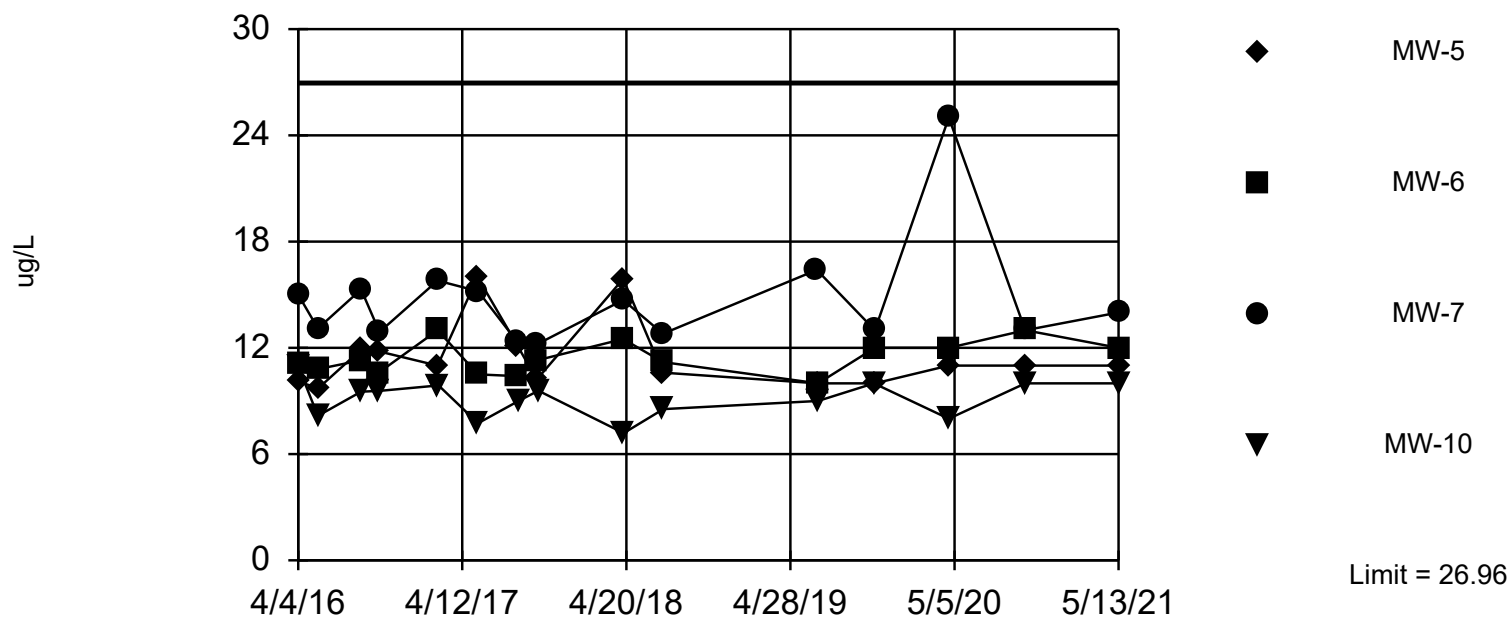
Constituent: Arsenic Analysis Run 7/19/2021 2:10 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=22.4, Std. Dev.=2.016, n=13. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 70 (10/13/2020).

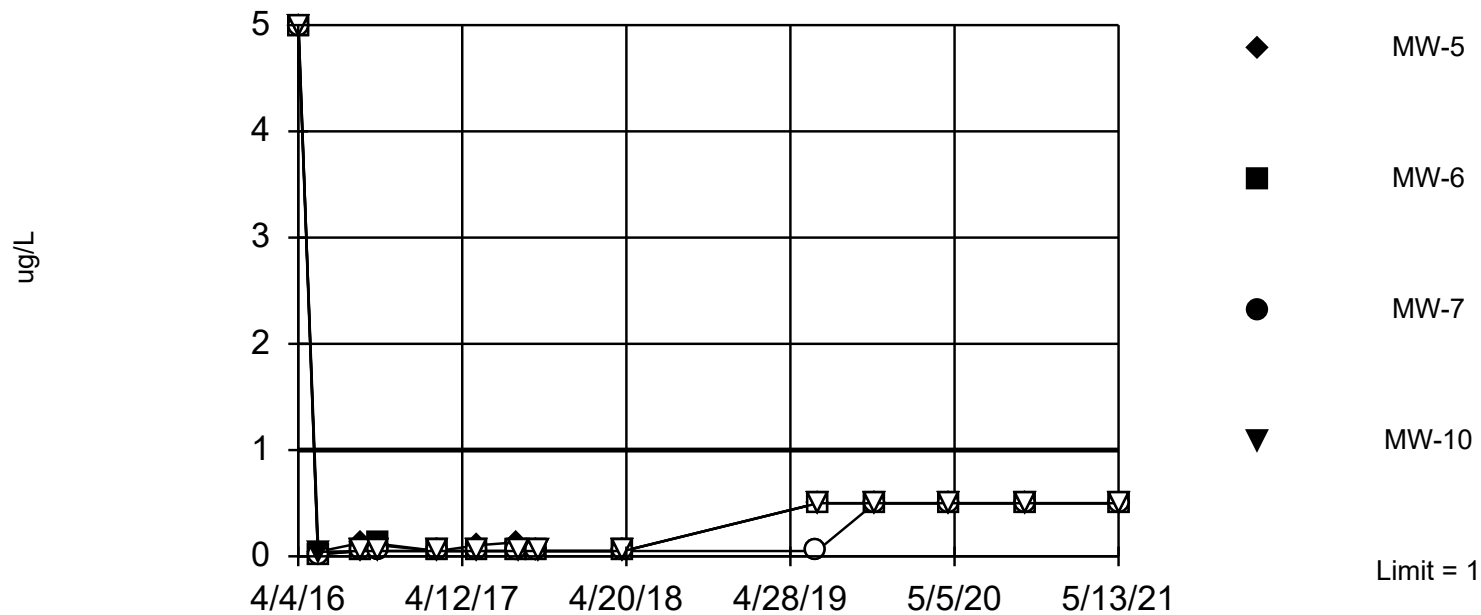
Constituent: Barium Analysis Run 7/19/2021 2:17 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Non-parametric



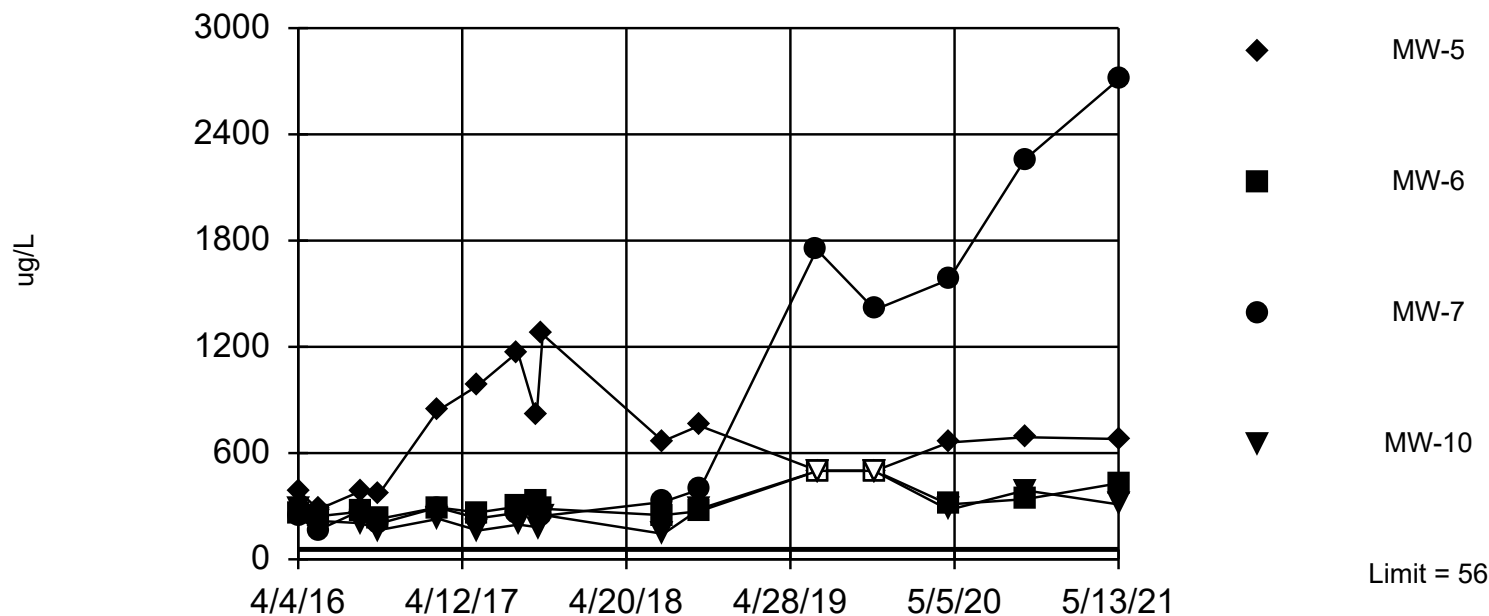
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values ($n = 14$) were censored; limit is most recent reporting limit. Report alpha = 0.2222. Individual comparison alpha = 0.0609. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Beryllium Analysis Run 7/19/2021 2:20 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit Interwell Parametric



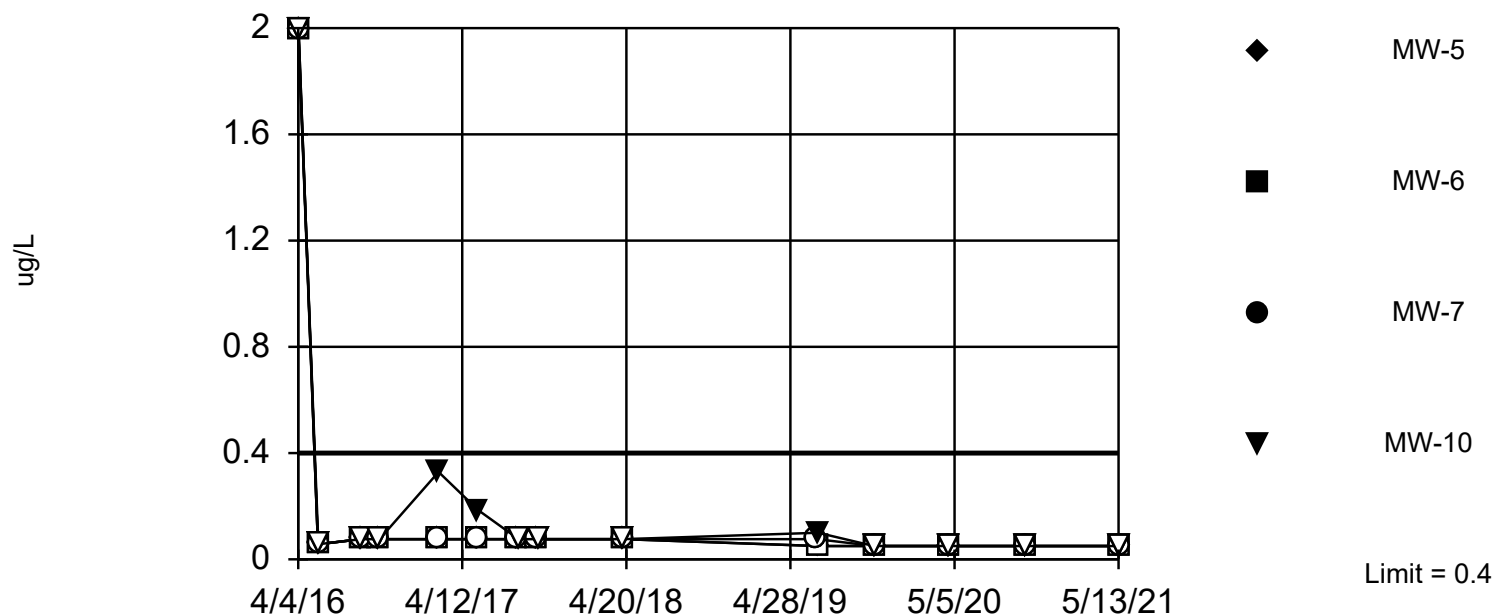
Background Data Summary (after Kaplan-Meier Adjustment): Mean=38.33, Std. Dev.=7.906, n=14, 21.43% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Boron Analysis Run 7/19/2021 2:23 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit Interwell Non-parametric



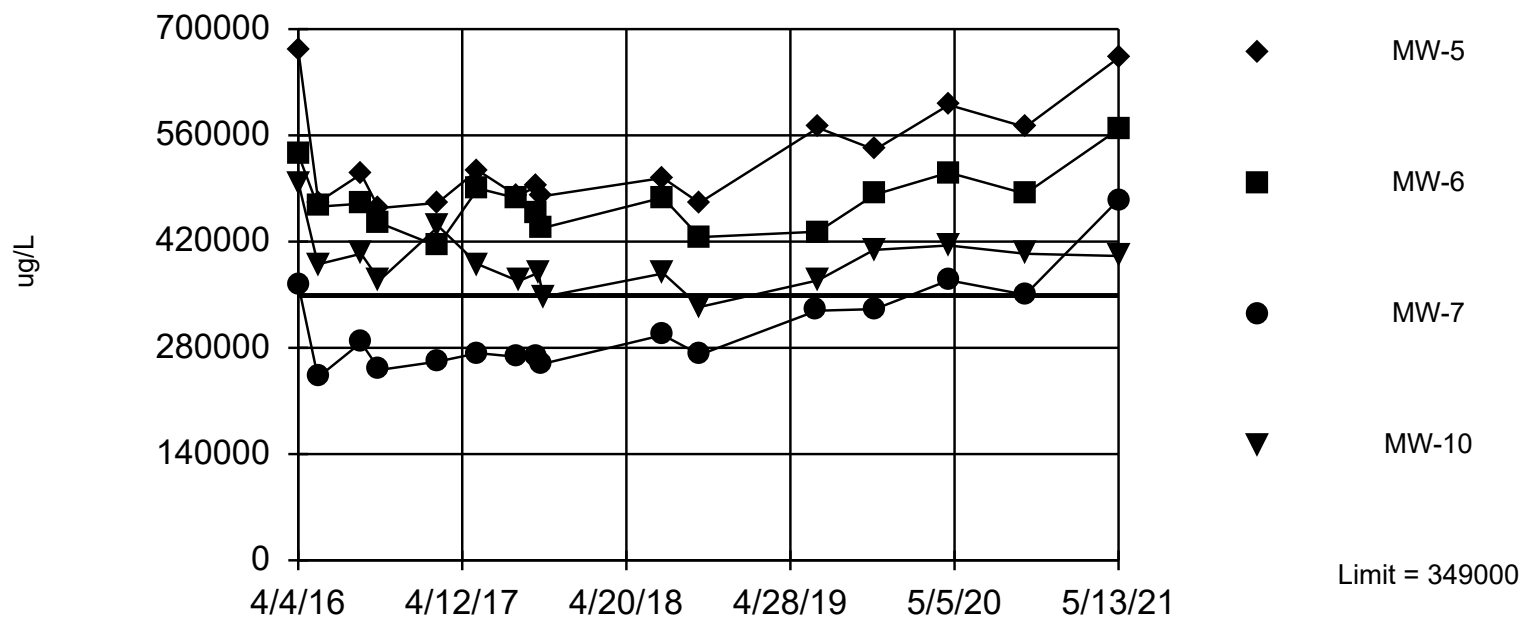
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Report alpha = 0.2353. Individual comparison alpha = 0.06487. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Cadmium Analysis Run 7/19/2021 2:28 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit Interwell Non-parametric



