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BIG RIVERS ELECTRIC CORPORATION

2024 Annual Groundwater Monitoring & Corrective Action Report for the Federal Coal Combustion Residuals Rule

BIG RIVERS ELECTRIC CORPORATION SEBREE GENERATING STATION GREEN LANDFILL AND FORMER SURFACE IMPOUNDMENT

PROJECT NOs. 170774 & 170781

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List of Abbreviations

Abbreviation	Term/Phrase/Name
ACM	Assessment of Corrective Measures
BREC	Big Rivers Electric Corporation
CCR	coal combustion residuals
CCR Rule	*Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule,* dated April 17, 2015, amended July 30, 2018, and on September 28, 2020
CFR	Code of Federal Regulations
Green Former Surface Impoundment (former CCR unit)	Green Former Surface Impoundment
Green Landfill (active CCR unit)	Green Station Landfill
GWPS	groundwater protection standard
HMP&L	Reid/Henderson Municipal Power and Light
KDWM	Kentucky Department for Environmental Protection, Division of Waste Management
LCL	lower confidence limit
Pace	Pace Analytical Services, LLC
Report	*2024 Annual Groundwater Monitoring and Corrective Action Report*
Station/Site	Sebree Generating Station located in Robards, Kentucky
SSI	statistically significant increase
SSL	statistically significant level
TDS	total dissolved solids
USEPA	United States Environmental Protection Agency

Executive Summary

This *2024 Annual Groundwater Monitoring and Corrective Action Report* (Report) summarizes groundwater monitoring and corrective action activities completed between January 1 and December 31, 2024, at the Big Rivers Electric Corporation (BREC) Sebree Generating Station (Station or Site) as required by 40 Code of Federal Regulations (CFR) §257.90(e) of the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule (CCR Rule). The following two CCR units (one active and one former unit) at the Station are subject to the CCR Rule:

- Green Station Landfill (Green Landfill; active CCR unit; Webster County); and
- Green Station Former Surface Impoundment (Green Former Surface Impoundment; former CCR unit; Webster County).

The Green Former Surface Impoundment completed closure by removal activities in August 2024. BREC is currently working on obtaining the completion of closure certification with the Kentucky Department of Environmental Protection Division of Waste Management (KDWM).

The 2024 Annual Groundwater Monitoring and Corrective Action Report for the Reid/Henderson Municipal Power and Light Surface Impoundment (Henderson County) at the Station is provided as a separate submittal.

A Site figure presenting the location of the active and former CCR units is presented as **Figure 1**. The program monitoring networks for the active and former CCR units, including supporting monitoring wells, are presented as **Figure 2** (Green Landfill) and **Figure 3** (Green Former Surface Impoundment). Four new characterization monitoring wells (MW-11A, MW-12B, MW-13B, and MW-14A) were installed at the Green Former Surface Impoundment during the 2024 reporting period.

Results of baseline groundwater monitoring performed in 2016 and 2017 indicated that the Green Landfill would require initiation of assessment monitoring under the CCR Rule, as the laboratory analytical results from these events indicated that most of the Appendix III constituents had statistically significant increases (SSIs) over background and included calcium, chloride, sulfate, and total dissolved solids at the Green Landfill.

On February 5, 2018, BREC posted on their publicly accessible CCR reporting website a formal notification that the Green Landfill would transition from baseline detection to assessment monitoring program (BREC, 2018a). At both the start and end of the 2024 annual reporting period, the Green Landfill was operating under the assessment monitoring program in 40 CFR §257.95.

Statistical evaluation of groundwater analytical data collected during assessment monitoring at the Green Landfill indicated that Appendix IV constituents were detected in downgradient monitoring wells at SSIs over background in 2018 through 2024 as summarized in the table below.

Appendix IV Constituents at an SSI	Green Landfill (2018-2024)
Arsenic	• June and July 2018 • April and October 2019 • April and September 2020 • April and September 2021 • April and December 2022 • June and November 2023 • April and November 2024
Barium	• June and July 2018 • April and October 2019 • April and September 2020 • April and September 2021 • April and December 2022 • June and November 2023 • April and November 2024
Cadmium	• April 2021
Cobalt	• September 2020 • April 2024
Chromium	• none
Fluoride	• none
Lithium	• June and July 2018 • April and October 2019 • April and September 2020 • April and September 2021 • April and December 2022 • June and November 2023 • April and November 2024
Mercury	• June and July 2018 • April and October 2019 • April and September 2020 • April 2021 • December 2022 • June and November 2023 • April and November 2024
Molybdenum	• April and September 2021 • April 2022 • June and November 2023 • April and November 2024
Radium 226+228 (combined)	• April 2022 • November 2024
Selenium	• April 2020 • April 2021 • April 2022 • June 2023

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 annual reporting periods from 2018 through 2024 are as follows:

Appendix IV Constituent at an SSL above GWPS	Green Landfill	Reporting Period (2018-2024)
Arsenic	MW-2	2022, 2023, and 2024
Lithium	MW-3A, MW-4, MW-5, and MW-6	2018, 2019, 2020, 2021, 2022, 2023, and 2024

On December 6, 2018, and October 3, 2022, BREC posted on their publicly accessible CCR reporting website a formal notification that lithium (BREC, 2018b) and arsenic (BREC, 2022) had been detected at SSLs above the established GWPS for the Green Landfill. In June 2019, BREC finalized an *Assessment of Corrective Measures* (ACM) for the Green Landfill to identify applicable remedial technologies to address impacts in groundwater pursuant to Title 40 CFR §257.96 (AECOM, 2019b). Reports summarizing the results of the Green Landfill ACM were completed and placed in the BREC operating record on June 13, 2019. The ACM report was posted to BREC's publicly accessible CCR reporting website on July 11, 2019. Semi-annual progress on the selection of remedy process for the Green Landfill was reported in December 2019 (AECOM, 2019c) and June 2020 (AECOM, 2020b).

A public meeting open to interested and affected parties was held on July 16, 2020, to discuss the results of the ACM for Green Landfill. No public input influencing the remedy for the CCR unit was received during the meeting. On November 18, 2020, BREC finalized a *Final Groundwater and Non-Groundwater Corrective Action Remedy Selection Report, Green Landfill, Sebree Station, Webster County, Kentucky* (AECOM, 2020c), thereby selecting the remedy for groundwater and non-groundwater impacts at the CCR unit in accordance with 40 CFR §257.97.

Construction of source control measures to address groundwater impacts at Green Landfill were initiated in November 2020. These source control measures consisted of:

1. Design and construction of perimeter toe drain system and additional seepage controls to address leachate outbreaks;
2. Design, permitting, and construction of supplemental seepage controls at River Seep -07; and
3. Sediment removal from the South Sediment Basin.

Construction of these additional source control measures around the perimeter of the Green Landfill was completed in the fourth quarter of 2021. Each of these remedies is expected to benefit groundwater corrective action as a whole and will be further evaluated in 2025 and beyond for alignment with the corrective action objectives through performance monitoring.

For the Green Former Surface Impoundment, the results of the statistical evaluation for Appendix III constituents collected during the baseline groundwater monitoring period in 2016 and 2017 initiated semi-annual detection monitoring by BREC in 2018. At both the start and end of the 2024 annual reporting period, the Green Former Surface Impoundment was operating under the detection monitoring program in

accordance with 40 CFR §257.94. Assessment monitoring has not been triggered for the Green Former Surface Impoundment.

Other activities and conditions for the 2024 annual reporting period include:

- Semi-annual assessment groundwater monitoring events were performed at Green Landfill in April and November 2024;
- Semi-annual detection groundwater monitoring events were performed at Green Former Surface Impoundment in May and November 2024;
- Installation of four new characterization monitoring wells (MW-11A, MW-12B, MW-13B, and MW-14A) at the Green Former Surface Impoundment;
- No groundwater monitoring program transitions (detection to assessment or vice versa) were triggered at the Gren Landfill or Green Former Surface Impoundment; and
- The Green Former Surface Impoundment completed closure by removal activities in August 2024 with BREC working on obtaining the completion of closure certification with the KDWM.

Anticipated activities for the next 2025 annual reporting period include:

- Completion of two semi-annual assessment groundwater monitoring events at the Green Landfill;
- Completion of two semi-annual detection groundwater monitoring events at the Green Former Surface Impoundment (unless an SSI triggers assessment monitoring);
- Characterization of groundwater for arsenic at the Green Landfill due to SSL over the GWPS; and
- Evaluation of current remedy at Green Landfill.

This Report for BREC was prepared to address the requirements of CFR 40 CFR 257.90(e) of the USEPA CCR Rule, which requires the contents listed below with the appropriate report section reference identified in **bold type** for the corresponding content:

1. A map, aerial image, or diagram showing the active and former CCR units and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the active and former CCR units (see **Figure 2** and **Figure 3**);
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken. **Four new characterization monitoring wells (MW-11A, MW-12B, MW-13B, and MW-14A) were installed at the Green Former Surface Impoundment in 2024 (see Section 2.2);**
3. In addition to the monitoring data obtained under Section 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient monitoring well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs **(see Section 2.1)**;
4. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at an SSI over background levels) **(see Section 3.3)**; and
5. Other information required to be included in the annual report as specified in Section 257.90 through 257.98 (i.e., groundwater monitoring results and various demonstrations regarding alternative monitoring frequency, alternative sources, and extension of schedule for ACMs) **(no other information was developed or reported in 2024)**.

1.0 Introduction

At the request of Big Rivers Electric Corporation (BREC), Burns & McDonnell prepared this *2024 Annual Groundwater Monitoring and Corrective Action Report* (Report) for the BREC Sebree Generating Station (Station or Site), located in Robards, Kentucky within both Henderson and Webster Counties, Kentucky. This Report was prepared in accordance with §257.90(e) of 40 Code of Federal Regulations (CFR) Part 257 and 261 of the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule (CCR Rule) to document the status of the groundwater monitoring and corrective action program at the active and former CCR units, summarize key actions completed, describe any problems encountered, discuss any actions to resolve the problems, and provide key activities for the upcoming year. The CCR Rule was established to regulate the disposal of CCR produced by electricity generating facilities (USEPA, 2015, 2018, 2020a, and 2020b).

This Report is the eighth annual report and summarizes activities performed in 2024 related to the CCR Rule groundwater monitoring program at the following active and former CCR units:

- Green Station Landfill (Green Landfill; active CCR unit; Webster County); and
- Green Station Former Surface Impoundment (Green Former Surface Impoundment; former CCR unit; Webster County).

The 2024 Annual Groundwater Monitoring and Corrective Action Report for the Reid/Henderson Municipal Power and Light (HMP&L) Surface Impoundment (Henderson County) at the Station is provided as a separate submittal.

As stated in the previous 2016-2018 Annual Groundwater Monitoring and Corrective Action Reports (AECOM, 2018 and 2019a), statistical results of the baseline groundwater data indicated that the Green Landfill would require initiation of assessment monitoring under the CCR Rule, as the laboratory analytical results from these events indicated that most of the Appendix III constituents had statistically significant increases (SSIs) over background.

On February 5, 2018, BREC posted on their publicly accessible CCR reporting website a formal notification that the Green Landfill would enter assessment monitoring program, fulfilling the requirement of 40 CFR §257.107(h)(4).

Based upon the statistical evaluation of Appendix III constituents collected during the baseline period at the Green Former Surface Impoundment, BREC initiated semi-annual detection monitoring in 2018.

The following sections present a background summary of the Site, 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.

1.1 Site Description

BREC owns and operates the Station, which is a former coal-fired power generating facility located on the Green River approximately two miles northeast of Sebree, Kentucky. The Station is composed of the Green Station and HMP&L Station. The Station is bounded by Interstate 69 to the west and the Green River to the east (see **Figure 1**). Reid Unit 1 began commercial operation in 1966 and was retired on September 30, 2020.

HMP&L Station 2, Units 1 and 2 began commercial operation in 1973 and 1974, respectively. Both HMP&L units were retired as of February 1, 2019. Green Station Units 1 (250 Megawatt) and 2 (242 Megawatt) began commercial operation as coal-fired units in 1979 and 1981, respectively. Both Green Station units were converted to natural gas-fired boilers in the second quarter of 2022. Three disposal CCR units at the Station are regulated under the CCR Rule: Green Landfill, Green Former Surface Impoundment, and the Reid/HMP&L Surface Impoundment. This Report is for the Green Landfill and Green Former Surface Impoundment with each active and former CCR unit discussed in more detail below.

1.1.1 Green Landfill

The Green Landfill is located directly south of the Station, situated south of the Green Former Surface Impoundment. The Green Landfill is a Kentucky permitted landfill (Permit No. SW11700007) that previously received special wastes generated by burning coal (CCRs) from Green Station, and formerly Reid Station Unit 1, and HMP&L Station 2 Units 1 and 2. The landfill began receiving CCR wastes in 1980 and received CCR material generated from Green Former Surface Impoundment closure activities, which began in 2022 and were completed in August 2024. The current Green Landfill footprint is approximately 170 acres.

As stated in the published CCR monitoring well network certification for this CCR unit (Associated Engineering Inc., 2016a), the original ground surface within the landfill footprint was irregular and the dominant features were small stream valleys draining towards the Green River, which is located just east of the landfill; and towards Groves Creek, which is located just south of the landfill. There was also historic oil and gas production at and in the immediate vicinity of the Green Landfill. A review of the records from the Kentucky Geological Survey showed that at or immediately adjacent to the Site, there were several dry oil/gas exploration holes, oil production wells, one gas production well, and one secondary recovery injection well. There were also former brine ponds at the Site. Most of these oil and gas wells were abandoned in accordance with applicable regulations by BREC in 1997 and 1998. The last existing oil well was decommissioned in 2019 by BREC.

1.1.2 Green Former Surface Impoundment

The Green Former Surface Impoundment is located directly south of the Station and situated north of the Green Landfill. The Green Former Surface Impoundment was in place for more than 40 years for the placement of CCR material. In 2022, this former CCR unit began closure activities which were completed in August 2024. BREC is working on obtaining the completion of closure certification with the Kentucky Department of Environmental Protection Division of Waste Management (KDWM).

Following the completion of the closure by removal activities, the former CCR unit remains as an open incised area (without CCR). BREC plans on repurposing the former CCR unit as a non-CCR surface impoundment. The immediate watershed that drains to the former CCR unit, and in which the former CCR unit is located, is unnamed and 54.13 acres in size. The unnamed watershed discharges from the former CCR surface impoundment outflow structure and is routed and monitored under a Kentucky Pollution Discharge Elimination System permit, to the Green River.

As stated in the monitoring well network certification for this former CCR unit (Associated Engineering Inc., 2016b), the Green Former Surface Impoundment was a combined incised/dike earthen embankment structure. The west, south, and east sides of the Green Former Surface Impoundment were diked while the north side was incised. The south dike had the greatest height, reaching approximately 20 feet above grade.

The original ground surface within the former pond footprint was irregular and the predominant features were small stream valleys draining eastward toward the Green River.

1.2 Site Hydrogeology

The Station lies in the Western Kentucky Coalfields section of the Interior Low Plateaus physiographic province, characterized by rolling uplands underlain by coal-bearing bedrock of the Pennsylvanian Period. The geology underlying the Site vicinity consists of unconsolidated materials, including loess and alluvial deposits, underlain by Upper to Middle Pennsylvanian-age clastic and carbonate bedrock consisting primarily of sandstone and shale. The unconsolidated materials also include fill, silty and clayey residuum, and minor amounts of sandy, clayey channel fill alluvium. The bedrock is comprised of the Upper Pennsylvanian Shelburn Formation (formerly identified as the Lisman Formation [Fairer, 1973]) and the Middle Pennsylvanian Carbondale Formation. At the base of the Shelburn Formation is the Providence Limestone Member, consisting of limestone and interbedded shale, but this geologic unit is absent in much of the area due to erosional channeling. Due to its discontinuous character and the presence of interbedded shale, hydrologically significant karst features are not present in the Providence Limestone Member. The underlying Carbondale Formation consists of cyclic sequences of sandstones, shales, siltstones and coals. The Carbondale sediments were deposited in a fluvial-deltaic system. As a result of this depositional environment, the sandstone/siltstone units of the Carbondale tend to be lenticular bodies rather than continuous sheet-like strata. Regionally, gradational and abrupt horizontal changes in lithology are often encountered. Fairer (1973) reports three coal beds within the Carbondale Formation consisting of (in descending order): No. 11, No. 10, and No. 9 coal beds. The, thin, No. 11 coal bed is locally present beneath the Providence Limestone Member of the overlying Lisman Formation. The No. 10 coal bed is discontinuous locally and not present throughout the area. The No. 10 coal bed is pyritic, averaging approximately 4 feet in thickness, and is located at the base of the Carbondale Formation.

The targeted stratigraphic interval of the monitoring well networks at the Station were identified as the Upper Sandstone Member (Sebree sandstone) of the Carbondale Formation. The United States Geological Survey Geologic Map of the Robards Quadrangle (Fairer, 1973) described the Sebree sandstone sequence as “Siltstone, sandstone, shale and coal: Siltstone, light- to medium-gray, micaceous, thin-bedded, locally calcareous. Sandstone, light- to medium-gray, grayish- and yellowish-brown, fine- to medium-grained, slightly micaceous, thin-bedded to massive; locally fills channels. Shale, dark gray to black, carbonaceous.” For purposes of compliance with the CCR Rule groundwater monitoring requirements; this sequence, and particularly the sandstone intervals, were considered to be the uppermost aquifer underlying the Station (Associated Engineering Inc., 2016a and 2016b).

1.3 Green Landfill CCR Program Monitoring Well System

1.3.1 Operating Permit Compliance Monitoring Wells

Prior to implementation of the CCR Rule, a groundwater monitoring well network was already present at the Green Landfill in compliance with the requirements of the facility’s operating permit. The existing monitoring wells are located along the perimeter of the permitted footprint for the Green Landfill and meet the CCR Rule requirements that a minimum of one (1) upgradient and three (3) downgradient monitoring wells must be located at the waste boundary of the (active) CCR unit, or as close as practicable (Associated Engineering Inc., 2016a).

Under the requirements stated in the operating permit, six (6) monitoring wells (MW-1, MW-2, MW-3A, MW-4, MW-5, and MW-6) were installed adjacent to the Green Landfill to determine the general direction of groundwater movement and to monitor groundwater at the CCR unit. Monitoring Well MW-1 is located northwest of the landfill and is considered upgradient and represents the background monitoring well. Monitoring Wells MW-2, MW 3A, MW-4, MW-5, and MW-6; located respectively, northeast, east, southeast, south, and southwest are considered downgradient. As-built specifics of each monitoring well installation are summarized in **Table 1**. The locations of the groundwater monitoring wells are shown on **Figure 2**. Each monitoring well has a dedicated bladder pump and tubing system installed for groundwater sampling purposes.

Details regarding the monitoring network are presented in the *Monitoring Well Completion Report* (FMSM Engineers, 1997).

No new CCR Rule compliance monitoring wells were installed in 2024 at the Green Landfill.

1.3.2 Characterization Monitoring Wells

As-built specifics of each characterization monitoring well installation are summarized in **Table 1** and their locations are shown on **Figure 2**. Each characterization monitoring well has a dedicated bladder pump and tubing system installed for groundwater sampling purposes.

These characterization monitoring wells, located at a downgradient position east of the CCR 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.

No new characterization monitoring wells were installed in 2024 at the Green Landfill.

1.4 Green Former Surface Impoundment CCR Rule Program Monitoring Well System

1.4.1 Operating Permit Compliance Monitoring Wells

Prior to implementation of the CCR Rule, three temporary piezometers (P-10, P-11, and P-12) were installed adjacent to, and respectively; northwest, southwest, and northeast of the Green Former Surface Impoundment to determine the general direction of groundwater movement. Measured static water levels, from the highest to lowest elevation were observed in P-10 (highest), P-11, and P-12 (lowest). A hydraulic gradient was calculated using this data indicating the apparent direction of groundwater movement is generally from northwest to southeast. This groundwater gradient characterization and the ability to locate monitoring wells specific to the former CCR unit justified the placement of the minimum of one (1) upgradient and three (3) downgradient monitoring wells in accordance with the CCR Rule (Associated Engineering Inc., 2016b). An upgradient monitoring well (MW-11) was installed adjacent to, and northwest of the former CCR unit. Three downgradient monitoring wells (MW-12, MW-13, and MW-14) were installed adjacent to, and respectively; south-southeast, southeast, and east-northeast of the former CCR unit. As-built specifics of each monitoring well installation are summarized in **Table 2**. The locations of the groundwater monitoring wells are shown on **Figure 3**. Each monitoring well has a dedicated bladder pump system and tubing installed for groundwater sampling purposes.

Details about the groundwater monitoring network are presented in the *Assessment of Groundwater Gradients in Vicinities of Green and Reid/HMPL CCR Impoundments* dated September 25, 2015, maintained within the operating record at the Station.

No new CCR Rule compliance monitoring wells were installed in 2024 at the Green Former Surface Impoundment.

1.4.2 Characterization Monitoring Wells

Four (4) characterization monitoring wells (MW-11A, MW-12B, MW-13B, and MW-14A) were installed in 2024 (to evaluate the occurrence of groundwater in the unconsolidated alluvium overlying the bedrock Carbondale Formation at the locations indicated on **Figure 3**. As-built specifics of each characterization monitoring well installation are summarized in **Table 2**. Details about the characterization monitoring well installations in 2024 are provided in **Section 2.2**.

1.5 Summary of Groundwater Monitoring Programs

1.5.1 Green Landfill Groundwater Monitoring Program

Results of baseline groundwater monitoring performed in 2016 and 2017 indicated that the Green Landfill would require initiation of assessment monitoring under the CCR Rule, as the laboratory analytical results from these events indicated that most of the Appendix III constituents had SSIs over background that included: calcium, chloride, sulfate, and total dissolved solids (TDS).

On February 5, 2018, BREC posted on their publicly accessible CCR reporting website a formal notification that the Green Landfill would transition from detection to assessment monitoring program. Since 2018, the Green Landfill has been operating under the assessment monitoring program in 40 CFR §257.95. Statistical evaluation of previous groundwater analytical data collected during assessment monitoring at the Green Landfill from 2018 through 2023 indicated that Appendix IV constituents were detected in downgradient monitoring wells at SSIs over background as summarized in the table below.

Appendix IV Constituents at an SSI	Green Landfill (2018-2023)
Arsenic	• June and July 2018 • April and October 2019 • April and September 2020 • April and September 2021 • April and December 2022 • June and November 2023
Barium	• June and July 2018 • April and October 2019 • April and September 2020 • April and September 2021 • April and December 2022 • June and November 2023
Cadmium	• April 2021

Appendix IV Constituents at an SSI	Green Landfill (2018-2023)
Cobalt	• September 2020
Chromium	• none
Fluoride	• none
Lithium	• June and July 2018 • April and October 2019 • April and September 2020 • April and September 2021 • April and December 2022 • June and November 2023
Mercury	• June and July 2018 • April and October 2019 • April and September 2020 • April 2021 • December 2022 • June and November 2023
Molybdenum	• April and September 2021 • April 2022 • June and November 2023
Radium 226+228 (combined)	• April 2022
Selenium	• April 2020 • April 2021 • April 2022 • June 2023

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 previous annual reporting periods from 2018 through 2023 are as follows:

Appendix IV Constituent at an SSL above GWPS	Green Landfill	Reporting Period (2018-2023)
Arsenic	MW-2	2022 and 2023
Lithium	MW-3A, MW-4, MW-5, and MW-6	2018, 2019, 2020, 2021, 2022, and 2023

On December 6, 2018, and October 3, 2022, BREC posted on their publicly accessible CCR reporting website formal notification that lithium (BREC, 2018b) and arsenic (BREC, 2022) had been detected at SSLs above the established GWPS for the Green Landfill. In June 2019, BREC finalized an *Assessment of Corrective Measures* (ACM) for the Green Landfill to identify applicable remedial technologies to address impacts in groundwater pursuant to Title 40 CFR §257.96 (AECOM, 2019b). Reports summarizing the results of the Green Landfill ACM were completed and placed in the BREC operating record on June 13, 2019. The ACM report was posted to BREC's publicly accessible CCR reporting website on July 11, 2019. Semi-annual progress on the selection of remedy process for the Green Landfill was reported in December 2019 (AECOM, 2019c) and June 2020 (AECOM, 2020b).

A public meeting open to interested and affected parties was held on July 16, 2020, to discuss the results of the ACM for Green Landfill. No public input influencing the remedy for the CCR unit was received during the meeting. On November 18, 2020, BREC finalized a *Final Groundwater and Non-Groundwater Corrective Action Remedy Selection Report* (AECOM, 2020c); thereby, selecting the remedy for groundwater and non-groundwater impacts at the CCR unit in accordance with 40 CFR §257.97.

Construction of source control measures to address groundwater impacts at the Green Landfill were initiated in November 2020. These source control measures consisted of:

1. Design and construction of a perimeter toe drain system and additional seepage controls to address leachate outbreaks;
2. Design, permitting, and construction of supplemental seepage controls at River Seep -07; and
3. Sediment removal from the South Sediment Basin.

Construction of these additional source control measures around the perimeter of the Green Landfill was completed in the fourth quarter of 2021. Each of these remedies is expected to benefit groundwater corrective action as a whole and will be further evaluated in 2025 and beyond for alignment with the corrective action objectives through performance monitoring.

1.5.2 Green Former Surface Impoundment Monitoring Program

Based upon the statistical evaluation of Appendix III constituents collected during the baseline monitoring period at the Green Former Surface Impoundment in 2016 through 2017, BREC initiated semi-annual detection monitoring in 2018. At both the start and end of the previous 2023 annual reporting period, the Green Former Surface Impoundment was operating under the detection monitoring program in 40 CFR §257.94. Assessment monitoring has not been triggered for this former CCR unit.

2.0 Groundwater Monitoring Activities and Results

The following subsections describe the activities that were performed in 2024 for the Green Landfill and the Green Former Surface Impoundment related to each of their corresponding CCR program groundwater monitoring well systems.

2.1 Groundwater Sampling Activities

In 2024, the following monitoring events were performed at the Station:

- Green Landfill: Two (2) assessment groundwater monitoring events and two (2) characterization groundwater monitoring events; and
- Green Former Surface Impoundment: Two (2) detection groundwater monitoring events.

The dates of each semi-annual groundwater sampling event performed by BREC personnel and the monitoring wells included in the sampling events for the active and former CCR units are summarized in the table below.

Green Landfill			
Event Type	**Sampling Event**	**Dates**	**Monitoring Wells Sampled**
Assessment	First Half 2024 (Event #23)	April 16-17, 2024	Background (Upgradient) MW-1 Downgradient MW-2, MW-3A, MW-4, MW-5, and MW-6
Characterization	First Half 2024 (Event #12)	April 17, 2024	Characterization (Downgradient) MW-104
Characterization	First Half 2024 (Event #3)	April 16, 2024	Characterization (Downgradient) MW-105, MW-106S, and MW-106D
Assessment	Second Half 2024 (Event #24)	November 13-14,19, & 21, 2024	Background (Upgradient) MW-1 Downgradient MW-2, MW-3A, MW-4, MW-5, and MW-6
Characterization	Second Half 2024 (Event #13)	November 14, 2024	Characterization (Downgradient) MW-104
Characterization	Second Half 2024 (Event #4)	November 15 & 21, 2024	Characterization (Downgradient) MW-105, MW-106S, and MW-106D

Green Former Surface Impoundment			
Event Type	**Sampling Event**	**Dates**	**Monitoring Wells Sampled**
Detection	First Half 2024 (Event #21)	May 15, 2024	Background (Upgradient) MW-11 Downgradient MW-12, MW-13, MW-14
Detection	Second Half 2024 (Event #22)	November 12, 2024	Background (Upgradient) MW-11 Downgradient MW-12, MW-13, MW-14

Following the November 2024 sampling event at the Green Landfill, a total of 24 compliance monitoring events, 13 characterization monitoring events at Monitoring Well MW-104, and four characterization monitoring events at Monitoring Wells MW-105, MW-106S, and MW-106D have been performed since 2016. Following the November 2024 sampling event at the Green Former Surface Impoundment, a total of 22 monitoring events have been performed since 2016. The previous monitoring events at both the active and former CCR units were reported on in the Annual Groundwater Monitoring and Corrective Action Reports in 2016-2017 (AECOM, 2018), 2018 (AECOM, 2019a), 2019 (AECOM, 2020a), 2020 (AECOM, 2021), 2021 (AECOM, 2022*),* 2022 (Burns & McDonnell, 2023), and 2023 (Burns & McDonnell, 2024a).

Prior to groundwater sampling, the depth to groundwater was gauged at each of the monitoring wells by BREC personnel during the 2024 monitoring events. The measured depth to groundwater level data and the calculated groundwater elevations are summarized in **Table 3** (Green Landfill) and **Table 4** (Green Former Surface Impoundment).

Monitoring wells were sampled by BREC personnel following low flow purging and sampling techniques developed and incorporated into current operating permits which are maintained within the operating record at the Station. No filtration of samples was conducted in either the field or laboratory procedures. Monitoring well sampling forms for each of the groundwater monitoring events are included in **Appendix A** (Green Landfill) and **Appendix B** (Green Former Surface Impoundment).

Groundwater samples collected during the 2024 sampling events were submitted to Pace Analytical Services, LLC (Pace) in Madisonville, Kentucky for laboratory analysis with radium 226 + 228 (combined) analysis performed by Pace in Greensburg, Pennsylvania. Laboratory analyses were performed in accordance with USEPA-approved methods. Groundwater samples collected at the Green Landfill during assessment and characterization monitoring events were analyzed for Appendix III and Appendix IV constituents, in accordance with 40 CFR §257.95(d)(1). Groundwater samples collected at the Green Former Surface Impoundment for the detection monitoring events were analyzed for Appendix III constituents only, in accordance with 40 CFR §257.94(a).

2.2 Characterization Monitoring Well Installation Activities

Additional groundwater monitoring wells were installed in October 2024 to evaluate the occurrence of groundwater in the unconsolidated alluvium overlying the bedrock Carbondale Formation. The monitoring well installation activities were performed in general accordance with the protocols and procedures

specified in the KDWM-approved *2024 Monitoring Well Installation Work Plan* (Burns & McDonnell, 2024d). Four (4) new monitoring wells were installed as characterization monitoring wells and included Monitoring Wells MW-11A, MW-12B, MW-13B and MW-14A. A map illustrating the location of these new characterization monitoring wells is presented as **Figure 3**. A shallow monitoring well was installed adjacent to the existing Monitoring Wells MW-11, MW-12, MW-13, and MW-14. As-built specifics of each new characterization monitoring well installation are summarized in **Table 2**. A *Monitoring Well Construction Progress Report* (Burns & McDonnell, 2024e), included herein as **Appendix C**, was prepared to summarize monitoring well installation activities.

3.0 Groundwater Monitoring Activities and Results

3.1 Groundwater Flow

Measured depth to groundwater level data collected by BREC personnel and the calculated groundwater elevations during the 2024 monitoring events are summarized in **Table 3** (Green Landfill) and **Table 4** (Green Former Surface Impoundment). The data were used to construct piezometric surface maps to illustrate groundwater flow conditions. These data and figures are representative of general conditions at the active and former CCR units.

3.1.1 Green Landfill

Overall, the predominate groundwater flow direction beneath the footprint of the Green Landfill is to the east and southeast towards the Green River and Groves Creek with a localized northeast flow component along the northern portion of the CCR unit (see **Figures 4** and **5**).

3.1.2 Green Former Surface Impoundment

Overall, the predominate groundwater flow direction beneath the footprint of the Green Former Surface Impoundment is to the east and southeast towards the Green River with a localized northeast flow component along the northern portion of the former CCR unit (see **Figures 6** and **7**).

3.2 Sampling Results

3.2.1 Groundwater Sampling Results

During 2024, the following monitoring events were performed at the Station:

- Green Landfill: Two (2) assessment groundwater monitoring events and two (2) characterization groundwater monitoring events; and
- Green Former Surface Impoundment: Two (2) detection groundwater monitoring events.

Groundwater analytical results from the assessment and characterization monitoring events are summarized in the tables included in **Appendix D** (Green Landfill) and **Appendix E** (Green Former Surface Impoundment). Complete copies of the analytical laboratory reports for the active and former CCR units are included in **Appendix F** (Green Landfill) and **Appendix G** (Green Former Surface Impoundment). Laboratory data were validated, and all data are considered viable for reporting as qualified with copies of the data validation reports provided in **Appendix H** (Green Landfill) and **Appendix I** (Green Former Surface Impoundment).

3.3 Groundwater Statistical Evaluation

As part of previous assessment monitoring performed at the Green Landfill, background and downgradient monitoring wells for this CCR unit were sampled for Appendix IV constituents in 2018 through 2023. In accordance with 40 CFR §257.95, GWPSs were established for detected Appendix IV constituents. Previous assessment monitoring results indicated the presence of an SSL above a GWPS in the following Green Landfill monitoring wells:

- Lithium (Monitoring Wells MW-3A, MW-4, MW-5, and MW-6) and
- Arsenic (Monitoring Well MW-2).

Previous detection monitoring results indicated no Appendix III constituent SSIs at the Green Former Surface Impoundment and therefore this former CCR unit was not subject to assessment monitoring and no SSL determination was required.

In accordance with 40 CFR §257.93(f), 40 CFR §257.93(h), and 40 CFR §257.95(d)(2), Burns & McDonnell conducted statistical evaluations of the 2024 groundwater data for the Green Landfill and Green Former Surface Impoundment to identify any 2024 SSIs over background concentrations and identify any 2024 SSLs over established GWPSs for detected Appendix IV constituents. Statistical methods were chosen in accordance with 40 CFR §257.93(f), while the rationale behind why each method was selected is outlined in the *Statistical Methods Certification Document* (Associated Engineers, Inc., 2016a and 2016b). Summaries of the 2024 statistical evaluation conducted on the Appendix III detection and Appendix IV assessment constituents for the Green Landfill and Green Former Surface Impoundment are provided as **Appendix J** and **Appendix K**, respectively and discussed below.

3.3.1 Green Landfill Statistical Evaluation

The Green Landfill assessment monitoring data were evaluated using an inter-well statistical evaluation approach that statistically compared constituent concentrations at downgradient compliance monitoring wells to those present at an upgradient/background monitoring well. For the Green Landfill, Monitoring Well MW-1 is designated as the background monitoring well because it is located upgradient of the CCR unit; whereas, Monitoring Wells MW-2, MW-3A, MW-4, MW-5, and MW-6 are designated as compliance monitoring wells because they are located along the downgradient side of the CCR unit waste boundary.

As presented in **Appendix J**, the results of the statistical analysis indicate the following Appendix III constituents were observed as SSIs with concentrations above calculated background values in downgradient compliance monitoring wells.

2024 Appendix III SSIs – Green Landfill	
May 2024 Sampling Event	**November 2024 Sampling Event**
Calcium (MW-2, MW-3A, MW-4, MW-5, and MW-6)	Calcium (MW-2, MW-3A, MW-4, MW-5, and MW-6)
Chloride (MW-2, MW-3A, MW-4, MW-5, and MW-6)	Chloride (MW-2, MW-3A, MW-4, and MW-5)
Sulfate (MW-2, MW-3A, MW-4, and MW-6)	Sulfate (MW-2, MW-3A, MW-4, MW-5, and MW-6)
TDS (MW-2, MW-3A, MW-4, MW-5, and MW-6)	TDS (MW-2, MW-3A, MW-4, MW-5, and MW-6)

The remaining monitoring wells and Appendix III constituents of boron, fluoride, and pH did not have any verified SSIs over background. Based on these results, assessment monitoring is required to continue at the

Green Landfill on a semi-annual basis. As presented in **Appendix J**, the statistical analysis results indicate the following Appendix IV constituents were observed as SSIs with concentrations above calculated background values in downgradient compliance monitoring wells.

2024 Appendix IV SSIs – Green Landfill	
May 2024 Sampling Event	**November 2024 Sampling Event**
Arsenic (MW-2)	Arsenic (MW-2)
Barium (MW-2)	Barium (MW-2)
Cobalt (MW-2)	Cobalt (none)
Lithium (MW-3A, MW-4, MW-5, and MW-6)	Lithium (MW-3A, MW-4, MW-5, and MW-6)
Mercury (MW-4)	Mercury (MW-2)
Molybdenum (MW-2)	Molybdenum (MW-2)
Radium 226 + 228 (none)	Radium 226 + 228 (MW-3A)

The previously identified April 2022 Appendix IV constituent SSI for radium 226 + 228 (combined) at Monitoring Well MW-5 did not recur in 2024.

These Appendix IV constituents with SSIs were further evaluated to determine whether they are present at SSLs over the GWPSs by calculating the lower confidence limit (LCL) at 95% confidence for each monitoring well and constituent pair using all 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 J** provides a summary of the LCLs and GWPSs for arsenic, barium, cobalt, lithium, mercury, molybdenum, and radium 228 + 226 for the monitoring wells identified above for the 2024 semi-annual events, respectively. As presented in **Appendix J**, the statistical analysis results indicated the following Appendix IV constituents were observed at SSLs over the GWPS.

2024 Appendix IV SSLs > GWPS – Green Landfill	
May 2024 Sampling Event	**November 2024 Sampling Event**
Arsenic (MW-2)	Arsenic (MW-2)
Lithium (MW-3A, MW-4, MW-5, and MW-6)	Lithium (MW-3A, MW-4, MW-5, and MW-6)

The LCLs for the remaining monitoring well and Appendix IV constituent pairs are less than or equal to the GWPSs; thus, are not considered SSLs. Based on these results, assessment monitoring will continue on a semi-annual basis at the Green Landfill.

The identified SSLs over the GWPS for lithium are consistent with previous statistical evaluations since 2018. On December 6, 2018, BREC posted a formal notification that lithium in Appendix IV had been detected at SSLs above the established GWPS as required by 40 CFR §257.95(g) and 40 CFR §257.107(h)(8). The identified SSLs over the GWPS for arsenic is consistent with the previous statistical evaluation in 2022 (the first SSL occurrence for arsenic). On October 3, 2022, BREC posted a formal notification that arsenic in

Appendix IV has been detected at an SSL above the established GWPS as required by 40 CFR §257.95(g) and 40 CFR §257.107(h)(8).

3.3.2 Green Former Surface Impoundment Statistical Evaluation

The Appendix III detection monitoring data collected at the Green Former Surface Impoundment were statistically evaluated using an inter-well approach that compared constituent concentrations at downgradient monitoring wells to those present at a background monitoring well. For the Green Former Surface Impoundment, Monitoring Well MW-11 is designated as the background monitoring well because it is located upgradient, whereas Monitoring Wells MW-12, MW-13, and MW-14 are designated as compliance monitoring wells because they were located along the downgradient side the former CCR unit waste boundary.

The results from the statistical analysis indicate that none of the Appendix III constituents (boron, calcium, chloride, fluoride, pH, sulfate, or TDS) have verified SSIs over their background upper prediction limit (see **Appendix K**). In addition, pH does not have a verified SSI below its lower prediction limit. A summary of the statistical evaluations conducted on the detection Appendix III constituents for the Green Former Surface Impoundment is provided as **Appendix K**. Based on these results, assessment monitoring is not currently required at the Green Former Surface Impoundment and detection monitoring will continue on a semi-annual basis.

3.4 Conclusion

Based upon the 2024 statistical evaluation of Appendix III and Appendix IV constituents collected during assessment monitoring at the Green Landfill, BREC is required to continue semi-annual assessment monitoring in 2025.

Based upon the 2024 statistical evaluations of Appendix III constituents collected during detection monitoring at the Green Former Surface Impoundment, BREC is required to continue semi-annual detection monitoring in 2025.

4.0 Certifications and Notifications to the Operating Record

The following certifications and notifications were made to the operating record and/or were posted to the BREC's publicly accessible CCR website during the reporting period:

- *2023 Annual Groundwater Monitoring and Corrective Action Report* (Burns & McDonnell, 2024a);
- Document the 2024 groundwater concentrations of Appendices III and IV constituents in the facility operating record as required by 40 CFR §257.95(d)(1);
- Calculated 2024 GWPSs for the Green Landfill;
- *Re:* "Statistical Evaluation of April 2024 Assessment Monitoring Groundwater Data" (Burns & McDonnell, 2024b; **Appendix J**);
- *Re:* "Statistical Evaluation of April 2024 Detection Monitoring Groundwater Data" (Burns & McDonnell, 2024c; **Appendix K**);
- *Re:* "Statistical Evaluation of November 2024 Assessment Monitoring Groundwater Data" (Burns & McDonnell, 2025b; **Appendix J**); and
- *Re:* "Statistical Evaluation of November 2024 Detection Monitoring Groundwater Data" (Burns & McDonnell, 2025a; **Appendix K**).

5.0 Key Activities Planned for 2025

Anticipated activities for the next 2025 annual reporting period include continued groundwater monitoring and groundwater characterization for the Green Landfill (Appendix IV constituents [arsenic and lithium] with SSLs above GWPSs).

5.1 Groundwater Monitoring

Continued semi-annual assessment monitoring of all operating permit monitoring wells and subsequent statistical evaluations for the Green Landfill are planned for 2025. The semi-annual assessment monitoring will include two (2) assessment groundwater monitoring events and two (2) characterization groundwater monitoring events.

For the Green Former Surface Impoundment, continued semi-annual detection monitoring of all operating permit monitoring wells and subsequent statistical evaluations are planned for 2025. The semi-annual detection monitoring will include two (2) detection groundwater monitoring events (unless a verified SSI triggers assessment monitoring).

5.2 Green Surface Impoundment Closure Activities

The Green Surface Impoundment began closure by removal activities in 2022 and completed closure activities in August 2024. BREC is working on obtaining the completion of closure certification with the KDWM.

5.3 Green Landfill Groundwater Characterization

The statistical evaluations of the 2024 groundwater data at the Green Landfill identified Appendix IV constituents arsenic (first occurrence in 2022) and lithium (first occurrence in 2018) at concentrations in downgradient monitoring wells at SSLs above the GWPSs (see **Section 3.3.1**). In accordance with 40 CFR §257.96(g)(1), characterization of the “nature and extent of the release and any relevant site conditions that may affect the remedy ultimately selected” with the caveat that the “characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the CCR unit pursuant to 40 CFR §257.96”.

The Green Landfill was previously subject to corrective action to address the following impacts:

1. Lithium in groundwater at an SSL above the GWPS in four monitoring wells (MW-3A, MW-4, MW-5, and MW-6) at the CCR unit and
2. Address Notices of Violation received from KDWM regarding unpermitted discharges and seepage emanating from the CCR unit.

To address these impacts, a *Final Groundwater and Non-Groundwater Corrective Action Remedy Selection Report* (AECOM, 2020c) was completed documenting the 2019 and 2020 implementation of the corrective action remedy. Alternative #5 from the ACM was selected as the remedy to address both groundwater and non-groundwater impacts at the Green Landfill consisting of consisting of closure-in-place, other source controls, institutional controls, and groundwater monitoring. In 2019 and 2020, source controls were implemented consisting of the construction of a deep collection trench along the east side of the Green Landfill (referred to as the Deep Seep Collection Trench or Eastern Collection Trench) and the construction of

a series of shallower collection trenches along the north side of the Green Landfill (referred to as the Northwest Seep Collection Trench). In 2020 and 2021, shallow collection trenches were constructed around the perimeter of the Green Landfill and residual CCR material was removed from the South Sediment Basin to comply with an Agreed Order signed by BREC and KDWM. These source control measures implemented to date are intended to capture non-groundwater releases from migrating beyond the functional perimeter of the unit and the property controlled by BREC.

The most recently observed groundwater impact of arsenic at an SSL above the GWPS was in Monitoring Well MW-2 following statistical analysis performed in association with the 2022 through 2024 groundwater monitoring events. Monitoring Well MW-2 is located on the northeastern, downgradient side of the waste boundary of the CCR unit, and directly north of the Deep Seep Collection Trench (see **Figure 2**). At the time of the arsenic SSL above the GWPS, the closest monitoring well to Monitoring Well MW-2 was Monitoring Well MW-3A to the south, which was over 1,000 feet offset from Monitoring Well MW-2 and did not exhibit arsenic detections. Thus, the existing monitoring well network provided an insufficient delineation of the observed arsenic impact in groundwater downgradient of the CCR unit. In order to evaluate the nature and extent of arsenic impacts in groundwater at Monitoring Well MW-2, three additional characterization monitoring wells (MW-105, MW-106S, and MW-106D) were installed at the CCR unit in 2023.

The additional data collected and continued semi-annual groundwater monitoring from these newly installed characterization monitoring wells will be incorporated into the conceptual site model and used to evaluate the source and extent of arsenic impacts.

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Tables

TABLE 1

SUMMARY OF MONITORING WELL CONSTRUCTION - GREEN LANDFILL

CCR GROUNDWATER MONITORING PROGRAM
BIG RIVERS ELECTRIC CORPORATION - SEBREE STATION
GREEN STATION LANDFILL
WEBSTER COUNTY, KENTUCKY

Well No.		Location*		Reference Elevation*		Casing Length	Size / Type	Filter Pack Interval (feet, GS, NADV88)		Screened Interval (feet, GS, NAVD88)		Bottom of Boring (feet, GS)
		Lat	Long	TOIC (feet, NAV88)	GS (feet, NAVD88)	(feet, TOIC)	(ID / Material)	Top	Bottom	Top	Bottom	
Program Monitoring Wells												
MW-1 (8002-9625)	U / B	37.637800	-87.508100	423.23	420.2	45.5	4 inch / PVC	389.9	377.7	387.7	377.7	45
MW-2 (8002-9630)	D	37.636300	-87.500900	392.37	389.9	50.3	4 inch / PVC	354.1	342.1	352.1	342.1	49
MW-3A (8003-6430)	D	37.631900	-87.500900	386.48	380.7	41.3	4 inch / PVC	357.2	344.5	355.2	345.2	36.2
MW-4 (8002-9628)	D	37.628100	-87.501100	391.33	388.8	33.1	4 inch / PVC	370.2	358.2	368.2	358.2	33
MW-5 (8002-9627)	D	37.628318	-87.503480	390.18	387.7	27.5	4 inch / PVC	374.7	362.7	372.7	362.7	26
MW-6 (8002-9626)	D	37.628555	-87.507413	388.17	385.7	45.5	4 inch / PVC	354.9	342.7	352.7	342.7	45
Characterization Well												
MW-104 (8007-1139)	D / C	37.630519	-87.500959	395.13	392.47	60.84	2 inch / PVC	347.5	332.5	342.5	332.5	60
MW-105 (8008-0529)	D / C	37.636833	-87.500928	381.77	378.90	33.87	2 inch / PVC	359.9	346.9	358.1	348.1	32
MW-106S (8008-0527)	D / C	37.636178	-87.500928	387.26	384.75	41.51	2 inch / PVC	357.8	344.8	356.0	346.0	40
MW-106D (8008-0528)	D / C	37.636194	-87.500947	387.88	385.30	66.08	2 inch / PVC	333.8	321.3	332.0	322.0	64

* Reference elevation of Monitoring Wells MW-1 through MW-6 surveyed by Fuller, Mossbarger, Scott and May, Civil Engineers, Inc., Lexington, Kentucky, December 1996 and December 1999. Reference elevation of Monitoring Well MW-104 surveyed by Associated Engineers Inc., March 19, 2019. New characterization Monitoring Wells MW-105, MW-106S, and MW-106D surveyed by Associated Engineers, Inc. of Madisonville, KY on May 19, 2023. Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, North American Datum of 1927 (NAD27) datum.

C = characterization
D = downgradient
GS = ground surface
ID = internal diameter
Lat./Long. = latitude and longitude
NAVD88 = North American Vertical Datum of 1988
PVC = polyvinyl chloride
TOIC = top of internal casing
U / B = upgradient / background

TABLE 2

SUMMARY OF MONITORING WELL CONSTRUCTION - GREEN FORMER SURFACE IMPOUNDMENT

CCR GROUNDWATER MONITORING PROGRAM
BIG RIVERS ELECTRIC CORPORATION - SEBREE STATION
GREEN STATION FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Well No.		Location*		Reference Elevation*		Casing Length	Size / Type	Filter Pack Interval		Screened Interval		Bottom of Boring
		Lat	Long	TOIC (feet, NAV88)	GS (feet, NAV88)	(feet, TOIC)	(ID / Material)	(feet, GS, NADV88)		(feet, GS, NADV88)		(feet, GS)
								Top	Bottom	Top	Bottom	
Program Monitoring Wells												
MW-11 (8006-3938)	U / B	37.64262	-87.50325	401.32	398.36	51.5	2 inch / PVC	356.86	348.46	354.86	349.86	49.5
MW-12 (8006-3939)	D	37.63915	-87.50182	395.54	392.35	73.7	2 inch / PVC	333.85	320.35	331.85	321.85	72.0
MW-13 (8006-3940)	D	37.64086	-87.50072	394.60	391.46	52.6	2 inch / PVC	348.96	339.96	346.96	341.96	51.5
MW-14 (8006-3941)	D	37.64220	-87.50001	390.71	387.55	50.0	2 inch / PVC	347.75	337.95	345.75	340.75	49.6
Characterization Wells (Water Level Gauging)												
MW-11A (8006-7551)	U / B	37.64252	-87.50323	400.33	397.61	25.45	2 inch / PVC	387.81	374.38	384.88	374.88	22.5
MW-12B (8006-7552)	D	37.63930	-87.50162	393.04	390.76	61.52	2 inch / PVC	342.96	331.02	341.52	331.52	60.5
MW-13B (8006-7554)	D	37.64073	-87.50074	394.34	391.64	42.40	2 inch / PVC	364.44	351.44	361.94	351.94	41.5
MW-14A (8006-7553)	D	37.64211	-87.50002	389.95	387.54	19.45	2 inch / PVC	379.54	370.00	375.50	370.50	18.5

*Reference elevation of monitoring wells surveyed by Associated Engineers, Inc., Madisonville, Kentucky, January 2015
Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, North American Datum of 1927 (NAD27) datum.

D = downgradient
GS = ground surface
ID = internal diameter
Lat./Long. = latitude and longitude
NAVD88 = North American Vertical Datum of 1988
PVC = polyvinyl chloride
TOIC = top of internal casing
U / B = upgradient /background

TABLE 3

2024 GROUNDWATER ELEVATIONS - GREEN LANDFILL

BIG RIVERS ELECTRIC CORPORATION - SEBREE STATION
GREEN STATION LANDFILL
WEBSTER COUNTY, KENTUCKY

GROUNDWATER MONITORING WELL PROGRAM

	MW-1		MW-2		MW-3A		MW-4		MW-5		MW-6	
Reference Elevation TOIC*(ft, NADVD88)	**Upgradient/Background 422.56**		**Downgradient 391.82**		**Downgradient 386.27**		**Downgradient 391.11**		**Downgradient 389.81**		**Downgradient 388.10**	
Date Measured	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**
4/15/2024	19.91	402.65	19.93	371.89	12.36	373.91	23.16	367.95	14.91	374.90	18.83	369.27
11/12/2024	20.84	401.72	22.43	369.39	14.95	371.32	28.28	362.83	15.54	374.27	22.06	366.04

	MW-104		MW-105		MW-106S		MW-106D	
Reference Elevation TOIC*(ft, NADVD88)	**Characterization 395.40**		**Characterization 381.77**		**Characterization 387.26**		**Characterization 387.88**	
Date Measured	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**	**Depth to Water (ft, TOIC)**	**GW Elevation (ft, NAVD88)**
4/15/2024	20.67	374.73	7.01	374.76	17.06	370.20	17.42	370.46
11/12/2024	24.88	370.52	10.08	371.69	21.69	365.57	24.44	363.44

* Reference elevation of monitoring wells resurveyed on May 19, 2023 by Associated Engineers, Inc. of Madisonville, KY.

ft = feet
GW = groundwater
NAVD88 = North American Vertical Datum of 1988
TOIC = top of internal casing

TABLE 4

2024 GROUNDWATER ELEVATIONS - GREEN FORMER SURFACE IMPOUNDMENT

BIG RIVERS ELECTRIC CORPORATION - SEBREE STATION
GREEN FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

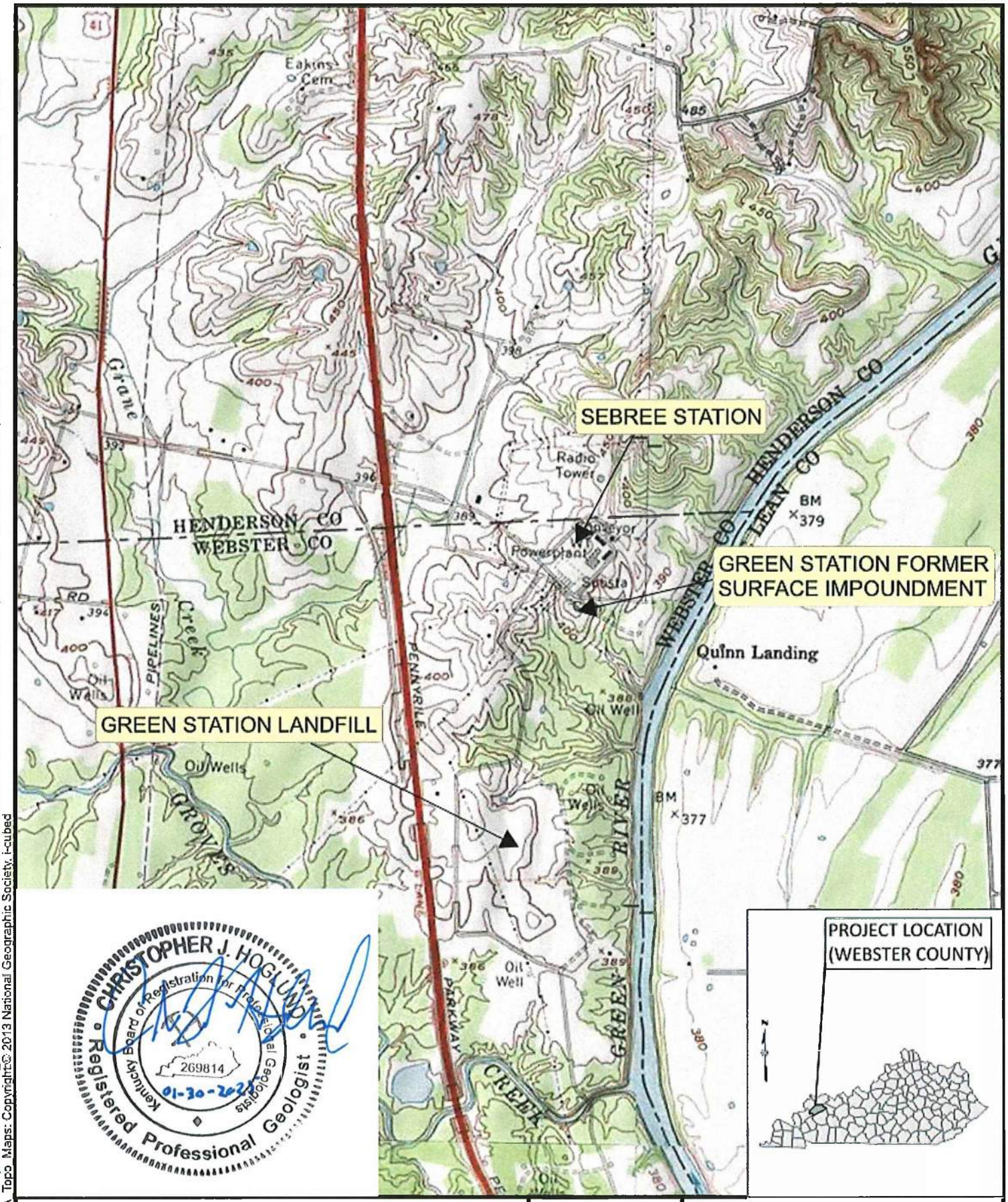
	GROUNDWATER MONITORING WELL PROGRAM							
	MW-11		MW-12		MW-13		MW-14	
Reference Elevation TOIC*(ft, NADVD88)	Upgradient/Background 401.32		Downgradient 395.54		Downgradient 394.60		Downgradient 390.71	
Date Measured	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)
4/15/2024	41.67	359.65	25.97	369.57	21.93	372.67	22.34	368.37
11/12/2024	40.05	361.27	31.87	363.67	26.48	368.12	29.49	361.22

	MW-11A		MW-12B		MW-13B		MW-14A	
Reference Elevation TOIC*(ft, NADVD88)	Characterization Monitoring 400.33		Characterization Monitoring 393.04		Characterization Monitoring 394.60		Downgradient 390.71	
Date Measured	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)
11/12/2024	19.48	381.84	30.47	365.07	25.59	369.01	19.27	371.44

*Reference elevation of monitoring wells surveyed by Associated Engineers, Inc., Madisonville, Kentucky, January 2015

ft = feet
GW = groundwater
NAVD88 = North American Vertical Datum of 1988
TOIC = top of internal casing

Figures



CHRISTOPHER J. HOGLUND
Kentucky Board of Registration for Professional Geologists
269814
01-30-2025
Registered Professional Geologist

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROBARDS QUADRANGLE
DELAWARE QUADRANGLE
(FROM ARCGIS ONLINE Copyright © 2011 National Geographic Society, i-cubed)

0 1,000 2,000
Scale in Feet

NORTH

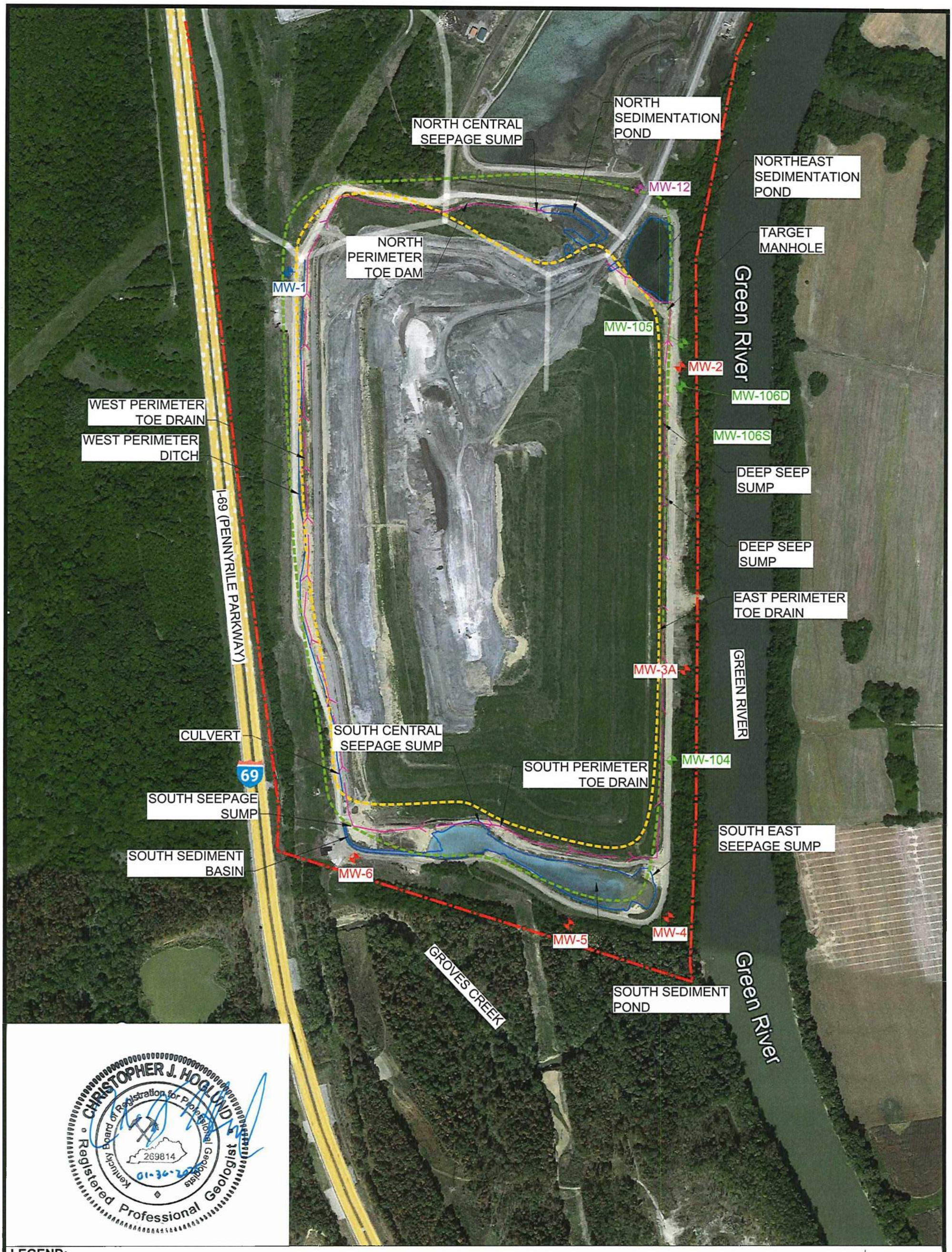
BURNS McDONNELL

FIGURE 1
GENERAL LOCATION MAP
SEBREE STATION
WEBSTER COUNTY, KENTUCKY

Path: \\bmcdata\s\Clients\ENS\BigRiversEC\153431_2022SebreeGW\Studies\Geospatial\DataFiles\ArcDocs\BREC Sebree Green LF Figure\BREC Sebree Green LF Figure.aprx ORParab 1/30/2025
Service Layer Credits: USA Topo Maps: Copyright© 2013 National Geographic Society, i-cubed

Source: ArcGIS Online Copyright: 2011 National Geographic Society, i-cubed, Burns & McDonnell Engineering, Inc, BREC

Issued: 1/30/2025



BURNS McDONNELL

FIGURE 2
GROUNDWATER MONITORING SYSTEM
GREEN LANDFILL
WEBSTER COUNTY, KENTUCKY

\\BMCD.BURNSMCD.COM\DFS\CLIENTS\ENS\BIGRIVERSEC\170781_GREENSICCRGW24\STUDIES\SITE_INVEST\FIGURES\170781_FIG 2_CCR GW.DWG 1/30/2025 11:49 AM ABMENDHE

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Kentucky Board of Registration for Professional Geologists
269814
01-30-2025
Registered Professional Geologist

Legend

- DOWNGRADIENT CCR MONITORING WELLS
- UPGRADIENT CCR MONITORING WELL
- NEW CHARACTERIZATION MONITORING WELLS (WATER LEVEL GAUGING ONLY)
- FORMER CCR SURFACE IMPOUNDMENT BOUNDARY (APPROX.)
- PROPERTY BOUNDARY

NORTH

0 100 200

Scale in Feet

BURNS McDONNELL

FIGURE 3
GROUNDWATER MONITORING SYSTEM
GREEN FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Source: Esri, USGS, Burns & McDonnell Engineering, Inc, BREC

Issued: 1/30/2025

Path: Z:\Clients\ENS\BigRiversEC153431_2022SebreeGWStudies\Geospatial\DataFiles\ArcDocs\BREC Sebree Green LF Figure\BREC Sebree Green IS Figure 112724\BREC_SI_WPaprx ORParab 1/30/2025
Service Layer Credits: Google Earth: Google Earth

CHRISTOPHER J. HOGLUND
Board of Registration for Professional Geologists
Kentucky
269814
01-30-2025
Registered Professional Geologist

LEGEND:

- PROPERTY LINE
- KAR PERMIT AREA
- CCR FILL AREA
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CHARACTERIZATION MONITORING WELL
- CCR SURFACE IMPOUNDMENT MONITORING WELL (WATER LEVEL ONLY)
- 370 — GROUNDWATER CONTOUR
- 402.65 GROUNDWATER ELEVATION
- FLOW DIRECTION

NOTE:

CHARACTERIZATION WELL MW-106D NOT USED IN CONTOURING.

NORTH

0 250' 500'
SCALE IN FEET

BURNS McDONNELL

FIGURE 4
POTENTIOMETRIC SURFACE MAP
APRIL 15, 2024
GREEN LANDFILL
WEBSTER COUNTY, KENTUCKY

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CHRISTOPHER J. HOGLUND
Registered Professional Geologist
Kentucky Board of Registration for Professional Geologists
269814
01-30-2025

LEGEND:

- PROPERTY LINE
- KAR PERMIT AREA
- CCR FILL AREA
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CHARACTERIZATION MONITORING WELL
- CCR SURFACE IMPOUNDMENT MONITORING WELL (WATER LEVEL ONLY)
- 370 — GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- 401.72 — GROUNDWATER ELEVATION
- FLOW DIRECTION

NOTE:

CHARACTERIZATION WELL MW-106D NOT USED IN CONTOURING.

NORTH

0 250' 500'
SCALE IN FEET

BURNS McDONNELL

Figure 5
POTENTIOMETRIC SURFACE MAP
NOVEMBER 11, 2024
GREEN LANDFILL
WEBSTER COUNTY, KENTUCKY

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Registered Professional Geologist
Kentucky Board of Registration for Professional Geologists
269814
01-30-2025

LEGEND:

- PROPERTY LINE
- FORMER CCR SURFACE IMPOUNDMENT BOUNDARY (APPROX.)
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR LANDFILL MONITORING WELL (WATER LEVEL ONLY)
- 370 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- 359.65 GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION

NORTH

0 150' 300'
SCALE IN FEET

BURNS McDONNELL

FIGURE 6
POTENTIOMETRIC SURFACE MAP
APRIL 15, 2024
GREEN FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

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CHRISTOPHER J. HOGLUND
Kentucky Board of Registration for Professional Geologists
Registered Professional Geologist
269814
01-30-2025

LEGEND:

- PROPERTY LINE
- FORMER CCR SURFACE IMPOUNDMENT BOUNDARY (APPROX.)
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR LANDFILL MONITORING WELL (WATER LEVEL ONLY)
- NEW CHARACTERIZATION MONITORING WELL
- 370 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- 361.27 GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION

NORTH

0 150' 300'
SCALE IN FEET

BURNS McDONNELL

FIGURE 7
POTENTIOMETRIC SURFACE MAP
NOVEMBER 12, 2024
GREEN FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

\\BMCD.BURNSMCD.COM\DFS\CLIENTS\ENS\BIGRIVERSEC\170781_GREENS\CCRGW24\STUDIES\SITE_INVEST\FIGURES\170781_GREEN SI_2H.DWG 1/29/2025 1:27 PM ABMENDHE

Appendix A – Green Landfill Field Sampling Forms

Big Rivers
ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-1	45.53	19.61	25.92	4/17/24	1230

Site Location:	AKGWA#	Casing Diameter	Measuring Point (ft.) (EB)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9625	☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	~~423.23~~ 422.56	402.95	16.92	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☒ Clear ☐ Partly Cloudy ☒ Windy Temp. 79° (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	pH (SU)	eH/ORP (mV)	Sp. Cond. (mS)	Turbidity (NTU)	DO Mg/L
1245	0	19.61	200	I	16.0	7.35	-137.7	1.108	0.05	0.69
1250	5	20.84	200	1.0	17.2	7.34	-137.0	1.102	0.20	0.53
1255	10	21.19	200	2.0	17.5	7.34	-136.0	1.106	0.02	0.46
1300	15	21.50	200	3.0	17.7	7.33	-137.7	1.103	0.02	0.42
1305	20	21.83	200	4.0	17.7	7.33	-142.3	1.099	0.29	0.38
1310	25	22.08	200	5.0	17.8	7.32	-146.3	1.096	0.02	0.35
				4-17-24						
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- .10 (SU)	+/- 10 mV	+/- 3%	+/- 10% unless <5 NTU consider stable	+/- 10% <0.5mg/l stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ / Casing PVC ☒	Field Blank Collected	Duplicated Collected
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	☐ Yes ☒ No Time: N/A	☐ Yes ☒ No Time: N/A
					Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒ Yes ☐ No

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1310	22.08	Clear	None	17.8	1.096	0.35	7.32	-146.3	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-2	50.27	19.71	30.56	4/16/24	0845

Site Location:	AKGWA#	Casing Diameter	Measuring Point (ft.) EB	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9630	☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	~~392.37~~ 391.82	~~372.66~~ 372.11 EB	19.95	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0950	0	19.71	200	I	16.1	1.910	4.20	6.61	-65.9	3.73
0955	5	20.55	200	1.0	16.4	1.977	3.25	6.50	-81.1	0.91
1000	10	21.11	200	2.0	16.3	2.011	2.60	6.47	-82.1	0.25
1005	15	21.55	200	3.0	16.2	2.002	1.82	6.45	-80.5	0.46
1010	20	22.04	200	4.0	16.3	2.017	2.12	6.45	-78.3	0.09
1015	25	22.52	200	5.0	16.4	2.020	1.76	6.45	-76.6	0.31
1020	30	22.96	200	6.0	16.4	2.012	1.30	6.44	-76.0	0.02
1025	35	23.36	200	7.0	16.6	2.019	1.76	6.45	-74.7	0.02
1030	40	24.01	200	8.0	16.5	2.016	1.78	6.44	-74.5	0.02
1035	45	24.52	200	9.0	16.6	2.017	2.42	6.44	-75.3	0.02
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1050	25.49	Clear	None	16.8	2.013	1.01	6.44	-76.4	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-2	50.27	19.71	30.56	4/16/24	0945

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) (60) ~~392.37~~ 391.82	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9630			372.11	19.95	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1040	50	24.79	200	10.0	16.7	2.019	1.70	6.44	-74.6	0.02
1045	55	25.08	200	11.0	16.8	2.016	1.21	6.44	-75.5	0.02
1050	60	25.49	200	12.0	16.8	2.013	1.01	6.44	-76.4	0.02
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-16-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1050	25.49	Clear	None	16.8	2013	1.01	6.44	-76.4	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-3A	41.30	12.41	28.89	4/17/24	0815

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8003-6430		386.48	374.07	4.71	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 68° (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0820	0	12.41	200	1	15.8	8.311	2.21	6.62	446.7	6.95
0825	5	13.05	200	1.0	15.8	8.339	2.40	6.70	551.8	0.02
0830	10	13.15	200	2.0	15.8	8.348	2.38	6.71	560.4	0.47
0835	15	13.19	200	3.0	15.8	8.354	2.34	6.72	563.4	0.02
0840	20	13.22	200	4.0	15.8	8.353	2.30	6.72	565.0	0.02
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-17-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☒ Duplicated Collected Time:
okay	(80) heavy Not visible	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
0840	13.22	Clear	None	15.8	8.353	2.30	6.72	565.0	0.02