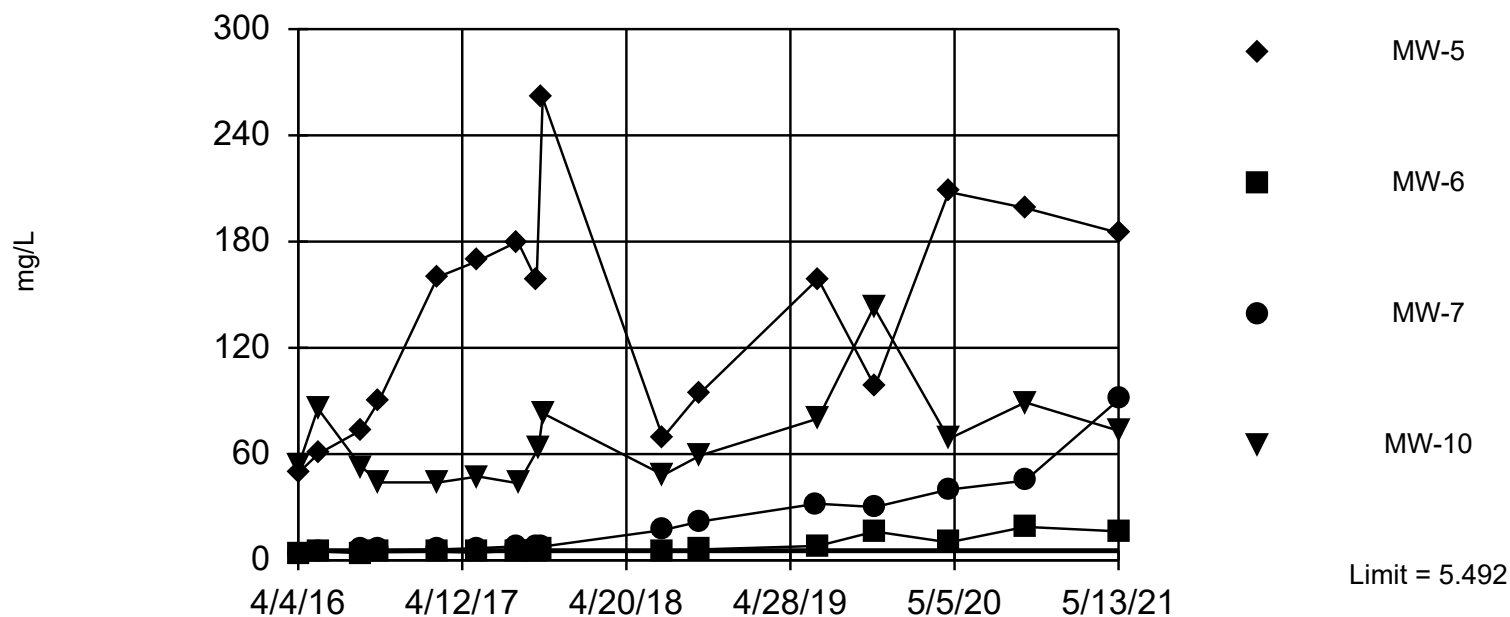
NP test selected by user. Limit is highest of 16 background values. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Calcium Analysis Run 7/19/2021 2:30 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit
Interwell Parametric



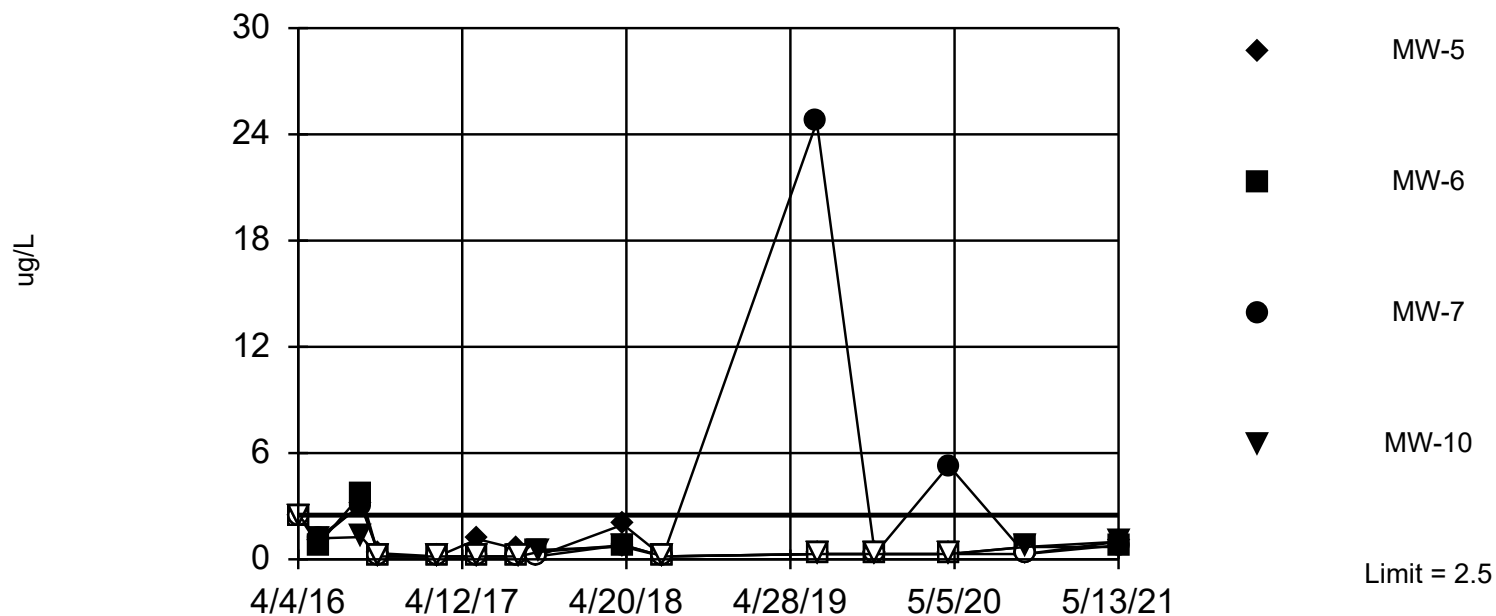
Background Data Summary: Mean=4.377, Std. Dev.=0.5077, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit.

Constituent: Chloride Analysis Run 7/19/2021 2:34 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



NP test selected by user. Limit is highest of 14 background values. 50% NDs. Report alpha = 0.2222. Individual comparison alpha = 0.0609. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

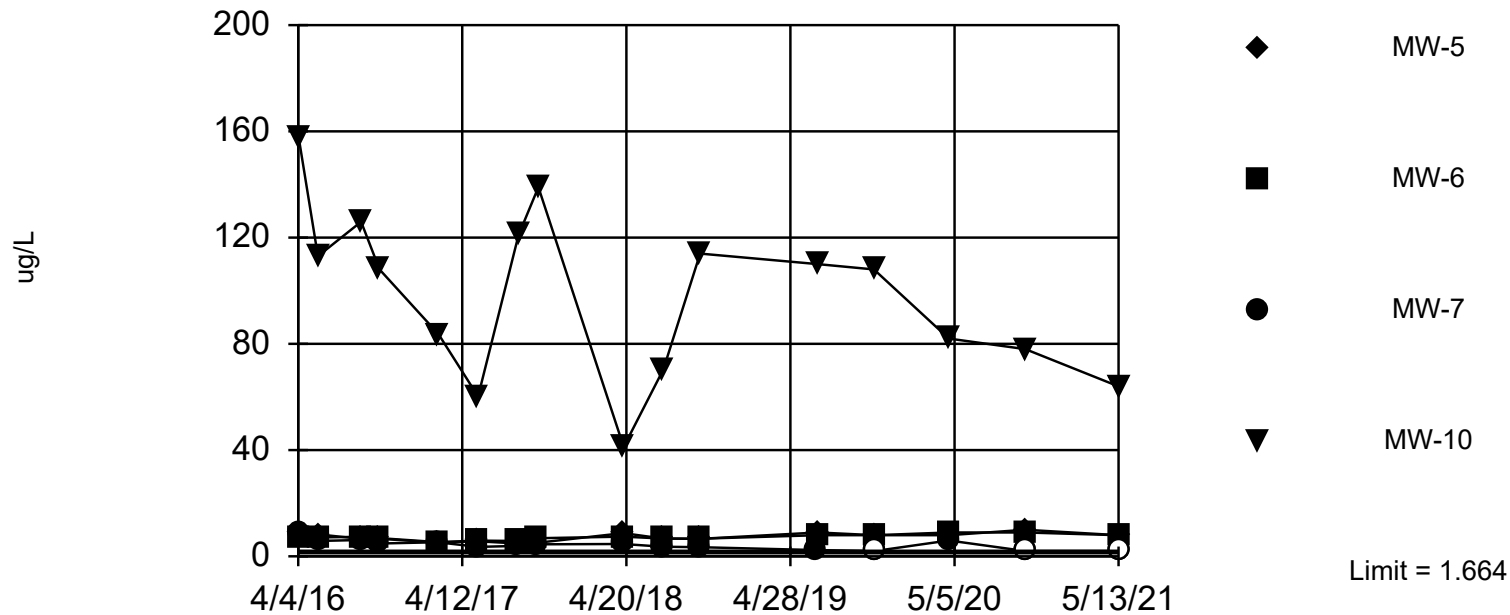
Constituent: Chromium Analysis Run 7/19/2021 2:41 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-10

Prediction Limit

Interwell Parametric



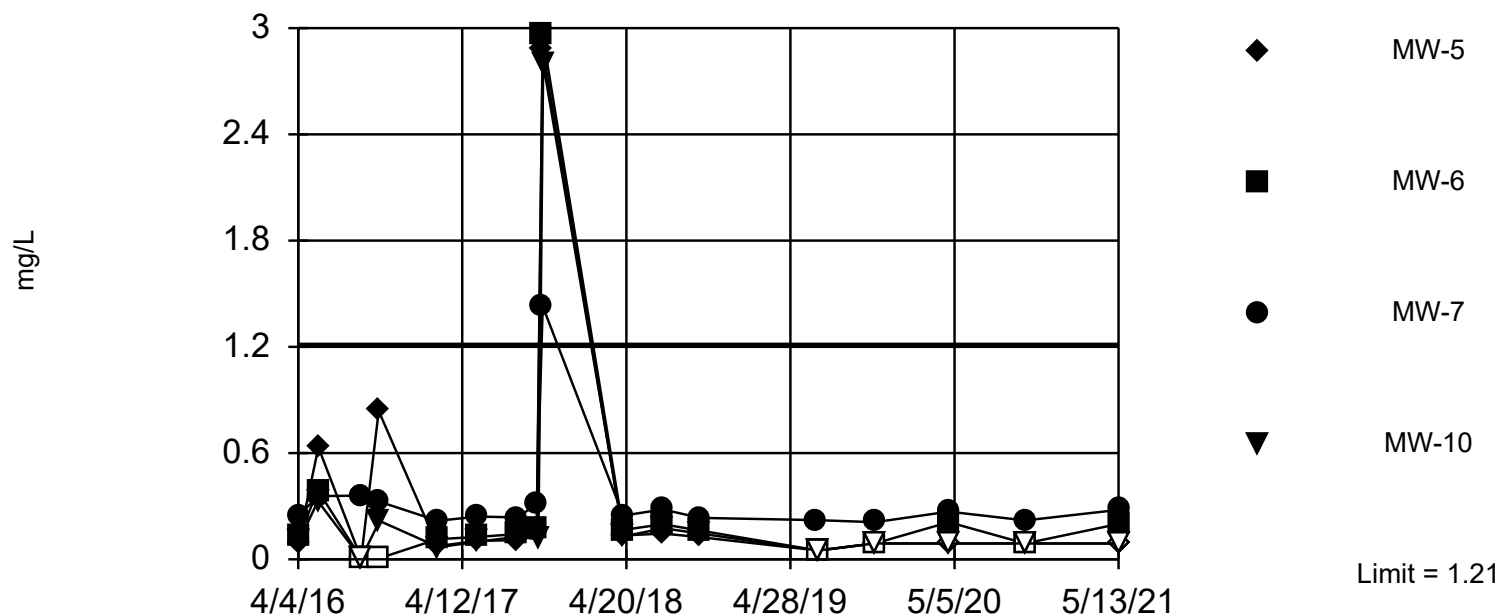
Background Data Summary (after Kaplan-Meier Adjustment): Mean=1.082, Std. Dev.=0.2627, n=15, 33.33% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 15 (10/13/2020).

Constituent: Cobalt Analysis Run 7/19/2021 2:44 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



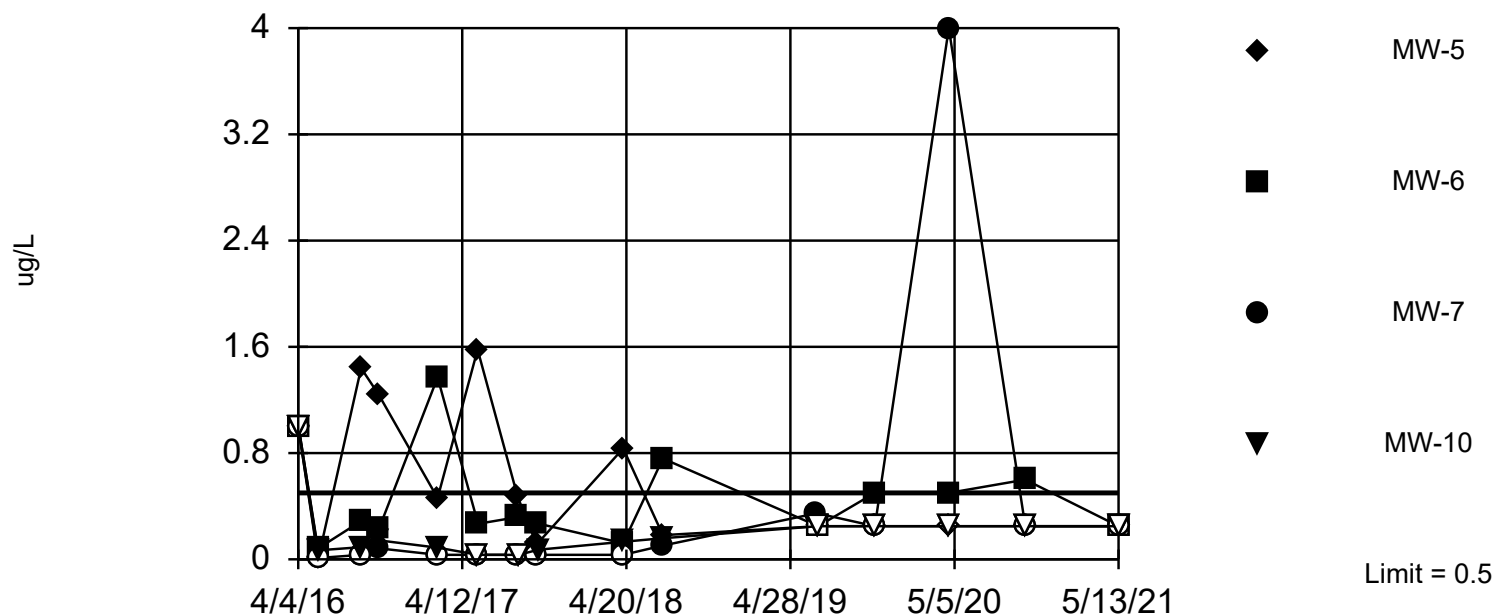
NP test selected by user. Limit is highest of 17 background values. Report alpha = 0.1905. Individual comparison alpha = 0.05146. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Fluoride Analysis Run 7/19/2021 2:48 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



NP test selected by user. Limit is highest of 13 background values. 84.62% NDs. Report alpha = 0.2353. Individual comparison alpha = 0.06487. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