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Henderson, KY 42419-0024
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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-4	33.13	22.86	10.27	4/16/24	1448

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) EB ~~391.33~~ 391.11	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9628			368.25	6.70	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 80s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1450	0	22.86	150	I	16.4	6.458	4.17	6.48	91.2	8.66
1455	5	23.16	150	0.75	18.6	6.409	3.83	6.47	93.6	4.09
1500	10	23.23	150	1.5	18.4	6.414	3.03	6.47	95.3	1.87
1505	15	23.26	150	2.25	18.6	6.409	3.56	6.47	101.1	3.04
1510	20	23.30	150	3	18.5	6.383	3.97	6.47	110.3	0.59
1515	25	23.37	150	3.75	18.4	6.358	4.28	6.47	121.6	1.62
1520	30	23.38	150	4.5	18.5	6.341	4.59	6.48	133.7	1.97
1525	35	23.36	150	5.25	18.5	6.495	3.87	6.48	165.1	2.63
1530	40	23.36	150	6.0	18.4	6.672	2.82	6.49	218.9	0.71
1535	45	23.37	150	6.75	18.4	6.780	2.20	6.50	274.9	0.88
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
EB Good Okay	Okay	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1550	23.37	Clear	None	18.5	6.844	1.68	6.52	413.1	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-4	33.13	22.86	10.27	4/16/24	1448

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~391.33~~ 391.11	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9628			368.25	6.70	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 80s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1540	50	23.37	150	7.5	18.7	6.811	1.91	6.51	326.9	0.02
1545	55	23.37	150	8.25	18.7	6.830	1.76	6.51	372.5	0.02
1550	60	23.37	150	9.0	18.5	6.844	1.68	6.52	412.1	0.02
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-16-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Okay	Okay	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1550	23.37	Clear	None	18.5	6.844	1.68	6.52	412.1	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-5	27.48	15.30	12.18	4/16/24	1355

Site Location:	AKGWA#	Casing Diameter ☒4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) EB ~~390.18~~ 389.81	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9627			374.51	7.95	—

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog ☒ Clear □ Partly Cloudy □ Windy Temp. 80s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1355	0	15.30	200	1	16.7	6.680	7.05	6.48	61.7	2.26
1400	5	16.70	200	1.0	15.9	6.348	3.61	6.42	73.2	0.02
1405	10	16.86	200	2.0	15.8	6.336	2.85	6.44	77.1	0.02
1410	15	16.97	200	3.0	15.7	6.329	2.62	6.45	79.4	0.02
1415	20	16.97	200	4.0	15.7	6.323	2.47	6.45	81.2	0.02
1420	25	17.40	200	5.0	15.4	6.334	2.40	6.45	82.7	0.02
					4-16-24					
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Poor	okay	☐ Yes ☒ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1420	17.40	Clear	None	15.4	6.334	2.40	6.45	82.7	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-6	45.47	18.50	26.97	4/17/24	1110

Site Location:	AKGWA#	Casing Diameter	Measuring Point (ft.) EB	Groundwater Elevation (ft.) EB	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9626	~~4"~~ ☐2" Conversion fact. 4"-0.67 2"-0.16	~~388.17~~ 388.10	~~369.67~~ 369.60	17.60	✓

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☒ Clear ☐ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1115	0	18.50	250	I	18.0	5.523	7.55	6.82	21.6	7.31
1120	5	18.63	250	1.25	17.6	5.692	3.60	6.61	14.5	3.29
1125	10	18.61	250	2.5	18.3	5.719	2.00	6.55	59.6	1.32
1130	15	18.64	250	3.75	17.4	5.666	1.12	6.53	68.9	1.37
1135	20	18.63	250	5.0	17.3	5.631	0.83	6.50	81.5	0.29
1140	25	18.64	250	6.25	17.3	5.599	0.76	6.49	88.6	0.30
1145	30	18.63	250	7.5	17.4	5.593	0.73	6.49	93.5	1.04
1150	35	18.64	250	8.75	17.4	5.586	0.67	6.49	96.8	0.41
1155	40	18.64	250	10.0	17.4	5.588	0.66	6.48	100.3	0.31
						4-17-24				
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☒ Field Blank Collected Time: 1130	☐ Duplicated Collected N/A Time:
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1155	18.64	Clear	None	17.4	5.588	0.66	6.48	100.3	0.31

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-104	60.84	20.30	40.54	4/17/24	0940

Site Location:	AKGWA#	Casing Diameter ☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~395.4~~ 395.40 EB	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8007-1139			375.10	6.62	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☒ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0945	0	20.30	150	I	18.0	9.275	5.78	6.85	203.3	0.29
0950	5	21.46	150	0.75	17.7	9.534	1.19	6.48	94.3	0.62
0955	10	21.89	100	1.5	17.7	9.592	0.64	6.47	83.9	0.87
1000	15	22.25	100	2.0	18.1	9.625	0.50	6.46	74.2	0.02
1005	20	22.46	100	2.5	18.3	9.583	0.48	6.46	67.9	0.02
1010	25	22.71	100	3.0	18.3	9.514	0.48	6.47	57.7	0.02
1015	30	22.88	100	3.5	18.4	9.563	0.48	6.46	51.3	0.02
1020	35	22.96	100	4.0	18.4	9.557	0.48	6.46	48.2	0.02
				4-17-24						
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1020	22.96	Clear	None	18.4	9.557	0.48	6.46	48.2	0.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-105	33.87	6.90	26.97	4/16/24	0830

Site Location:	AKGWA#	Casing Diameter ☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0529		381.77	374.87	4.40	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 60s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0840	0	6.90	200	I	15.0	2.835	0.63	6.32	-90.1	290
0845	5	10.32	200	1.0	15.0	2.829	0.28	6.37	-103.8	163
0850	10	11.23	150	2.0	15.1	2.827	0.22	6.39	-108.1	97.5
0855	15	11.61	100	2.75	15.9	2.808	0.21	6.40	-110.8	71.8
0900	20	11.85	100	3.25	16.5	2.825	0.20	6.41	-112.8	63.5
0905	25	12.11	100	3.75	16.7	2.835	0.19	6.41	-113.0	58.5
0910	30	12.19	100	4.25	16.7	2.836	0.19	6.41	-113.2	53.5
0915	35	12.34	100	4.75	16.8	2.835	0.18	6.41	-113.6	43.8
0920	40	12.48	100	5.25	17.0	2.834	0.17	6.42	-114.2	40.0
0925	45	12.63	100	5.75	17.2	2.836	0.16	6.42	-114.2	39.1
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
0930	12.76	Clear	None	17.4	2.835	0.16	6.42	-114.6	40.0

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-105	33.87	6.90	26.97	4/16/24	0830

Site Location:	AKGWA#	Casing Diameter	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0529	☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	381.77	374.87	4.40	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 60s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0930	50	12.76	100	6.25	17.4	2.835	0.16	6.42	-114.6	40.0
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-16-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
0930	12.76	Clear	None	17.4	2.835	0.16	6.42	-114.6	40.0

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-106S	41.51	16.82	24.69	4/16/24	1208

Site Location:	AKGWA#	Casing Diameter ☐4" ☑2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0527		387.26	370.44	4.03	/

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☒ Clear ☐ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1210	0	16.82	200	1	16.6	1.808	3.25	6.74	-56.0	431
1215	5	18.48	200	1.0	17.5	1.866	3.39	6.72	-54.1	231
1220	10	18.80	200	2.0	17.5	1.864	3.35	6.71	-58.8	182
1225	15	19.00	200	3.0	17.6	1.833	3.17	6.71	-69.3	87.7
1230	20	19.23	200	4.0	17.4	1.784	3.63	6.70	-80.8	59.0
1235	25	19.43	200	5.0	17.3	1.709	3.88	6.71	-90.5	50.2
1240	30	19.56	200	6.0	17.5	1.631	3.26	6.71	-97.1	42.4
1245	35	19.68	200	7.0	17.8	1.561	3.26	6.71	-104.9	40.5
1250	40	19.75	200	8.0	17.5	1.503	3.58	6.71	-108.7	35.2
1255	45	19.79	200	9.0	17.6	1.464	3.85	6.72	-112.1	26.7
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☑	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
good	good	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☑ No With: N/A	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1310	19.88	clear	none	17.6	1.438	2.46	6.71	-112.2	17.1

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-106S	41.51	16.82	24.69	4/16/24	1208

Site Location:	AKGWA#	Casing Diameter ☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0527		387.26	370.44	4.03	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☒ Clear ☐ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1300	50	19.78	200	10.0	17.8	1.454	2.84	6.71	-111.3	23.9
1305	55	19.86	200	11.0	17.9	1.429	2.60	6.71	-114.2	19.5
1310	60	19.88	200	12.0	17.6	1.432	2.46	6.71	-112.2	17.1
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-16-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1310	19.88	Clear	None	17.6	1.432	2.46	6.71	-112.2	17.1

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Groundwater Field Log

Green Landfill

48.91

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-106D	66.08	17.17	~~28.89~~ EB	4/16/24	1115

Site Location:	AKGWA#	Casing Diameter	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0528	□4" ☒2" Conversion fact. 4"-0.67 2"-0.16	387.88	~~361.44~~ EB 370.71	7.98	—

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear ☒ Partly Cloudy □ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1120	0	17.17	200	1	18.3	0.757	4.42	7.03	-105.9	81.4
1125	5	19.82	200	2.0	16.9	0.994	1.36	7.27	-189.6	188
1130	10	21.36	200	3.0	16.8	0.995	1.10	7.36	-184.0	47.6
1135	15	22.99	200	3.0	16.7	1.001	1.10	7.35	-178.5	15.1
1140	20	24.78	200	4.0	16.9	0.990	1.01	7.32	-159.1	5.64
1145	25	25.89	200	5.0	17.2	1.001	0.94	7.22	-175.3	4.53
1150	30	27.39	200	6.0	17.4	1.00	0.86	7.21	-174.7	2.22
1155	35	28.45	200	7.0	17.3	0.990	0.88	7.21	-173.6	2.02
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-16-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: N/A ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1155	28.45	Clear	None	17.3	0.990	0.88	7.21	-173.6	2.02

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-1	45.53	20.56		11/21/24	1625

Site Location:	AKGWA#	Casing Diameter ☒4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~423.23~~ 422.56	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9625					

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	pH (SU)	eH/ORP (mV)	Sp. Cond. (mS)	Turbidity (NTU)	DO Mg/L
1540	0	20.56	200	0	15.29	8.22	198	0.921	1.74	0.06
1545	5	21.77		1.0	14.91	8.18	16	0.915	2.26	0.07
1550	10	22.36		2.0	14.73	8.14	-83	0.914	2.67	0.08
1555	15	22.92		3.0	14.69	8.12	-125	0.915	2.64	0.08
1600	20	23.36		4.0	14.62	8.11	-140	0.921	1.58	0.06
1605	25	23.75		5.0	14.54	8.09	-145	0.915	1.58	0.07
1610	30	24.29		6.0	14.47	8.09	-148	0.916	1.49	0.06
1615	35	24.55		7.0	14.45	8.03	-149	0.916	2.34	0.08
1620	40	24.92		8.0	14.31	8.06	-152	0.916	1.65	0.08
1625	45	25.30		9.0	14.18	8.07	-154	0.915	2.33	0.08
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- .10 (SU)	+/- 10 mV	+/- 3%	+/- 10% unless <5 NTU consider stable	+/- 10% <0.5mg/l stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☒	Field Blank Collected □ Yes □No Time:	Duplicated Collected □Yes □No Time:
Ok	Ok	☒ Yes □ No	☒ Yes □ No	Filtered: □ Yes ☒ No	Split Sample □ Yes ☒ No With:	Semi-Annual □Yes ☒No

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1625	25.30	Clear	none	14.18	0.915	0.08	8.07	-154	2.33

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-2	50.27	22.30		11/13/24	0917

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~392.37~~ 391.87	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9630					—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☐ Partly Cloudy ☐ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0847	0	22.30	200	0	15.68	1.71	8.23	6.83	187	2.37
0852	5	23.35		1.0	15.61	1.83	1.67	6.79	-23	3.76
0857	10	23.80		2.0	15.69	1.86	1.36	6.89	-73	6.25
0902	15	24.24		3.0	15.75	1.86	1.14	6.97	-82	6.59
0907	20	24.83		4.0	15.77	1.86	0.54	7.02	-86	6.60
0912	25	25.00		5.0	15.83	1.86	0.54	7.05	-90	5.94
0917	30	25.40		6.0	15.79	1.86	0.84	7.09	-92	6.04
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☐

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
0917	25.40	clear	none	15.79	1.86	0.84	7.09	-92	6.04

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-3A	41.30	14.65		11/19/24	1328

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~386.48~~ 386.27	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8003-6430					

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☐ Partly Cloudy ☐ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1248	0	14.65	200	0	19.63	7.32	5.33	8.95	198	2.46
1253	5	15.18		1.0	17.97	7.25	1.19	8.09	130	1.44
1258	10	15.31		2.0	17.76	7.20	0.08	7.48	89	1.16
1303	15	15.36		3.0	17.72	7.19	0.06	7.27	61	1.67
1308	20	15.39		4.0	17.75	7.18	0.07	7.19	46	0.26
1313	25	15.45		5.0	17.53	7.19	0.06	7.17	23	0.73
1318	30	15.50		6.0	17.57	7.18	0.06	7.16	9	0.58
1323	35	15.53		7.0	17.61	7.18	0.07	7.16	1	0.48
1328	40	15.53	↓	8.0	17.64	7.18	0.06	7.17	0	0.07
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1328	15.53	clear	none	17.64	7.18	0.06	7.17	0	0.07

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-4	33.13	27.82		11/14/24	1401

Site Location:	AKGWA#	Casing Diameter ☒4" ☐2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~391.38~~ 391.11	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9628					

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☐ Partly Cloudy ☐ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1326	0	27.82	200	0	17.21	6.04	2.92	7.46	251	8.20
1331	5	28.30		1.0	16.66	5.73	1.48	7.52	228	0.55
1336	10	28.55		2.0	16.35	5.69	1.52	7.46	224	0.19
1341	15	28.81		3.0	16.32	5.70	0.75	7.35	220	0.02
1346	20	29.00		4.0	16.23	5.65	0.77	7.28	212	0.02
1351	25	29.20		5.0	16.13	5.64	1.32	7.29	198	0.31
1356	30	29.59		6.0	16.08	5.65	1.42	7.28	199	0.08
1401	35	29.59		7.0	16.09	5.66	1.39	7.29	202	1.29
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1401	29.59	clear	none	16.09	5.66	1.39	7.29	202	1.29

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-5	27.48	15.54		11/13/24	1614

Site Location:	AKGWA#	Casing Diameter ☑4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) ~~390.18~~ 389.81	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9627					

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1544	Ø	15.54	250	Ø	15.61	5.69	6.21	6.53	202	1.34
1549	5	17.50	↓		15.46	5.70	4.12	6.35	186	1.67
1554	10	18.09			15.49	5.70	2.96	6.29	178	3.20
1559	15	18.10			15.47	5.70	2.39	6.37	176	4.71
1604	20	18.10			15.53	5.71	2.11	6.36	180	6.67
1609	25	18.34			15.65	5.72	2.17	6.35	192	6.25
1614	30	18.65	✓		15.67	5.74	2.19	6.34	187	6.31
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1614	18.65	clear	none	15.67	5.74	2.19	6.34	187	6.31

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-6	45.47	21.26		11/21/24	1355

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8002-9626		388.17			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1330	0	21.26	200	0	14.73	4.38	6.79	8.12	328	4.19
1335	5	21.34	↓	1.0	15.01	4.87	0.08	7.55	311	4.45
1340	10	21.32	↓	2.0	15.05	4.89	0.08	7.34	308	2.09
1345	15	21.34	↓	3.0	15.21	4.89	0.07	7.23	311	2.36
1350	20	21.36	↓	4.0	15.19	4.86	0.11	7.18	315	2.10
1355	25	21.38	↓	5.0	15.20	4.83	0.06	7.16	317	2.03
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☑	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1355	21.38	clear	none	15.20	4.83	0.06	7.16	317	2.03

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-104	60.84	24.46		11/14/24	1640

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8007-1139		395.4			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1540	Ø	24.46	200	Ø	17.22	7.96	1.79	7.78	276	4.88
1545	5	26.38		1.0	16.92	8.11	0.74	7.54	270	0.99
1550	10	26.99		2.0	16.68	8.16	0.63	7.38	259	1.01
1555	15	27.79		3.0	16.54	8.16	0.59	7.34	251	2.78
1600	20	28.04		4.0	16.35	8.18	0.57	7.31	242	3.92
1605	25	28.25		5.0	16.21	8.20	0.59	7.29	233	3.00
1610	30	28.59	√	6.0	16.12	8.22	0.24	7.26	223	2.20
1615	35	28.83		7.0	15.99	8.24	0.28	7.26	212	2.41
1620	40	29.04		8.0	15.85	8.26	0.22	7.26	198	0.02
1625	45	29.30		9.0	15.76	8.28	0.20	7.26	186	1.32
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☐ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1640	24.69	Clear	none	15.52	8.32	0.21	7.24	143	1.81

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-104	60.84			11/14/24	1640

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8007-1139		395.4			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1630	50	29.41	200	10.0	15.65	8.29	0.26	7.24	171	1.14
1635	55	29.54	↓	11.0	15.51	8.32	0.22	7.24	159	1.39
1640	60	29.69	↓	12.0	15.52	8.32	0.21	7.24	143	1.81
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1640	29.69	Clear	none	15.52	8.32	0.21	7.24	143	1.81

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-105	33.87			11/21/24	1045

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.) 381.77	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0529					

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1015	0	9.43	220	✓	13.83	2.58	0.05	9.09	298	37.6
1020	5	12.35			14.70	2.61	0.04	7.88	154	22.0
1025	10	13.97			15.10	2.62	0.04	7.38	9	12.6
1030	15	15.48			15.18	2.62	0.04	7.08	-97	7.49
1035	20	17.78			15.16	2.61	0.05	7.00	-111	4.90
1040	25	20.08	↓		15.36	2.60	0.03	6.96	-113	4.35
1045	30	21.18			15.32	2.60	0.06	6.96	-113	3.40
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1045	21.18	clear	none	15.32	2.60	0.06	6.96	-113	3.40

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-106D	66.08	23.40		11/15/24	0946

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0528		387.88			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □ Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0911	0	23.90	325	0	15.71	0.865	1.67	8.03	138	6.22
0916	5	27.30			15.61	0.914	2.69	8.07	-150	11.4
0921	10	28.90			15.70	0.917	2.25	8.05	-165	12.6
0926	15	30.40			15.61	0.916	1.72	8.01	-167	5.87
0931	20	32.39			15.64	0.903	1.25	8.06	-166	5.64
0936	25	33.68			15.59	0.870	1.11	8.05	-165	4.21
0941	30	36.00			15.49	0.856	1.06	8.08	-166	4.66
0946	35	36.50			15.53	0.817	1.02	8.08	-160	4.74
~~0951~~	~~40~~									
~~0956~~	~~45~~									
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☒	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
0946	36.50	Clear	None	15.53	0.817	1.02	8.08	-160	4.74

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Groundwater Field Log

Green Landfill

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
Green LF	MW-106S	41.51	21.34		11/15/24	1056

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8008-0527		387.26			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1011	0	21.34	200	0	15.75	1.69	0.57	7.70	-76	86.00
1016	5	22.91		1.0	15.79	1.76	0.81	7.59	-99	125
1021	10	23.42		2.0	15.80	1.75	0.71	7.54	-108	71
1026	15	23.78		3.0	15.78	1.71	0.66	7.53	-112	46.7
1031	20	24.20		4.0	15.79	1.68	0.70	7.52	-115	38.3
1036	25	24.25		5.0	15.83	1.58	0.60	7.52	-118	29.8
1041	30	24.28		6.0	15.81	1.51	0.55	7.54	-121	24
1046	35	24.32		7.0	15.78	1.45	0.56	7.52	-123	18
1051	40	24.48		8.0	15.80	1.40	0.47	7.54	-126	14
1056	45	24.53		9.0	15.78	1.38	0.50	7.55	-128	11.5
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☑	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☑ No With:	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1056	24.53	clear	none	15.78	1.38	0.50	7.55	-128	11.5

Appendix B – Green Former Surface Impoundment Field Sampling Forms

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CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-11	49.9	41.67	8.23	4/15/24	1515

Site Location:	AKGWA#	Casing Diameter ☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3938		401.32	359.65	1.34	/

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 80s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	pH (SU)	eH/ORP (mV)	Sp. Cond. (mS)	Turbidity (NTU)	DO Mg/L
1525	0	42.84	300	1	17.9	7.00	-28.9	3.820	6.62	1.93
1530	5	42.30	200	1.5	19.1	6.96	-39.8	3.573	3.15	1.33
1535	10	42.26	200	2.5	19.5	6.96	-46.4	3.584	0.30	1.56
1540	15	42.22	200	3.5	19.6	6.96	-50.7	3.572	0.11	1.69
1545	20	42.22	200	4.5	19.8	6.96	-50.3	3.586	0.18	1.82
1550	25	42.23	200	5.5	19.7	6.96	-52.5	3.578	0.02	1.53
1555	30	42.20	200	6.5	19.9	6.94	-53.7	3.582	0.02	1.51
1600	35	42.13	200	7.5	20.0	6.96	-53.9	3.585	0.02	1.54

4-15-24

For three (3) consecutive Readings		Required Purge	Actual Purge	+/- 3% (°C)	+/- .10 (SU)	+/- 10 mV	+/- 3%	+/- 10% unless <5 NTU consider stable	+/- 10% <0.5mg/l stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	Field Blank Collected ☐ Yes ☒ No Time: N/A	Duplicated Collected ☐ Yes ☒ No Time: N/A
okay	okay	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒ Yes ☐ No

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1600	42.13	Clear	None	20.0	3.585	1.54	6.96	-53.9	0.02

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CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-12	72.0	25.97	46.03	4/15/24	1405

Site Location:	AKGWA#	Casing Diameter □4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3939		395.54	369.57	7.51	

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog ☒ Clear □ Partly Cloudy □ Windy Temp. 83° (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1410	0	~~32.89~~ ~~25.97~~	300	I	17.6	1.046	0.57	7.11	-139.9	1.38
1415	5	33.84	200	1.5	18.7	1.046	0.35	7.10	-156.4	0.02
1420	10	34.72	200	2.5	19.2	1.051	0.29	7.10	-160.2	0.02
1425	15	35.74	200	3.5	19.1	1.054	0.24	7.09	-161.3	0.02
1430	20	37.22	200	4.5	18.8	1.049	0.21	7.07	-160.5	0.02
1435	25	37.85	200	5.5	19.4	1.049	0.20	7.09	-160.9	0.02
1440	30	39.16	200	6.5	19.0	1.049	0.18	7.09	-160.5	0.02
1445	35	40.25	200	7.5	19.3	1.052	0.17	7.09	-160.6	0.02

4-15-24

For three (3) consecutive Readings		Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☒	☒ Field Blank Collected Time: ~~n/a~~	□ Duplicated Collected Time: N/A
Good	Good	☒ Yes □ No	☒ Yes □ No	Filtered: □ Yes ☒ No	Split Sample □ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1445	40.25	Clear	None	19.3	1.052	0.17	7.09	-160.6	0.02

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CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-13	51.5	21.93	29.57	4/15/24	1110

Site Location:	AKGWA#	Casing Diameter □4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3940		394.60	372.67	4.83	—

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog ☒ Clear □ Partly Cloudy □ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1115	0	21.93	300	I	17.7	1.296	2.11	6.68	90.2	14.1
1120	5	26.05	300	1.5	17.9	1.273	2.99	6.70	96.6	2.06
1125	10	26.24	200	3.0	19.1	1.289	2.62	6.69	66.1	1.30
1130	15	26.67	200	4.0	18.4	1.327	1.60	6.66	13.8	1.56
1135	20	27.06	200	5.0	18.6	1.323	1.31	6.66	7.1	2.38
1140	25	27.34	200	6.0	18.5	1.321	1.15	6.66	4.4	3.25
1145	30	27.60	200	7.0	18.5	1.321	1.00	6.65	2.5	1.69
1150	35	27.84	200	8.0	18.5	1.323	0.89	6.64	1.4	2.63
1155	40	27.96	200	9.0	18.6	1.320	0.76	6.64	0.3	1.15
1200	45	28.06	200	10.0	18.7	1.318	0.63	6.64	-1.7	0.37
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☐ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1220	28.27	Clear	None	18.7	1.309	0.40	6.63	-6.6	2.81

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CCR GROUNDWATER FIELD LOG

GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-13	51.5	21.93	29.57	4/15/24	1110

Site Location:	AKGWA#	Casing Diameter ☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3940		394.60	372.67	4.83	/

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☒ Clear ☐ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1205	50	28.16	200	11.0	18.5	1.315	0.52	6.64	-4.1	0.52
1210	55	28.21	200	12.0	18.6	1.311	0.45	6.64	-5.1	1.57
1215	60	28.27	200	13.0	18.7	1.309	0.40	6.63	-6.6	2.81
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-15-2024

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☐ Duplicated Collected Time: N/A
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1220	28.27	Clear	None	18.7	1.309	0.40	6.63	-6.6	2.81

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CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-14	49.6	22.34	27.26	~~7/~~ 4/15/24	1000

Site Location:	AKGWA#	Casing Diameter	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3941	☐4" ☒2" Conversion fact. 4"-0.67 2"-0.16	390.71	368.37	4.45	—

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☐ Clear ☒ Partly Cloudy ☐ Windy Temp. 70s (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
~~1000~~ EB 1005	I	22.34	300	I	17.9	1.538	1.22	6.76	-16.9	6.92
1010	5	23.10	300	1.5	17.8	1.539	0.76	6.76	-33.0	3.06
1015	10	23.44	300	3.0	17.8	1.538	0.71	6.76	-40.0	4.39
1020	15	23.68	300	4.5	17.8	1.537	0.68	6.76	-48.0	3.22
1025	20	23.76	300	6.0	17.9	1.539	0.68	6.76	-51.7	0.02
1030	25	23.96	300	7.5	17.8	1.537	0.66	6.76	-53.7	0.61
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

4-15-24

Well Condition	Pad Condition	Lock Functioning	Bladder Pump			
Good	Good	☒ Yes ☐ No	☒ Yes ☐ No	Casing SS ☐ Casing PVC ☒	☐ Field Blank Collected Time: N/A	☒ Duplicated Collected Time: 1035
				Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☐ No With: N/A	Semi-Annual ☒

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1035	23.96	Clear	None	17.8	1.537	0.66	6.76	-53.7	0.61

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CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-11	49.9	40.7		11/12/24	1456

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3938		401.32			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp. 59 (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	pH (SU)	eH/ORP (mV)	Sp. Cond. (mS)	Turbidity (NTU)	DO Mg/L
1411	0	40.7	150	0	18.37	7.14	213	3.44	12.8	7.01
1416	5	40.63			17.43	6.89	141	3.26	~~25.7~~ 15.1	2.35
1421	10	40.5			17.23	6.81	65	3.22	8.25	1.78
1426	15	40.63			17.23	6.75	29	3.23	6.06	1.78
1431	20	40.65			17.19	6.71	7	3.21	3.93	1.58
1436	25	40.66			17.10	6.58	-8	3.29	2.37	1.53
1441	30	40.79			17.05	6.56	-10	3.48	2.28	1.51
1446	35	40.80			17.05	6.54	-23	3.69	2.12	1.50
1451	40	40.85			17.01	6.52	-29	3.79	2.06	1.42
1456	45	40.89			16.98	6.51	-33	3.76	1.68	1.38
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- .10 (SU)	+/- 10 mV	+/- 3%	+/- 10% unless <5 NTU consider stable	+/- 10% <0.5mg/l stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☑	Field Blank Collected ☐ Yes ☑ No Time:	Duplicated Collected ☑ Yes ☐ No Time:
OK	OK	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☐ No With:	Semi-Annual ☑ Yes ☐ No

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1456	40.89	clear	none	16.98	3.76	1.38	6.51	-33	1.68

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CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-12	72.0	31.89		11-12-24	1218

Site Location:	AKGWA#	Casing Diameter □4" □2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3939		395.54			

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog ☑ Clear □ Partly Cloudy □ Windy Temp. 56 (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1158	0	31.89	200	0	17.89	0.876	5.46	6.67	-75	14.4
1203	5	34.90	↓	2.0	16.97	0.949	2.82	6.60	-120	2.40
1208	10	37.10		3.0	16.74	0.951	1.77	6.57	-131	0.62
1213	15	39.00		3.0	16.75	0.950	1.78	6.57	-135	1.16
1218	20	40.80		4.0	16.71	0.949	1.75	6.57	-137	1.33
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☑	☒ Field Blank Collected Time:	☐ Duplicated Collected Time:
ok	ok	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☑ No With:	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1218	40.80	yellow	none	16.71	0.949	1.75	6.57	-137	1.33

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CCR GROUNDWATER FIELD LOG

GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-13	51.5	26.65		11-12-24	[illegible]1119
Site Location:	**AKGWA#**	**Casing Diameter** ☐4" ☐2" Conversion fact. 4"-0.67 2"-0.16	**Measuring Point (ft.)** 394.60	**Groundwater Elevation (ft.)**	**Well Vol. (Gal.)**	**PO #**
Webster Co, KY	8006-3940					

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☑ Clear ☐ Partly Cloudy ☐ Windy Temp. 51 (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1019	0	28.45	300	0	16.75	1.18	4.72	6.45	250	0.02
1024	5	29.22		1.0	16.53	1.26	4.48	6.35	262	1.53
1029	10	29.85		2.0	16.51	1.27	4.13	6.34	272	1.36
1034	15	30.29		3.0	16.45	1.23	3.67	6.33	278	1.63
1039	20	30.85	✓	4.0	16.47	1.25	2.94	6.33	191	2.85
1044	25	31.25		5.0	16.57	1.26	2.43	6.31	161	3.94
1049	30	31.43		6.0	16.51	1.27	1.84	6.35	148	3.23
1054	35	31.69		7.0	16.50	1.29	1.56	6.33	128	3.55
1059	40	31.82		8.0	16.51	1.29	1.44	6.32	117	2.35
1104	45	32.10		9.0	16.67	1.29	1.35	6.31	107	1.94
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☑	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☑ No With:	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1119	32.54	clear	none	16.74	1.30	1.09	6.31	80	3.21

Big Rivers ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

CCR GROUNDWATER FIELD LOG

GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-13	51.5	26.65		11-12-24	1119
Site Location:	**AKGWA#**	**Casing Diameter** □4" □2" Conversion fact. 4"-0.67 2"-0.16	**Measuring Point (ft.)** 394.60	**Groundwater Elevation (ft.)**	**Well Vol. (Gal.)**	**PO #**
Webster Co, KY	8006-3940					

□ Rain □ Sleet/Freezing Rain □ Snow □ Fog □ Clear □Partly Cloudy □ Windy Temp._____(F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
1109	50	32.30	200	10.0	16.57	1.30	1.24	6.31	98	1.41
1114	55	32.45	↓	11.0	16.50	1.30	1.12	6.32	89	2.20
1119	60	32.54	↓	12.0	16.74	1.30	1.09	6.31	80	3.21
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS □ Casing PVC ☑	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
ok	ok	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☒ No	Split Sample ☐ Yes ☒ No With:	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
1119	32.54	clear	none	16.74	1.30	1.09	6.31	80	3.21

Monitoring Well MW-13 (pH Resample)

pH field readings are below from the 12/17 re-sampling:

Time	Lab pH Probe	Field pH
9:32	6.74	7.17
9:37	6.73	6.4
9:42	6.76	6.27
9:47	6.78	6.29
9:52	6.8	6.34
9:57	6.79	6.36
10:02	6.76	6.35
10:07	6.76	6.34
10:12	6.67	6.33
10:17	6.71	6.32
10:22	6.72	6.33
10:27	6.72	6.33
10:32	6.71	6.32

Thanks,

Hunter Mizell
Environmental Scientist, Green Station
Big Rivers Electric Corporation
9000 State HWY 2096
Robards, KY 42452
Office: (270) 844-5834

Big Rivers
ELECTRIC CORPORATION

Big Rivers ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

CCR GROUNDWATER FIELD LOG — GREEN ASH POND

Site Name:	Well No.	Total Depth (ft.)	Initial Depth to Water (ft.)	Height of Water Column (ft.)	Date:	Time:
GREEN POND	MW-14	49.6	28.49		11-12-24	0907

Site Location:	AKGWA#	Casing Diameter ☐4" ☑2" Conversion fact. 4"-0.67 2"-0.16	Measuring Point (ft.)	Groundwater Elevation (ft.)	Well Vol. (Gal.)	PO #
Webster Co, KY	8006-3941		390.71			

☐ Rain ☐ Sleet/Freezing Rain ☐ Snow ☐ Fog ☑ Clear ☐ Partly Cloudy ☐ Windy Temp. 47 (F°)

Time	ET (min)	Depth to Water (ft.)	Purge Rate ml/min	Volume Purged (L)	Temp (°C)	Sp. Cond. (mS)	DO Mg/L	pH (SU)	eH/ORP (mV)	Turbidity (NTU)
0903	0	28.49	200	0	16.52	1.420	2.23	6.65	150	2.39
0907	5	29.19		1.0	16.61	1.540	1.57	5.82	52	1.70
0912	10	29.34		2.0	16.74	1.55	1.58	5.95	34	1.77
0917	15	29.57		3.0	16.77	1.55	1.56	6.04	26	2.39
0922	20	29.72		4.0	16.80	1.55	1.59	6.14	24	2.66
0927	25	29.88		5.0	16.74	1.57	1.58	6.18	22	2.07
0932	30	29.98		6.0	16.82	1.56	1.66	6.26	25	2.81
0937	35	30.12		7.0	16.83	1.55	1.64	6.31	23	1.57
0942	40	30.15		8.0	16.85	1.54	1.60	6.33	23	0.07
For three (3) consecutive Readings			Required Purge	Actual Purge	+/- 3% (°C)	+/- 3%	+/- 10% <0.5mg/l stable	+/- .10 (SU)	+/- 10 mV	+/- 10% unless <5 NTU consider stable

Well Condition	Pad Condition	Lock Functioning	Bladder Pump	Casing SS ☐ Casing PVC ☑	☐ Field Blank Collected Time:	☐ Duplicated Collected Time:
OK	OK	☑ Yes ☐ No	☑ Yes ☐ No	Filtered: ☐ Yes ☑ No	Split Sample ☐ Yes ☑ No With:	Semi-Annual ☑

Sample Time	Depth to Water	Color	Odor	Temp. (C°)	Sp. Cond. (mS)	DO (mg/L)	pH (SU)	eH/ORP (mV)	Turbidity NTU)
0942	30.15	Clear	none	16.85	1.54	1.60	6.33	23	0.07

Appendix C – Monitoring Well Construction Progress Report (Green Former Surface Impoundment)

BIG RIVERS ELECTRIC CORPORATION

Monitoring Well Construction Progress Report

Sebree Station – Green Former CCR Surface Impoundment

PROJECT NO. 176659
AGENCY INTEREST NO. 4196
REVISION NUMBER 0
DECEMBER 19, 2024

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List of Abbreviations

Abbreviation	Term/Phrase/Name
amsl	above mean sea level
bgs	below ground surface
BREC	Big Rivers Electric Corporation
bTOC	below top of casing
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CFR	Code of Federal Regulations
CCR	coal-combustion residuals
Facility/Site	Big Rivers Electric Corporation's Sebree Generating Station, Former Surface Impoundment at Webster County, Robards, Kentucky
ft	feet
HASP	Health and Safety Plan
IDW	investigation-derived waste
KAR	Kentucky Administrative Regulation
KDEP	Kentucky Department of Environmental Protection
KDWM	Kentucky Department of Environmental Protection, Division of Waste Management
MW	Monitoring Well
Report	Monitoring Network Construction Progress Report
Work Plan	2024 Monitoring Well Installation Work Plan

Index and Certification

BIG RIVERS ELECTRIC CORPORATION
Monitoring Well Construction Progress Report
Project No. 176659

Report Index

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Certification

I, Chris Hoglund, certify that I am a qualified groundwater scientist, having received a baccalaureate or post-graduate degree in the natural sciences or engineering, and having sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound judgements regarding groundwater and contaminant fate and transport.

I further certify, that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse by the BIG RIVERS ELECTRIC CORPORATION or others without specific verification or adaptation by the Geologist.

Chris Hoglund, PG
KY Registered Professional Geologist No. 269814
Burns & McDonnell Engineering Company, Inc.
9400 Ward Parkway
Kansas City, MO 64114
Date: 12/24/2024

1.0 Introduction

Burns & McDonnell Engineering Company Inc. (Burns & McDonnell), on behalf of Big Rivers Electric Corporation (BREC), has prepared this Monitoring Well Construction Progress Report (Report) for the installation of monitoring wells at the former Green Station coal combustion residuals (CCR) surface impoundment (former Green Surface Impoundment or former CCR Unit) at the Sebree Generating Station in Webster County, Kentucky (Facility/Site) in accordance with Title 401 of the Kentucky Administrative Regulations (KAR) Chapter 6 Part 350. An aerial and topographic Site location map are provided as **Figures 1 and 2**, respectively.

The former CCR Unit was permitted (Permit No. SW11700007) by the Commonwealth of Kentucky, Energy and Environment Cabinet, Division of Waste Management (DWM) for disposal of special waste generated by burning coal (CCRs) from Green Station, Reid Station (Retired in 2015), and Henerson Municipal Power & Light (HMP&L) Station 2 (retired in 2019). In December 2021, the Green Surface Impoundment was converted from a Special Waste Surface Impoundment (ACTV0005) to a CCR Surface Impoundment (ACTV0008) as governed by the Code of Federal Regulations (CFR) Title 40 Part 257. In August 2024, BREC completed closure by CCR removal activities (also known as “clean closure”) at the former CCR Unit.

1.1 Purpose

At the request of BREC, additional groundwater monitoring wells were installed to evaluate the occurrence of groundwater in the unconsolidated alluvium overlying the bedrock Carbondale Formation. The monitoring well installation activities were performed in general accordance with the protocols and procedures specified in the Kentucky Department of Environmental Protection (KDEP), DWM approved *2024 Monitoring Well Installation Work Plan* (Work Plan; Burns & McDonnell, 2024a).

1.2 Report Outline

This report has been prepared to provide a summary of the groundwater monitoring well installation activities performed at the Site. This Report includes the following:

- Site Background – Section 2.0
- Monitoring Well Installation Activities – Section 3.0
- References – Section 4.0
- KDWM Work Plan Approval Letter – Included in **Appendix A**
- BREC 10-Day Notification Letter to KDWM – Included in **Appendix B**
- Field Photographs – Included as **Appendix C**
- Field Logbook – Included as **Appendix D**
- Drill Logs – Included as **Appendix E**
- Monitoring Well Construction Diagrams – Included as **Appendix F**
- Uniform Kentucky Well Construction Record – Included as **Appendix G**
- Monitoring Well Development Forms – Included as **Appendix H**
- Monitoring Well Survey Report – Included as **Appendix I**

2.0 Site Background

Below is a summary of the Site location and description, geology, and existing monitoring well network.

2.1 Site Location and Description

BREC owns and operates the Sebree Station, which is a power-generating facility located on the Green River approximately two miles northeast of Sebree, Kentucky. Sebree Station is composed of Green Station and Reid/HMP&L Station. The Sebree Station is bounded by Interstate-69 to the west and the Green River to the east (see **Figure 1**). Green Station Units 1 (250 Megawatt) and 2 (242 Megawatt) began commercial operation as coal-fired units in 1979 and 1981, respectively. Both Green units were converted to natural gas-fired boilers in the second quarter of 2022.

The location of the former CCR Unit is illustrated in **Figures 1** and **2.** The former CCR Unit is located directly south of the Sebree Generating Station and is situated north of the active Green CCR Landfill. The former CCR Unit had been in use for more than 40 years for the placement of CCR material. The footprint of the former CCR Unit was approximately 26 acres. As stated in the CCR monitoring well network certification for this CCR unit (Associated Engineering Inc., June 2016), the former CCR Unit was a combined incised/dike earthen embankment structure. It was diked on the west, south and east sides, while the north side is incised. The south dike had the greatest height, reaching approximately 20 feet. The original ground surface within the pond footprint was irregular and the predominant features were small stream valleys.

In 2022, this CCR unit began closure by removal activities which were completed in August 2024. Following completion of the closure by removal activities, the former CCR Unit remains an open incised area (without CCR) with plans for repurposing as a non-CCR surface impoundment.

2.2 Geology

The former surface impoundment lies in the Western Kentucky Coalfields section of the Interior Low Plateaus physiographic province, characterized by rolling uplands underlain by coal-bearing bedrock of the Pennsylvanian Period. The geology underlying the Site vicinity consists of unconsolidated materials, including loess and alluvial deposits, underlain by Upper to Middle Pennsylvanian-age clastic and carbonate bedrock consisting primarily of sandstone and shale. The unconsolidated materials also include fill, silty and clayey residuum, and minor amounts of sandy, clayey channel fill alluvium. The bedrock is comprised of the Upper Pennsylvanian Shelburn Formation (formerly identified as the Lisman Formation [Fairer, 1973]) and the Middle Pennsylvanian Carbondale Formation. At the base of the Shelburn Formation is the Providence Limestone Member, consisting of limestone and interbedded shale, but this geologic unit is absent in much of the area due to erosional channeling. Due to its discontinuous character and the presence of interbedded shale, hydrologically significant karst features are not present in the Providence Limestone Member. The underlying Carbondale Formation consists of cyclic sequences of sandstones, shales, siltstones and coals. The Carbondale sediments were deposited in a fluvial-deltaic system. As a result of this depositional environment, the sandstone/siltstone units of the Carbondale tend to be lenticular bodies rather than continuous sheet-like strata. Regionally, gradational and abrupt horizontal changes in lithology are often encountered. Fairer (1973) reports three coal beds within the Carbondale Formation consisting of (in descending order): No. 11, No. 10, and No. 9 coal beds. The thin No. 11 coal bed is locally present beneath the Providence Limestone Member of the overlying Lisman Formation. The No. 10 coal bed is discontinuous

locally and not present throughout the area. The No. 10 coal bed is pyritic, average 4-feet in thickness, and is at the base of the Carbondale Formation.

2.3 Existing Monitoring Well Network

Monitoring wells were installed at the former CCR Unit beginning in November 1996. The existing wells are located along the perimeter of the former CCR Unit footprint. One upgradient monitoring well (MW-11) and three downgradient monitoring wells (MW-12, MW-13, and MW-14) were installed around the Unit to determine the general direction of groundwater movement and to monitor groundwater quality. Each monitoring well has a dedicated bladder pump system and tubing installed for groundwater sampling purposes. A map illustrating the location of all groundwater monitoring wells is presented as **Figure 3**.

The targeted stratigraphic interval of the existing monitoring wells is material identified as the Upper Sandstone Member (Sebree sandstone) of the Carbondale Formation. The United States Geological Survey Geologic Map of the Robards Quadrangle (Fairer, 1973) describes the Sebree sandstone sequence as “Siltstone, sandstone, shale and coal: Siltstone, light- to medium-gray, micaceous, thin-bedded, locally calcareous. Sandstone, light- to medium-gray, grayish- and yellowish-brown, fine- to medium-grained slightly micaceous, thin-bedded to massive; locally fills channels. Shale, dark-gray to black, carbonaceous.”

3.0 Monitoring Well Installation Activities

To support the installation of the groundwater monitoring wells, the following field activities were performed in accordance with the KDWM-approved Work Plan:

- Advanced four (4) borings completed with monitoring wells.
- Developed three (3) of four (4) newly installed monitoring wells.
- Conducted surveying of the newly installed monitoring wells.

The monitoring well locations are illustrated in **Figure 3**. The general approach and results of field activities is presented below. These new groundwater monitoring wells will be included as characterization wells in the established CCR groundwater monitoring program at the Site to evaluate the occurrence of groundwater in the alluvium. A copy of the Work Plan approval letter from the KDWM is provided in **Appendix A**.

3.1 Pre-Investigation Activities

Pre-investigation activities included preparing a Site-specific Health and Safety Plan (HASP), obtaining onsite property access, clearing subsurface utilities, and satisfying KDWM permit requirements.

3.1.1 Health and Safety Plan

A Site-specific HASP (Burns & McDonnell, 2024b) was developed for the implementation of the monitoring well installation field activities. The HASP met applicable Occupational Safety and Health Administration standards/guidelines relevant to the planned workplace field activities, and also included current state safety standards and BREC-specific health and safety requirements. The HASP was used to guide safety practices for the field work of both Burns & McDonnell field personnel and Burns & McDonnell subcontractors. No health or safety incidents occurred during the well installation activities.

3.1.2 Site Access and Permitting

Site access, including access to the monitoring well locations within the existing BREC Green Station property, was obtained and coordinated with BREC prior to initiation of field work. No access agreements or permits were needed as all the monitoring wells are located on BREC property.

3.1.3 Utility Clearance

Prior to the initiation of field activities, subsurface utilities were located with the aid of BREC personnel and Kentucky One-Call (811 local or 1-800-752-6007), a public utility locating service. BREC was responsible for locating all on-site utilities owned by BREC and contracted a private utility locator to further mark/clear utilities in the vicinity of the new monitoring wells.

3.1.4 KDWM Notification

In accordance with 401 KAR 6:350 Section 12 and the permit (GSTR003), BREC provided the KDWM at least 10 days' notice prior to monitoring well construction and abandonment activities associated with the KDWM-approved Work Plan. Notification was provided to the KDWM via a letter prepared by BREC dated October 1, 2024. A copy of the notification letter is provided in **Appendix B**. A member of the KDWM was present to observe construction of Monitoring Well MW-12B.

3.2 Monitoring Well Installation

Four (4) new monitoring wells were installed as characterization monitoring wells at the former CCR Unit in accordance with 401 KAR 6:350 and included Monitoring Wells MW-11A, MW-12B, MW-13B and MW-14A **(Figure 3)**. Monitoring Well MW-12B was installed ~100 feet north of the existing deeper bedrock Monitoring Well MW-12. Newly installed Monitoring Wells MW-11A, MW-13B and MW-14A were installed in close proximity to the existing deeper bedrock Monitoring Wells MW-11, MW-13, and MW-14 respectively.

3.2.1 Drilling Activities

A combination of direct-push and hollow-stem auger (HSA) drilling methods were used for borehole advancement and monitoring well construction. Drilling and well construction/installation services were provided by Direct Push Analytical Corp, a Kentucky-licensed driller and KDWM-certified well contractor, in accordance with 401 KAR 6:350 monitoring well construction practices and standards.

Four (4) monitoring wells, MW-11A, MW-12B, MW-13B and MW-14A, were completed in unconsolidated alluvial overburden. Continuous soil sampling was performed at each monitoring well location using direct-push drilling techniques by advancing a direct-push core barrel through the alluvium overburden materials to the top of bedrock. Following continuous soil sampling to top of bedrock, the direct-push borehole was reamed/over-drilled using HSA drilling techniques to accommodate monitoring well installation.

3.2.2 Geology Encountered

The retrieved continuous soil/bedrock samples from direct-push and HSA drilling were examined by the field geologist. Photos of the recovered soil and bedrock from each monitoring well location are included in **Appendix C**. A copy of the field logbook and drill logs are included in **Appendices D and E**, respectively. The drilling depths for the new monitoring wells are summarized in **Table 1**.

The upper 12 to 17 feet of overburden consisted of a yellowish-brown to brown clay, with to some silt, trace to some fine sand, medium to high plasticity, medium to high stiffness, and trace to some iron-oxide staining. Between 17 to 32 feet below ground surface (bgs) the color of the overburden clay changed to very dark gray to grayish brown. An approximate 3-foot-thick transition zone was observed above bedrock comprised of gravel with some fine sand and trace-some silt and clay.

3.2.3 Monitoring Well Construction and Installation

The four (4) monitoring wells were installed through an 8.25-inch outside diameter HSA borehole. The bedrock geology encountered during drilling determined the targeted depth for the placement of the monitoring well screens within the alluvium above the top of bedrock.

Before installing the monitoring wells at the targeted depths, a minimum 6-inch-thick filter pack sand cushion was placed in the bottom of each borehole. The well filter packs consisted of Global Drilling Supplies Global Quartz Silica Sand, a clean, uniform, 12/20-grade silica sand.

The well casing, screen, and end cap were threaded together to construct each monitoring well and placed in the associated borehole through the HSAs, with the end cap set on top of the filter pack sand cushion. For Monitoring Well MW-12B (the only well greater than 50 feet in depth), the well casing was equipped with centralizers with the lowermost centralizer placed at approximately 46 feet bgs, which is above the bentonite

seal, and subsequent centralizers were placed every 10 feet thereafter proceeding upwards to 6 feet bgs. Well filter pack sand was placed around each well screen and extended from the bottom of the well to approximately 2-feet above the top of each well screen. The sand filter packs were placed by the gravity free-fall method with the depth of sand continuously monitored during placement downhole with a weighted tape measure to confirm bridging was not occurring and that the targeted top of sand placement depths were achieved.

At each well, an approximate 2-foot thick bentonite seal was placed immediately above the well filter pack sand, and consisted of Polymer Drilling Systems Pel-Plug 3/8-inch coated, time release, bentonite pellets. The bentonite pellets were placed using the gravity free-fall method while continuously monitoring installation depths during placement downhole with a weighted tape measure to confirm bridging was not occurring and that the targeted top of bentonite placement depth was achieved. Each bentonite seal was allowed to hydrate per manufacturer's recommendation of 2-hours before placing the annular seal.

Annular seals consisted of Haliburton's Barotherm®, a high-solids bentonite grout slurry. The grout was placed above the bentonite seal at each well using a tremie grout pipe per 401 KAR 6:350 Section 7, with the bottom of the pipe placed approximately 0.5-1.0 foot from the top of the bentonite seal. The grout pipe remained at depth until the high solids grout reached approximately 3 feet bgs. The grout was allowed to settle and if needed, additional grout was added to achieve a final minimum grout depth of 3 feet bgs.

Monitoring wells were completed above the ground surface in accordance with 401 KAR 6:350 Section 8. Each well casing was constructed to protrude approximately 2.5 feet above ground surface and was fitted with a locking steel protective cover. The protective covers were installed by first pouring concrete slurry into the borehole on top of the annular seal, and then pushing the protective covers into the wet concrete slurry, approximately 3-feet bgs. 3-foot square, 6-inch-thick concrete pads were constructed around each protective cover, with the protective cover centered within the pad. The concrete surface pads were installed in separate pours after the installation of the protective surface covers. The concrete pads were sloped outward to provide a means for water to flow off of the pads and two (2) one-quarter inch weep holes were drilled into opposite sides of each steel protective cover, approximately one-half inch above the concrete pads. Four (4) bollard posts were installed outside the corners of each well pad to provide protection from vehicle or equipment strikes. The bollards were not located within or in contact with the surface well pad and consisted of 3-inch diameter steel pipes that were 5-foot in length, extending approximately 3-feet above ground surface and 2-feet bgs. The bollards were coated with high-visibility yellow paint and filled with concrete. A water-tight well cap was installed in the top of each well casing and a minimum clearance of approximately one inch was maintained between the top of each well casing and the protective cover to provide secure, unobstructive closure of the lids. Kentucky Water Well identification tags were affixed to the inside each of the protective cover lids.

The well construction details and well diagrams for the new monitoring wells are provided in **Table 1** and **Appendix F**, respectively. Photos of the typical monitoring well construction and installation activities are included in **Appendix C**. A Uniform Kentucky Well Construction Record was completed by Direct Push Analytical Corp. for each new monitoring well and submitted to KDWM. Copies of the well construction records are provided in **Appendix G**. However, monitoring well construction records were submitted referencing the incorrect Kentucky Well ID numbers (except for MW-14A) and will need to be updated by the KDWM. The correct Kentucky Well ID numbers are noted on the well construction records provided in **Appendix G** and summarized below.

New Monitoring Well Construction Record Summary

New Monitoring Well	Current Kentucky Well ID No.	Correct Kentucky Well ID No.
MW-11A	8006-7544	8006-7551
MW-12B	8006-7551	8006-7552
MW-13B	8006-7552	8006-7554
MW-14A	8006-7553	8006-7553

3.3 Monitoring Well Development

Well development was performed on three of the four newly installed monitoring wells to remove fine-grained material from the well screens and filter packs. Development was accomplished by surging and pumping the monitoring wells using a submersible pump. Monitoring Well MW-12B was not developed due to the electrical lead on the submersible pump not being long enough to place the pump within the screened interval and reach the bottom of the well. Monitoring Well MW-12B will be developed at a later time.

The monitoring wells were each developed one to two times, with the well being pumped dry during each development event due to the low yield from the screened alluvium. Field water quality parameters of pH, conductivity, temperature, and relative turbidity were measured at the beginning and throughout the development. Final water quality parameter readings were recorded after the well was nearly dry. Except for Monitoring Well MW-12B (not developed), approximately three saturated well volumes of groundwater were pumped from each well. Data collected during the development of each well was recorded on a Well Development Form, copies of which are included in **Appendix H**.

3.4 Monitoring Well Surveying

The new monitoring wells at the former CCR Unit were surveyed for both vertical and horizontal control. Surveying was performed by Associated Engineers of Madisonville, Kentucky, a Kentucky-licensed Professional Land Surveyor, on October 22, 2024. The monitoring well locations were surveyed horizontally to the nearest 0.1 foot and referenced to a local coordinate system (northing and easting) using the Kentucky State Plane, Southern Zone and also included latitude/longitude coordinates. The monitoring well locations were surveyed vertically using an established surveyed benchmark referenced to the North American Datum 1927. The ground surface elevation at each monitoring well location was measured to the nearest 0.1 foot relative to mean sea level and reported using a Facility-specific datum from an established surveyed benchmark. The top of the monitoring well riser pipe was surveyed to the nearest 0.01 foot relative to mean sea level. The survey report prepared by Associated Engineers is provided in **Appendix J**.

3.5 Groundwater Occurrence

Groundwater level data was collected from both the existing and newly installed monitoring wells on November 12, 2024. Groundwater levels were measured using a decontaminated, battery-operated, electronic water level probe. Newly installed Monitoring Well MW-14A was dry. Groundwater depth and elevation data are provided in **Table 2** and summarized below.

Groundwater Depth and Elevation Summary

Stratigraphic Unit	Depth (ft bTOC)	Elevation (ft amsl)
Alluvium	19.48 (MW-11A) to 30.47 (MW-12B)	380.85 (MW-11A) to 362.57 (MW-12B)
Bedrock	26.48 (MW-13) to 40.04 (MW-11)	368.12 (MW-13) to 361.27 (MW-11)

amsl – above mean sea level
bTOC – below top of casing
ft- feet

3.6 Estimated Vertical Hydraulic Gradient

Vertical hydraulic gradients can be estimated using hydrologic data obtained from paired/clustered monitoring wells. Three newly installed clustered well pairs containing groundwater include Monitoring Wells MW-11 and MW-11A, MW-12 and MW-12B, and MW-13 and MW-13B.

The estimated vertical groundwater gradient is calculated as follows:

$$\frac{\text{Groundwater Elevation (shallow well)} - \text{Groundwater Elevation (deep well)}}{\text{Midpoint of Screen Elevation (shallow well)} - \text{Midpoint of Screen Elevation (deep well)}}$$

* A positive value identifies a downward gradient, while a negative value identifies an upward gradient.

The estimated vertical hydraulic gradients are provided in **Table 3** and summarized below.

Estimated Vertical Hydraulic Gradients Summary

Monitoring Well Pair	Calculated Vertical Gradient (feet/foot)	Vertical Gradient
MW-11A/11	0.711	Downward
MW-12B/12	-0.075	Upward
MW-13B/13	0.018	Downward

3.7 Decontamination

Drilling equipment, tools, and other non-disposable sampling equipment used for subsurface soil sampling and well installations were decontaminated with a Hotsy® hot water pressure washer prior to drilling operations and between boring and monitoring well locations. A centralized decontamination area was constructed near MW-12B and all decontamination fluids were temporarily contained within a large water trough (stock tank). Decontamination fluids were pumped from the decontamination trough and managed in accordance with investigation-derived waste (IDW) procedures specified in Section 3.8.

3.8 Investigation-Derived Waste

Excess soil cuttings resulting from the drilling operations through the soil overburden were temporarily contained in U.S. Department of Transportation approved and United Nations rated 55-gallon drums with the soil contents later disposed of by BREC at the Green CCR Landfill.

Liquid IDW generated during monitoring well installation activities consisted primarily of decontamination water and groundwater purged during well development. Liquid IDW was temporarily containerized in U.S. Department of Transportation approved and United Nations rated 55-gallon drums and disposed of on-Site by BREC at the Northeast Sediment Pond located directly northeast of the Green CCR Landfill.

4.0 References

Associated Engineers, Inc., 2016. CCR Impoundment Groundwater Monitoring System and Statistical Methods Assessment and Certification, Green Station CCR Surface Impoundment. June 26.

Burns & McDonnell, 2024a. 2024 Monitoring Well Installation Work Plan, Sebree Generating Station, Green Former CCR Surface Impoundment, Webster County, Kentucky, Agency Interest No. 4196, Revision 01. October 7th.

Burns & McDonnell, 2024b. Safety & Health Program, Big Rivers Electric Corp., Sebree Former Green Ash Pond PZ Installations. October 2nd.

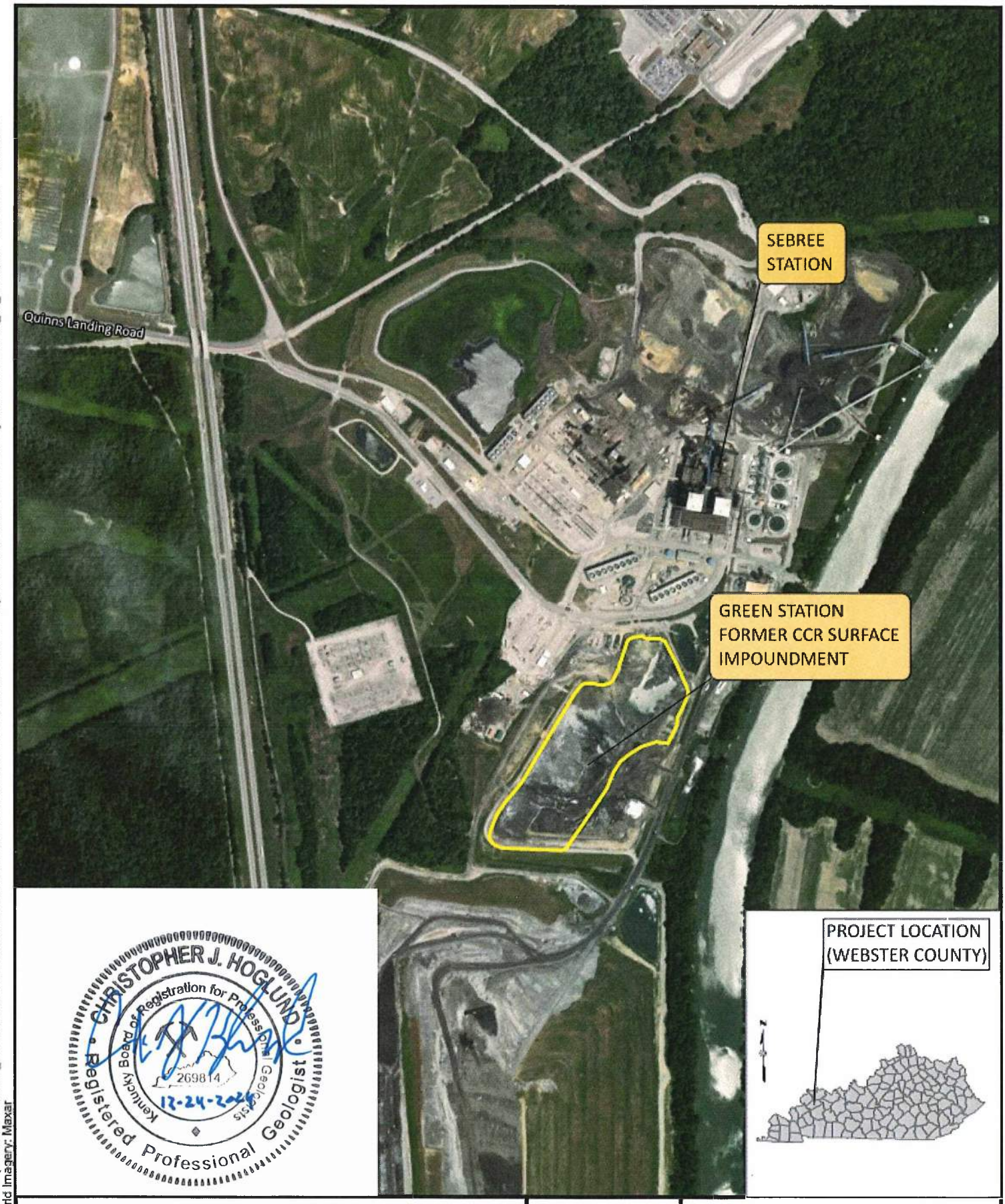
Fairer, G.M., 1973. Geologic Map of the Robards Quadrangle, Henderson and Webster Counties, Kentucky, U.S. Geological Survey.

Kentucky Administrative Regulation (KAR), Title 401 Energy and Environmental Cabinet, Department for Environmental Protection, Chapter 6 Water Wells, Section 350, Monitoring Well Construction Practices and Standards (401 KAR 6:350).

KAR, Title 401 Energy and Environmental Cabinet, Department for Environmental Protection, Chapter 45 Special Waste Section, Section 160, Surface and Groundwater Monitoring and Corrective Action for Special Waste Sites or Facilities (401 KAR 45:160).

KAR, Title 401 Energy and Environmental Cabinet, KDEP, Chapter 46, Coal Combustion Residuals (401 KAR Chapter 46).

Figures



CHRISTOPHER J. HOGLUND
Kentucky Board of Registration for Professional Geologists
269814
12-24-2024
Registered Professional Geologist

Legend

Former CCR Unit Boundary (approximate)

NORTH

0 500 1,000

Scale in Feet

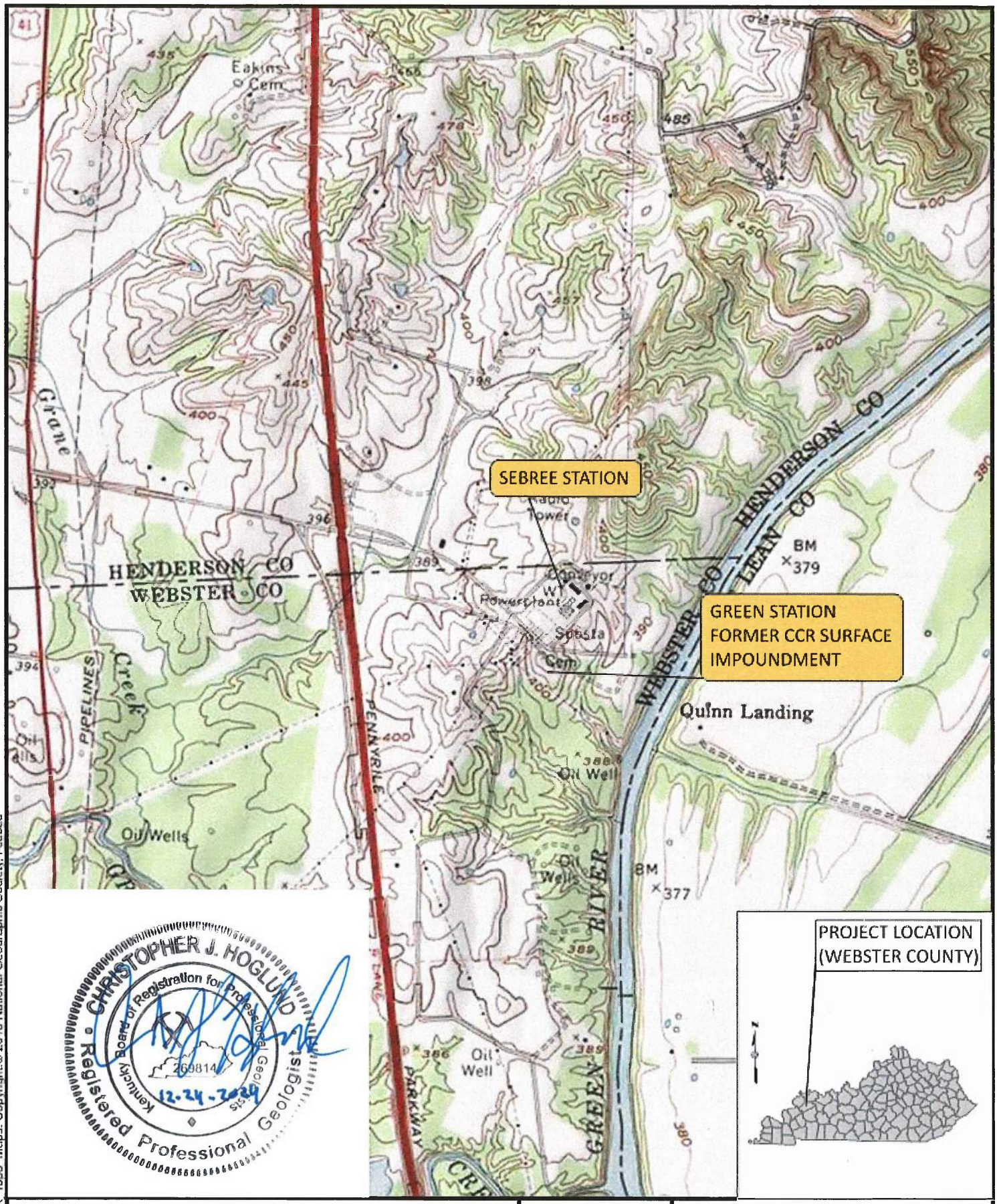
BURNS McDONNELL

FIGURE 1
AERIAL SITE LOCATION MAP
GREEN STATION FORMER CCR SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Source: ArcGIS Online World Imagery, Burns & McDonnell Engineering, Inc, BREC

Issued: 12/6/2024

Path: \\bmcdfs\Clients\ENS\BigRiversEC\153431_2022SebreeGW\Studies\Geospatial\DataFiles\ArcDocs\BREC Sebree Green LF Figure\BREC Sebree Green IS Figure 112724\BREC_SI_WP.aprx ORParab 12/6/2024
Service Layer Credits: World Imagery: Maxar



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROBARDS QUADRANGLE
DELAWARE QUADRANGLE
(FROM ARCGIS ONLINE Copyright:© 2011 National Geographic Society, i-cubed)

0 1,000 2,000
Scale in Feet

NORTH

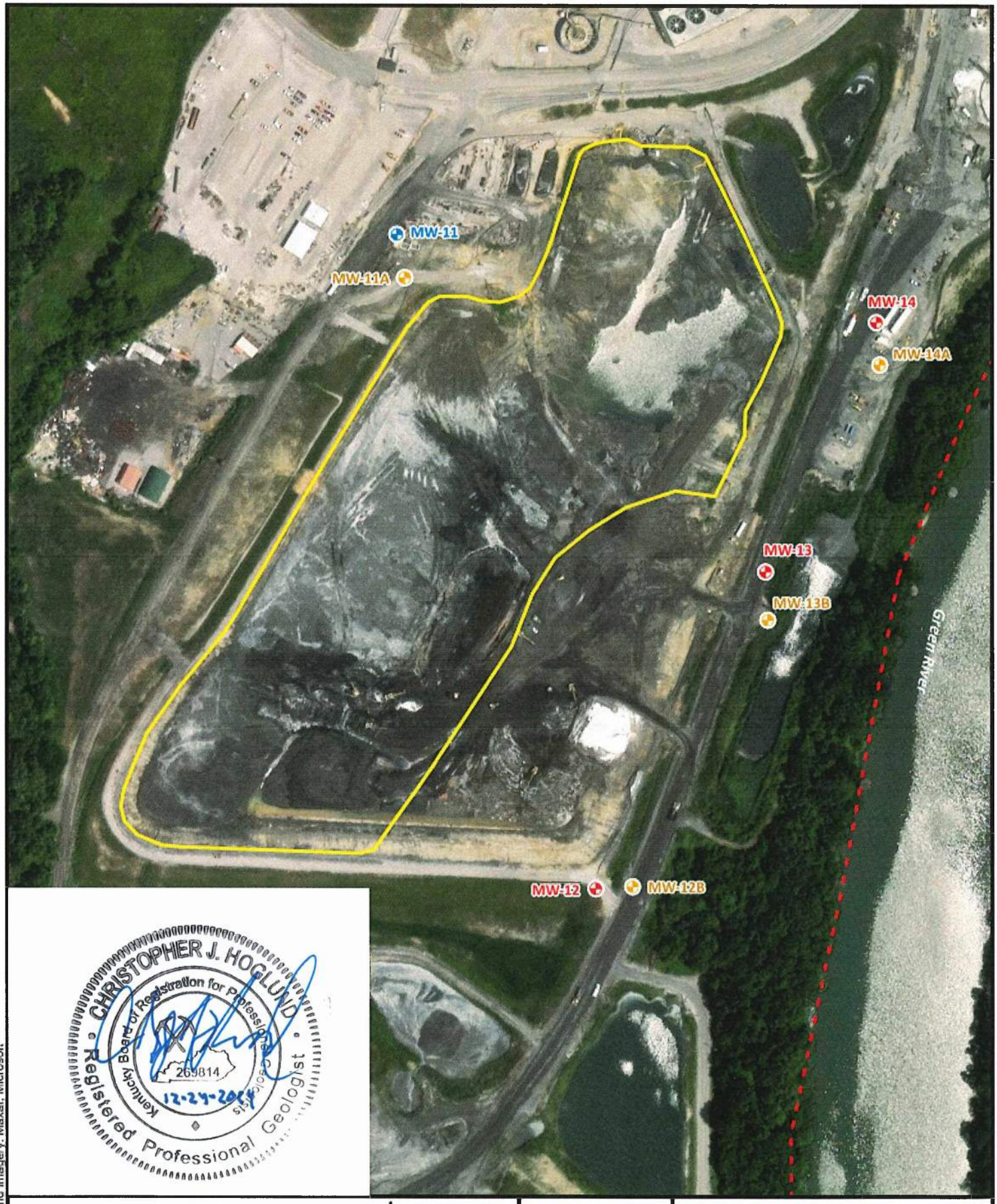
BURNS McDONNELL

FIGURE 2
TOPOGRAPHIC SITE LOCATION MAP
SEBREE STATION
WEBSTER COUNTY, KENTUCKY

Path: \\bmcdfs\Clients\ENS\BigRiversEC\153431_2022SebreeGW\Studies\Geospatial\DataFiles\ArcDocs\BREC Sebree Green LF Figure\BREC Sebree Green IS Figure 112724\BREC_SI_WP.aprx ORParab 12/6/2024
Service Layer Credits: USA_Topo_Maps: Copyright:© 2013 National Geographic Society, i-cubed