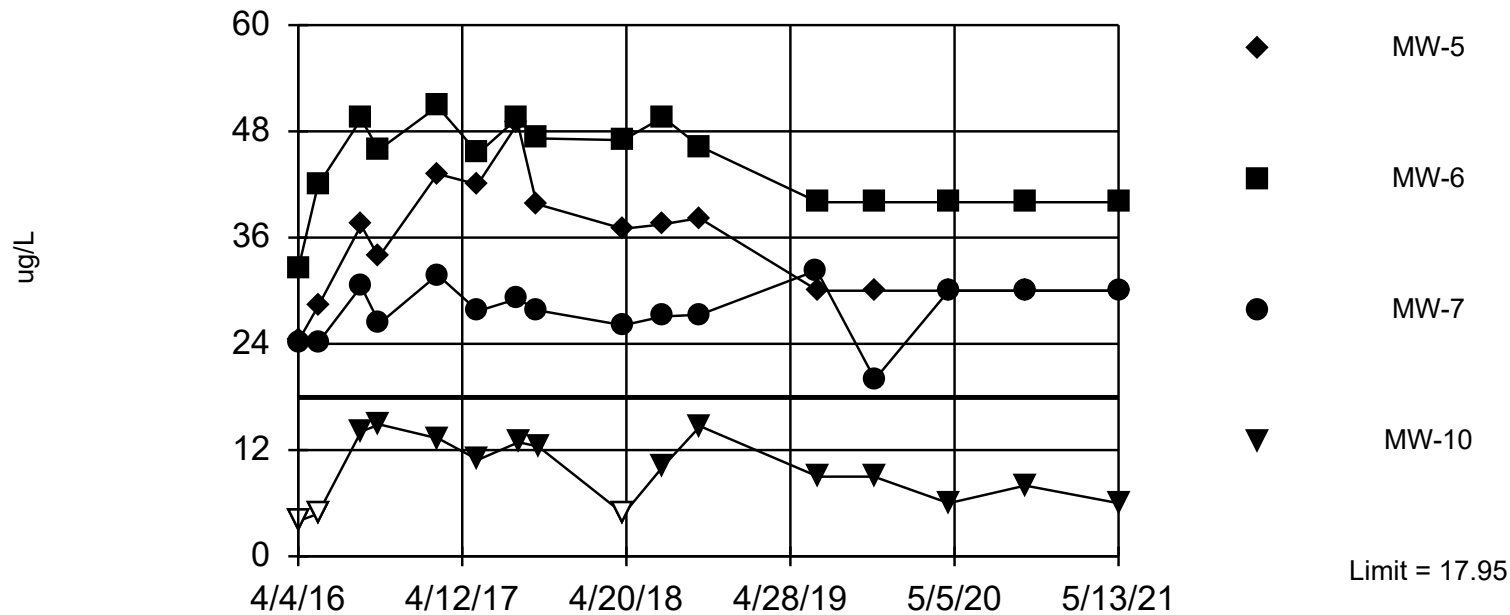
Constituent: Lead Analysis Run 7/19/2021 2:51 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7

Prediction Limit

Interwell Parametric



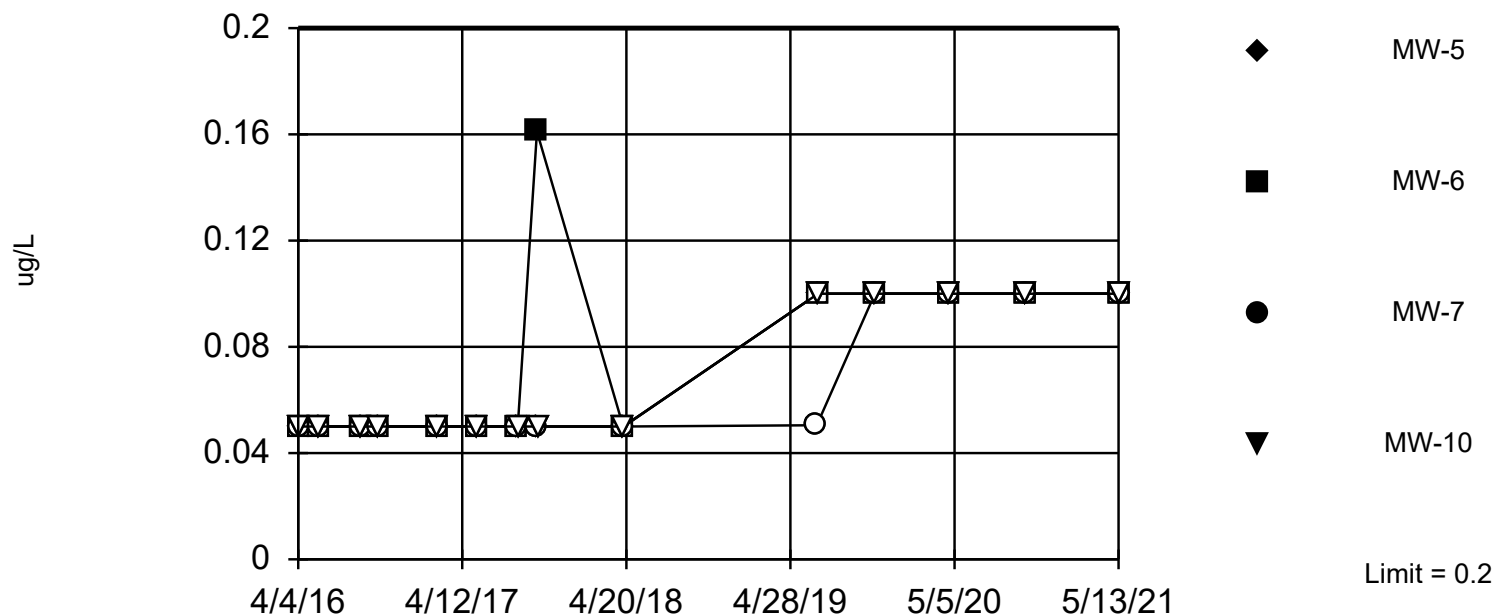
Background Data Summary (after Kaplan-Meier Adjustment): Mean=10.8, Std. Dev.=3.256, n=16, 25% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Lithium Analysis Run 7/19/2021 2:56 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values ($n = 14$) were censored; limit is most recent reporting limit. Report $\alpha = 0.2222$. Individual comparison $\alpha = 0.0609$. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

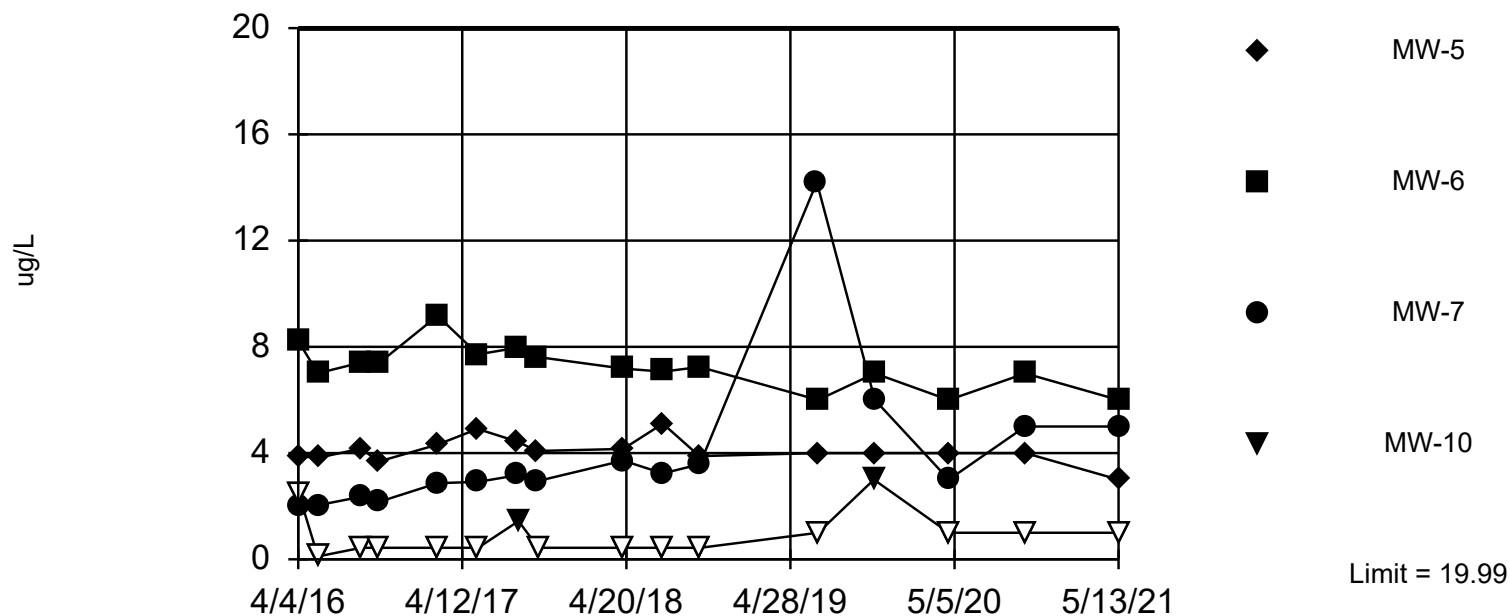
Constituent: Mercury Analysis Run 7/19/2021 2:58 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=13.47, Std. Dev.=2.967, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

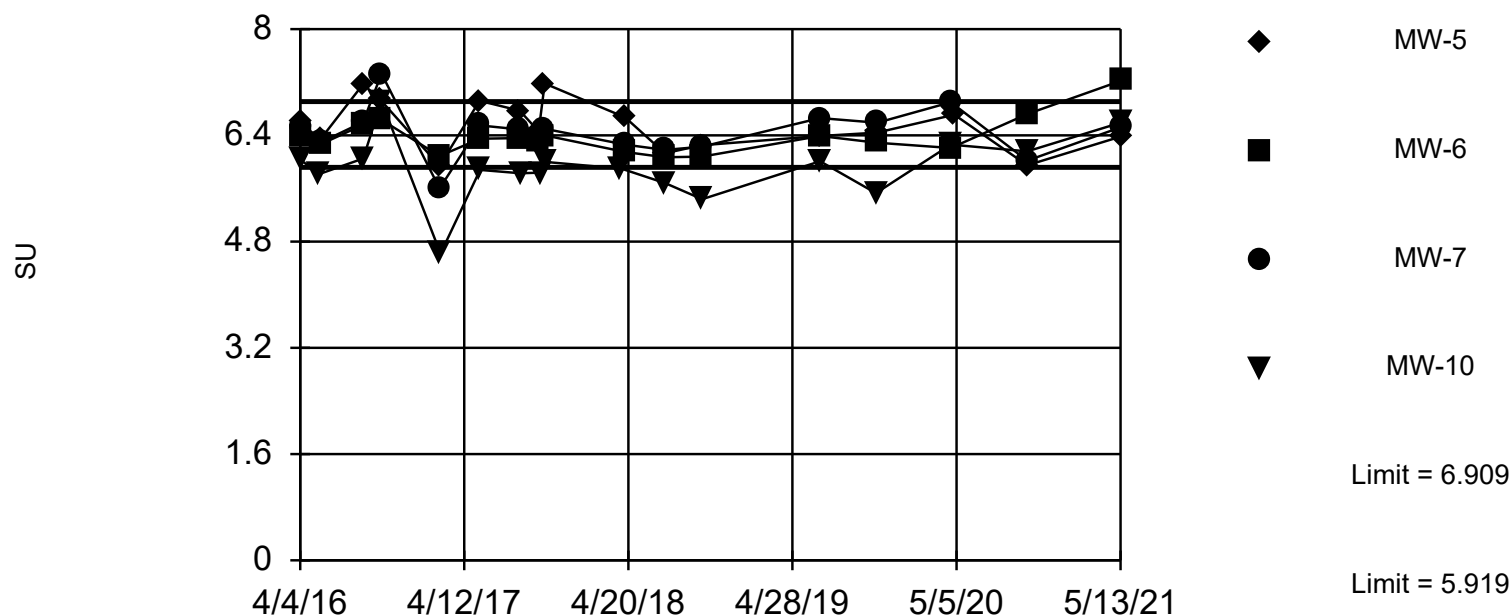
Constituent: Molybdenum Analysis Run 7/19/2021 3:00 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limits: MW-6

Prediction Limit

Interwell Parametric



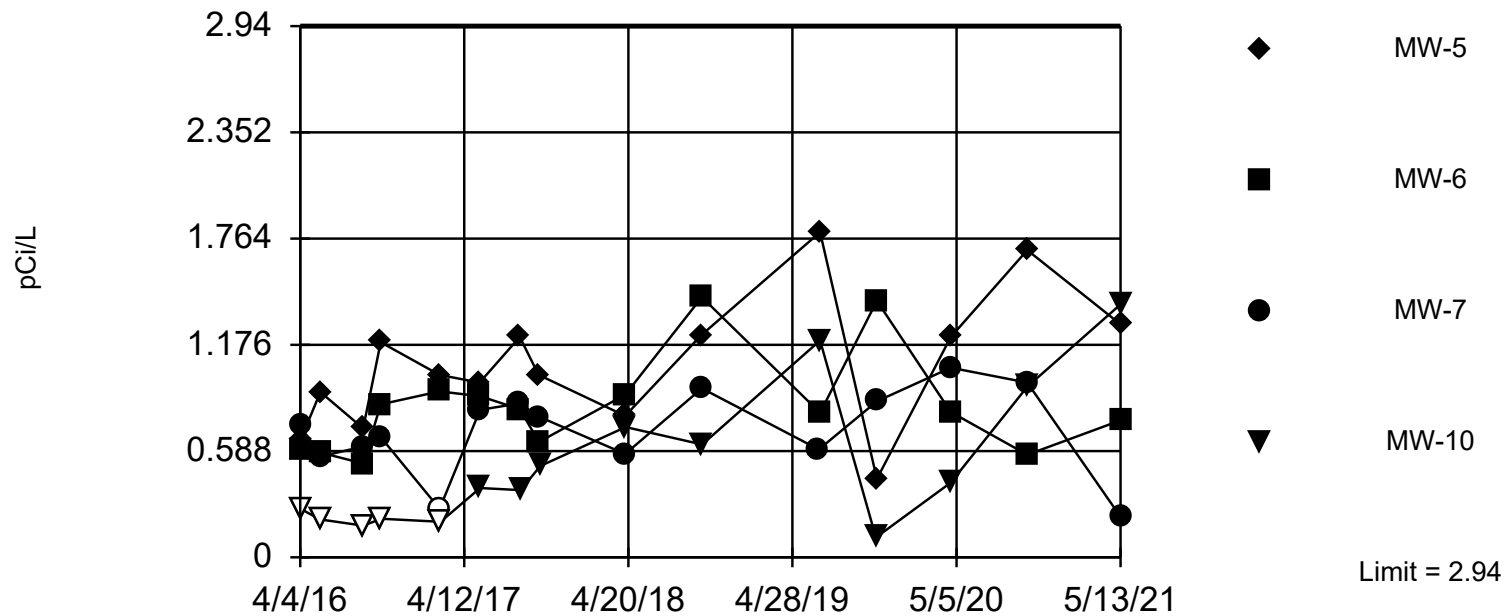
Background Data Summary: Mean=6.414, Std. Dev.=0.193, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.01252. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 4.91 (2/15/2017).