Source: ArcGIS Online Copyright: 2011 National Geographic Society, i-cubed, Burns & McDonnell Engineering, Inc, BREC

Issued: 12/6/2024



CHRISTOPHER J. HOGLUND
Kentucky Board of Registration for Professional Geologists
Registered Professional Geologist
269814
12-24-2024

Legend

- DOWNGRADIENT CCR MONITORING WELLS
- UPGRADIENT CCR MONITORING WELL
- NEWLY INSTALLED MONITORING WELLS
- (IMPOUNDMENT) UNIT BOUNDARY (APPROX.)
- PROPERTY BOUNDARY

NORTH

0 100 200

Scale in Feet

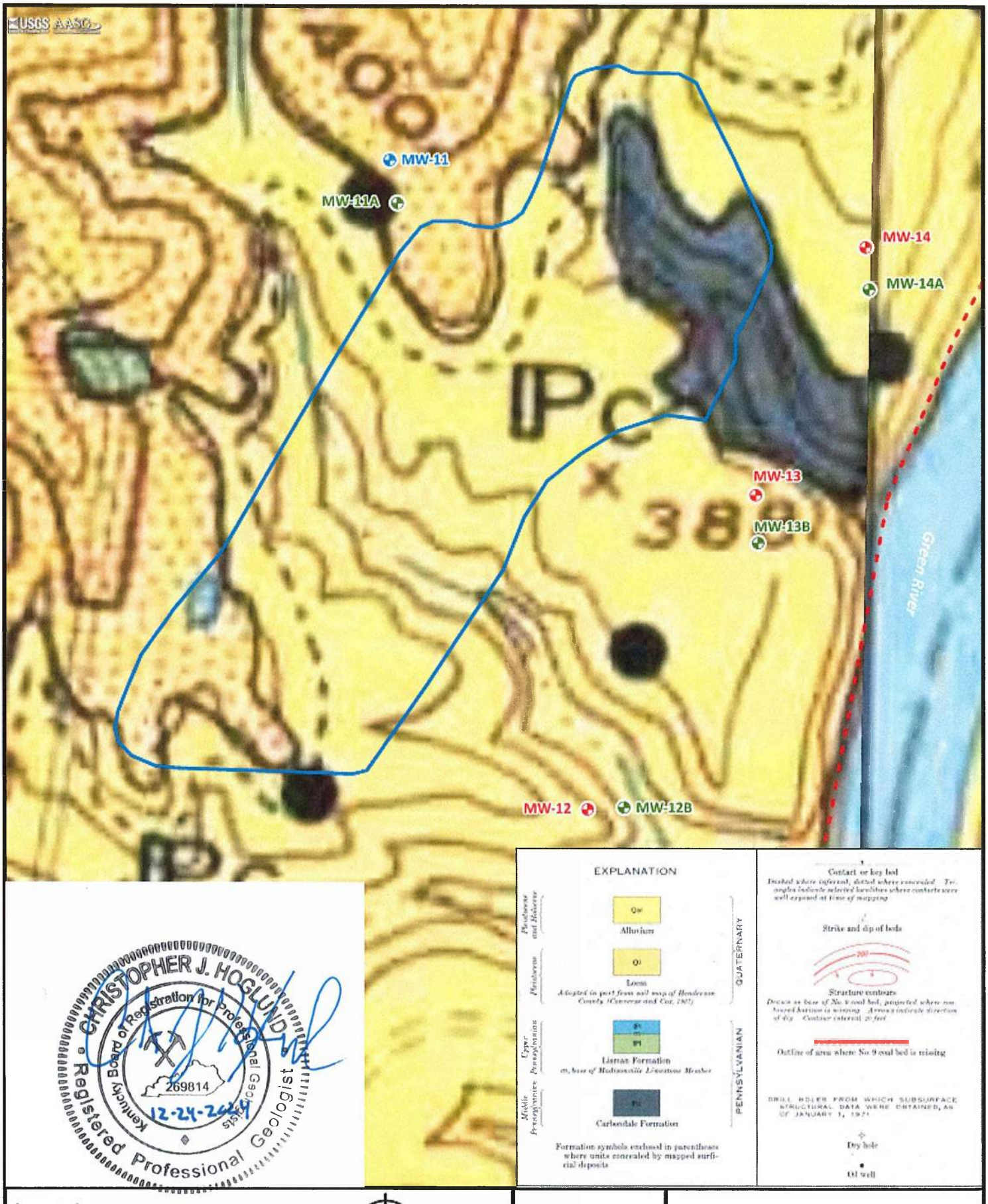
BURNS McDONNELL

FIGURE 3
GROUNDWATER MONITORING NETWORK FORMER GREEN SURFACE IMPOUNDMENT WEBSTER COUNTY, KENTUCKY

Path: \\bmcdfs\Clients\ENS\BigRiversEC\153431_2022SebreeGW\Studies\Geospatial\DataFiles\ArcDocs\BREC Sebree Green LF Figure\BREC Sebree Green IS Figure 112724\BREC_SI_WP.aprx ORParab 12/6/2024
Service Layer Credits: World Imagery: Maxar, Microsoft

Source: Esri, USGS, Burns & McDonnell Engineering, Inc, BREC

Issued: 12/6/2024



CHRISTOPHER J. HOGLUND
Kentucky Board of Registration for Professional Geologists
269814
12-24-2024
Registered Professional Geologist

Legend

- DOWNGRADIENT CCR MONITORING WELLS
- UPGRADIENT CCR MONITORING WELL
- NEWLY INSTALLED MONITORING WELLS
- (IMPOUNDMENT) UNIT BOUNDARY (APPROX.)
- PROPERTY BOUNDRY

NORTH

0 100 200

Scale in Feet

BURNS McDONNELL

FIGURE 4
SURFACE GEOLOGICAL MAP
FORMER CCR SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

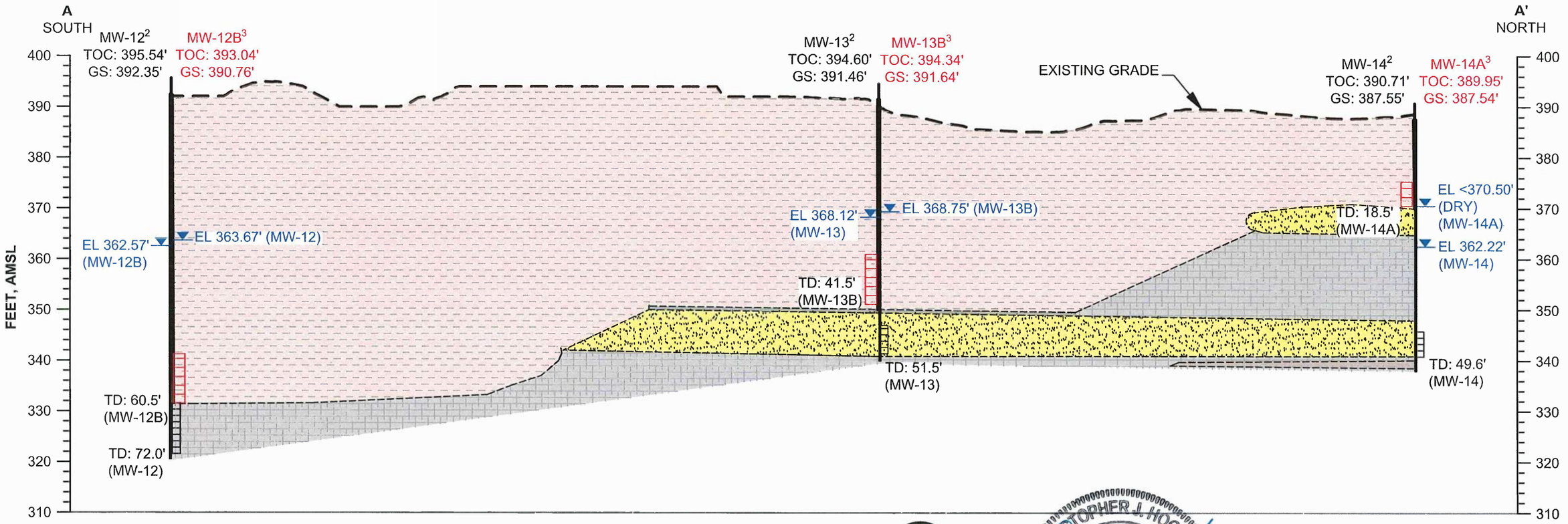
Path: \\bmcdcfs\Clients\ENS\BigRiversEC\153431_2022SebreeGW\Studies\Geospatial\DataFiles\ArcDocs\BREC Sebree Green LF Figure\BREC Sebree Green IS Figure 112724\BREC_SI_WP.aprx ORPparab 12/6/2024

Service Layer Credits:

Source: Esri, USGS, Burns & McDonnell Engineering, Inc, Geologic map of the robards quadrangle, Henderson and Webster counties, Kentucky by George m. Fairer1973, BREC

Issued: 12/6/2024

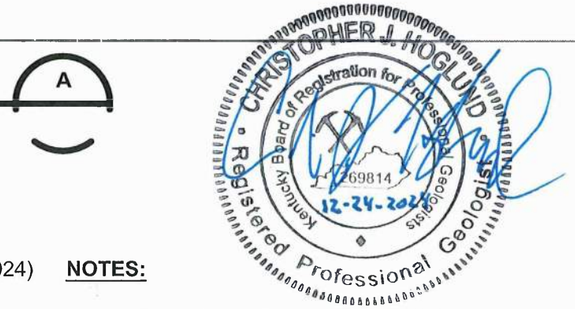
GREEN STATION FORMER CCR SURFACE IMPOUNDMENT
(WEST OF X-SECTION TRANSECT)



HORIZ: 0 50' 100' 200'
SCALE IN FEET

VERT: 0 10' 20' 40'
SCALE IN FEET

SECTION A-A'



LEGEND:

UNCONSOLIDATED MATERIAL:
- SILTY CLAY

BEDROCK LITHOLOGY:
- SANDSTONE
- SHALE
- INTERBEDDED SANDSTONE AND SHALE

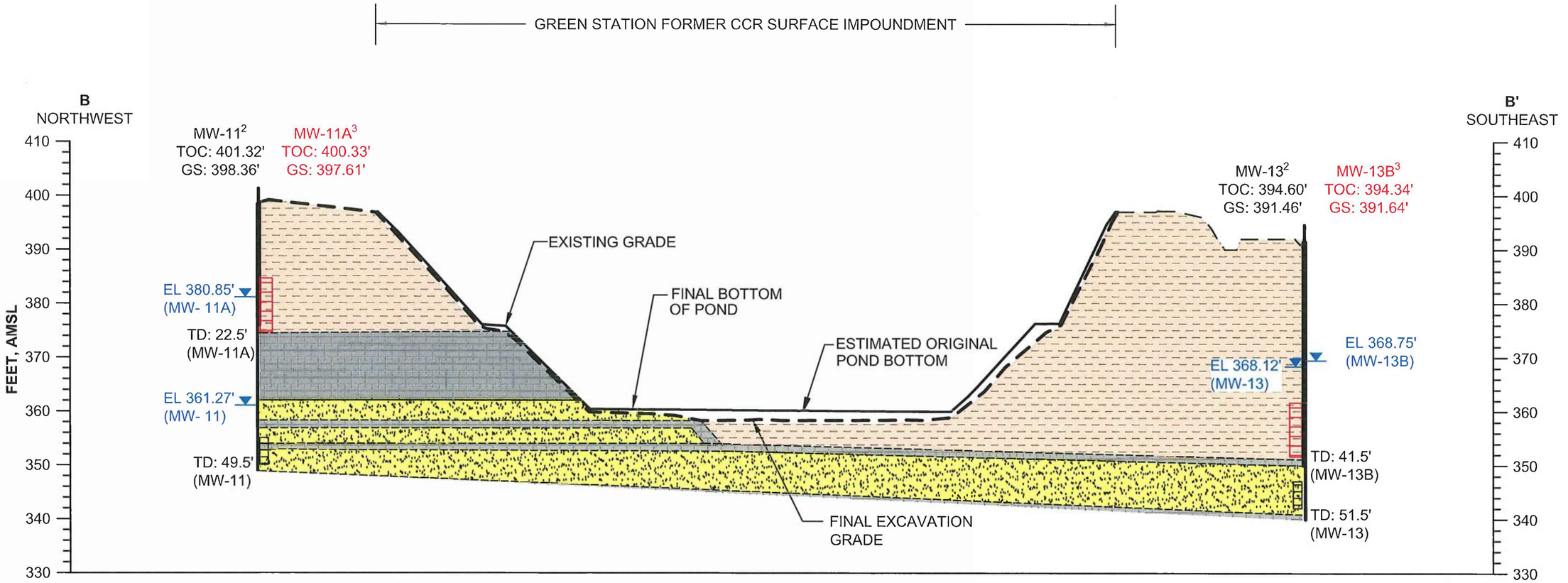
- POTENTIOMETRIC SURFACE (MEASURED IN 11/12/2024)
- MW-12B MONITORING WELL LOCATION ID
- AMSL ABOVE MEAN SEA LEVEL
- EXISTING MONITORING WELL SCREEN INTERVAL
- GS GROUND SURFACE
- TD TOTAL DEPTH
- TOC TOP OF CASING
- CCR COAL COMBUSTION RESIDUALS
- EL ELEVATION (FEET ABOVE MEAN SEA LEVEL [FT AMSL])
- GS GROUND SURFACE ELEVATION (FT AMSL)
- NEW MONITORING WELL SCREEN INTERVAL

NOTES:

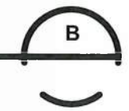
1. CORRELATION OF UNITS IS AN INTERPRETATION AND NOT NECESSARILY A DELINEATION OF ACTUAL EXTENT AND THICKNESS OF INDIVIDUAL UNITS (DASHED WHERE INFERRED).
2. LITHOLOGY WAS LOGGED BY ASSOCIATED ENGINEERS, INC. PERSONNEL.
3. LITHOLOGY WAS LOGGED BY BURNS & MCDONNELL PERSONNEL.
4. EXISTING GRADE FROM ASSOCIATED ENGINEERS, INC. (DATED 12/8/2015).

BURNS McDONNELL

FIGURE 5
GENERALIZED GEOLOGIC CROSS-SECTION A-A'
GREEN FORMER CCR
FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

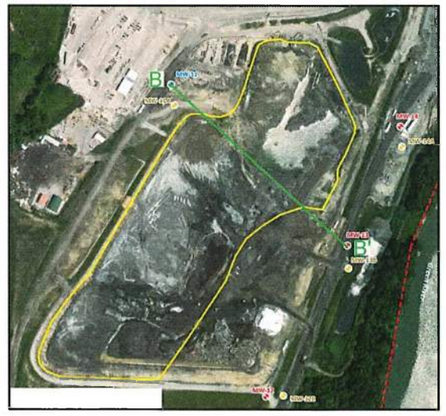


SECTION B-B'



HORIZ: 0 50' 100' 200' SCALE IN FEET

VERT: 0 10' 20' 40' SCALE IN FEET



LEGEND:

UNCONSOLIDATED MATERIAL:
- SILTY CLAY

BEDROCK LITHOLOGY:
- SANDSTONE
- SHALE

- POTENTIOMETRIC SURFACE (MEASURED IN 11/12/2024)
- MW-11A MONITORING WELL LOCATION ID
- EXISTING MONITORING WELL SCREEN INTERVAL
- GS GROUND SURFACE
- TD TOTAL DEPTH
- TOC TOP OF CASING
- NEW MONITORING WELL SCREEN INTERVAL
- AMSL ABOVE MEAN SEA LEVEL

NOTES:

1. CORRELATION OF UNITS IS AN INTERPRETATION AND NOT NECESSARILY A DELINEATION OF ACTUAL EXTENT AND THICKNESS OF INDIVIDUAL UNITS (DASHED WHERE INFERRED).
2. LITHOLOGY WAS LOGGED BY ASSOCIATED ENGINEERS, INC. PERSONNEL.
3. LITHOLOGY WAS LOGGED BY BURNS & MCDONNELL PERSONNEL.
4. EXISTING GRADE FROM ASSOCIATED ENGINEERS, INC. (DATED 12/8/2015).

BURNS McDONNELL

FIGURE 6

CROSS SECTION B-B'
GREEN FORMER CCR
FORMER SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Tables

Table 1
Summary of Monitoring Well Construction Details
Former Green CCR Surface Impoundment
Big Rivers Electric Corporation - Sebree Station
Webster County, Kentucky

Well No.		Location*		Reference Elevation*		Casing Length	Size / Type	Filter Pack Interval		Screened Interval		Bottom of Boring
		Lat	Long	TOIC (feet, NAV88)	GS (feet, NAV88)	(feet, TOIC)	(ID / Material)	(feet, GS, NADV88)		(feet, GS, NADV88)		(feet, GS)
Program Monitoring Wells								Top	Bottom	Top	Bottom	
MW-11 (8006-3938)	U / B	37.64262	-87.50325	401.32	398.36	51.5	2 inch / PVC	356.86	348.46	354.86	349.86	49.5
MW-12 (8006-3939)	D	37.63915	-87.50182	395.54	392.35	73.7	2 inch / PVC	333.85	320.35	331.85	321.85	72.0
MW-13 (8006-3940)	D	37.64086	-87.50072	394.60	391.46	52.6	2 inch / PVC	348.96	339.96	346.96	341.96	51.5
MW-14 (8006-3941)	D	37.64220	-87.50001	390.71	387.55	50.0	2 inch / PVC	347.75	337.95	345.75	340.75	49.6
Characterization Wells (Water Level Gauging)												
MW-11A (8006-7551)	U / B	37.64252	-87.503231	400.33	397.61	25.45	2 inch / PVC	387.81	374.38	384.88	374.88	22.5
MW-12B (8006-7552)	D	37.63930	-87.50162	393.04	390.76	61.52	2 inch / PVC	342.96	331.02	341.52	331.52	60.5
MW-13B (8006-7554)	D	37.64073	-87.50074	394.34	391.64	42.40	2 inch / PVC	364.44	351.44	361.94	351.94	41.5
MW-14A (8006-7553)	D	37.64211	-87.50002	389.95	387.54	19.45	2 inch / PVC	379.54	370.00	375.50	370.50	18.5

*Reference elevation of monitoring wells surveyed by Associated Engineers, Inc., Madisonville, Kentucky, January 2015
Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, North American Datum of 1927 (NAD27) datum.

D = Downgradient
GS = Ground surface
ID = Internal diameter
Lat./Long. = Latitude and longitude
NAVD88 = North American Vertical Datum of 1988
PVC = Polyvinyl chloride
TOIC = Top of internal casing
U / B = Upgradient / Background

Table 2
Groundwater Elevations - November 2024
Former Green CCR Surface Impoundment
Big Rivers Electric Corporation - Sebree Station
Webster County, Kentucky

	GROUNDWATER MONITORING WELL PROGRAM							
	MW-11		MW-12		MW-13		MW-14	
Reference Elevation TOIC*(ft, NADVD88)	Upgradient/Background 401.32		Downgradient 395.54		Downgradient 394.60		Downgradient 390.71	
Date Measured	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)
11/12/2024	40.05	361.27	31.87	363.67	26.48	368.12	28.49	362.22

	CHARACTERIZATION MONITORING WELLS - WATER LEVEL GAUGING							
	MW-11A		MW-12B		MW-13B		MW-14A	
Reference Elevation TOIC*(ft, NADVD88)	Upgradient/Background 400.33		Downgradient 393.04		Downgradient 394.34		Downgradient 389.95	
Date Measured	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)	Depth to Water (ft, TOIC)	GW Elevation (ft, NAVD88)
11/12/2024	19.48	380.85	30.47	362.57	25.59	368.75	Dry	< 370.50

*Reference elevation of monitoring wells surveyed by Associated Engineers, Inc., Madisonville, Kentucky, January 2015

ft = feet
GW = Groundwater
NAVD88 = North American Vertical Datum of 1988
TOIC = Top of internal casing

Table 3
Estimated Vertical Hydraulic Gradients
Former Green CCR Surface Impoundment
Big Rivers Electric Corporation - Sebree Station
Webster County, Kentucky

Well Cluster	Top of Casing Elev. (ft amsl)	Total Well Depth (feet bTOC)	Well Screen Elevation		Screened Geologic Formation	Water Depth (ft bTOC)	Water Elevation (ft amsl)	Difference in Water Level (ft)	Vertical Gradient (feet/foot)	
			Top (ft amsl)	Mid-Point (ft amsl)						
12-Nov-24										
MW-11A	400.33	25.45	384.88	379.88	Alluvium (Clay-rich)	19.48	380.85	19.58	0.71148	Downward
MW-11	401.32	51.50	354.86	352.36	Bedrock (Interbedded Shale and Sandstone)	40.05	361.27			
MW-12B	393.04	61.52	341.52	336.52	Alluvium (Clay-rich)	30.47	362.57	-1.10	-0.07576	Upward
MW-12	395.54	73.70	331.85	322.00	Bedrock (Sandstone w/ Shale Interbeds)	31.87	363.67			
MW-13B	394.34	42.40	361.94	356.94	Alluvium (Clay-rich)	25.59	368.75	0.63	0.01803	Downward
MW-13	394.60	52.60	346.96	322.00	Bedrock (Sandstone w/ Shale	26.48	368.12			

$$\text{Vertical Gradient (ft/ft)} = \frac{\text{Groundwater Elevation of (Shallow Well) - Groundwater Elevation of (Deep Well)}}{\text{(Screen Midpoint Elevation (Shallow Well) - Screen Midpoint Elevation (Deep Well)}}$$

amsl - above mean sea level (North American Vertical Datum 1988 (NAVD88)
bTOC - below top of casing
ft - feet

Notes:

1. Positive vertical gradient value identifies a downward gradient, while a negative value identifies an upward gradient.

Appendix A – KDWM Work Plan Approval Letter

Andy Beshear
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
300 Sower Boulevard
Frankfort, Kentucky 40601
Phone: (502) 564-2150
Fax: 502-564-4245

Rebecca Goodman
SECRETARY

Anthony R. Hatton
COMMISSIONER

October 9, 2024

Mr. Mark Bertram
Big Rivers Electric Corporation
9000 KY 2096
Robards, Kentucky 42452

Sent via e-mail only

RE: Approval – Groundwater Monitoring Well Installation Plan
Big Rivers Electric Corp – Reid HMP&L Station 2 – Green Station
Agency Interest No. 4196
Application I.D. No. APE20240005
Webster County

Dear Mr. Bertram,

The Kentucky Division of Waste Management (DWM), Solid Waste Branch has reviewed the revised Groundwater Monitoring Well Installation Work Plan, received October 7, 2024. Based upon the information submitted, the subject plan is hereby approved.

The proposed procedures are acceptable, provided the work is conducted in complete compliance with 401 KAR 6:350. Any deviation from the approved plan requires prior approval of DWM pursuant to 401 KAR 6:350 Section 12(1), and any deviation from the requirements of 401 KAR 6:350 requires the driller to obtain a variance from the Kentucky Division of Water pursuant to 401 KAR 6:350 Section 1(7).

Please be advised that approval of this application is limited to the work described therein. The present correspondence does not constitute the approval of a groundwater monitoring system, and it does not constitute an approval of any other detail of the construction or abandonment of groundwater monitoring wells at Big Rivers Electric Corporation – Reid HMP&L Station 2 – Green Station, including any well's construction, location, depth, or suitability for monitoring any particular CCR unit, aquifer, or aquifer zone pursuant to 401 KAR Chapters 46.

Should you have any questions, or if you would like to schedule a meeting regarding this matter, please contact Todd Hendricks, P.G. at Todd.Hendricks@ky.gov.

Sincerely,

Danny Anderson, P.E.
Manager, Solid Waste Branch

DA/cwh/rth/oy

c: Mr. Mark Bertram via e-mail: mark.bertram@bigrivers.com
Chris Hoglund, P.G. via e-mail: choglund@burnsmcd.com

Appendix B – BREC 10-Day Notification Letter to KDWM

Big Rivers
ELECTRIC CORPORATION

Sebree Station
9000 Highway 2096
Robards, KY 42452
www.bigrivers.com

October 1, 2024

Mr. Danny Anderson
Division of Waste Management
300 Sower Boulevard
Frankfort, Kentucky 40601

RE: Big Rivers Electric Corp. – Former Green CCR Surface Impoundment (AI#4196); 10-day Notification of Piezometer Installation; Permit No. SW11700007; Application I.D. No. APE20220004

Mr. Anderson,

Big Rivers is seeking approval from the Kentucky Division of Waste Management to begin construction of four (4) piezometers near the former Green CCR Surface Impoundment on October 15, 2024. The Work Plan for this project was submitted to the Division on September 26, 2024, and is attached for your convenience.

Please contact me at (270) 844-5708 should you have questions or concerns. Thank you for your time and consideration.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for such violations.

Sincerely,

Mark Bertram, CHMM
Director Environmental Services

Appendix C - Field Photographs

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-12B: Typical setup and direct-push drilling activities for continuous soil sampling. Photo looking west. 10/15/2024
	Monitoring Well MW-13B: Typical setup and hollow-stem auger drilling activities for monitoring well installation. Photo looking south. 10/16/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-12B: Typical monitoring well construction activities with well materials installed through hollow-stem augers. Photo looking west 10/15/2024
	Monitoring Well MW-12B: Typical well construction activities with addition of sand filter pack through hollow-stem augers after monitoring well has been set to targeted total depth. Photo looking west. 10/15/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-12B: Typical well construction activities with addition of bentonite pellets through hollow-stem augers and gauging of depth to top of pellets during placement of bentonite. Photo looking southwest. 10/15/2024
	Monitoring Well MW-12B: Showing well riser pipe equipped with centralizers before installation through hollow-stem augers. Photo looking south. 10/15/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-12B: Typical mixing of high-solids bentonite grout for monitoring well annular seal. Photo looking southeast. 10/15/2024
	Monitoring Well MW-13B: Typical mixing of concrete for construction of well pad and protective bollards. Photo looking south. 10/17/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Typical placement of concrete in borehole around monitoring well prior to installing the well protective casing for above-ground surface completions. Photo looking south. 10/17/2024
	<u>Monitoring Well MW-12B:</u> Typical finishing of concrete pad and concrete-filled protective bollards at above-ground surface completions. Photo looking north. 10/17/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-14A: Above-ground surface completion. Photo looking east. 10/18/2024
	Monitoring Well MW-13B: Above-ground surface completion. Photo looking northeast. 10/18/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-11A: Above-ground surface completion. Photo looking northwest. 10/18/2024
	Monitoring Well MW-12B: Above-ground surface completion Photo looking west. 10/18/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Typical weep hole drilled at base of protective casing above the well pad surface. 10/18/2024
	Typical decontamination of drilling equipment using power-washer and a water trough (stock tank) to collect residual soil and water from decontamination. Photo facing east. 10/16/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-12B: Direct-push soil cores collected at MW-12B from 0-36 ft bgs. The photograph displays the soil cores arranged from top to bottom, with depth increasing from left to right. Each soil core's top is positioned on the left side of the photo. 10/15/2024
	Monitoring Well MW-13B: Direct-push soil cores collected at MW-13B from 0 to 41.5 ft bgs. The photograph displays the soil cores arranged from top to bottom, with depth increasing from left to right. Each soil core's top is positioned on the left side of the photo. 10/15/2024

APPENDIX C – SITE PHOTO LOG

Monitoring Well Construction Progress Report
Big Rivers Electric Corporation
Robards, Kentucky

Photograph	Description
	Monitoring Well MW-14A Direct-push soil cores from MW-14A from 0 to 18.5 ft bgs. The photograph displays the soil cores arranged from top to bottom, with depth increasing from left to right. Each soil core's top is positioned on the left side of the photo. 10/15/2024
	Monitoring Well MW-11A Direct-push soil cores from MW-11A from 0 to 20 ft bgs. The photograph displays the soil cores arranged from top to bottom, with depth increasing from left to right. Each soil core's top is positioned on the left side of the photo. 10/16/2024

Appendix D - Field Logbook

Tuesday OCT. 15, 2024 — J. Fraser

40-62, Sunny

Groundwater PZ install

Josh Fraser

0550 BMcD Arrive on site.

0600 Direct Push onsite

0605 Site orientation

0630 meet with Hunter Mizell

0640 head to MW-12B conduct PTA
Discuss plan for day

0730 Begin setup

0800 Begin pushing on MW-12B

0910 will switch to HSA and continue
due to concerns of Hurting tooling/Rig

0945 Beg. in HSA

0950 MW-12 WL: 51.52

1200 Hit 60ft bgs no bedrock but
will not have enough supplies
to continue. set well at 60ft bgs

1210 Begin well construction
Screen: 5'/16, 5'/16
Riser: 5'/8 x10 risers
Cap: 2.0"
Centralizers: 46, 36, 26, 16, 6
Sand: 6" buffer Top of sand: 47'10"
(NSF) 6.5 bags
Pellets: 45ft - 47'10"
1 bucket

10/15/24

1430 setup and begin probing at
MW-13B

1530 Refusal at 41.5ft bgs
(weathered shale)

1535 pull up Rods & Decon

1600 setup & beg. in probing
at MW-14B

1630 Refusal at 18.5ft bgs

1635 pull up and Decon tooling

1700 off site

10/15/24

Rite in the Rain

Wednesday OCT. 16. 2024 J. Fischer

37-61, sunny

BREC Green PZ Install

Josh Fischer

0630 All personnel on site, conduct PTA Sign in

0645 Set up for day, pour for grout

0700 set up on MW-11B to probe.

0715 begin probing at MW-11B

0740 TD @ 20ft bgs in light grey Shale. Pull up Rods and decon

0835 Begin mixing grout Lauren water Stake on site (Bentonite gold) max 14.5 gallon water per bag.

0940 pull Augers at MW-12B and top off grout 6.5 bags of grout

1120 Decon Augers

1205 Set up at MW-13B and prep to Drill.

1230 Lauren offsite. Begin HSA at MW-13B

1350 Hit 40ft TD with Auger

1355 Construct well

Screen 5.01, 5.01 Cap: 2"

Riser 5'1/8" x7

10/16/24

1410 Add 6" buffer ~39.5'

6.5 bags Sand filter pack: 27.4"

1438 Bentonite seal: 25'

1500 Set up Begin HSA on MW-14B

1600 TD at 16ft bgs

1605 Construct MW-14B

Screen: 5.01' Cap: 2"

Risers 5'1/16" x3

Sand: 6" buffer 15.5'

~5 bags filter pack: 8'

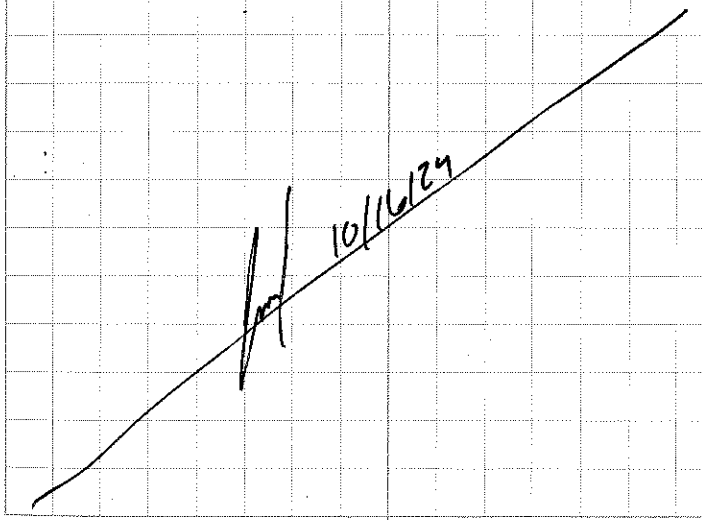
~1 bucket Bentonite seal: 6'

1645 grout MW-13B

1745 Finish grout 4 bags

1750 Decon Augers

1830 offsite



Rite in the Rain

Thursday OCT. 17, 2024 J. Frash

32 - 60, sunny

BREC Green PZ Install

Josh Frash

0625 Arrive on site

0640 Direct Push onsite. load equipment and Conduct PTA

0700 Sign in. get water. set up at MW-13B for grout

0740 MW-13B WL: gauges ~ 38ft bgs but cannot get consistent reading

0758 MW-14B WL: ~13ft bgs. believed to be water from Chip hydration

0755 Begin mixing grout - 1 bag

0900 Set up & Beg.- HSA at MW-11A

1030 At 22.5ft bgs. Construct well

Screen: 5.01 - 5.01 cap: 2"

Riser: 5' 1/16" x3 + 2.5'

6" buffer

Sand: 9'10" - 22' ~7 bags

1100 Bentonite: 7'10" 9'10"

1130 Set up for Concrete and development at MW-12B

1200 Cut Riser to 25ft ags

MW-12B WL: 31.44 BTOC

1 well volume: 1.8 gallon

1305 Grout MW-11A

10/17/24

1435 mix concrete for MW-11A well pad & bollards

1530 MW-13B WL: 39.80

TD: 43.15

pH	Temp	Cond	Turb
8.1	25.7	2.98	Brown
7.9	19.3	3.06	↓ 1 gal

WL: 41.65

1545 MW-14A WL: 17.17

TD 20.28

pH	Temp	Cond	Turb
7.8	23.3	1036	Brown
7.6	21.5	1186	↓ 1.5 gal

WL: 18.77

1610 MW-11A WL: 23.35

TD: 25.45

pH	Temp	Cond	Turb
7.9	22.2	830	light brown

WL: 24.25

1615 Complete MW-11A move to 13B and beg.- mixing concrete

1720 out of concrete. Cover & bollards in place. will finish pad tomorrow. Cleanup

1545 offsite

10/17/24

Rite in the Rain

Friday OCT. 18, 2024 — J. Fasha

39-72. Sunny

BREL Green PZ install

Josh Fasha

0630 Arrive on site. sign in Conduct PTA

0650 At MW-13B. set up and start mixing Concrete

0710 MW-13B WL: 39.86
TD: 42.40

0730 MW-14A WL: 18.67

0735 MW-11A WL: 23.79

0820 MW-13B WL: 39.86

	pH	Temp	Cond	Turb	
	7.9	18.1	2.56	Brown	Dry Ignal

0840

Round	WLs	TD
MW-11	39.98	
MW-11A	23.76	25.45
MW-1	20.83	
MW-12	31.54	
MW-12B	31.33	61.52
MW-13	26.79	
MW-13B	40.85	42.40
MW-14	28.70	
MW-14A	17.86	19.45

0900 Finish MW-14A pad. Clean up and drill weep holes.

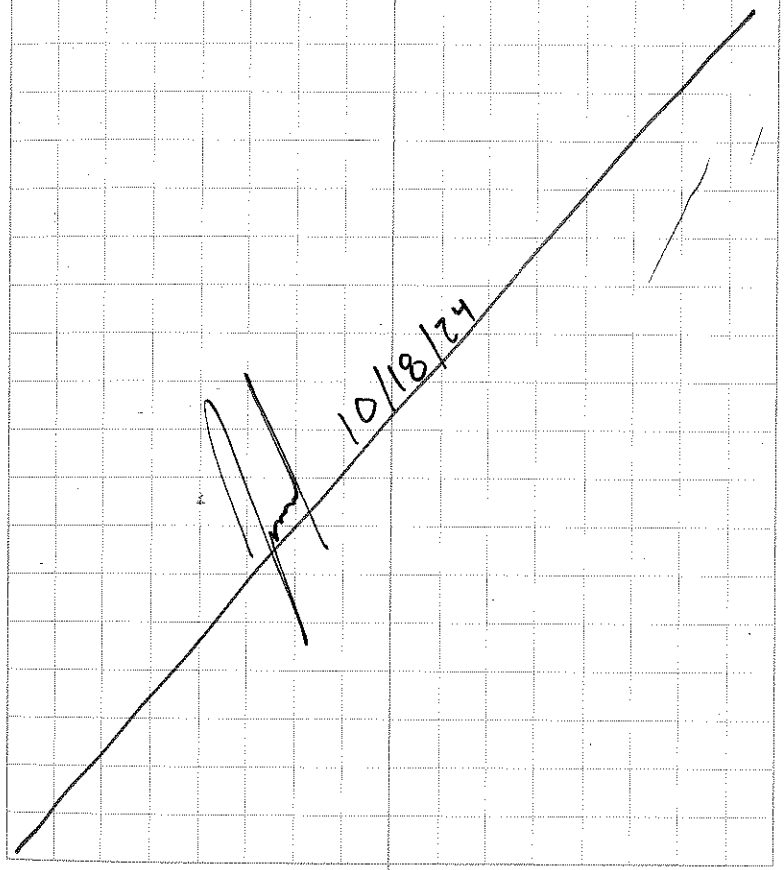
10/18/24

IDs

MW-14A	8006-7553
MW-13B	8006-7554
MW-12B	8006-7552
MW-11A	8006-7551

1000 All personal offsite

1730 Arrive at HC office unload truck



Rite in the Rain

Appendix E - Drill Logs

Drilling Log

Project Name	Project Number	Boring Number
BREC Green PZ Install	176659	MW-11A
Ground Elevation	**Location**	**Page**
	BREC Green Station	1 of 2
Air Monitoring Equipment		**Total Footage**
4-Gas, H2S		22.5

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DP, HSA	2"/8"	16.5'	6'	—	—

Drilling Company: Direct Push Analytical	Driller(s): K. Collins
Drilling Rig: Geoprobe 7822 DT	Type of Sampler: Dual Tube
Date: 10/16/24 To: 10/16/24	Field Observer(s): J. Fraser

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
0	Silt, pale brown 10yr 6/3 Dry no plasticity, grass, Roots			3.0/4.0	0715					
1	Clay with silt, trace to some plasticity Dry. stiff. Brown 10yr 4/3									
2										
3	Clay with silt, some sand (fine) stiff, Damp. trace to some plasticity Dark yellowish Brown 10yr 4/6 Some Iron Staining									
4	Silt with Clay, trace fine sand. Damp Increasing moisture w/Depth trace Plasticity. very Dark grayish Brown 10yr 3/2			4.0/4.0						Bentonite grout (3' - 7'10")
5	Clay trace silt. medium to high Plasticity. moist. stiff. Olive grey 5y 4/2. trace Iron Staining									
6										
7	Iron Staining becomes more Present									
8	Same as above yellowish brown 10yr 5/8. trace to some grey mottling.			4.0/4.0						Bentonite Pellets (7'10"-9'10")
9	Some Black organic Inclusions									
10										Sand filter Pack (9'10"-22')
11										
12				4.0/4.0						
13										
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

051601 Form WCD-2-1

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Drilling Log Continuation

Project Name	BREC Green P2 Install
Project Number	176659
Boring Number	MW-11A
Page	2 of 2
Date	10/16/24

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
15	SS gravel fine to coarse									
	Return to clay w/some gravel stringers. grey mottling			4.0/4.0						
16										
17	light grey, slightly weathered shale								Screen (12-22)	
18										
19										
20	DP: TD 20ft bgs									
21										
22								22-22.5	Sand Buffer	
23	22.5 ft bgs TD with HSA									

BZ=Breathing Zone BH=Bore Hole S=Sample

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010515 Form WCD-KC-2-2

Drilling Log

Project Name: BREC Green PZ Install	Project Number: 176659	Boring Number: MW-12B
Ground Elevation:	Location: BREC Green Station	Page: 1 of 4
Air Monitoring Equipment: 4-Gas, H_2S		Total Footage: 60'

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DP/HSA	2"/8"	60'	—	—	—

Drilling Company: Direct Push Analytical	Driller(s): K. Collins
Drilling Rig: Geoprobe 6620DT	Type of Sampler: Dual Tube
Date: 10/15/24 To: 10/15/24	Field Observer(s): J. Fraher

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
0	Silt w/gravel (fine to coarse) very Dark Brown 10yr 2/1. Stiff. trace Plasticity			3.0/4.0	0800					0930 Check WL after Rods Removed @ 36 ft bgs WL: DRY
1	Clay w/ trace silt. medium plasticity Stiff to very stiff. Damp Brown 10yr 4/3									
2										
3										
4				4.0/4.0						Bentonite grout (3'-45')
5	Same as above grayish brown 2.5y 5/2 Dry									
6										
7										
8	Same as above dark grayish brown 2.5y 4/2			4.0/4.0						
9	Same as above grayish brown 10yr 5/2. some light grey mottling									
10										
11	Yellowish brown 10yr 5/4 Some iron staining									
12	weathered light brown SS			4.0/4.0						
	Clay w/ some silt. medium plasticity yellowish brown 10yr 5/4 trace gravel									
13										
14	Same as above Dark grayish brown 2.5y 4/2									

BZ=Breathing Zone BH=Bore Hole S=Sample

Drilling Log Continuation

Project Name	BREC Green P2 Install
Project Number	176659
Boring Number	MW-12B
Page	2 of 4
Date	10/15/24

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
15	Dark yellowish brown 10yr 4/4									
16					4.0/4.0					
17	Same as above Olive Brown 2.5y 4/3									
18										
19										
20	Clay trace silt. high plasticity Damp. Very Stiff. Olive Brown 2.5y 4/3. trace Black mottling				4.0/4.0					
21										
22										
23										
24					4.0/4.0					
25										
26	Same as above. dark grayish brown 2.5y 4/2 Damp.									
27	Clay. high plasticity dark grey 2.5y 4/1 Damp.									
28	Same as above. some Reddish brown mottling				4.0/4.0					
29										
30	Clay trace silt, medium to high Plasticity. grayish brown 2.5y 5/2									
31	Same as above. Brown 10y-5/3									
32										

BZ=Breathing Zone BH=Bore Hole S=Sample

BURNS McDONNELL.

010515 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number MW-12B
Project Name BREC Green PZ Install
Page 3 of 4
Project Number 176659
Date 10/15/24

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
33	Clay, trace silt. very stiff high plasticity. Brown 10y-5/3			4.0/4.0						
34										
35										DP Refusal at 36ft bgs. switch to HSA to Avoid damaging Tooling
36	Same as above									
37										
38										
39										
40										
41										
42										
43										
44										
45										Bentonite Pellets 45'-47'10"
46										
47										
48	Same as above olive Brown 2.5y 4/3. Damp.									Sand Filter Pack (47'10"-60')
49										
50										

BZ=Breathing Zone BH=Bore Hole S=Sample

BURNS McDONNELL.

010515 Form WCD-KC-2-2

Drilling Log Continuation

Project Name BREC Green PZ Install	Boring Number MW-12B
Project Number 176659	Page 4 of
	Date 10/15/24

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
51	Same as above									
52										
53										Screen (50-60)
54										
55										
56	Becomes wet									
57										
58										
59										
60	TD: 60.0 ft bgs									Sand Filter Buffer (60-60.5) Over drilled to 60.5

BZ=Breathing Zone BH=Bore Hole S=Sample

Drilling Log

Project Name	Project Number	Boring Number
BREC Green PZ Install	176659	MW-13B
Ground Elevation	**Location**	**Page**
	BREC Green Station	1 of 3
Air Monitoring Equipment		**Total Footage**
4-Gas, H_2S		41.5'

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DP/HSA	2"/8"	40.8'	0.7'	—	—

Drilling Company	Driller(s)
Direct Push Analytical	K. Collins
Drilling Rig	**Type of Sampler**
Geoprobe 6620DT	Dual Tube
Date / **To**	**Field Observer(s)**
10/15/24 / 10/15/24	J. Fraher

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
0	Gravel fine to coarse			3.5/4.0	1445					
1	Clay trace silt. high Plasticity. very stiff yellowish brown 10yr 5/4									
2	Clay some silt. medium plasticity stiff. Dark brown 10yr 3/3. Some Black mottling trace Iron staining									
3										
4				3.5/4.0						
4	Clay, high Plasticity Reddish Brown 5yr 5/4									
5	Same as above. yellowish brown 10yr 5/4 with light grey mottling Some Iron staining.									
6										
7										
8				3.5/4.0						
8	Same as above. trace silt Becomes Damp.									
9										
10										
11										
12				3.5/4.0						
12	Clay with trace to some silt high Plasticity Brown 10yr 5/3 Damp Stiff.									
13										
14										

Bentonite grout (3'-25')

BZ=Breathing Zone BH=Bore Hole S=Sample

BURNS McDONNELL

Drilling Log Continuation

Project Name	BREC Green PZ Install
Project Number	176659
Boring Number	MW-13B
Page	2 of 3
Date	10/15/24

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
16	Clay trace silt. Dry. medium Plasticity. Olive Brown 2.5y 4/3 Very stiff			4.0/4.0						
20	Same as above Brown 10yr 4/3			4.0/4.0						
24				4.0/4.0						
25										Bentonite Pellets (25'-27'4")
27	Becomes moist									
28				4.0/4.0						Sand Filter Pack (27'4"-35.5')
31	Some light grey mottling									

BZ=Breathing Zone BH=Bore Hole S=Sample

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010515 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number MW-13B
Project Name BREC Green PZ Install
Page 3 of 3
Project Number 176659
Date 10/15/24

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
33	Same as above very stiff			4.0/4.0						
34									Screen (29.5-39.5)	
35										
36	Clay, high plasticity. moist Dark grey 10yr 4/1. very stiff			4.0/4.0						
37										
38	Same as above Brown 10yr 4/3									
	Returns to Dark grey 10yr 4/1									
39										
40	Clay with silt, trace sand. low Plasticity. Dry. yellowish brown 10yr 5/4			1.5/1.5					Sand Buffer (39.5-40)	
41	Weathered yellowish brown Shale.									
42	Refusal @ 41.5 ft bgs									

BZ=Breathing Zone BH=Bore Hole S=Sample

Drilling Log

Project Name	Project Number	Boring Number
BREC Green PZ install	176659	MW-14A
Ground Elevation	**Location**	**Page**
	BREC Green Station	1 of 2
Air Monitoring Equipment		**Total Footage**
4-gas, H_2S		18.5

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DP/HSA	2"/8"	15.8'	2.7'	—	—

Drilling Company	Driller(s)
Direct Push Analytical	K. Collins
Drilling Rig	**Type of Sampler**
Geoprobe 6620DT	Dual tube
Date / **To**	**Field Observer(s)**
10/15/24 / 10/15/24	J. Fasher

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
0	Gravel with silt. grey				3.5/4.0	1600				
1	Silt. Dry. low stiffness no plasticity. Black 10yr 2/1 fill.									
2										
3	Clay with trace to some silt. Dry trace plasticity. Stiff Dark yellowish brown 10yr 4/6									
4				4.0/4.0						
5	Same as above Brown 10yr 4/3									
6										
7										
8				4.0/4.0						
9										
10	Clay with silt. trace to some Plasticity. Damp. yellowish brown 10yr 5/4 stiff.									
11										
12	Same as above dark yellowish brown 10yr 3/6 Heavy Iron staining			4.0/4.0						
13	Clay with silt, sand (fine) gravel (fine to coarse) Brown 10yr 4/3									
14	Clay with sand (fine) no plasticity light Brownish gray 2.5y 6/2 Dry									

Bentonite Grout (3-6)

Bentonite Pellets (6-8)

filter pack (8-15.5)

Screen (SH 10.5-15.5)

BZ=Breathing Zone BH=Bore Hole S=Sample

051601 Form WCD-2-1

BURNS McDONNELL

Drilling Log Continuation

Project Name	BREC Green PZ Install
Project Number	176659
Boring Number	MW-14A
Page	2 of 2
Date	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
15										
16	weathered shale. light yellowish brown. Dry								Sand buffer (6")	
17										
18										
19	Refusal @ 18.5 ft BGS									
20										

BZ=Breathing Zone BH=Bore Hole S=Sample

BURNS McDONNELL.

Appendix F - Monitoring Well Construction Diagrams

Monitoring Well Construction Diagram

Project Number: 176659	**Monitoring Well ID:** MW-11A
Project Name: BREC Green MW Install	**Property Owner:** Big Rivers Electric Corp.
Geologist: J. Frasher	Latitude: 37.64251944
Drilling Company: Direct Push Analytical	Longitude: -87.50323056
Driller: K. Collins	Survey Datum: NAD 1983 / NAVD 1988

Drilling Method: HSA
Borehole Diameter: 8.25"

Elevations (amsl)	
Top of Casing (TOC)	400.33
Ground Surface (GS)	397.61
Reference Point (RP)	na

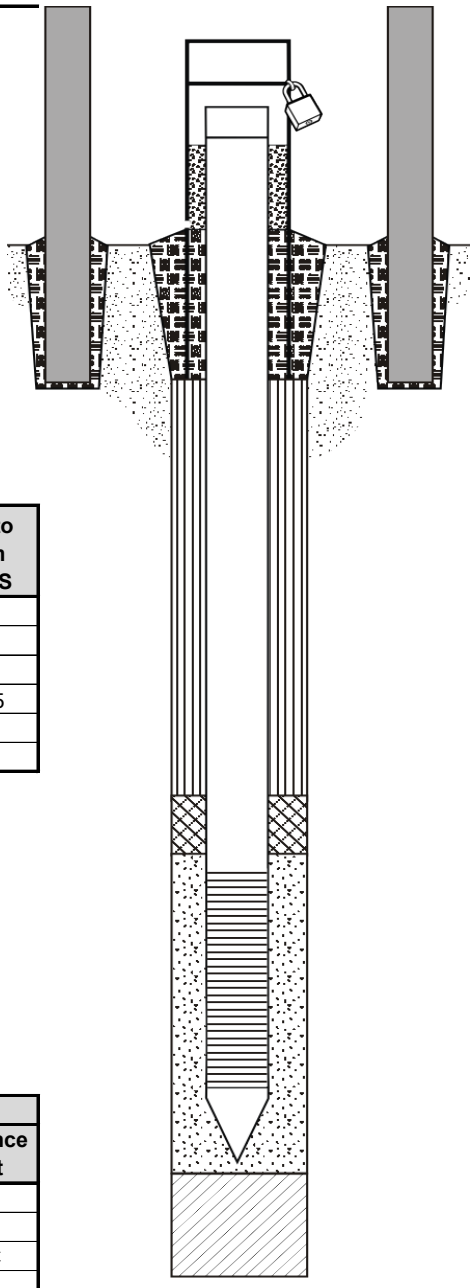
Dates	
Drilling/Installation Start	10/16/2024
Installation Complete	10/17/2024
Well Abandoned	NA
Development Start	10/17/2023
Development Complete	Yes

Annular Material Measurements	Depth to Top from GS	Depth to Bottom from GS
Annular Seal	3	7.8
Bentonite Seal	7.8	9.8
Secondary Filter Pack	NA	NA
Filter Pack	9.8	22.5
Backfill	NA	NA
Bottom of Borehole	22.5	NA

Casing Materials Measurements	Total Footage
Total Riser Installed	17.50
Total Riser Cutoff	2.07
Screen	10.02
Bottom Cap	2"
Total Depth from TOC	25.45

Groundwater Levels		
Date	Depth	Reference Point
10/17/2023	23.35	TOC
10/18/2023	23.76	TOC
11/12/2024	19.48	TOC

Comments: Protective casing pushed into concrete slurry. 6in buffer placed from 22.0-22.5 ft bgs



Cap Type: J-Plug
Lock Keyed to: na

Protective Cover:
- Material: Steel
- Size: 4" round
- Length: 5 ft
- Pea Gravel (Y/N): N
- Weep Hole (Y/N): Y
- Guage Mark (Y/N): N

Bollards (# and type): 4 / Steel

Surface Pad:
- Dimensions: 3'x3'x6"
- Material: Concrete

Annular Seal:
- Type & Size: High-Solids Bentonite Grout Slurry
- Manufacturer: Halliburton Geotherm Gold
- Amount Used: na

Bentonite Seal:
- Type & Size: 3/8 Pellets
- Manufacturer: Pel-Plug
- Amount Used: 1 Bucket

Secondary Filter Pack:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Primary Filter Pack:
- Type & Size: 12/20Whole Grain
- Manufacturer: NSF
- Amount Used: 7 bags

Well Casing:
- Type: PVC
- Diameter: 2"
- Sch. or Weight: Sch. 40
- Manufacturer:
- Screen Type: Factory Slotted
- Screen Slot Size: 0.010"
- Bottom Cap Type: PVC

Centralizers (Y/N): N
- Material: NA
- Number: NA
- Depth(s): NA

Backfill Material:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Monitoring Well Construction Diagram

Project Number: 176659	**Monitoring Well ID:** MW-12B
Project Name: BREC Green MW Install	**Property Owner:** Big Rivers Electric Corp.
Geologist: J. Frasher	Latitude: 37.63929722
Drilling Company: Direct Push Analytical	Longitude: -87.50161667
Driller: K. Collins	Survey Datum: NAD 1983 / NAVD 1988

Drilling Method: HSA
Borehole Diameter: 8.25"

Elevations (amsl)	
Top of Casing (TOC)	393.04
Ground Surface (GS)	390.76
Reference Point (RP)	na

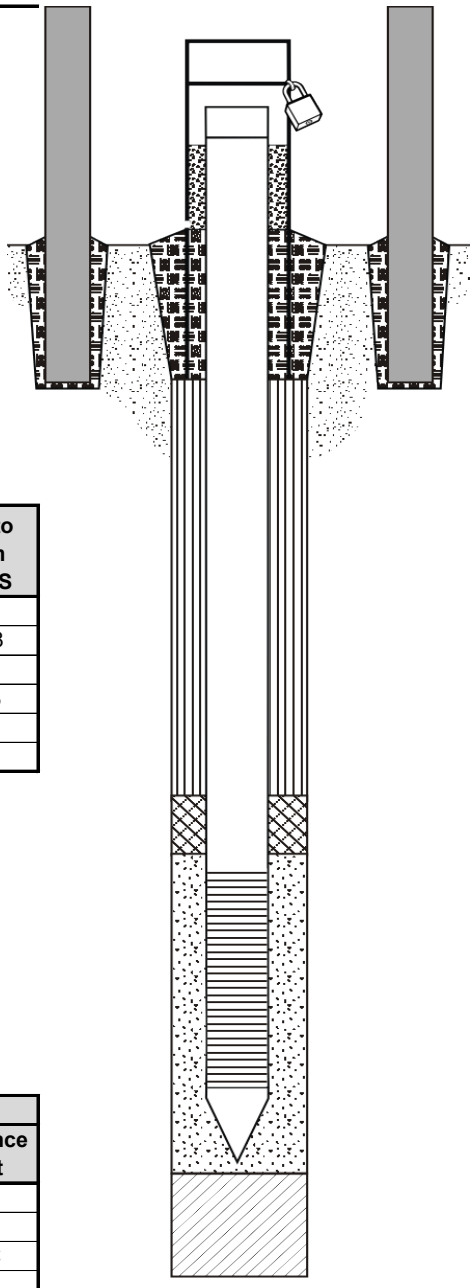
Dates	
Drilling/Installation Start	10/15/2024
Installation Complete	10/16/2024
Well Abandoned	NA
Development Start	NA
Development Complete	NA

Annular Material Measurements	Depth to Top from GS	Depth to Bottom from GS
Annular Seal	3	45
Bentonite Seal	45	47.8
Secondary Filter Pack	NA	NA
Filter Pack	47.8	60.5
Backfill	NA	NA
Bottom of Borehole	60.5	NA

Casing Materials Measurements	Total Footage
Total Riser Installed	55.0
Total Riser Cutoff	3.50
Screen	10.02
Bottom Cap	2"
Total Depth from TOC	61.52

Groundwater Levels		
Date	Depth	Reference Point
10/17/2023	31.44	TOC
10/18/2023	31.33	TOC
11/12/2024	30.47	TOC

Comments: Protective casing pushed into concrete slurry. 6in sand buffer placed from 60.0-60.5 ft bgs



Cap Type: J-Plug
Lock Keyed to: na

Protective Cover:
- Material: Steel
- Size: 4" round
- Length: 5 ft
- Pea Gravel (Y/N): N
- Weep Hole (Y/N): Y
- Guage Mark (Y/N): N

Bollards (# and type): 4 / Steel

Surface Pad:
- Dimensions: 3'x3'x6"
- Material: Concrete

Annular Seal:
- Type & Size: High-Solids Bentonite Grout Slurry
- Manufacturer: Halliburton Geotherm Gold
- Amount Used: 6.5 bags

Bentonite Seal:
- Type & Size: 3/8 Pellets
- Manufacturer: Pel-Plug
- Amount Used: 1 Bucket

Secondary Filter Pack:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Primary Filter Pack:
- Type & Size: 12/20Whole Grain
- Manufacturer: NSF
- Amount Used: 6.5 bags

Well Casing:
- Type: PVC
- Diameter: 2"
- Sch. or Weight: Sch. 40
- Manufacturer:
- Screen Type: Factory Slotted
- Screen Slot Size: 0.010"
- Bottom Cap Type: PVC

Centralizers (Y/N): Yes
- Material: NA
- Number: 5
- Depth(s): 46, 36, 26, 16, & 6 (ft bgs)

Backfill Material:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Monitoring Well Construction Diagram

Project Number: 176659	**Monitoring Well ID:** MW-13B
Project Name: BREC Green MW Install	**Property Owner:** Big Rivers Electric Corp.
Geologist: J. Frasher	Latitude: 37.64073333
Drilling Company: Direct Push Analytical	Longitude: -87.50073611
Driller: K. Collins	Survey Datum: NAD 1983 / NAVD 1988

Drilling Method: HSA
Borehole Diameter: 8.25"

Elevations (amsl)	
Top of Casing (TOC)	394.34
Ground Surface (GS)	391.64
Reference Point (RP)	na

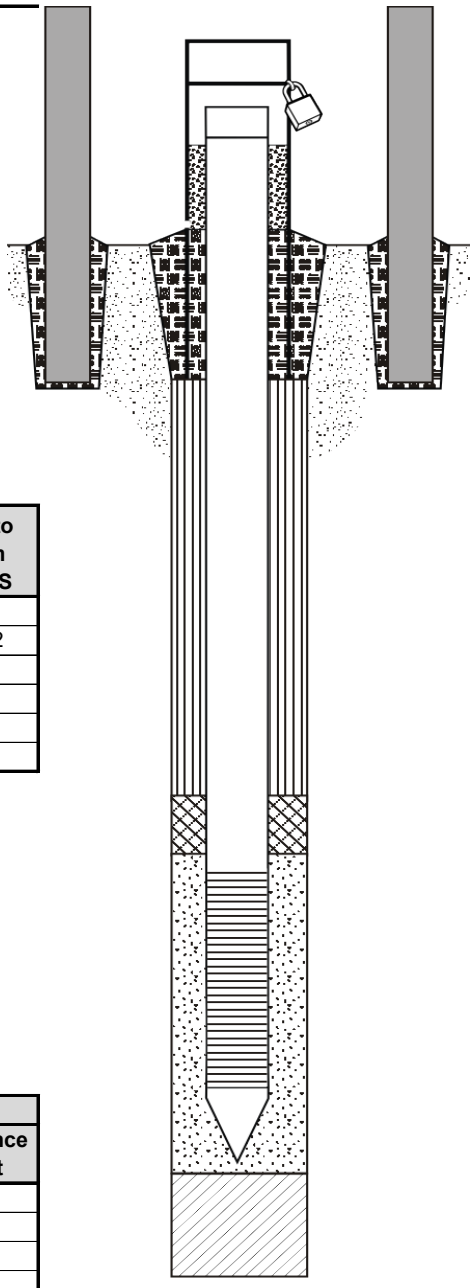
Dates	
Drilling/Installation Start	10/16/2024
Installation Complete	10/16/2024
Well Abandoned	NA
Development Start	10/17/2024
Development Complete	10/18/2024

Annular Material Measurements	Depth to Top from GS	Depth to Bottom from GS
Annular Seal	3	25
Bentonite Seal	25	27.2
Secondary Filter Pack	NA	NA
Filter Pack	27.2	40.0
Backfill	40.0	41.5
Bottom of Borehole	41.5	NA

Casing Materials Measurements	Total Footage
Total Riser Installed	35.0
Total Riser Cutoff	2.62
Screen	10.02
Bottom Cap	2"
Total Depth from TOC	42.40

Groundwater Levels		
Date	Depth	Reference Point
10/17/2023	39.80	TOC
10/18/2023	40.85	TOC
11/12/2024	25.59	TOC

Comments: Protective casing pushed into concrete slurry. 6in sand buffer placed from 39.5-40.0 ft bgs



Cap Type: J-Plug
Lock Keyed to: na

Protective Cover:
- Material: Steel
- Size: 4" round
- Length: 5 ft
- Pea Gravel (Y/N): N
- Weep Hole (Y/N): Y
- Guage Mark (Y/N): N

Bollards (# and type): 4 / Steel

Surface Pad:
- Dimensions: 3'x3'x6"
- Material: Concrete

Annular Seal:
- Type & Size: High-Solids Bentonite Grout Slurry
- Manufacturer: Halliburton Geotherm Gold
- Amount Used: 4 bags

Bentonite Seal:
- Type & Size: 3/8 Pellets
- Manufacturer: Pel-Plug
- Amount Used: 1 Bucket

Secondary Filter Pack:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Primary Filter Pack:
- Type & Size: 12/20Whole Grain
- Manufacturer: NSF
- Amount Used: 6.5 bags

Well Casing:
- Type: PVC
- Diameter: 2"
- Sch. or Weight: Sch. 40
- Manufacturer:
- Screen Type: Factory Slotted
- Screen Slot Size: 0.010"
- Bottom Cap Type: PVC

Centralizers (Y/N): N
- Material: NA
- Number: NA
- Depth(s): NA

Backfill Material:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Monitoring Well Construction Diagram

Project Number: 176659	**Monitoring Well ID:** MW-14A
Project Name: BREC Green MW Install	**Property Owner:** Big Rivers Electric Corp.
Geologist: J. Frasher	Latitude: 37.64210556
Drilling Company: Direct Push Analytical	Longitude: -87.50001667
Driller: K. Collins	Survey Datum: NAD 1983 / NAVD 1988

Drilling Method: HSA
Borehole Diameter: 8.25"

Elevations (amsl)	
Top of Casing (TOC)	389.95
Ground Surface (GS)	387.54
Reference Point (RP)	na

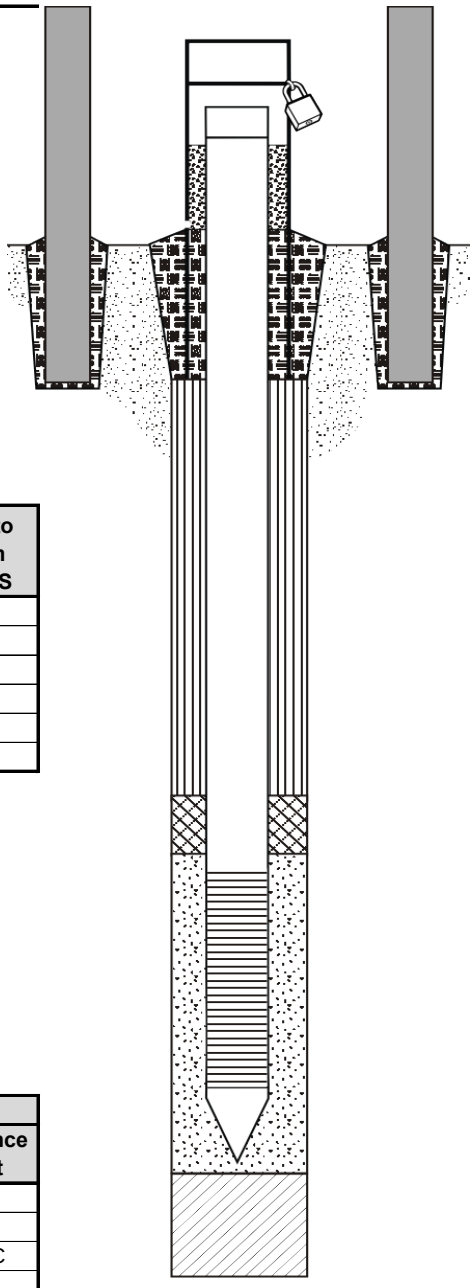
Dates	
Drilling/Installation Start	10/16/2024
Installation Complete	10/17/2024
Well Abandoned	NA
Development Start	10/17/2024
Development Complete	10/17/2024

Annular Material Measurements	Depth to Top from GS	Depth to Bottom from GS
Annular Seal	3	6
Bentonite Seal	6	8
Secondary Filter Pack	NA	NA
Filter Pack	8	16.0
Backfill	16.0	18.5
Bottom of Borehole	18.5	NA

Casing Materials Measurements	Total Footage
Total Riser Installed	15.0
Total Riser Cutoff	0.56
Screen	5.01
Bottom Cap	2"
Total Depth from TOC	19.45

Groundwater Levels		
Date	Depth	Reference Point
10/17/2023	17.17	TOC
10/18/2023	17.86	TOC
11/12/2024	Dry	TOC

Comments: Protective casing pushed into concrete slurry. 6in sand buffer placed from 16.0-15.5 ft bgs



Cap Type: J-Plug
Lock Keyed to: na

Protective Cover:
- Material: Steel
- Size: 4" round
- Length: 5 ft
- Pea Gravel (Y/N): N
- Weep Hole (Y/N): Y
- Guage Mark (Y/N): N

Bollards (# and type): 4 / Steel

Surface Pad:
- Dimensions: 3'x3'x6"
- Material: Concrete

Annular Seal:
- Type & Size: High-Solids Bentonite Grout Slurry
- Manufacturer: Halliburton Geotherm Gold
- Amount Used: 1 bag

Bentonite Seal:
- Type & Size: 3/8 Pellets
- Manufacturer: Pel-Plug
- Amount Used: 1 Bucket

Secondary Filter Pack:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Primary Filter Pack:
- Type & Size: 12/20Whole Grain
- Manufacturer: NSF
- Amount Used: 5 bags

Well Casing:
- Type: PVC
- Diameter: 2"
- Sch. or Weight: Sch. 40
- Manufacturer:
- Screen Type: Factory Slotted
- Screen Slot Size: 0.010"
- Bottom Cap Type: PVC

Centralizers (Y/N): N
- Material: NA
- Number: NA
- Depth(s): NA

Backfill Material:
- Type & Size: NA
- Manufacturer: NA
- Amount Used: NA

Appendix G - Uniform Kentucky Well Construction Record

Thank you for submitting your information via the Kentucky Energy and Environment Cabinet eForms website. Please save a copy of this submittal for your records. We recommend saving a copy as a .mht, .html, or .htm file. Your Submittal ID and Transaction ID will be included in an email after EEC Staff have reviewed your submittal.
The Submittal ID for this transaction is 463325 and was submitted by Kevin Collins on October 24, 2024 05:13 PM Eastern Time. If you need to contact EEC regarding your submission, please reference your Submittal ID.

The eForm Submittal ID allows you to use the data from this submittal as a template and/or download a copy of your submittal.

UNIFORM KENTUCKY WATER/MONITORING WELL REPORTING RECORD

Use this form to report installation, modification or decommissioning of any temporary or permanent monitoring or water wells

Form must be completed and submitted to the Division of Water within 60 days of completion of work

(*) indicates a required field; (✔) indicates a field may be required based on user input or is an optionally required field

Purpose of the application(*)

Note: If you are reporting anything other than a new installation and have no AKGWA number, search for it here: (https://kgs.uky.edu/kgsweb/DataSearching/Water/WaterWellSearch.asp) If you still need one, contact DOWDrillersProgram@ky.gov (mailto:DOWDrillersProgram@ky.gov?subject=Need%20AKGWA%20for%20eForm%20submittal) for an AKGWA number before proceeding.