Constituent: pH [Field] Analysis Run 7/19/2021 3:02 PM

Facility: BREC Wilson LF Data File: Wilson All Data

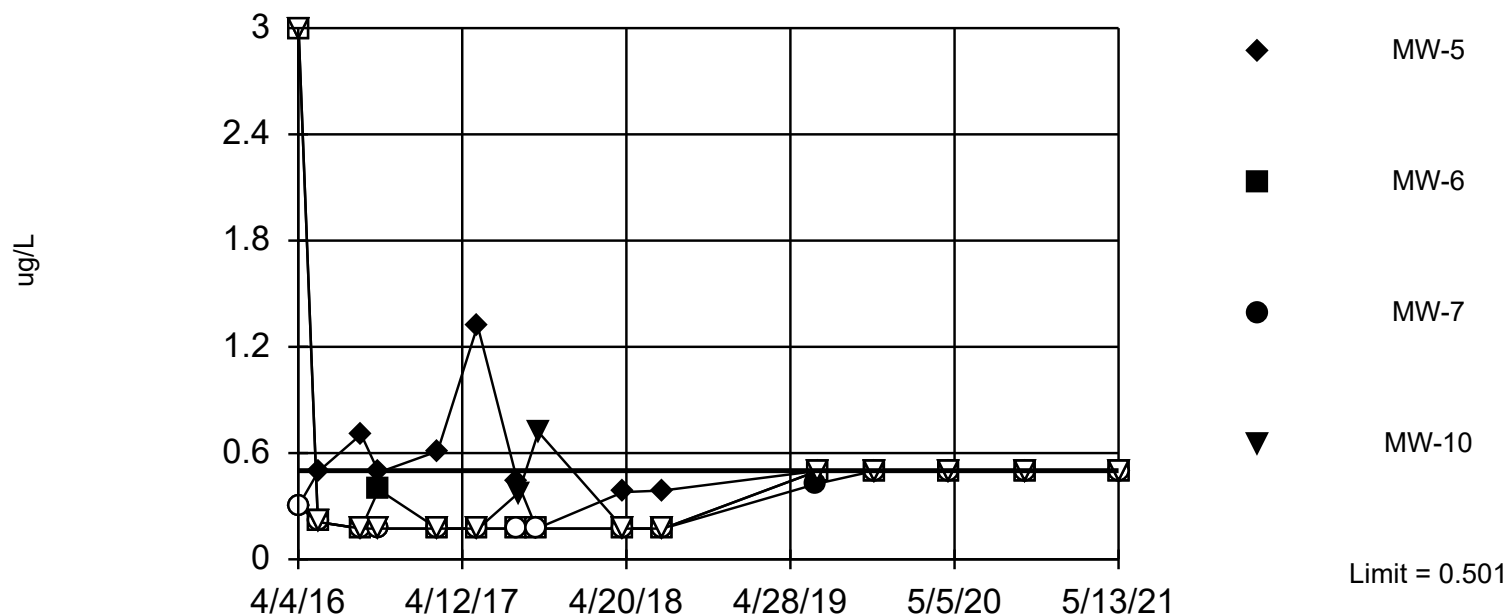
Within Limit

Prediction Limit
Interwell Non-parametric



Within Limit

Prediction Limit Interwell Non-parametric



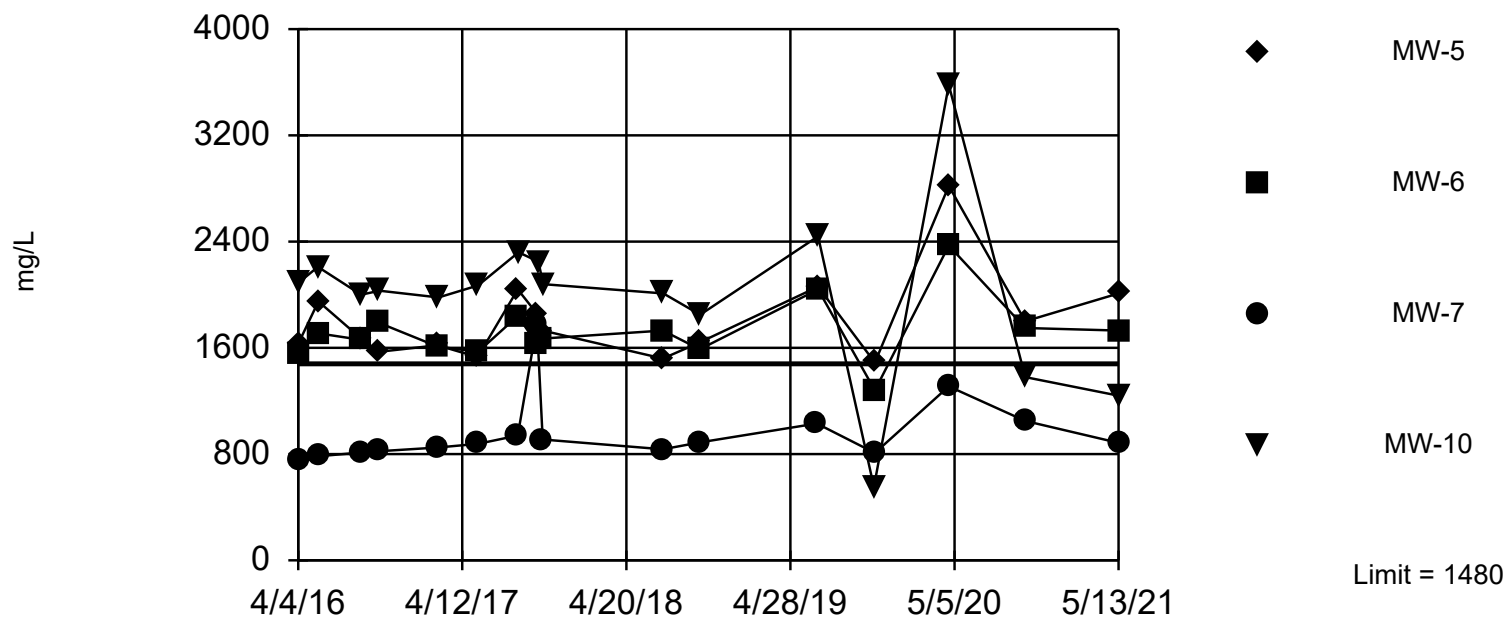
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 85.71% NDs. Report alpha = 0.2222. Individual comparison alpha = 0.0609. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Selenium Analysis Run 7/19/2021 3:08 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6

Prediction Limit
Interwell Non-parametric



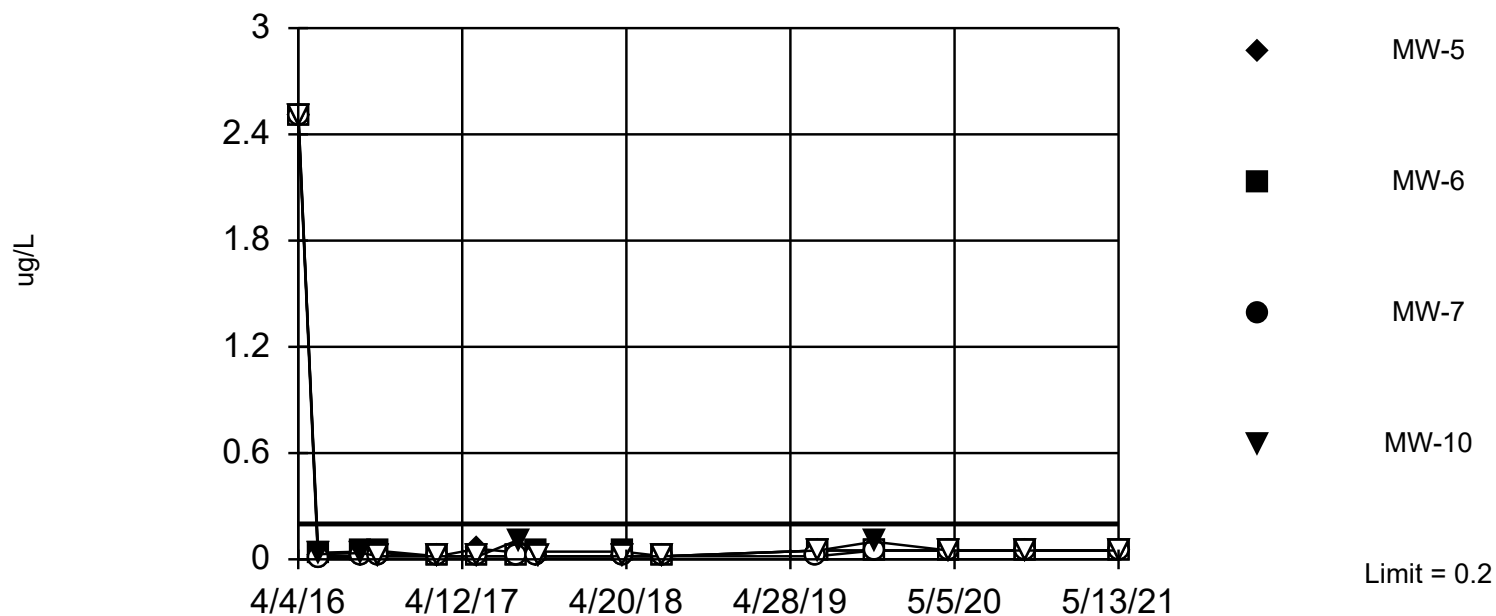
NP test selected by user. Limit is highest of 16 background values. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Sulfate Analysis Run 7/19/2021 3:10 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



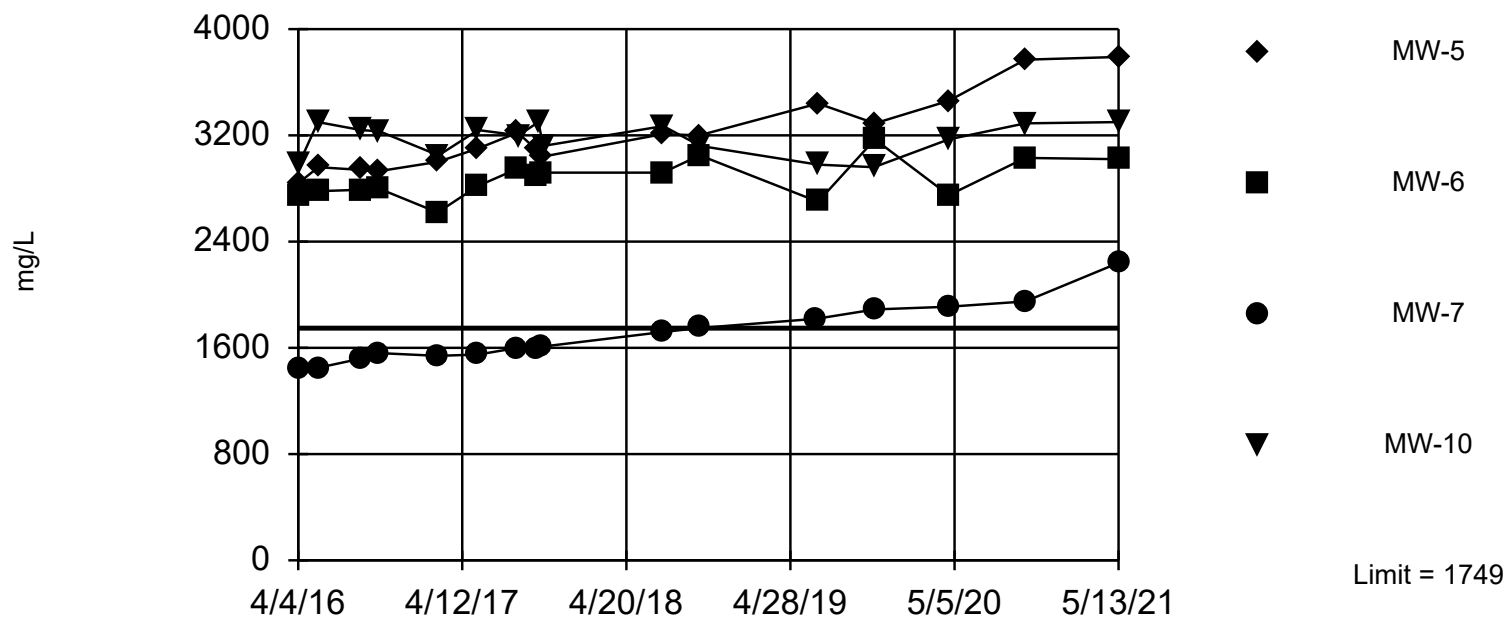
NP test selected by user. Limit is highest of 14 background values. 85.71% NDs. Report alpha = 0.2222. Individual comparison alpha = 0.0609. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Thallium Analysis Run 7/19/2021 3:13 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit Interwell Parametric



Background Data Summary: Mean=1579, Std. Dev.=77.45, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Total Dissolved Solids Analysis Run 7/19/2021 3:31 PM

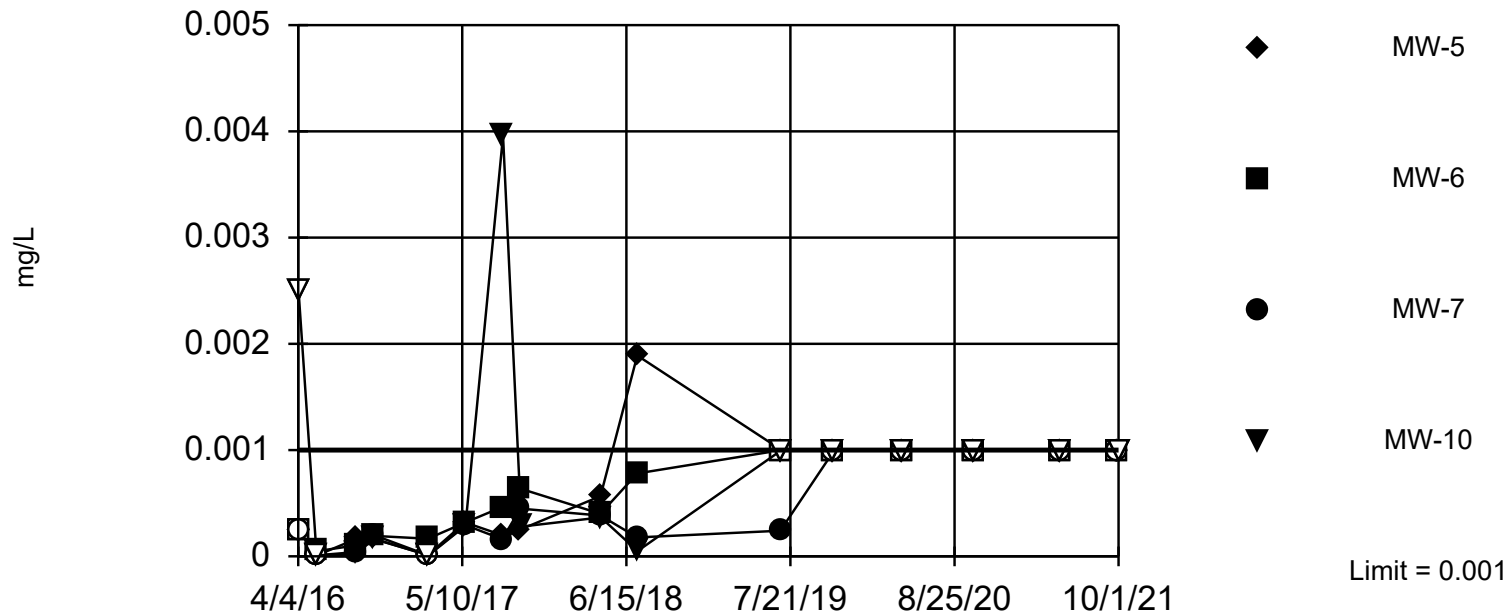
Facility: BREC Wilson LF Data File: Wilson All Data