Install only

Kentucky Well ID (AKGWA) Number(*)	Owner Well ID#	Well use(*)
Be sure to check the AKGWA Number against the Owner Well ID# before submitting this record.	MW-11A	Monitoring well - ambient m
8006-7554	Reference Point	

KDWM to update to: 8006-7551

Monitoring Well Info

Wellhead

Manhole cover and gasket ?(*)	if so, diameter (in):(✓)	Dedicated pump(*)
Yes	4	No pump

Flush mount(*)	Cap(*)
No	Water-tight and lockable

Owner Name and Address Information

"Enter business name if owner is an organization. Enter first name/middle initial/last name if owner is an individual"

Owner Business name(✓)	Owner first name(✓)	Owner middle initial	Owner last name(✓)
Big Rivers Electric Corporation	Owner first name	Middle initial	Owner last name

Owner address(*)	Owner city(*)	Owner state(*)	Owner zipcode(*)
9000 Highway 2096	Robards	Kentucky	42452

Owner telephone:(*)

270-521-7927

Site Name, Address and Agency Information

☐ Please check the checkbox if site address is same as the owner address

Agency Interest (AI) Number:	Program type	Permit or ID Number
4196		

Site Name(*)	Site telephone:
Big Rivers Electric Corp. Robards KYD01 Station Pond	

Big Rivers Electric Corp - Reid HMP&L Station 2 - Gre	###-###-####

Site Address(*)	Site city(*)	Site state(*)	Site zipcode(*)
9000 KY 2096	Robards	Kentucky	42452

Supporting Documentation

Site Map/Sketch Map(✓)	Upload file
Well location	Upload file
Well Diagram (monitoring well)	Upload file
Bacteria analysis (if applicable)	Upload file
Approved variance (if applicable)	Upload file
Drilling log (optional)	Upload file
Other laboratory analysis report (optional)	Upload file
Aquifer test results (optional)	Upload file
Casing/Screen Supplemental Info (if applicable)	Upload file
Other documentation (optional)	Upload file

Well Specifications

Active(*): Yes	Unsuitable for Intended use(*): No
Discharge permit required?(*): No	Withdrawal permit required?(*): No

Artesian/flowing(*)	If so, height (in):(✓)	Nested wells(*)	If so, number:(✓)
No		No	

Well Location

Well latitude(decimal degrees)(*)Driller Viewer (http://watermaps.ky.gov/well)	Well longitude(decimal degrees)(*)	Method(*)
37.642588	-87.503267	Driller Viewer

USGS 7.5' quadrangle(*)	County(*)	Physiographic region(*)
ROBARDS	Webster	W. Coal Field

Surface elevation(ft)(*)	Surface elevation method(*)	Well in flood zone?(*)
397.58	Driller Viewer	No

Construction

Install start date(*)	Install end date(*)
10/17/2024	10/17/2024

Drilling method(*)	Specify drilling method combinations(✓)
Auger - HS	Specify drilling method combinations

Drilling method has no annular space(*)	Multiple screens ?(*)	Well development method(*)	Specify development method combinations(✓)
No	No	Pumping	Specify development method combinations

Surface Completion :

Surface Completion :

Protective surface casing(*)	Protective surface casing type(✓)	Protective surface casing height above surface(in)(✓)	Water-tight locking cap(*)
Yes	Steel	36	Yes

Concrete pad?(*) if Yes, enter length(in) X Width(in) X height(in) in textbox below	Bumper guards?(*) if so, enter number below:	Weep holes(*) if yes, enter number below
Yes 36x36x6	Yes 4	Yes 1

Outer casing(*)	Outer casing type(✓)	Outer casing height above surface(in)(✓)	Outer casing 2 foot above flood level ?(✓)
No			

Inner casing(*)	Inner casing type(✓)	Inner casing height above surface(in)(✓)	Inner casing 2 foot above flood level ?(✓)
Yes	PVC	30	Yes

Please report depths in feet below ground surface,

Total depth (ft bgs):(*)	Depth to bedrock (ft bgs):(✓)
22.5	

Static water level (ft bgs):	SWL method(✓)

Casing/open borehole:

(*)Note: When entering a row of data, From Depth, To Depth, Borehole diameter and Casing Type are required fields

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Casing OD (in)	Casing ID (in)	Casing Type
0.0	12.0	8.0	2.37	2.0	PVC

Screen:

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Screen OD (in)	Screen ID (in)	Screen Type	Screen Slot Size (in)
12.0	22.0	8.0	2.37	2.0	PVC	0.01

Annulus fill and seal

Section	From Depth (ft)	To Depth (ft)	Material
Filterpack	9.75	22.5	Sand
Grout	3.0	7.75	Bentonite
Seal	7.75	9.75	Bentonite pellets

Lithologic log

From Depth (ft)	To Depth (ft)	Description

Comments

MW-11A
8006-7554

Affirmation

I certify under penalty of law that this document/electronic submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. By submitting data, this transmission constitutes my

signature and I am responsible for any and all content submitted either by me or by the people I represent.	
Date affirmed(*)	**10/24/2024**
Driller first name(*)	**Kevin**
Driller middle initial	**R**
Driller last name(*)	**Collins**
Driller suffix	**Driller suffix**
Certification number(*)	**0348-0554-00**
Certification company(*)	**Direct Push Analytical Corp.**

Click to Save Values for Future Retrieval | Click to Submit to EEC

Thank you for submitting your information via the Kentucky Energy and Environment Cabinet eForms website. Please save a copy of this submittal for your records. We recommend saving a copy as a .mht, .html, or .htm file. Your Submittal ID and Transaction ID will be included in an email after EEC Staff have reviewed your submittal.
The Submittal ID for this transaction is 463118 and was submitted by Kevin Collins on October 23, 2024 12:42 PM Eastern Time. If you need to contact EEC regarding your submission, please reference your Submittal ID.

The eForm Submittal ID allows you to use the data from this submittal as a template and/or download a copy of your submittal.

UNIFORM KENTUCKY WATER/MONITORING WELL REPORTING RECORD

Use this form to report installation, modification or decommissioning of any temporary or permanent monitoring or water wells

Form must be completed and submitted to the Division of Water within 60 days of completion of work

(*) indicates a required field; (✔) indicates a field may be required based on user input or is an optionally required field

Purpose of the application(*)

Note: If you are reporting anything other than a new installation and have no AKGWA number, search for it here: (https://kgs.uky.edu/kgsweb/DataSearching/Water/WaterWellSearch.asp) If you still need one, contact DOWDrillersProgram@ky.gov (mailto:DOWDrillersProgram@ky.gov?subject=Need%20AKGWA%20for%20eForm%20submittal) for an AKGWA number before proceeding.

Install only

Kentucky Well ID (AKGWA) Number(*)	Owner Well ID#	Well use(*)
Be sure to check the AKGWA Number against the Owner Well ID# before submitting this record.	MW-12B	Monitoring well - ambient m
8006-7551	Reference Point	

KDWM to update to: 8006-7552

Monitoring Well Info

Wellhead

Manhole cover and gasket ?(*)	if so, diameter (in):(✓)	Dedicated pump(*)
Yes	4	No pump

Flush mount(*)	Cap(*)
No	Water-tight and lockable

Owner Name and Address Information

"Enter business name if owner is an organization. Enter first name/middle initial/last name if owner is an individual"

Owner Business name(✓)	Owner first name(✓)	Owner middle initial	Owner last name(✓)
Big Rivers Electric Corporation	Owner first name	Middle initial	Owner last name

Owner address(*)	Owner city(*)	Owner state(*)	Owner zipcode(*)
9000 Highway 2096	Robards	Kentucky	42452

Owner telephone:(*)

270-521-7927

Site Name, Address and Agency Information

☐ **Please check the checkbox if site address is same as the owner address**

Agency Interest (AI) Number:	Program type	Permit or ID Number
4196		

Site Name(*)	Site telephone:
Big Rivers Electric Corp. - Robards HWP24 Station Pad C	

Big Rivers Electric Corp - Reid HMP&L Station 2 - Gre	###-###-####

Site Address(*)	Site city(*)	Site state(*)	Site zipcode(*)
9000 KY 2096	Robards	Kentucky	42452

Supporting Documentation

Site Map/Sketch Map(✓)	Upload file
Well location	Upload file
Well Diagram (monitoring well)	Upload file
Bacteria analysis (if applicable)	Upload file
Approved variance (if applicable)	Upload file
Drilling log (optional)	Upload file
Other laboratory analysis report (optional)	Upload file
Aquifer test results (optional)	Upload file
Casing/Screen Supplemental Info (if applicable)	Upload file
Other documentation (optional)	Upload file

Well Specifications

Active(*): Yes	Unsuitable for Intended use(*): No
Discharge permit required?(*): No	Withdrawal permit required?(*): No

Artesian/flowing(*)	If so, height (in):(✓)	Nested wells(*)	If so, number:(✓)
No		No	

Well Location

Well latitude(decimal degrees)(*)Driller Viewer (http://watermaps.ky.gov/well)	Well longitude(decimal degrees)(*)	Method(*)
37.63930	-87.50170	Driller Viewer

USGS 7.5' quadrangle(*)	County(*)	Physiographic region(*)
ROBARDS	Webster	W. Coal Field

Surface elevation(ft)(*)	Surface elevation method(*)	Well in flood zone?(*)
389.64	Driller Viewer	No

Construction

Install start date(*)	Install end date(*)
10/15/2024	10/16/2024

Drilling method(*)	Specify drilling method combinations(✓)
Auger - HS	Specify drilling method combinations

Drilling method has no annular space(*)	Multiple screens ?(*)	Well development method(*)	Specify development method combinations(✓)
No	No	Pumping	Specify development method combinations

Surface Completion :

Surface Completion :

Protective surface casing(*)	Protective surface casing type(✓)	Protective surface casing height above surface(in)(✓)	Water-tight locking cap(*)
Yes	Steel	36	Yes

Concrete pad?(*) if Yes, enter length(in) X Width(in) X height(in) in textbox below	Bumper guards?(*) if so, enter number below:	Weep holes(*) if yes, enter number below
Yes 36x36x6	Yes 4	Yes 1

Outer casing(*)	Outer casing type(✓)	Outer casing height above surface(in)(✓)	Outer casing 2 foot above flood level ?(✓)
No			

Inner casing(*)	Inner casing type(✓)	Inner casing height above surface(in)(✓)	Inner casing 2 foot above flood level ?(✓)
Yes	PVC	2.5	Yes

Please report depths in feet below ground surface,

Total depth (ft bgs):(*)	Depth to bedrock (ft bgs):(✓)
60.5	

Static water level (ft bgs):	SWL method(✓)

Casing/open borehole:

(*)Note: When entering a row of data, From Depth, To Depth, Borehole diameter and Casing Type are required fields

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Casing OD (in)	Casing ID (in)	Casing Type
0.0	50.0	8.	2.37	2.0	PVC

Screen:

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Screen OD (in)	Screen ID (in)	Screen Type	Screen Slot Size (in)
60.	50.	8.0	2.37	2.0	PVC	0.01

Annulus fill and seal

Section	From Depth (ft)	To Depth (ft)	Material
Grout	3.0	45.0	Bentonite
Seal	45.0	47.8	Bentonite pellets
Filterpack	47.8	60.5	Sand

Lithologic log

From Depth (ft)	To Depth (ft)	Description

Comments

MW-12B 8005-7551

Affirmation

I certify under penalty of law that this document/electronic submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. By submitting data, this transmission constitutes my

signature and I am responsible for any and all content submitted either by me or by the people I represent.	
Date affirmed(*)	**10/23/2024**
Driller first name(*)	**Kevin**
Driller middle initial	**R**
Driller last name(*)	**Collins**
Driller suffix	**Driller suffix**
Certification number(*)	**0348-0554-00**
Certification company(*)	**Direct Push Analytical Corp.**

Click to Save Values for Future Retrieval | Click to Submit to EEC

Thank you for submitting your information via the Kentucky Energy and Environment Cabinet eForms website. Please save a copy of this submittal for your records. We recommend saving a copy as a .mht, .html, or .htm file. Your Submittal ID and Transaction ID will be included in an email after EEC Staff have reviewed your submittal.
The Submittal ID for this transaction is 463207 and was submitted by Kevin Collins on October 23, 2024 03:03 PM Eastern Time. If you need to contact EEC regarding your submission, please reference your Submittal ID.

The eForm Submittal ID allows you to use the data from this submittal as a template and/or download a copy of your submittal.

UNIFORM KENTUCKY WATER/MONITORING WELL REPORTING RECORD

Use this form to report installation, modification or decommissioning of any temporary or permanent monitoring or water wells

Form must be completed and submitted to the Division of Water within 60 days of completion of work

(*) indicates a required field; (✔) indicates a field may be required based on user input or is an optionally required field

Purpose of the application(*)

Note: If you are reporting anything other than a new installation and have no AKGWA number, search for it here: (https://kgs.uky.edu/kgsweb/DataSearching/Water/WaterWellSearch.asp) If you still need one, contact DOWDrillersProgram@ky.gov (mailto:DOWDrillersProgram@ky.gov?subject=Need%20AKGWA%20for%20eForm%20submittal) for an AKGWA number before proceeding.

Install only

Kentucky Well ID (AKGWA) Number(*)	Owner Well ID#	Well use(*)
Be sure to check the AKGWA Number against the Owner Well ID# before submitting this record.	MW-13B	Monitoring well - ambient m
8006-7552	Reference Point	

KDWM to update to: 8006-7554

Monitoring Well Info

Wellhead

Manhole cover and gasket ?(*)	if so, diameter (in):(✓)	Dedicated pump(*)
Yes	4	No pump

Flush mount(*)	Cap(*)
No	Water-tight and lockable

Owner Name and Address Information

"Enter business name if owner is an organization. Enter first name/middle initial/last name if owner is an individual"

Owner Business name(✓)	Owner first name(✓)	Owner middle initial	Owner last name(✓)
Big Rivers Electric Corporation	Owner first name	Middle initial	Owner last name

Owner address(*)	Owner city(*)	Owner state(*)	Owner zipcode(*)
9000 Highway 2096	Robards	Kentucky	42452

Owner telephone:(*)

270-521-7927

Site Name, Address and Agency Information

☐ **Please check the checkbox if site address is same as the owner address**

Agency Interest (AI) Number:	Program type	Permit or ID Number
4196		

Site Name(*)	Site telephone:
Big Rivers Electric Corp. - Robards HMP&L Station Two	

Big Rivers Electric Corp - Reid HMP&L Station 2 - Gre	###-###-####

Site Address(*)	Site city(*)	Site state(*)	Site zipcode(*)
9000 KY 2096	Robards	Kentucky	42452

Supporting Documentation

Site Map/Sketch Map(✓)	Upload file
Well location	Upload file
Well Diagram (monitoring well)	Upload file
Bacteria analysis (if applicable)	Upload file
Approved variance (if applicable)	Upload file
Drilling log (optional)	Upload file
Other laboratory analysis report (optional)	Upload file
Aquifer test results (optional)	Upload file
Casing/Screen Supplemental Info (if applicable)	Upload file
Other documentation (optional)	Upload file

Well Specifications

Active(*): Yes	Unsuitable for Intended use(*): No
Discharge permit required?(*): No	Withdrawal permit required?(*): No

Artesian/flowing(*)	If so, height (in):(✓)	Nested wells(*)	If so, number:(✓)
No		No	

Well Location

Well latitude(decimal degrees)(*)Driller Viewer (http://watermaps.ky.gov/well)	Well longitude(decimal degrees)(*)	Method(*)
37.640747	-87.50070	Driller Viewer

USGS 7.5' quadrangle(*)	County(*)	Physiographic region(*)
ROBARDS	Webster	W. Coal Field

Surface elevation(ft)(*)	Surface elevation method(*)	Well in flood zone?(*)
390.11	Driller Viewer	No

Construction

Install start date(*)	Install end date(*)
10/16/2024	10/16/2024

Drilling method(*)	Specify drilling method combinations(✓)
Auger - HS	Specify drilling method combinations

Drilling method has no annular space(*)	Multiple screens ?(*)	Well development method(*)	Specify development method combinations(✓)
No	No	Pumping	Specify development method combinations

Surface Completion

Surface Completion :

Protective surface casing(*)	Protective surface casing type(✓)	Protective surface casing height above surface(in)(✓)	Water-tight locking cap(*)
Yes	Steel	36	Yes

Concrete pad?(*) if Yes, enter length(in) X Width(in) X height(in) in textbox below	Bumper guards?(*) if so, enter number below:	Weep holes(*) if yes, enter number below
Yes 36x36x6	Yes 4	Yes 1

Outer casing(*)	Outer casing type(✓)	Outer casing height above surface(in)(✓)	Outer casing 2 foot above flood level ?(✓)
No			

Inner casing(*)	Inner casing type(✓)	Inner casing height above surface(in)(✓)	Inner casing 2 foot above flood level ?(✓)
Yes	PVC	30	Yes

Please report depths in feet below ground surface,

Total depth (ft bgs):(*)	Depth to bedrock (ft bgs):(✓)
40	

Static water level (ft bgs):	SWL method(✓)

Casing/open borehole:

(*)Note: When entering a row of data, From Depth, To Depth, Borehole diameter and Casing Type are required fields

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Casing OD (in)	Casing ID (in)	Casing Type
0.0	29.5	8.0	2.37	2.0	PVC

Screen:

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Screen OD (in)	Screen ID (in)	Screen Type	Screen Slot Size (in)
	39.5			2.0		

Annulus fill and seal

Section	From Depth (ft)	To Depth (ft)	Material

Lithologic log

From Depth (ft)	To Depth (ft)	Description

Comments

Affirmation

I certify under penalty of law that this document/electronic submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. By submitting data, this transmission constitutes my signature and I am responsible for any and all content submitted either by me or by the people I represent.

Date affirmed(*)	10/23/2024
Driller first name(*)	

	Kevin
Driller middle initial	R
Driller last name(*)	Collins
Driller suffix	Driller suffix
Certification number(*)	0348-0554-00
Certification company(*)	Direct Push Analytical Corp.

Click to Save Values for Future Retrieval | Click to Submit to EEC

Thank you for submitting your information via the Kentucky Energy and Environment Cabinet eForms website. Please save a copy of this submittal for your records. We recommend saving a copy as a .mht, .html, or .htm file. Your Submittal ID and Transaction ID will be included in an email after EEC Staff have reviewed your submittal.
The Submittal ID for this transaction is 463322 and was submitted by Kevin Collins on October 24, 2024 04:03 PM Eastern Time. If you need to contact EEC regarding your submission, please reference your Submittal ID.

The eForm Submittal ID allows you to use the data from this submittal as a template and/or download a copy of your submittal.

UNIFORM KENTUCKY WATER/MONITORING WELL REPORTING RECORD

Use this form to report installation, modification or decommissioning of any temporary or permanent monitoring or water wells

Form must be completed and submitted to the Division of Water within 60 days of completion of work

(*) indicates a required field; (✔) indicates a field may be required based on user input or is an optionally required field

Purpose of the application(*)

Note: If you are reporting anything other than a new installation and have no AKGWA number, search for it here: (https://kgs.uky.edu/kgsweb/DataSearching/Water/WaterWellSearch.asp) If you still need one, contact DOWDrillersProgram@ky.gov (mailto:DOWDrillersProgram@ky.gov?subject=Need%20AKGWA%20for%20eForm%20submittal) for an AKGWA number before proceeding.

Install only

Kentucky Well ID (AKGWA) Number(*)	Owner Well ID#	Well use(*)
Be sure to check the AKGWA Number against the Owner Well ID# before submitting this record.	MW-14A	Monitoring well - ambient m
8006-7553	Reference Point	

Monitoring Well Info

Wellhead

Manhole cover and gasket ?(*)	if so, diameter (in):(✓)	Dedicated pump(*)
Yes	4	No pump

Flush mount(*)	Cap(*)
No	Water-tight and lockable

Owner Name and Address Information

"Enter business name if owner is an organization. Enter first name/middle initial/last name if owner is an individual"

Owner Business name(✓)	Owner first name(✓)	Owner middle initial	Owner last name(✓)
Big Rivers Electric Corporation	Owner first name	Middle initial	Owner last name

Owner address(*)	Owner city(*)	Owner state(*)	Owner zipcode(*)
9000 Highway 2096	Robards	Kentucky	42452

Owner telephone:(*)

270-521-7927

Site Name, Address and Agency Information

☐ **Please check the checkbox if site address is same as the owner address**

Agency Interest (AI) Number:	Program type	Permit or ID Number
4196		

Site Name(*)	Site telephone:
Big Rivers Electric Corp. - Robards HWP01 Station Pro C	

Big Rivers Electric Corp - Reid HMP&L Station 2 - Gre	###-###-####

Site Address(*)	Site city(*)	Site state(*)	Site zipcode(*)
9000 KY 2096	Robards	Kentucky	42452

Supporting Documentation

Site Map/Sketch Map(✓)	Upload file
Well location	Upload file
Well Diagram (monitoring well)	Upload file
Bacteria analysis (if applicable)	Upload file
Approved variance (if applicable)	Upload file
Drilling log (optional)	Upload file
Other laboratory analysis report (optional)	Upload file
Aquifer test results (optional)	Upload file
Casing/Screen Supplemental Info (if applicable)	Upload file
Other documentation (optional)	Upload file

Well Specifications

Active(*): Yes	Unsuitable for Intended use(*): No
Discharge permit required?(*): No	Withdrawal permit required?(*): No

Artesian/flowing(*)	If so, height (in):(✓)	Nested wells(*)	If so, number:(✓)
No		No	

Well Location

Well latitude(decimal degrees)(*)Driller Viewer (http://watermaps.ky.gov/well)	Well longitude(decimal degrees)(*)	Method(*)
37.640747	-87.500085	Driller Viewer

USGS 7.5' quadrangle(*)	County(*)	Physiographic region(*)
ROBARDS	Webster	W. Coal Field

Surface elevation(ft)(*)	Surface elevation method(*)	Well in flood zone?(*)
387.92	Driller Viewer	No

Construction

Install start date(*)	Install end date(*)
10/16/2024	10/16/2024

Drilling method(*)	Specify drilling method combinations(✓)
Auger - HS	Specify drilling method combinations

Drilling method has no annular space(*)	Multiple screens ?(*)	Well development method(*)	Specify development method combinations(✓)
No	No	Pumping	Specify development method combinations

Surface Completion

Surface Completion :

Protective surface casing(*)	Protective surface casing type(✓)	Protective surface casing height above surface(in)(✓)	Water-tight locking cap(*)
Yes	Steel	36	Yes

Concrete pad?(*) if Yes, enter length(in) X Width(in) X height(in) in textbox below	Bumper guards?(*) if so, enter number below:	Weep holes(*) if yes, enter number below
Yes 36x36x6	Yes 4	Yes 1

Outer casing(*)	Outer casing type(✓)	Outer casing height above surface(in)(✓)	Outer casing 2 foot above flood level ?(✓)
No			

Inner casing(*)	Inner casing type(✓)	Inner casing height above surface(in)(✓)	Inner casing 2 foot above flood level ?(✓)
Yes	PVC	30	Yes

Please report depths in feet below ground surface,

Total depth (ft bgs):(*)	Depth to bedrock (ft bgs):(✓)
16	

Static water level (ft bgs):	SWL method(✓)

Casing/open borehole:

(*)Note: When entering a row of data, From Depth, To Depth, Borehole diameter and Casing Type are required fields

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Casing OD (in)	Casing ID (in)	Casing Type
0.0	10.5	8.0	2.37	2.0	PVC

Screen:

From Depth (ft)	To Depth (ft)	Borehole diameter (in)	Screen OD (in)	Screen ID (in)	Screen Type	Screen Slot Size (in)
10.5	15.5	8.0	2.37	2.0	PVC	0.01

Annulus fill and seal

Section	From Depth (ft)	To Depth (ft)	Material
Filterpack	8.0	16.0	Sand
Grout	3.0	6.0	Bentonite
Seal	6.0	8.0	Bentonite pellets

Lithologic log

From Depth (ft)	To Depth (ft)	Description

Comments

MW-14A
8006-7553

Affirmation

I certify under penalty of law that this document/electronic submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. By submitting data, this transmission constitutes my

signature and I am responsible for any and all content submitted either by me or by the people I represent.	
Date affirmed(*)	**10/24/2024**
Driller first name(*)	**Kevin**
Driller middle initial	**R**
Driller last name(*)	**Collins**
Driller suffix	**Driller suffix**
Certification number(*)	**0348-0554-00**
Certification company(*)	**Direct Push Analytical Corp.**

Click to Save Values for Future Retrieval | Click to Submit to EEC

Appendix H - Monitoring Well Development Forms

Well Development Summary

Big Rivers Electric Corporation - Sebree Station
Former Green CCR Surface Impoundment
Webster County, Kentucky

Well Identification	Well Development (gallons and date)			Total Development (gallons and days)	3 Well Volumes (gallons)	3 Borehole Volumes (gallons)	Clear-Low Turbidity During Development?	3 Well Volumes Purged?	3 Borehole Volumes Purged?
Newly Installed Monitoring Wells									
MW-11A	1 10/17/2024	-- --	-- --	1 gallons 1 days	1.03	5.97	Cloudy Brown, High turbidity, developed dry	Yes	No
MW-12B	well not developed; electrical lead of the submersible pump was not long enough to place within screened interval			not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
MW-13B	1.5 10/17/2024	0.8 10/18/2024	-- --	2.3 gallons 2 days	1.27	7.39	Cloudy Brown, High turbidity, developed dry	Yes	No
MW-14A	1.5 10/17/2024	-- --	-- --	1.5 gallons 1 day	1.12	6.48	Cloudy Brown, High turbidity, developed dry	Yes	No

WELL DEVELOPMENT RECORD

Project Name: BREC Green MW Install	**Project Number:** 176659	**Well Number:** MW-11A

Project Information		**Elevation of Monitoring Well**		
Facility Name:	BREC Sebree Station	Ground Surface Elevation (GS):	397.61	feet amsl
Location: Latitude:	37.64252 Longitude: -87.50323	Top of Casing Elevation (TOC):	400.33	feet amsl
Well Information		**Borehole Volume Calculation:**	Filter Pack Porosity =	30%
Date Well Installed:	10/17/2024	Water Column =	2.10 feet	Filter Pack = 12.00 ft Saturated Filter Pack = 2.10 ft
Total Depth of Well:	25.45 feet from TOC	1 Well Volume =	0.34 gallons	3 Well Volume = 1.03 gallons
Depth to Top of Screen:	15.45 feet from TOC	1 well volume (gallons) = initial height of water column (ft) x .16		
Length of Casing Screened:	10.00 feet	Filter Pack Volume=	1.65 gallons	
Borehole Diameter:	8.25 inches	Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume		
Well Casing Diameter:	2.00 inches	3 Borehole Volume =	5.97 gallons	
Type of Formation Screened:	Alluvium (clay-rich)	3 Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)		

Development Method

Equipment:				Method Description:
Surge	X	Bail		Monitoring well screen surged before development. Developed with electric submersible pump
Airlift		Pump	X	

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (mS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
10/17/24	4:10:00 PM	23.35	25.45	0	0	22.2	7.90	830	Brown	High turbidity; brown
	4:12:00 PM	24.25	25.45	1.0	1.0	Dry	Dry	Dry	Dry	Purged Dry

*from TOC unless otherwise noted in Remarks

WELL DEVELOPMENT RECORD

Project Name: BREC Green MW Install | **Project Number:** 176659 | **Well Number:** MW-13B

Project Information

Facility Name: BREC Sebree Station

Location: Latitude: 37.64073 Longitude: -87.50074

Well Information

Date Well Installed: 10/16/2024

Total Depth of Well: 42.40 feet from TOC

Depth to Top of Screen: 32.40 feet from TOC

Length of Casing Screened: 10.00 feet

Borehole Diameter: 8.25 inches

Well Casing Diameter: 2.00 inches

Type of Formation Screened: Alluvium (clay-rich)

Elevation of Monitoring Well

Ground Surface Elevation (GS): 391.64 feet amsl

Top of Casing Elevation (TOC): 394.34 feet amsl

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 2.60 feet Filter Pack = 12.00 ft Saturated Filter Pack = 2.60 ft

1 Well Volume = 0.42 gallons 3 Well Volume = 1.27 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Filter Pack Volume= 2.04 gallons

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Borehole Volume = 7.39 gallons

3 Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge	X	Bail		Monitoring well screen surged before development. Developed with electric submersible pump.
Airlift		Pump	X	

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (mS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
10/17/24	3:30:00 PM	39.80	43.15	0	0	25.70	8.10	2980.00	Brown	High turb. Brown
	3:32:00 PM	--	43.15	1.0	1.0	19.3	7.9	3060	Brown	High turb. Brown
	3:33:00 PM	41.65	43.15	0.5	1.5	Dry	Dry	Dry	Dry	
10/18/24	8:20:00 AM	39.86	42.40	0.5	2.0	18.1	7.9	2560	Brown	High turb. Brown
	8:21:00 AM	40.85	42.40	0.3	2.3	Dry	Dry	Dry	Dry	

*from TOC unless otherwise noted in Remarks

WELL DEVELOPMENT RECORD

Project Name: BREC Green MW Install | **Project Number:** 176659 | **Well Number:** MW-14A

Project Information

Facility Name: BREC Sebree Station

Location: Latitude: 37.64211 Longitude: -87.50002

Well Information

Date Well Installed: 10/17/2024

Total Depth of Well: 19.45 feet from TOC

Depth to Top of Screen: 14.45 feet from TOC

Length of Casing Screened: 5.00 feet

Borehole Diameter: 8.25 inches

Well Casing Diameter: 2.00 inches

Type of Formation Screened: Alluvium (clay-rich)

Elevation of Monitoring Well

Ground Surface Elevation (GS): 387.54 feet amsl

Top of Casing Elevation (TOC): 389.95 feet amsl

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 2.28 feet Filter Pack = 7.00 ft Saturated Filter Pack = 2.28 ft

1 Well Volume = 0.37 gallons 3 Well Volume = 1.12 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Filter Pack Volume= 1.79 gallons

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Borehole Volume = 6.48 gallons

3 Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge	X	Bail		Monitoring well screen surged before development. Developed with electric submersible pump.
Airlift		Pump	X	

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (mS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
10/17/24	3:45:00 PM	17.17	20.28	0	0	23.30	7.80	1036.00	Brown	High turb. Brown, prior to well completion
	3:46:00 PM	--	20.28	1.0	1.0	21.5	7.6	1186	Brown	High turb. Brown, prior to well completion
	3:47:00 PM	18.77	20.28	0.5	1.5	Dry	Dry	Dry	Dry	

*from TOC unless otherwise noted in Remarks

Appendix I - Monitoring Well Survey Report

ASSOCIATED ENGINEERS, INC.
ENGINEERS • GEOLOGISTS • SURVEYORS

Big Rivers Electric Corporation
Sebree – Reid Green

Monitoring Well Surveyed Locations
Surveyed October 22, 2024

Client: Big Rivers Electric Corporation

Field Surveyors: M. Brandon Lynn / Mitch Lander
Licensed Surveyor: James D. Cansler, LPLS
Survey Method: GPS (RTK)
Equipment: Carlson BRX7
Control System: BREC Sebree – Reid Green Control (Local)
Primary Reference Point: Mon 1

Associated Engineers, Inc. (AEI) has been retained by Big Rivers Electric Corporation via request from Burns & McDonnell Engineering Company for the purpose of surveying the location of four (4) new ground water monitoring wells at Big Rivers Electric Corporations' Sebree – Reid Green. The location and elevation of the surface, well pad, top of well casing, and top of well pipe were recorded at each location. The naming convention for the wells was provided to AEI by the client. Below is the tabulated location information for each well:

Well Number	MW-11A	MW-12B	MW-13B	MW-14A
Northing	481,364.30	480,183.28	480,700.82	481,196.34
Easting	1,492,376.80	1,492,822.82	1,493,087.14	1,493,304.75
Top of Casing Elev.	400.62	393.25	394.61	390.33
Top of Well Pipe Elev.	400.33	393.04	394.34	389.95
Top of Pad Elev.	397.92	390.93	392.00	387.72
Ground Elev.	397.61	390.76	391.64	387.54
Latitude	37°38'33.07"	37°38'21.47"	37°38'26.64"	37°38'31.58"
Longitude	087°30'11.63"	087°30'05.82"	087°30'02.65"	087°30'00.06"
HRMS*	0.020	0.025	0.024	0.020
VRMS**	0.031	0.042	0.039	0.031

***Horizontal Root-Mean-Square** (HRMS)

****Vertical Root-Mean-Square** (VRMS)

If there are any further questions feel free to contact me at
270-821-7732 / jcansler@associatedengineers.com

James D. Cansler, LPLS
November 13, 2024

Appendix D – Green Landfill Groundwater Analytical Summary Tables

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-1

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			3/26/2016		5/23/2016		8/18/2016		10/26/2016		2/1/2017		5/2/2017		8/7/2017		9/5/2017		10/5/2017		6/4/2018		7/10/2018		9/28/2018		4/22/2019	
			Baseline Events																Detection		Assessment		Re-Sampling		Assessment Monitoring			
Boron	--	mg/L	1.67		1.49		2.25		1.70		1.71	J	1.68		1.85	B	1.79		1.92		NA		1.41		1.94	B	1.73	B
Calcium	--	mg/L	29.1		31.8	B	33.0		30.9		20.8		28.1		27.1		29.9	B	26.4		NA		26.5		28.5	B	32.1	
Chloride	--	mg/L	9.03	JB	0.501	JB	6.60	B	6.02	B	5.56	B F1	5.30	B	5.12	B F1	5.71	B	4.07	F1 B	NA		6.34	B	6.17	B	6.41	B,F1
Fluoride	4.0	mg/L	ND	J	ND	JB	ND	J	ND	JB	ND	J F1	ND	JB	ND	J F1	ND	J	ND	J F1	NA		ND	J	ND	JB	0.521	J
pH (Field Measurement)	--	s.u.	7.39		7.24		7.57		7.19		7.63		7.54		7.45		7.48		7.63		NA		7.08		8.43		7.87	
Sulfate	--	mg/L	25.2		22.8	JB	22.9		20.7	B	28.4		24.0	B	25.3	B	23.4		24.9	JB	NA		23.5		22.5	B	35.1	B F1
Total Dissolved Solids	--	mg/L	598		588		585		585		605		630		614		627		636		NA		585		616		568	B
APPENDIX IV CONSTITUENTS																												
Antimony	0.006	mg/L	ND		ND	J	ND	B	ND		ND		ND	JB	0.00297	B	ND	JB			ND	JB	ND	J	NA		0.000254	JB
Arsenic	0.01	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J F1	ND	JB			ND	JB	ND	J	ND	JB	0.00167	JB
Barium	2.0	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J F1	ND	J			ND	JB	ND	J	ND	J	0.0862	J
Beryllium	0.004	mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		0.000533	J
Cadmium	0.005	mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		0.000299	J
Chromium	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J			ND	JB	ND		NA		0.00354	B
Cobalt	0.006	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	JB	ND	J	NA		0.000571	J
Fluoride	4.0	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J F1	ND	JB	ND	J F1	ND	J			ND	J	ND	J	ND	JB	0.521	J
Lead	0.015	mg/L	ND	J	ND	J	ND	J	ND		ND		ND		ND		ND	J			ND		ND	J	NA		0.000279	J
Lithium	0.04	mg/L	0.0293	J	0.0317	J	0.0326	J	0.0286	J	0.0342	J	0.0396	J	0.0314	J	0.0315	J			0.0319	J	0.0298	J	0.0279	J	0.0295	J
Mercury	0.002	mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		ND		ND	
Molybdenum	0.1	mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND				ND	J	ND	J	NA		0.00105	J
Radium 226 + Radium 228	5.0	pCi/L	1.05		1.02		0.676		1.02		0.694		0.666		0.491		0.601				1.92		0.882		0.905		0.689	
Selenium	0.05	mg/L	ND		ND		ND		ND		ND		ND		ND	J	ND				ND		ND		NA		0.00105	J
Thallium	0.002	mg/L	ND		ND	J	ND		ND	J	ND		ND		ND	J	ND				ND		ND		NA		0.000498	J

B = Compound was found in the blank and sample.
F1 = Matrix spike (MS) and/or matrix spike duplicate (MSD) Recovery is outside acceptance limits.
GWPS = groundwater protection standard
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN LANDFILL - GROUNDWATR ANALYTICAL SUMMARY (continued)
MW-1