Attachment 2
September 2021 Time Series Plots
and Prediction Limit Results

Within Limit

Prediction Limit

Interwell Non-parametric



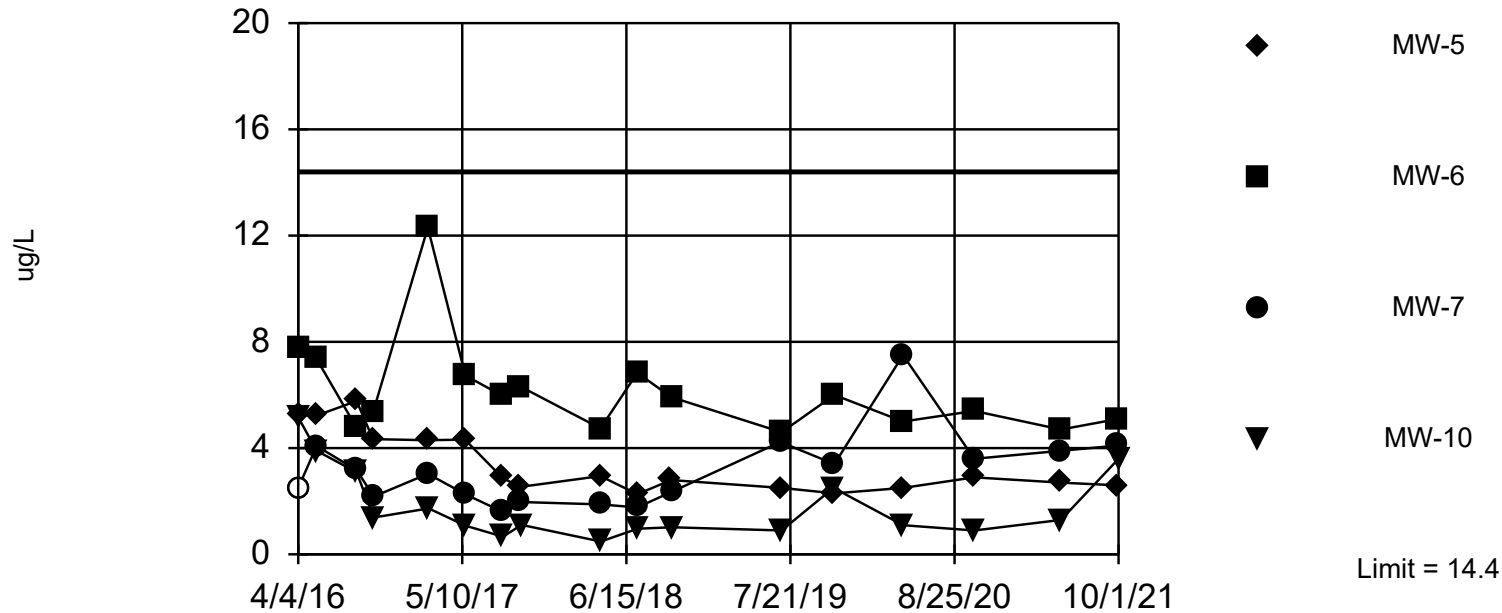
NP test selected by user. Limit is highest of 16 background values. 56.25% NDs. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Antimony Analysis Run 12/14/2021 3:40 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



NP test selected by user. Limit is highest of 17 background values. Report alpha = 0.1905. Individual comparison alpha = 0.05146. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

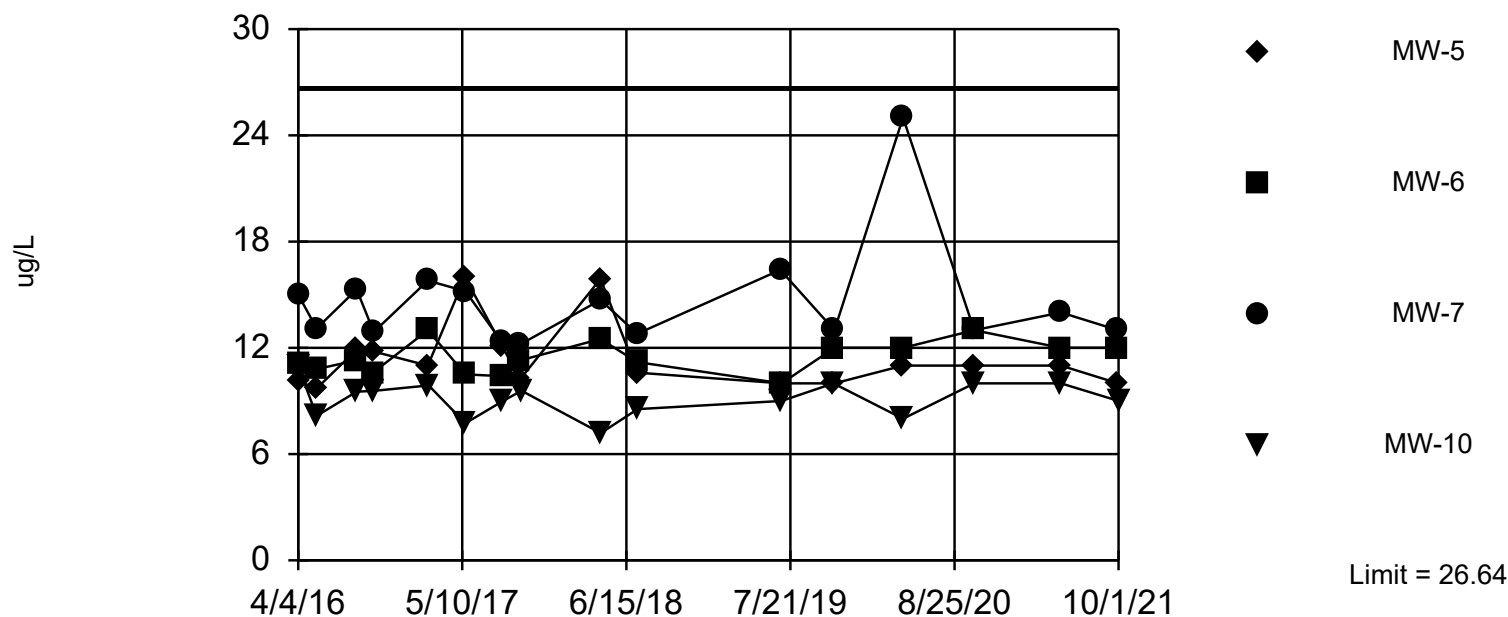
Constituent: Arsenic Analysis Run 12/14/2021 3:41 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Parametric



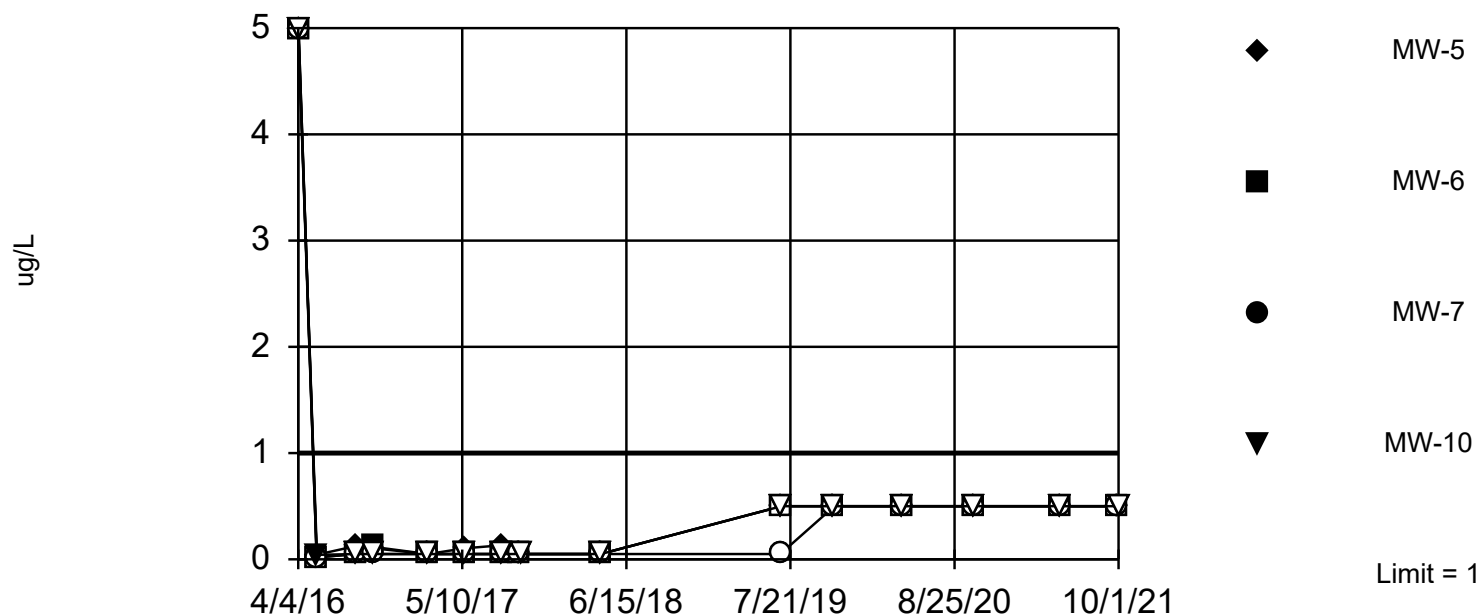
Background Data Summary: Mean=22.29, Std. Dev.=1.968, n=15. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 70 (10/13/2020).

Constituent: Barium Analysis Run 12/14/2021 3:43 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



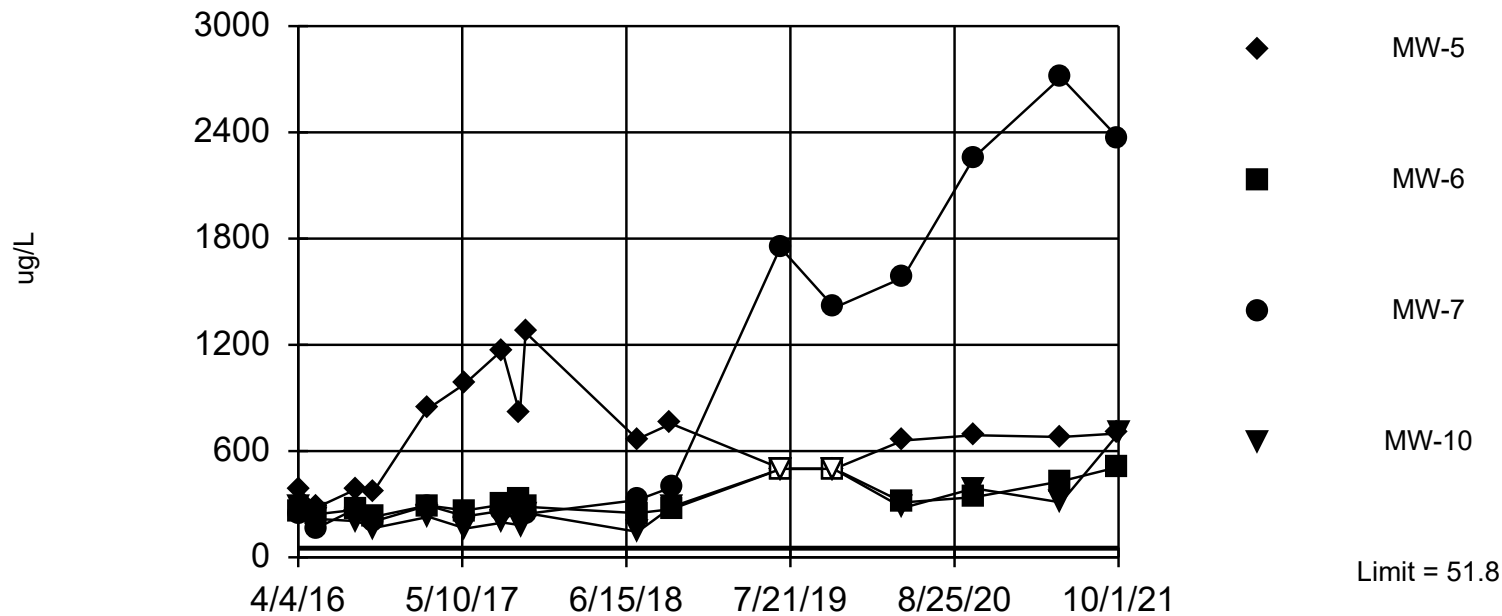
NP test selected by user. All background values (n = 15) were censored; limit is most recent reporting limit. Report alpha = 0.2105. Individual comparison alpha = 0.05738. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Beryllium Analysis Run 12/14/2021 3:45 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit Interwell Non-parametric



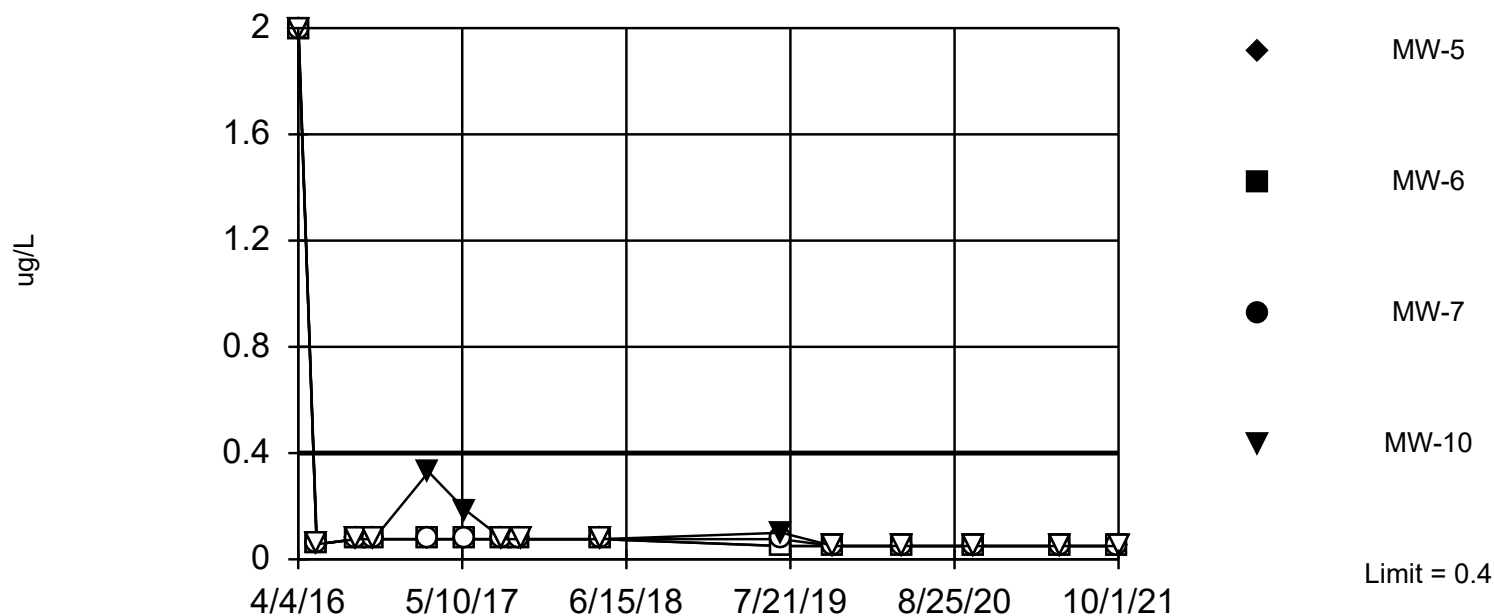
NP test selected by user. Limit is highest of 15 background values. 26.67% NDs. Report alpha = 0.2105. Individual comparison alpha = 0.05738. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Boron Analysis Run 12/14/2021 3:13 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit Interwell Non-parametric



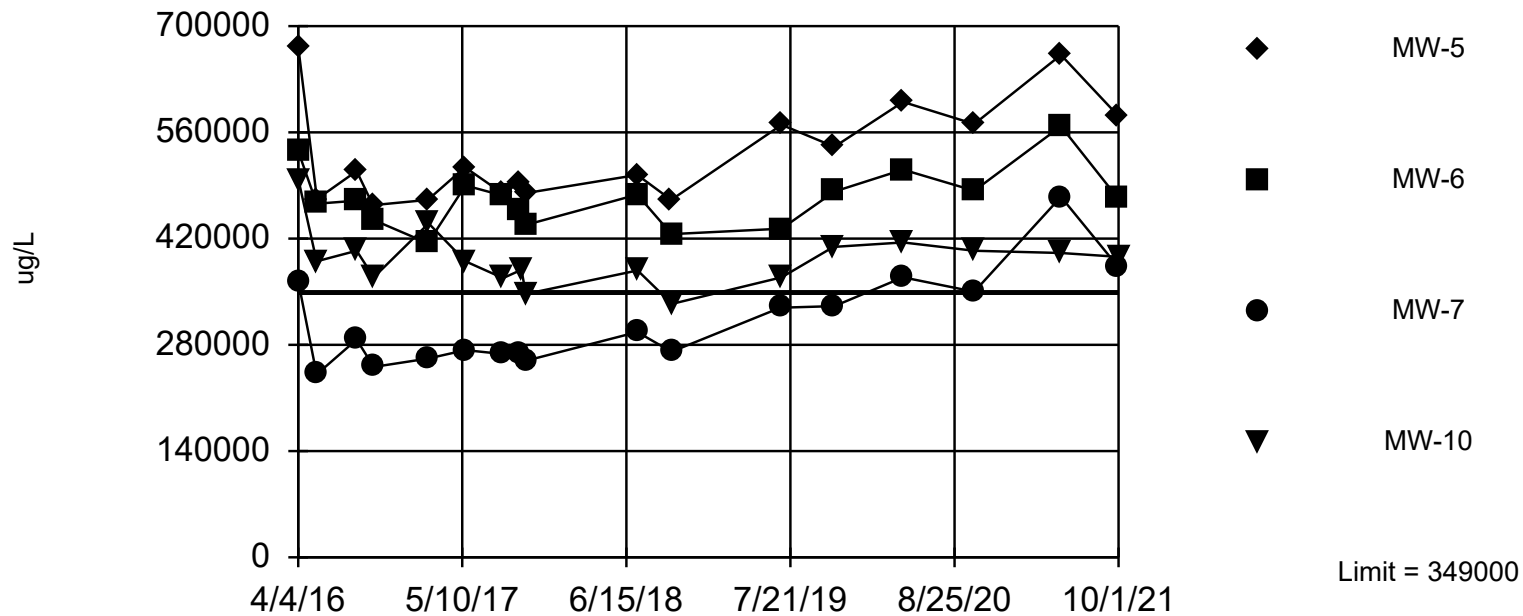
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Report alpha = 0.2222. Individual comparison alpha = 0.0609. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Cadmium Analysis Run 12/14/2021 3:49 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit
Interwell Non-parametric



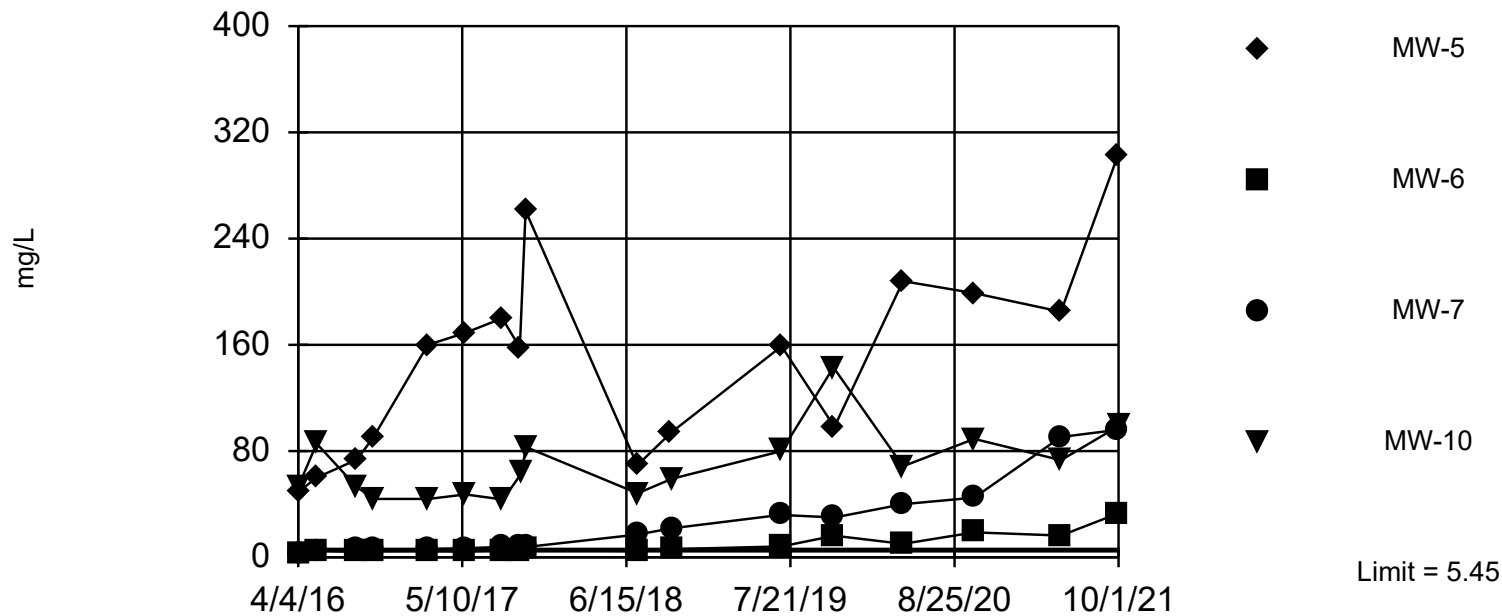
NP test selected by user. Limit is highest of 17 background values. Report alpha = 0.1905. Individual comparison alpha = 0.05146. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Calcium Analysis Run 12/14/2021 3:20 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit Interwell Parametric



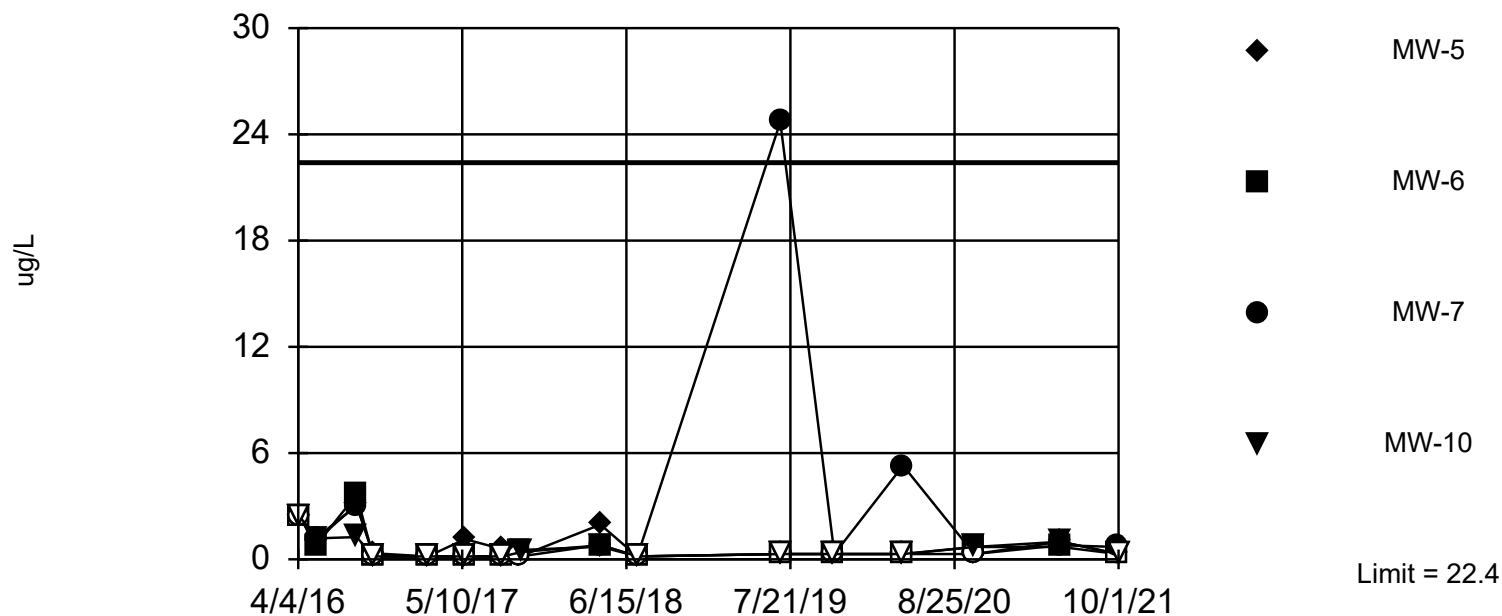
Background Data Summary: Mean=4.349, Std. Dev.=0.505, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Chloride Analysis Run 12/14/2021 3:23 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



NP test selected by user. Limit is highest of 16 background values. 43.75% NDs. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

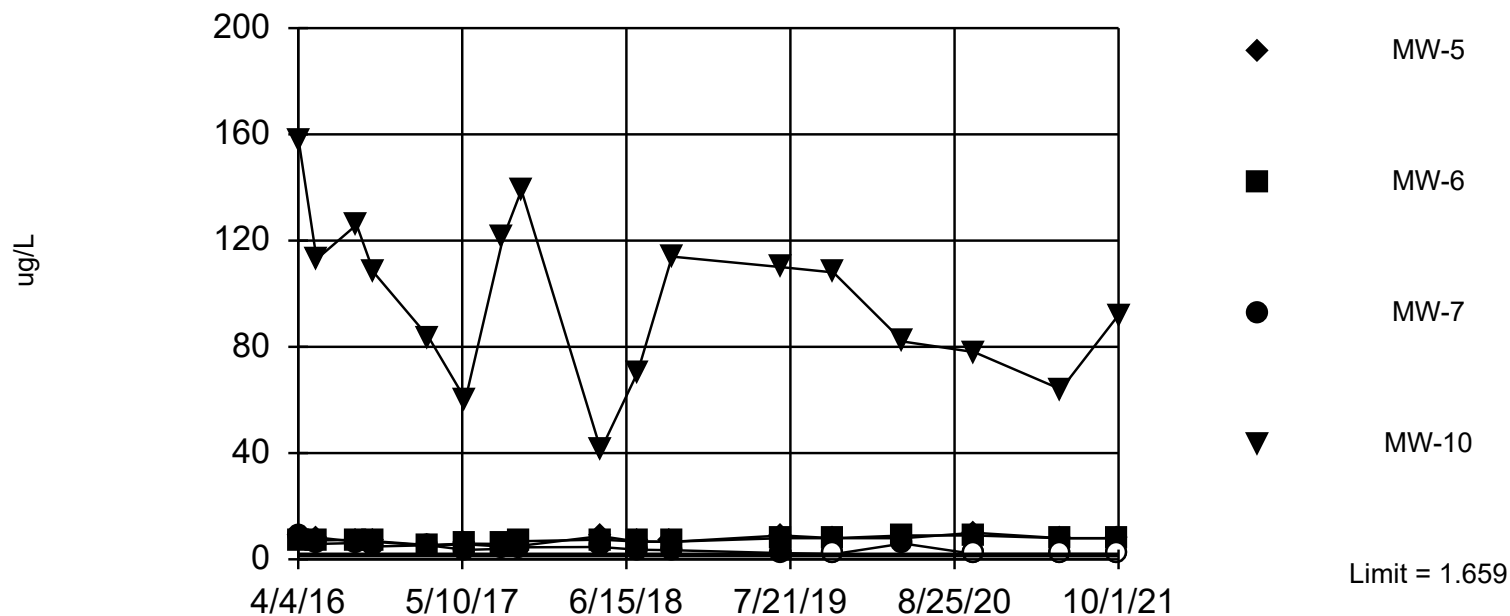
Constituent: Chromium Analysis Run 12/17/2021 9:08 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=1.082, Std. Dev.=0.2627, n=16, 37.5% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 15 (10/13/2020).

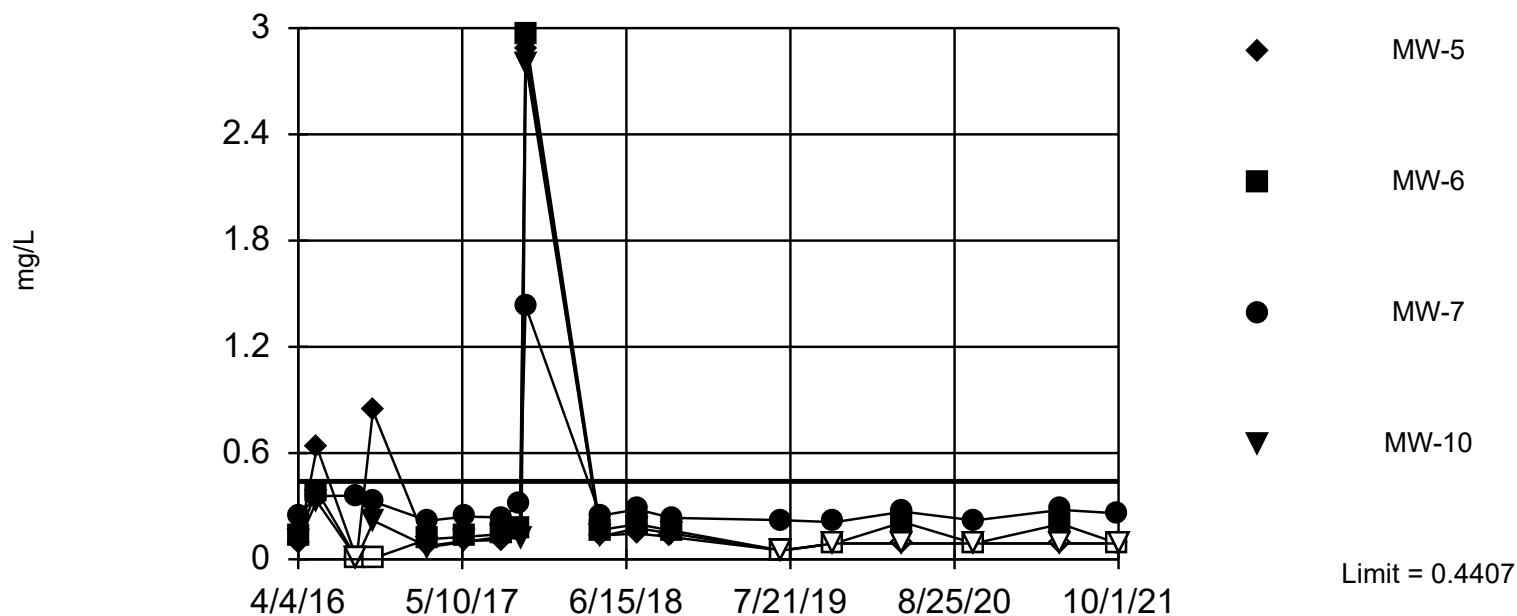
Constituent: Cobalt Analysis Run 12/17/2021 9:16 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-1.291, Std. Dev.=0.2162, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit.

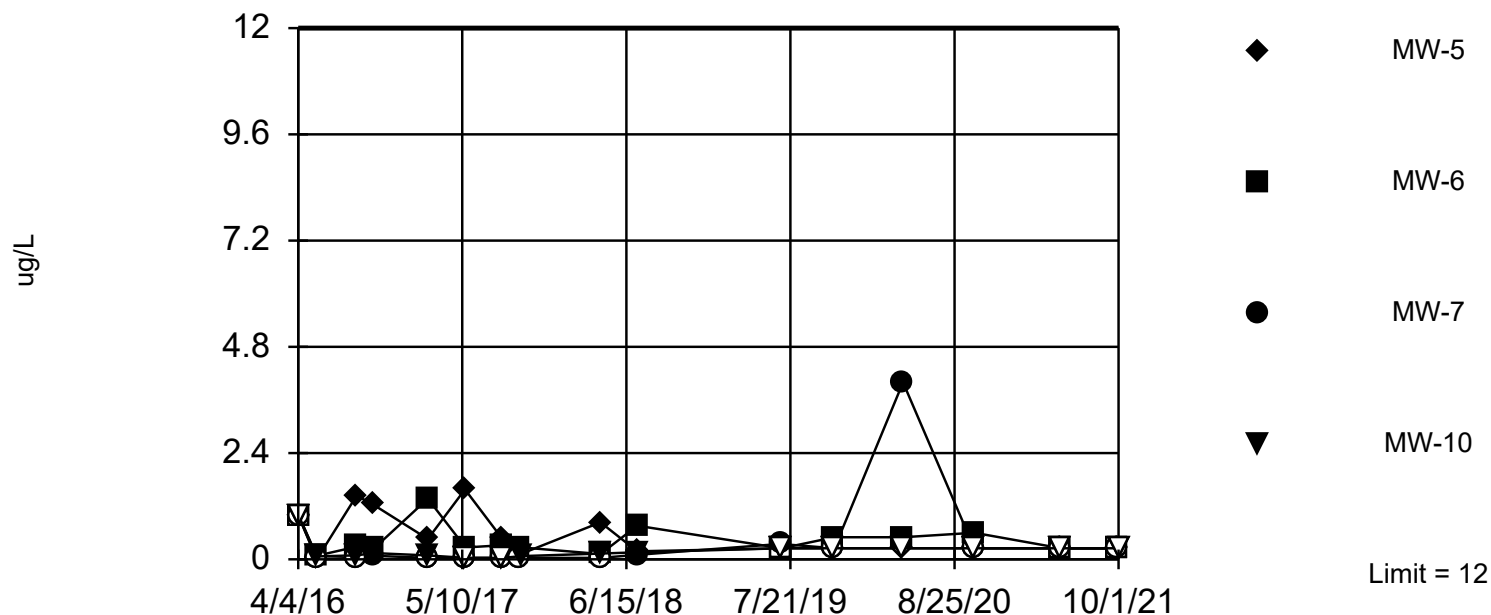
Constituent: Fluoride Analysis Run 12/14/2021 3:28 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 75% NDs. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

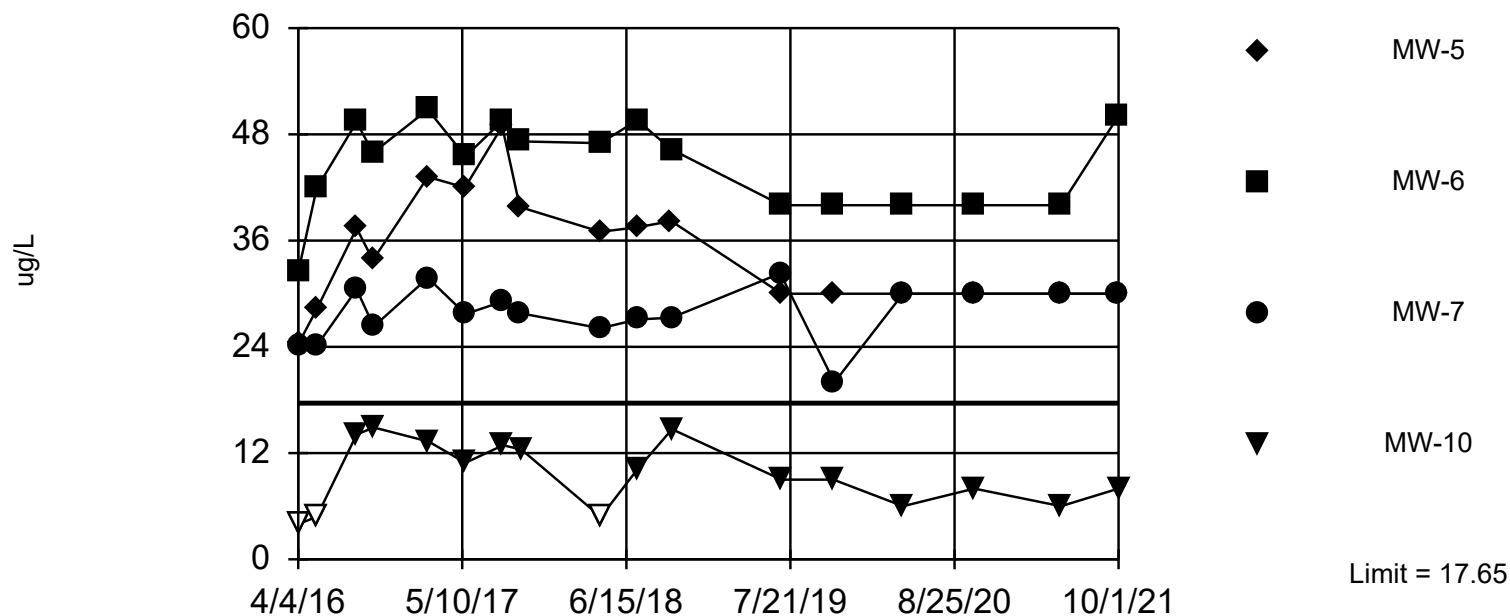
Constituent: Lead Analysis Run 12/17/2021 9:20 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7

Prediction Limit

Interwell Parametric



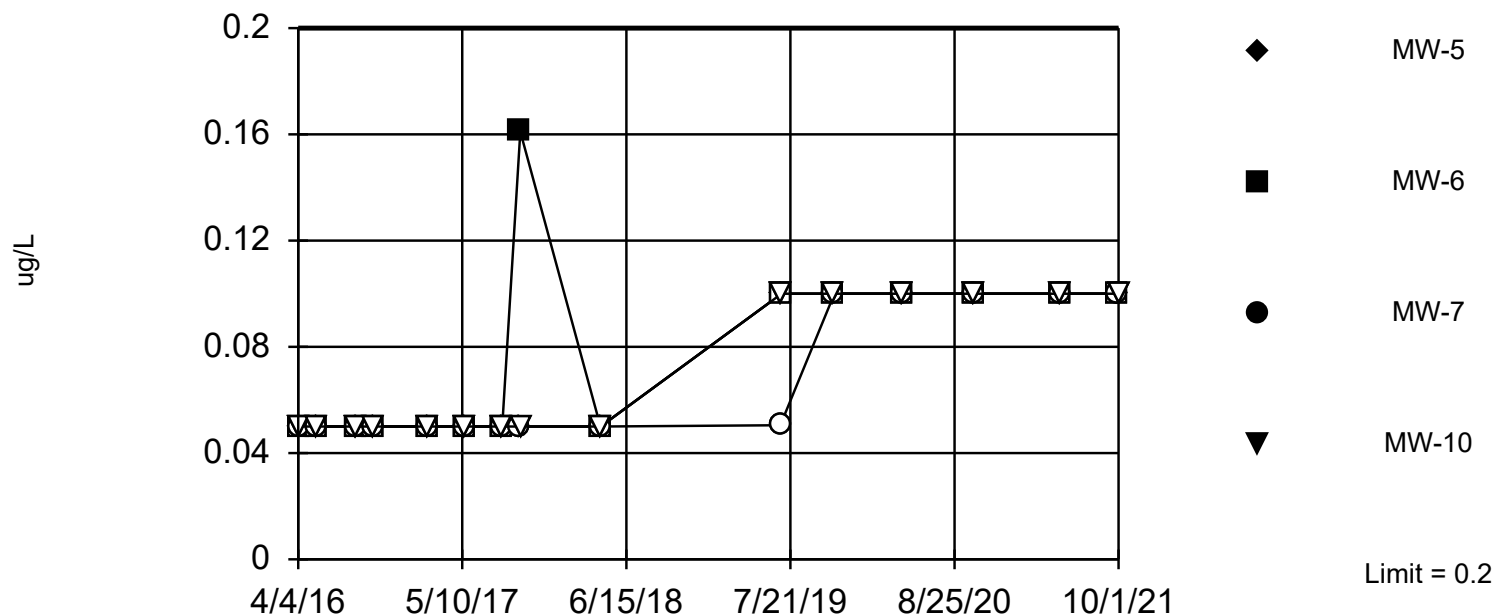
Background Data Summary (after Kaplan-Meier Adjustment): Mean=10.75, Std. Dev.=3.164, n=17, 23.53% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Lithium Analysis Run 12/17/2021 9:22 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit Interwell Non-parametric



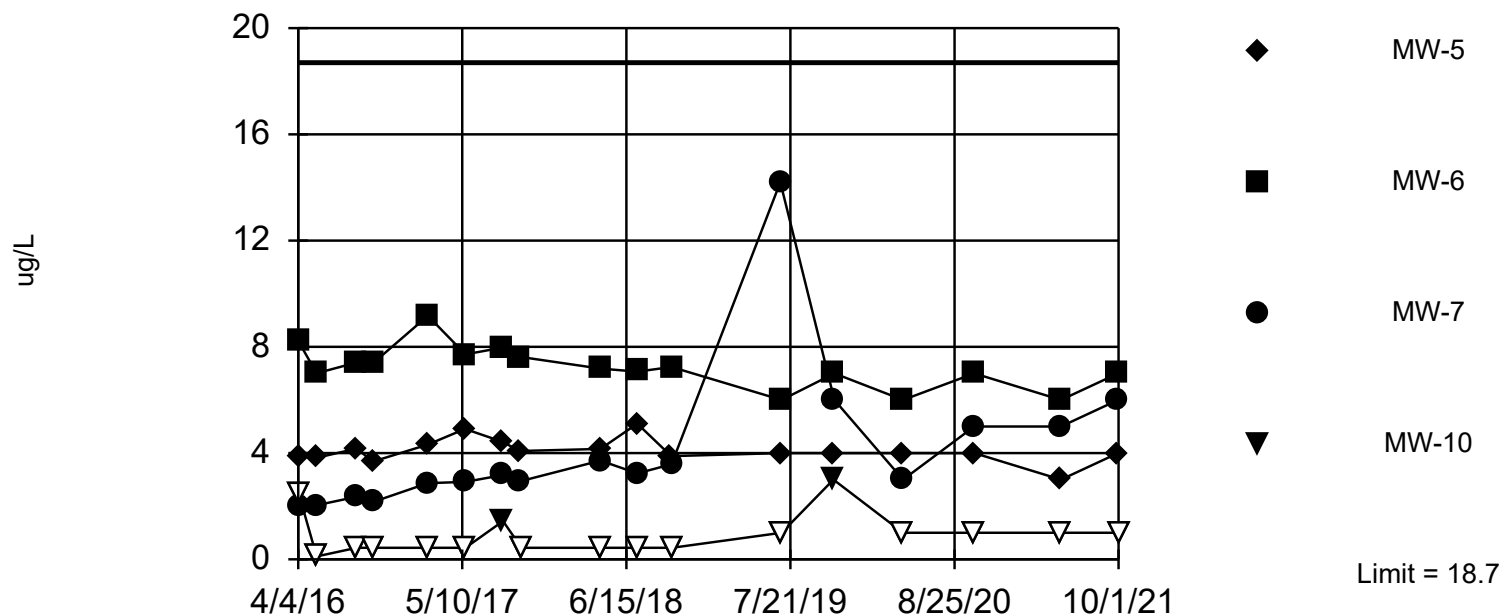
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values ($n = 15$) were censored; limit is most recent reporting limit. Report $\alpha = 0.2105$. Individual comparison $\alpha = 0.05738$. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Mercury Analysis Run 12/17/2021 9:28 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



NP test selected by user. Limit is highest of 17 background values. Report alpha = 0.1905. Individual comparison alpha = 0.05146. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

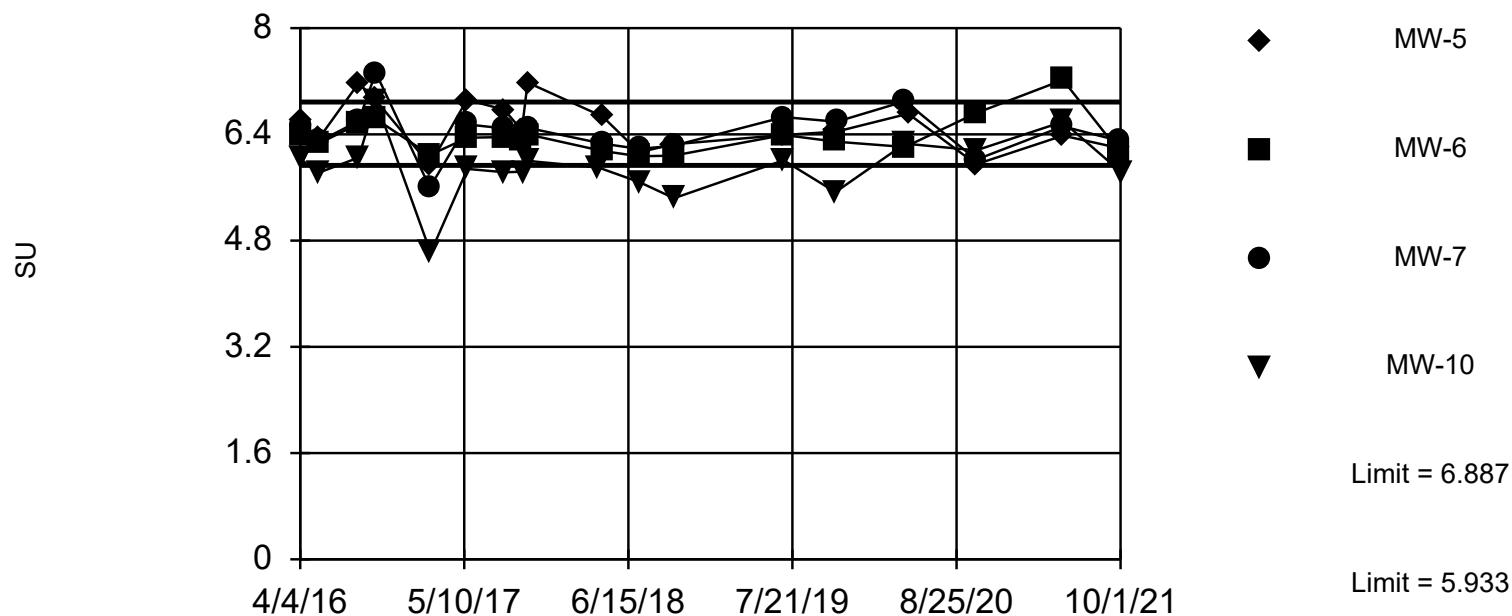
Constituent: Molybdenum Analysis Run 12/17/2021 9:31 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limits: MW-10

Prediction Limit

Interwell Parametric



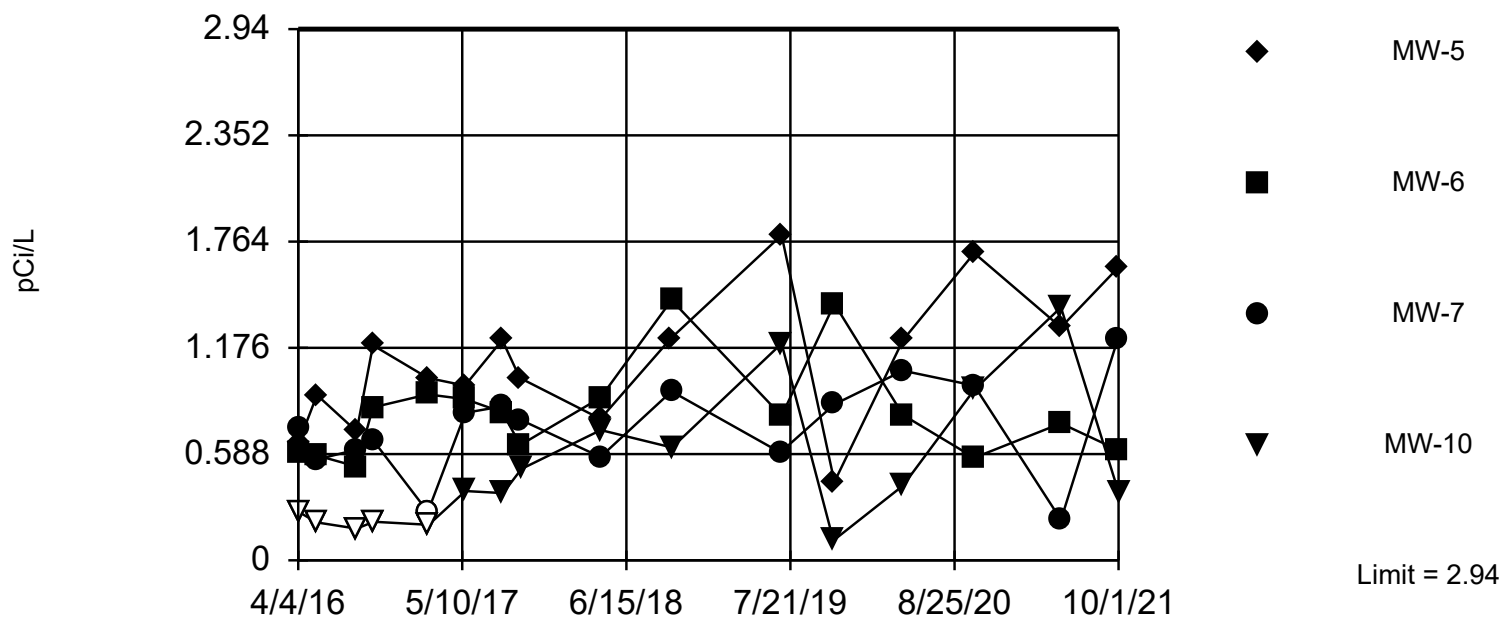
Background Data Summary: Mean=6.41, Std. Dev.=0.1875, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.01252. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 4.91 (2/15/2017).

Constituent: pH [Field] Analysis Run 12/14/2021 3:30 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



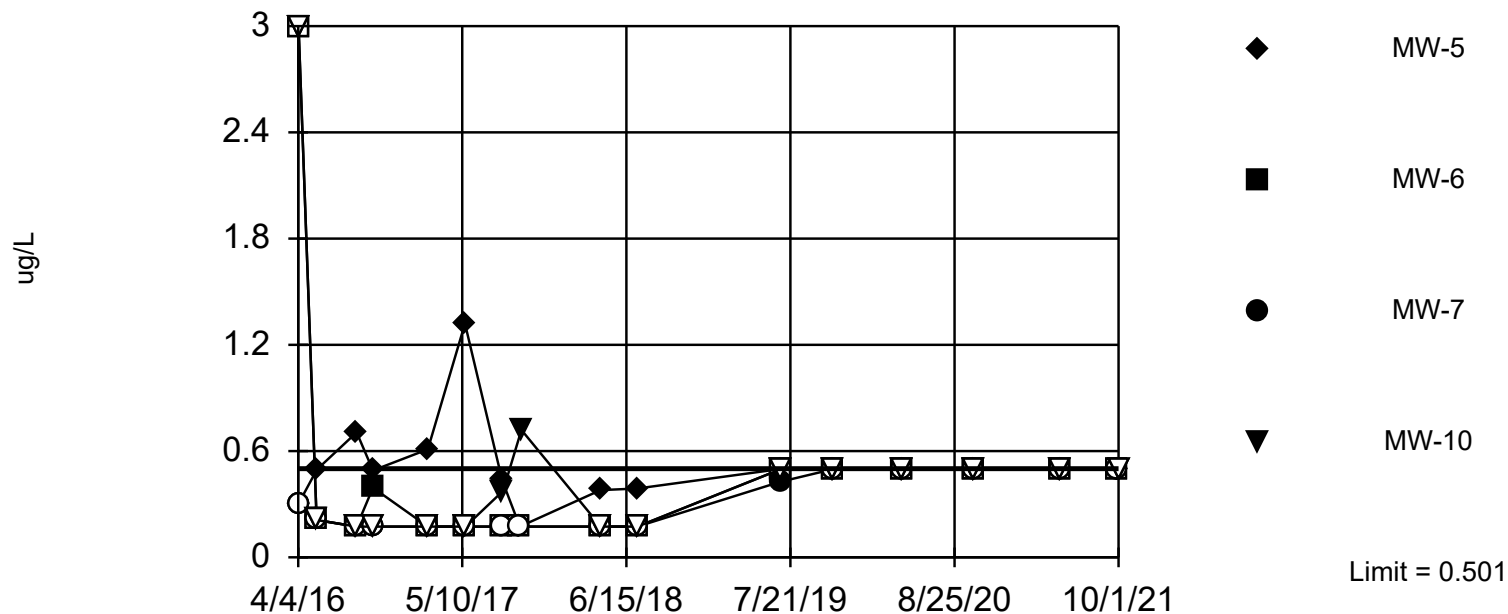
NP test selected by user. Limit is highest of 16 background values. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Radium 226 + 228 Analysis Run 12/17/2021 9:33 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 86.67% NDs. Report alpha = 0.2105. Individual comparison alpha = 0.05738. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

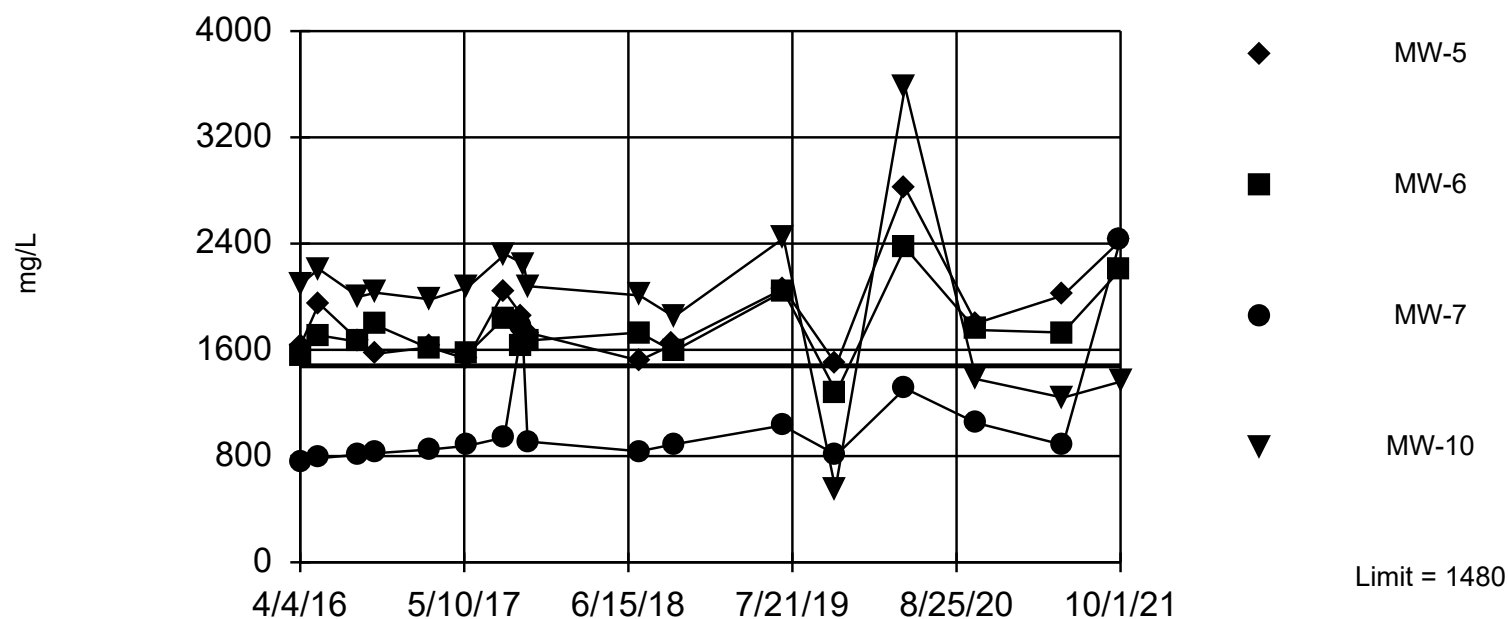
Constituent: Selenium Analysis Run 12/17/2021 9:40 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 16 background values. Report alpha = 0.2. Individual comparison alpha = 0.05426. Most recent point for each compliance well compared to limit. Insufficient data to test for seasonality; data will not be deseasonalized.

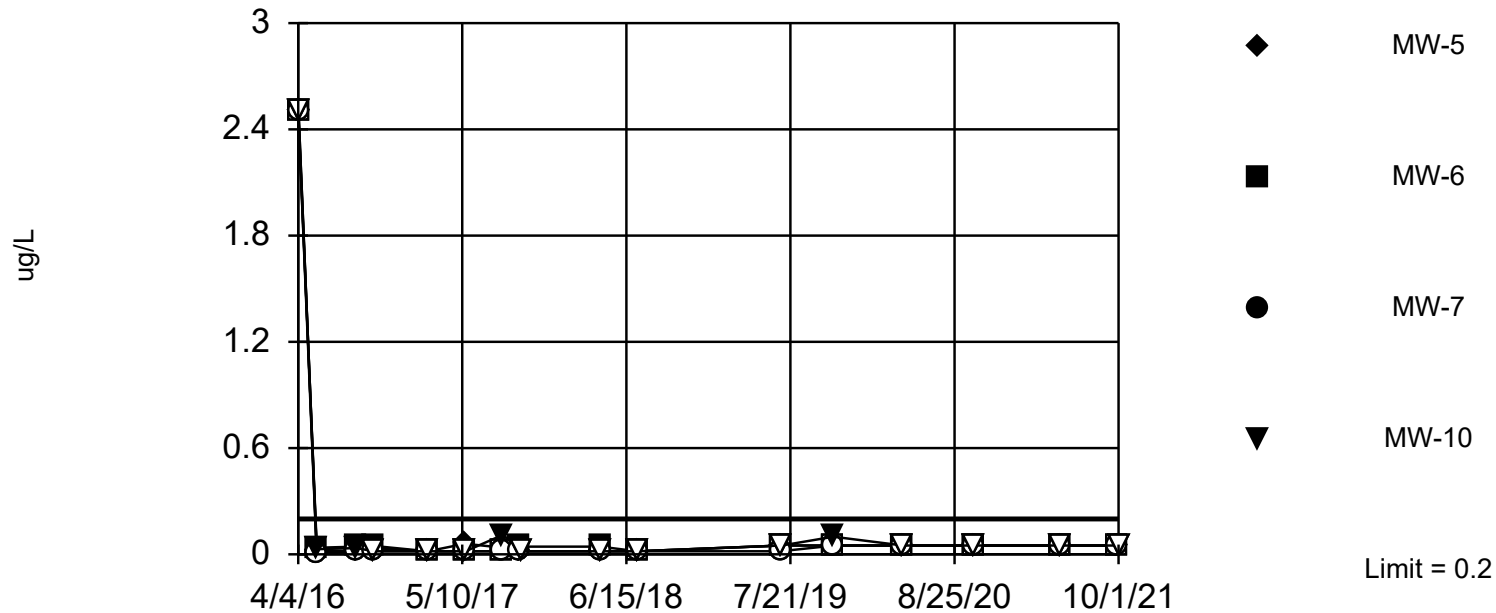
Constituent: Sulfate Analysis Run 12/14/2021 3:34 PM

Facility: BREC Wilson LF Data File: Wilson All Data

Within Limit

Prediction Limit

Interwell Non-parametric



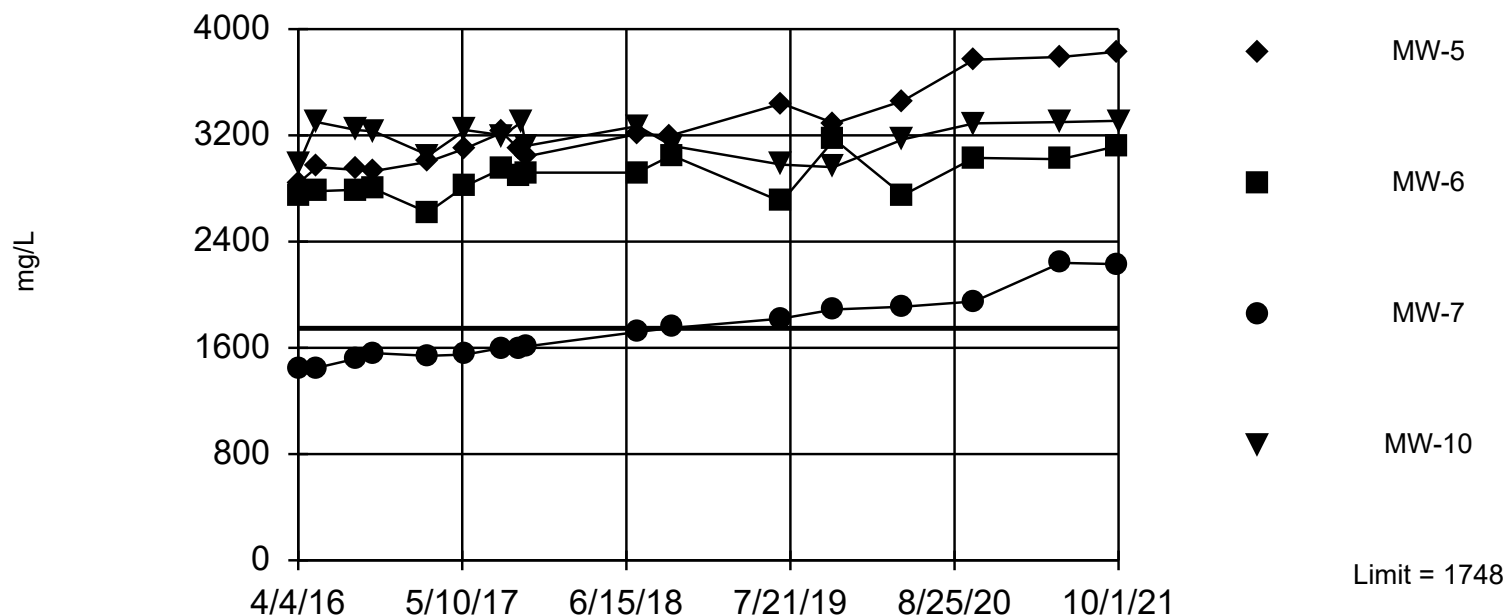
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 86.67% NDs. Report alpha = 0.2105. Individual comparison alpha = 0.05738. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Thallium Analysis Run 12/17/2021 9:49 AM

Facility: BREC Wilson LF Data File: Wilson All Data

Exceeds Limit: MW-5, MW-6, MW-7, MW-10

Prediction Limit Interwell Parametric



Background Data Summary: Mean=1582, Std. Dev.=76.01, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.09646. Individual comparison alpha = 0.02504. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Total Dissolved Solids Analysis Run 12/14/2021 3:37 PM

Facility: BREC Wilson LF Data File: Wilson All Data

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