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			9/30/2019		4/6/2020		9/22/2020		4/22/2021		9/23/2021		4/20/2022		12/9/2022		6/22/2023		11/7/2023		4/17/2024		11/21/2024	
			Assessment Events																					
Boron	--	mg/L	1.68	D2,M4	1.69	D1,M3	1.66	D2,M4	1.45	D1,M4	1.68	D1,M1,M4	1.71	D1,M2	1.82	D2,M1	1.92	D1,M1,M2	1.65	D1	1.84	D1	1.71	D1
Calcium	--	mg/L	29.1	D2	27.7	D1,M3	26.4	D2	31.6	D1,M1	26.4	D1,M1	31	D1,M2	31.2	D2,M2	28.6	D1,M1,M2	25.2	D1	29	D1	29.9	D1
Chloride	--	mg/L	7.5		6.5		6.6		6.4		6.2		13.9		5.7		5.7		5.7		6.2	M1, Y5, J+	5.8	
Fluoride	4.0	mg/L	0.6		0.5		0.6		0.5		0.6		0.5		0.6		0.5		0.6		0.7	M1, Y5, J+	0.5	
pH (Field Measurement)	--	s.u.	7.79	H3	7.22		6.88		6.90		7.28		6.67		7.62		8.51		7.94		7.32	J	8.07	
Sulfate	--	mg/L	19		21		24		42	D	33	D	48		30		31		30		29	M1, J+	37	
Total Dissolved Solids	--	mg/L	444	H1	488		388		582		584		672		602		520		684		548		568	
APPENDIX IV CONSTITUENTS																								
Antimony	0.006	mg/L	ND	M1 V1 U	<0.005		<0.005		<0.005	U	<0.005	M2, U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Arsenic	0.01	mg/L	0.0005	V1 J	0.0019		<0.0010		0.0005	J	<0.0010	M1, M2, U	0.0004	J	0.0008	J	0.0005	J	0.0016		0.0025		0.0011	
Barium	2.0	mg/L	0.091	D2	0.087		0.077		0.081		0.078	M2	0.077		0.085		0.071		0.079		0.085		0.086	
Beryllium	0.004	mg/L	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	M2, U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.0020	U
Cadmium	0.005	mg/L	ND	VI U	<0.0010		<0.0010		0.0001	J	<0.0010	M2, U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.0010	U
Chromium	0.1	mg/L	ND	U	0.0011	J	<0.0020		<0.0020	U	<0.0020	M2, U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.0020	U
Cobalt	0.006	mg/L	ND	U	<0.004		<0.004		<0.004	U	<0.004	M2, U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U
Fluoride	4.0	mg/L	0.6		0.5		0.6		0.5		0.6		0.5		0.6		0.5		0.6		0.7	M1,Y5	0.5	
Lead	0.015	mg/L	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	M2, U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
Lithium	0.04	mg/L	ND	D2 M3 U	0.03		<0.20	M1	0.03		0.03	M1, M2	0.03		0.03		0.03		0.03		0.03		0.03	
Mercury	0.002	mg/L	ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	M1, M2, U	0.0002	J	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U
Molybdenum	0.1	mg/L	ND	U	<0.01		<0.01		<0.01	U	<0.01	M1, M2, U	0.002	J	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Radium 226	5.0	pCi/L	0.782		0.808		0.564		0.412		1.53		2.36	J	1.46	J	0.805	J	0.176	J	0.831	J	1.74	
Radium 228			0.733																					
Selenium	0.05	mg/L	ND	U	<0.003		<0.003		<0.003	U	<0.003	M2, U	<0.003	M1, U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Thallium	0.002	mg/L	0.0001	V1 J	0.0001	J	0.0001	J	<0.0020	U	<0.0020	M1, M2, U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	0.0001	J	<0.0020	U

B = Compound was found in the blank and sample.
D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
F1 = Matrix spike (MS) and/or matrix spike duplicate (MSD) Recovery is outside acceptance limits.
GWPS = groundwater protection standard
H1 = Sample analysis performed pasts holding time.
H3 = Sample received and analyzed past holding time.
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.
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 spike sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-2

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			3/26/2016		5/23/2016		8/18/2016		11/14/2016		2/1/2017		5/2/2017		8/8/2017		9/7/2017		10/6/2017		6/5/2018		7/11/2018		9/28/2018	
			Baseline Events																Detection		Assessment		Re-Sampling		Assessment	
Boron	--	mg/L	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	0.113	JB	ND	JB	ND	J	NA		ND	J	0.0630	JB
Calcium	--	mg/L	119		116	B	140		140	B	126		152		154		121		150		NA		155		165	B
Chloride	--	mg/L	126	B	125	B	129	B	133		142	B	129	B	145	B	136	B	129	B	NA		154	B	159	B
Fluoride	4.0	mg/L	ND	J	ND		ND	J	ND	JB F1	ND	J	ND	JB	ND	JB	ND	JB F1	ND	J	NA		ND	J	ND	JB
pH (Field Measurement)	--	s.u.	6.81		6.59		6.7		6.78		7.12		7.04		6.77		6.69		6.86		6.64		6.4		7.02	
Sulfate	--	mg/L	80.0		84.5	J	85.5	J	90.1		89.8		83.2		92.0	JB	90.8		88.6	JB	NA		107.0		108	B
Total Dissolved Solids	--	mg/L	764		780		830		880		862		918		913		818		970		NA		884		937	
APPENDIX IV CONSTITUENTS																										
Antimony	0.006	mg/L	ND		ND	J	ND	JB	ND	JB	ND		ND	JB	ND	B	ND	JB	NA		ND	JB	ND	J	NA	
Arsenic	0.01	mg/L	0.00703	J	0.00633		0.0110		0.0159		0.0462		0.00755		0.0381		0.00527		NA		0.0327	B	0.0119		0.0211	B
Barium	2.0	mg/L	ND	J	ND	J	0.280		0.319		0.347		0.332		0.308		ND	J	NA		0.369		0.323		0.367	
Beryllium	0.004	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA	
Cadmium	0.005	mg/L	ND	J	ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA	
Chromium	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND	JB	ND		NA	
Cobalt	0.006	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	NA		ND	JB	ND	J	NA	
Fluoride	4.0	mg/L	ND	J	ND		ND	J	ND	JB F1	ND	J	ND	JB	ND	JB	ND	JB F1	NA		ND	J	ND	J	ND	JB
Lead	0.015	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND	J	NA	
Lithium	0.04	mg/L	ND	J	ND		ND		ND		ND	J	ND	J	ND	JB	ND		NA		ND		ND		ND	
Mercury	0.002	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		ND	
Molybdenum	0.1	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	JB	NA		ND	J	ND	J	NA	
Radium 226 Radium 228	5.0	pCi/L	0.533		ND		0.46		ND		0.856		0.73		0.968		0.537		NA		1.18		0.733		0.803	
Selenium	0.05	mg/L	ND		ND		ND		ND	JB	ND		ND		ND	JB	ND		NA		ND		ND		NA	
Thallium	0.002	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND		NA	

B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
GWPS = groundwater protection standard
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-2

APPENDIX III CONSTITUENTS	2024 GWPS	Units	4/23/2019		10/1/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021		4/20/2022		12/10/2022		6/24/2023		11/7/2023		4/16/2024		11/13/2024	
			Assessment Monitoring																							
Boron	--	mg/L	0.101	JB	ND	D2 U	<0.10		<0.10		<0.10	U	<0.10	U	<0.10	U	<1.0	D2, U	<0.10	U	<0.10	U	<0.10	U	<0.10	U, M2
Calcium	--	mg/L	156		166	D1	145	D1	157	D1	179	D1	193	D1	190	D1	216	D1	192	D1	179	D1	199	D1	215	D1, M2
Chloride	--	mg/L	144		108	D	120	D	231	D	264	D	301	D	159	D	233	D	218		185	D	455	D, M2, J-	194	D
Fluoride	4.0	mg/L	0.193	J	0.3		0.2		0.3		0.2		0.3		0.2		0.2		0.2		0.3		0.3		0.2	
pH (Field Measurement)	--	s.u.	7.15		7.39	H3	6.92		6.22		6.69		6.27		6.37		6.92		7.54		7.23		6.44	J	2.09	
Sulfate	--	mg/L	105		79.0	D	85	D	117	D	199	D	205	D	128	D	150		156		159		390	D, M2, J-	174	
Total Dissolved Solids	--	mg/L	918	B	930	H1	806		914		1040		1070		1130		1230		1610		1060		1050		1250	H1
APPENDIX IV CONSTITUENTS																										
Antimony	0.006	mg/L	0.0000670	JB	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Arsenic	0.01	mg/L	0.00738	B	0.0129	D2	0.0033		0.0095		0.0259		0.025		0.0331	J	0.0501		0.0323		0.0283		0.0099		0.0298	M2
Barium	2.0	mg/L	0.362		0.380	D2	0.238		0.336		0.363		0.329		0.348	J	0.351		0.340		0.270		0.276		0.261	M2
Beryllium	0.004	mg/L	0.000281	J	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U
Cadmium	0.005	mg/L	ND		ND	V1 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U
Chromium	0.1	mg/L	0.00122	JB	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U
Cobalt	0.006	mg/L	0.00382	J	ND	D2 U	<0.004		<0.004		<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	0.005		<0.004	U
Fluoride	4.0	mg/L	0.193	J	0.3		0.2		0.3		0.2		0.3		0.2		0.2		0.2		0.3		0.3		0.2	
Lead	0.015	mg/L	ND		ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
Lithium	0.04	mg/L	ND		ND	D2 VI U	0.007	J	0.006	V1, J	0.006	J	0.006	J	0.006	J	0.006	J	0.006	J	0.005	J	0.005	J	0.005	J
Mercury	0.002	mg/L	ND		ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	0.0003	J
Molybdenum	0.1	mg/L	0.00210	J	0.003	J	0.002	J	0.002	J	0.003	J	0.002	J	0.003	J	0.003	J	0.005	J	0.003	J	0.003	J	0.004	J
Radium 226	5.0	pCi/L	0.391		0.136		0.529		0.493		1.26		0.591		1.27	J	1.59	J	1.50	J	0.00	J	1.28	J	1.29	
Radium 228					0.834																					
Selenium	0.05	mg/L	ND		ND	U	<0.003		<0.003		<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Thallium	0.002	mg/L	0.0000800	J	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U

B = Compound was found in the blank and sample.
D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
GWPS = groundwater protection standard
H1 = Sample analysis performed pasts holding time.
H3 = Sample received and analyzed past holding time.
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-3A

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			3/26/2016		5/23/2016		8/18/2016		11/14/2016		2/1/2017		5/2/2017		8/8/2017		9/6/2017		10/6/2017		6/5/2018		7/11/2018		9/28/2018		4/23/2019	
			Baseline Events																Detection		Assessment		Re-Sampling		Assessment Monitoring			
Boron	--	mg/L	0.145		0.135	J	0.279	J	0.213	J	0.235	JB	0.232	J	0.304	JB	0.376	J	0.313		NA		0.177	J	0.257	JB	0.259	JB
Calcium	--	mg/L	431		322	B	362		365	B	327		420		421		438	B	408		NA		469		447	B	411	
Chloride	--	mg/L	2630	HB	3070		2150	B	2150	B	2220	B	2120	B	1790	B	2270	B	1870	B	NA		2180	B	2040	B	1850	
Fluoride	4.0	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND		3.16		ND	J	NA		ND	J	ND	JB	0.387	J
pH (Field Measurement)	--	s.u.	6.92		6.86		6.95		6.75		7.17		7.11		6.81		6.9		6.95		6.84		6.55		7.98		7.23	
Sulfate	--	mg/L	1330		1330		1190		1660		1080		1030	B	942		1130		1030	B	NA		1010		1130	B	1080	
Total Dissolved Solids	--	mg/L	4440		5010		4170		4450		4270		5170		5010		5020		5300		NA		4540		4940		4250	B
APPENDIX IV CONSTITUENTS																												
Antimony	0.006	mg/L	ND		ND	J	ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	NA		ND	JB	ND		NA		0.000102	JB
Arsenic	0.01	mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	NA		ND	JB	ND	J	ND	JB	0.000575	JB
Barium	2.0	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		ND	J	ND	J	ND	J	0.0474	J
Beryllium	0.004	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		0.000199	J
Cadmium	0.005	mg/L	ND	J	ND	J	ND		ND		ND	J	ND	J	ND		ND		NA		ND	J	ND	J	NA		0.000164	J
Chromium	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J	NA		ND	JB	ND		NA		0.00168	JB
Cobalt	0.006	mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		ND	JB	ND	J	NA		0.000243	J
Fluoride	4.0	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND		3.16		NA		ND	J	ND	J	ND	JB	0.387	J
Lead	0.015	mg/L	ND	J	ND		ND		ND		ND		ND		ND	J	ND	J	NA		ND		ND	J	NA		0.000137	J
Lithium	0.04	mg/L	0.669		0.516		0.648		0.677		0.689		0.746		0.767		0.762		NA		0.699		0.79		0.766		0.678	
Mercury	0.002	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		ND		ND	
Molybdenum	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Radium 226 Radium 228	5.0	pCi/L	1.38		0.386		0.472		1.15		1.15		0.923		1.53		1.03		NA		1.18		1.43		1.21		0.641	
Selenium	0.05	mg/L	ND		ND		ND	J	ND	JB	ND		ND		ND		ND		NA		ND	J	ND		NA		0.00103	J
Thallium	0.002	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J	NA		ND		ND		NA		0.000860	J

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mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-3A

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																			
			10/1/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021		4/20/2022		12/10/2022		6/24/2023		11/8/2023		4/17/2024		11/19/2024	
			Assessment Monitoring																			
Boron	--	mg/L	ND	D2 U	0.26		0.28		0.25		0.37		0.28		<1.0	D2, U	0.30		0.31		0.35		0.36	
Calcium	--	mg/L	490	D1	425	D1	423	D1	438	D1	483	D1	428	D1	553	D1	531	D1	475	D1	514	D1	478	D1
Chloride	--	mg/L	4570	D	3220	D	1200	D	3460	D	1780	D	1820	D	2530	D	1820	D	1190	D,J	1980	D1	1930	D
Fluoride	4.0	mg/L	0.4		0.5		0.4		0.4		<0.20	U	0.4		0.4		0.5		0.4		0.5		0.3	
pH (Field Measurement)	--	s.u.	7.33	H3	6.86		6.61		7.26		6.77		6.68		6.99		7.82		7.37		6.72	J	7.1	
Sulfate	--	mg/L	1680	D	1840	D	1830	D	2110	D	2380	D	752	D	1720	D	1140	D,M2	2530	D,J	3200	D	1280	D
Total Dissolved Solids	--	mg/L	6900	H1	5860		5680		5940		6490		5220		5350		5090		3630	J	5080	J	4500	
APPENDIX IV CONSTITUENTS																								
Antimony	0.006	mg/L	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Arsenic	0.01	mg/L	ND	D2 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.0010	U
Barium	2.0	mg/L	0.051	D2 U	0.042		0.043		0.042		0.045		0.038		0.04		0.035		0.038		0.042		0.040	
Beryllium	0.004	mg/L	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U
Cadmium	0.005	mg/L	ND	V1 U	0.0001	J	<0.0010		0.0002	J	<0.0010	U	0.0001	J	<0.0010	U	<0.0010	U	<0.0010	U	0.0001	J	<0.0010	U
Chromium	0.1	mg/L	ND	D2 U	<0.0020		0.0006	J	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U
Cobalt	0.006	mg/L	0.008		<0.004		0.004		<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U
Fluoride	4.0	mg/L	0.4		0.5		0.4		0.4		<0.20	U	0.4		0.4		0.5		0.4		0.5		0.3	
Lead	0.015	mg/L	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
Lithium	0.04	mg/L	0.79	D1	0.68		0.80	D2	0.75		0.76		0.65		0.61		0.64		0.71		0.75		0.69	
Mercury	0.002	mg/L	ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U
Molybdenum	0.1	mg/L	ND	D2 U	<0.01		<0.01		<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Radium 226	5.0	pCi/L	0.139		1.06		1.51		1.25		1.46		1.46	J	2.3	J	1.43	J	2.45	J	1	J	2.70	
Radium 228			0.734																					
Selenium	0.05	mg/L	ND	D2 U	<0.003		<0.003		<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	D2,U	<0.003	U
Thallium	0.002	mg/L	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U

B = Compound was found in the blank and sample.
D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
GWPS = groundwater protection standard
H1 = Sample analysis performed pasts holding time.
H3 = Sample received and analyzed past holding time.
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-4

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																	
			3/29/2016		5/23/2016		8/18/2016		10/26/2016		2/1/2017		5/2/2017		8/8/2017		9/7/2017		10/6/2017		6/5/2018		7/11/2018		9/28/2018		4/22/2019	
			Baseline Events																Detection		Assessment		Re-Sampling		Assessment Monitoring			
Boron	--	mg/L	0.602		0.498	J	1.58		1.7		1.54	B	2.09		2.51	B	2.87	B	1.36		NA		0.751	J	1.33	B	1.25	B
Calcium	--	mg/L	660		386	B	464		558		591		774		743		739		828		NA		822		722	B	730	
Chloride	--	mg/L	1450	B	939	B	952	B	1000	B	1420	B	1320	B	1360	B	1880	B	1730	B	NA		1430	B	1310	B	1510	
Fluoride	4.0	mg/L	ND	J	ND		ND	J	ND	JB	ND	J	1.06	B	ND		ND	JB	ND	J	NA		ND	J	ND	JB	0.102	J
pH (Field Measurement)	--	s.u.	6.36		6.83		7.08		6.61		7.28		7.1		6.84		6.64		6.93		6.86		6.58		8.06		7.26	
Sulfate	--	mg/L	1830		1640		1420		1420	B	1620		1430	B	1600	B	2020		1590	B	NA		1460		1400	B	1440	
Total Dissolved Solids	--	mg/L	3700		4250		3440		3250		4420		4550		4890		4700	H	6220		NA		4880		5170		4840	B
APPENDIX IV CONSTITUENTS																												
Antimony	0.006	mg/L	ND		ND	J	ND	JB	ND		ND		ND	JB	ND	JB	ND	JB	NA		ND	JB	ND		NA		0.0000360	JB
Arsenic	0.01	mg/L	ND		ND	J	ND	J	ND		ND	J	ND	J	ND	J	ND	JB	NA		ND	JB	ND	J	ND	JB	0.000445	JB
Barium	2.0	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J	ND	J	ND	JB	NA		ND	J	ND	J	ND	J	0.0308	JB
Beryllium	0.004	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Cadmium	0.005	mg/L	ND	J	ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Chromium	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND	JB	ND		NA		0.00110	JB
Cobalt	0.006	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND	JB	ND	J	NA		0.000415	J
Fluoride	4.0	mg/L	ND		ND		ND	J	ND	JB	ND	J	ND	B	ND		ND	JB	NA		ND	J	ND	J	ND	JB	0.102	J
Lead	0.015	mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND	J	NA		ND	
Lithium	0.04	mg/L	1.39		0.838		1.13		1.25		1.35		1.59		1.77		1.66		NA		1.81		1.91		1.81		1.73	
Mercury	0.002	mg/L	0.00027		0.000224		ND	J	0.000248		0.000302		0.000717		0.000825		0.000485		NA		0.000824		0.000832		0.000680		0.000825	
Molybdenum	0.1	mg/L	ND	J	ND	J	ND		ND		ND	J	ND		ND		ND		NA		ND		ND		NA		ND	
Radium 226 + Radium 228	5.0	pCi/L	1.26		0.592		ND		0.536		1.22		1.43		1.94		1.19		NA		1.62		2		1.51		1.66	
Selenium	0.05	mg/L	ND	J	ND	J	ND	J	ND		ND	J	ND		ND		ND	J	NA		ND	J	ND		NA		0.00211	J
Thallium	0.002	mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND		NA		ND		ND		NA		0.0000410	J

B = Compound was found in the blank and sample.
GWPS = groundwater protection standard
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-4

APPENDIX III CONSTITUENTS	2024 GWPS	Units	10/1/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021		4/20/2022		12/10/2022		6/24/2023		11/7/2023		4/16/2024		11/14/2024	
			Assessment Monitoring																					
Boron	--	mg/L	1.75	D2	0.83		1.70	D2	1.38	D1	1.43	D1	0.87		1.26	D2	1.20	D1	0.31		1.08	D1	0.87	M1, M2
Calcium	--	mg/L	690	D1	464	D1	823	D1	764	D1	841	D1	534	D1	871	D1	725	D1	702	D1	744	D1	676	D1, M3
Chloride	--	mg/L	1910	D	1560	D	2030	D	2470	D	1910	D	704	D	2270	D	1130	D	1090	D	1440	D1	1270	D
Fluoride	4.0	mg/L	0.2		0.2		0.2		0.2		<0.20	U	0.2		0.2		0.2		0.2		0.2		<4.0	U
pH (Field Measurement)	--	s.u.	7.36	H3	6.70		6.64		7.12		6.52		6.68		7.05		7.69		7.16		6.52	J	7.29	
Sulfate	--	mg/L	2490	D	4000	D	2080	D	2330	D	1780	D	1230	D	2500	D	1650	D	1890		3850	D	1590	D
Total Dissolved Solids	--	mg/L	4820	H1	5120		4470		5040		5610		5740		3850		4660	J	4080		5220		3930	
APPENDIX IV CONSTITUENTS																								
Antimony	0.006	mg/L	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Arsenic	0.01	mg/L	ND	D2 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U
Barium	2.0	mg/L	0.029	D2 J	0.022		0.031		0.029		0.030		0.022		0.025		0.023		0.02		0.04		0.024	
Beryllium	0.004	mg/L	ND	D2 U	<0.0020		<0.0040	D2	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U, M2
Cadmium	0.005	mg/L	ND	V1 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U
Chromium	0.1	mg/L	ND	D2 U	0.0008	J	<0.0020		<0.0020	U	<0.0020	U	0.0008	J	0.0006	J	0.0018	J	0.0008	J	<0.0020	U	0.0010	V1, J
Cobalt	0.006	mg/L	ND	U	<0.004		<0.004		<0.004	U	<0.004		<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U, V1
Fluoride	4.0	mg/L	0.2		0.2		0.2		0.2		<0.20	U	0.2		0.2		0.2		0.2		0.2		<4.0	U
Lead	0.015	mg/L	ND	V1 U	<0.002		<0.002		<0.0020	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
Lithium	0.04	mg/L	ND	D2 V	0.82		1.73	D2	1.44		1.44	D2	0.79		1.1	D1	1.20	D1	0.99	D1	1.17	D1	1.06	C6, D1, M3
Mercury	0.002	mg/L	0.0004	V1 J	0.0003	J	0.0003	J	0.0004	J	0.0002	J	0.0002	J	0.0007		0.0004	J	0.0004	J	0.0003	J	0.0002	M2, J
Molybdenum	0.1	mg/L	ND	D2 U	0.002	J	<0.01		<0.01	U	<0.01	U	0.002	J	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U, V1
Radium 226	5.0	pCi/L	0.451		1.26		0.877		0.982		0.551		2.55	J	1.6	J	2.09	J	1.32	J	0.48	J	2.05	J
Radium 228			0.804																					
Selenium	0.05	mg/L	ND	U	0.023		<0.003		0.003		<0.003	U	0.028		0.002	J	0.003		0.001	J	<0.003	U	<0.003	U
Thallium	0.002	mg/L	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U

B = Compound was found in the blank and sample.
D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
GWPS = groundwater protection standard
H1 = Sample analysis performed pasts holding time.
H3 = Sample received and analyzed past holding time.
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.
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-5

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			3/29/2016		5/23/2016		8/18/2016		10/26/2016		2/1/2017		5/2/2017		8/7/2017		9/7/2017		10/6/2017		6/5/2018		7/11/2018		9/28/2018		4/22/2019	
			Baseline Events																Detection		Assessment		Re-Sampling		Assessment Monitoring			
Boron	--	mg/L	0.217		0.0896	J	0.216	J	0.214	J	0.222	JB	0.241	J	0.257	JB	0.276	B	0.262		NA		0.207	J	0.263	JB	0.271	JB
Calcium	--	mg/L	452		189	B	374		399		335		464		423		407	B	383		NA		469		441	B	446	
Chloride	--	mg/L	1630	B	521		688	B	755	B	734	B	722	B	945	B	779	B	608	B	NA		941	B	1140	B	931	
Fluoride	4.0	mg/L	ND	J	ND		ND	J	ND		ND	J	ND	JB	ND		3.69		ND	J	NA		ND	J	ND	JB	0.128	J
pH (Field Measurement)	--	s.u.	6.76		6.74		6.99		6.61		7.14		7.44		6.87		7.13		7.06		6.88		6.40		7.99		7.15	
Sulfate	--	mg/L	1760	HB	876		1780		1740	B	1880		1760	B	2060	B	1920		1600	B	NA		1800		1890	B	1800	
Total Dissolved Solids	--	mg/L	4210		1660		3470		3610		3680		4250		4130		4120		4390		NA		4100		4540		4360	B
APPENDIX IV CONSTITUENTS																												
Antimony	0.006	mg/L	ND		ND	J	ND	JB	ND		ND		ND	JB	ND	JB	ND	JB	NA		ND	JB	ND		NA		0.0000700	JB
Arsenic	0.01	mg/L	ND		ND	J	ND	JB	ND	J	ND	J	ND	J	ND	J	ND	JB	NA		ND	JB	ND	J	ND	JB	0.000424	JB
Barium	2.0	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		ND	J	ND	J	ND	J	0.0167	J
Beryllium	0.004	mg/L	ND		ND		ND	J	ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Cadmium	0.005	mg/L	ND	J	ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Chromium	0.1	mg/L	ND		ND	J	ND		ND		ND	J	ND	J	ND		ND	J	NA		0.00363	B	ND		NA		0.00159	JB
Cobalt	0.006	mg/L	ND		ND	J	ND	J	ND	J	ND		ND	J	ND		ND	J	NA		ND	JB	ND	J	NA		0.000288	J
Fluoride	4.0	mg/L	ND	J	ND		ND	J	ND		ND	J	ND		ND		3.69		NA		ND	J	ND	J	ND	JB	0.128	J
Lead	0.015	mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND		NA		ND	J	ND	J	NA		0.0000860	J
Lithium	0.04	mg/L	0.521		0.136		0.305		0.325		0.368		0.415		0.405		0.353		NA		0.459		0.481		0.425		0.434	
Mercury	0.002	mg/L	ND		ND		ND		ND		ND		ND		0.0035		ND		NA		ND		ND		ND		ND	
Molybdenum	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Radium 226	5.0	pCi/L	1.16		0.736		0.959		0.957		0.765		0.888		1.54		0.773		NA		0.862		1.42		1.37		0.945	
Radium 228																												
Selenium	0.05	mg/L	ND		ND		ND		ND		ND	J	ND	J	ND		ND		NA		ND	J	ND		NA		0.000624	J
Thallium	0.002	mg/L	ND		ND		ND	J	ND	J	ND		ND	J	ND		ND	J	NA		ND	J	ND		NA		0.0000890	J

B = Compound was found in the blank and sample.
GWPS = groundwater protection standard
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-5

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																			
			9/30/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021		4/20/2022		12/9/2022		6/24/2023		11/7/2023		4/16/2024		11/14/2024	
			Assessment Monitoring																			
Boron	--	mg/L	ND	D2 U	0.25		0.24		0.24		0.23		0.26		<1.0	D2, V1	0.24		0.21		<1.0	D2,U	0.23	
Calcium	--	mg/L	476	D1	464	D1	495	D1	498	D1	453	D1	500	D1	561	D1	485	D1	439	D1	529	D1	484	D1
Chloride	--	mg/L	1500	D	1860	D	1800	D	2080	D	2250	D	850	D	1930	D	1020	D	992	D	2260	D	1080	D
Fluoride	4.0	mg/L	0.2		0.2		0.2		0.2		<0.2	U	<0.2	U	0.2		0.3		0.2		0.3		<0.2	U
pH (Field Measurement)	--	s.u.	7.41	H3	6.77		6.52		6.92		6.67		6.59		6.94		7.71		7.25		6.45	J	6.34	
Sulfate	--	mg/L	2990	D	3720	D	973	D	3440	D	1000	D	877	D	3080	D	1900	D	2390	D	<1	U	1810	D
Total Dissolved Solids	--	mg/L	5320	H1	4960		5170		5000		5630		4900		4630	H2,J-	4220	H2,J	4650		3920		4040	
APPENDIX IV CONSTITUENTS																								
Antimony	0.006	mg/L	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Arsenic	0.01	mg/L	ND	D2 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.001	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U
Barium	2.0	mg/L	0.016	D2 J	0.014		0.014		0.014		0.013		0.013		0.012		0.012		0.011		0.013		0.015	
Beryllium	0.004	mg/L	ND	D2 U	<0.0020		<0.0040	D2	<0.0020	U	<0.0020	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.0020	U
Cadmium	0.005	mg/L	ND	V1 U	<0.0010		<0.0010		0.0006	J	<0.0010	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.0010	U
Chromium	0.1	mg/L	0.0033		<0.0020		0.0008	J	<0.0020	U	<0.0020	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	0.0007	J	0.0008	V1, J
Cobalt	0.006	mg/L	ND	U	<0.004		<0.004		<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U, V1
Fluoride	4.0	mg/L	0.2		0.2		0.2		0.2		<0.2	U	<0.2	U	0.2		0.3		0.2		0.3		<0.2	U
Lead	0.015	mg/L	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
Lithium	0.04	mg/L	0.40	D1	0.38		0.42	D2	0.39		0.35		0.39		0.33		0.33		0.36		0.38		0.36	
Mercury	0.002	mg/L	ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	0.0002	J	<0.0005	U	<0.0005	U
Molybdenum	0.1	mg/L	ND	D2 U	<0.01		<0.01		<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U, V1
Radium 226	5.0	pCi/L	0.368		1.48		1.68		1.24		1.02		2.67	J	1.37	J	1.69	J	1.12	J	1.6	J	1.21	J
Radium 228			0.730																					
Selenium	0.05	mg/L	ND	U	<0.003		<0.003		<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Thallium	0.002	mg/L	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.002	U	<0.002	U	0.0001	J	<0.002	U	<0.002	U	<0.0020	U

D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
GWPS = groundwater protection standard
H1 = Sample analysis performed pasts holding time.
H3 = Sample received and analyzed past holding time.
J- = Qualifid as estimated biased low during data review.
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-6

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			3/29/2016		5/23/2016		8/18/2016		10/26/2016		2/1/2017		5/2/2017		8/7/2017		9/5/2017		10/5/2017		6/4/2018		7/10/2018		9/28/2018		4/22/2019	
			Baseline Events																Detection		Assessment		Re-Sampling		Assessment Monitoring			
Boron	--	mg/L	0.156		0.137	J	0.193	J	0.168	J	0.173	B	0.179	J	0.167	JB	0.199	J	0.178		NA		0.155	J	0.196	JB	0.194	JB
Calcium	--	mg/L	467		374	B	373		400		320		415		365		382	B	376		NA		386		356	B	421	
Chloride	--	mg/L	167	B	149	B	136	JB	150	B	125	B	129	B	128	B	123	B	138	B	NA		147	B	142	B	142	
Fluoride	4.0	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND		ND	J	ND	J	NA		ND	J	ND	JB	0.409	J
pH (Field Measurement)	--	s.u.	6.66		6.65		6.96		6.6		6.92		6.97		6.76		6.95		6.86		NA		6.50		7.94		6.86	
Sulfate	--	mg/L	2250	HB	3340		2550		2610	B	2700		2600	B	2820	B	2490		2700	B	NA		2120		2420		2200	
Total Dissolved Solids	--	mg/L	4060		4280		4350		4470		4720		4700		4830		4890		4910		NA		4500		4820		4780	B
APPENDIX IV CONSTITUENTS																												
Antimony	0.006	mg/L	ND		ND	J	ND	JB	ND		ND		ND	JB	ND	JB	ND	JB	NA		ND	JB	ND		NA		0.0000920	JB
Arsenic	0.01	mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	NA		ND	JB	ND	J	ND	JB	0.000722	JB
Barium	2.0	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		ND	J	ND	J	ND	J	0.0128	J
Beryllium	0.004	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Cadmium	0.005	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		ND	
Chromium	0.1	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J	NA		ND	JB	ND		NA		0.00196	JB
Cobalt	0.006	mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		ND	JB	ND	J	NA		0.000276	J
Fluoride	4.0	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND		ND	J	NA		ND	J	ND	J	ND	JB	0.409	J
Lead	0.015	mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND	J	NA		ND	
Lithium	0.04	mg/L	0.0475	J	0.0527		0.0555		0.0524		0.0607		0.0724		0.0589		0.0554		NA		0.0650		0.0592		0.0558		0.0633	
Mercury	0.002	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		ND		ND	
Molybdenum	0.1	mg/L	ND	J	ND	J	ND	J	ND	B	ND	J	ND	J	ND	J	ND	J	NA		ND	J	ND	J	NA		0.000972	J
Radium 226 Radium 228	5.0	pCi/L	0.741		0.386		ND		0.751		ND		ND		0.462		ND		NA		0.392		0.532		ND	U	0.450	
Selenium	0.05	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND	J	ND		NA		0.00110	J
Thallium	0.002	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		0.0000610	J

B = Compound was found in the blank and sample.
GWPS = groundwater protection standard
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-6

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																			
			9/30/2019		4/6/2020		9/22/2020		4/22/2021		9/23/2021		4/20/2022		12/9/2022		6/24/2023		11/8/2023		4/17/2024		11/21/2024	
			Assessment Monitoring																			
Boron	--	mg/L	ND	D2 U	0.19		0.19		0.18		0.18		0.2		<1.0	D2, V1, U	0.19		0.15	M2	0.2		1.73	D1, M2
Calcium	--	mg/L	431	D1	458	D1	417	D1	376	D1	417	D1	451	D1	474	D1	408	D1	375	D1, M3	440	D1	417	D1, M3
Chloride	--	mg/L	230	D	181	D	286	D	276	D	130	D, M2	148	D	204	D	144	D	192	D, M3	319	D	5.8	
Fluoride	4.0	mg/L	0.5		0.4		0.5		0.4		<0.20	M2, U	0.3		0.5		0.5		0.5	J-	0.5		0.5	
pH (Field Measurement)	--	s.u.	7.15	H3	6.36		6.32		6.72		6.87		6.75		6.88		7.64		7.42		6.48	J	7.16	
Sulfate	--	mg/L	3830	D	4650	D	2380	D, H2	3460	D	1620	D, M2	1570	D	3030	D, J	2360	D	8480	D, M3	2710	D1	2710	D
Total Dissolved Solids	--	mg/L	4830	H1	4610		4740		5050		5080		4860		4560	H2, J-	4760	H2,J	4030		4180		4520	
APPENDIX IV CONSTITUENTS																								
Antimony	0.006	mg/L	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U, D2
Arsenic	0.01	mg/L	ND	V1 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	0.0010	
Barium	2.0	mg/L	0.010	D2 J	0.011		0.011		0.014		0.009		0.011		0.01		0.011		0.009		0.017		0.083	
Beryllium	0.004	mg/L	ND	D2 U	<0.0020		<0.0020	V1	<0.0020	U	<0.0020	U	<0.0020	V1, U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U, M2
Cadmium	0.005	mg/L	ND	V1 U	0.0001	J	<0.0010		<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	<0.0010	U	0.0002	J
Chromium	0.1	mg/L	ND	U	<0.0020		0.0006	J	0.0006	J	0.0006	J	<0.0020	U	<0.0020	U	0.0008	J	<0.0020	U	<0.0020	U	0.115	M7
Cobalt	0.006	mg/L	ND	U	<0.004		<0.004		<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U, D2
Fluoride	4.0	mg/L	0.5		0.4		0.5		0.4		<0.20	M2, U	0.3		0.5		0.5		0.5	J-	0.5		0.5	
Lead	0.015	mg/L	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.0005	U	<0.002	U	<0.002	U, M2
Lithium	0.04	mg/L	0.05	D2 V1 J	0.05		0.05	D2, J	0.05		0.04		0.05		0.04		0.04		0.04		0.05		0.05	
Mercury	0.002	mg/L	ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0002	U	<0.0005	U	<0.0005	U
Molybdenum	0.1	mg/L	ND	D2 U	<0.01		<0.01		<0.01	U	<0.01	U	<0.01	U	<0.01	U	0.002	J	<0.002	U	<0.01	U	0.12	M2
Radium 226	5.0	pCi/L	0.548		0.744		0.380		0.674		0.109		0.404	J	1.29	J	1.40	J	0.22	J	0.35	J	0.523	
Radium 228			0.698																					
Selenium	0.05	mg/L	ND	U	<0.003		<0.003		<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Thallium	0.002	mg/L	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U	<0.0020	U

D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
GWPS = groundwater protection standard
H1 = Sample analysis performed pasts holding time.
H2 = Initial analysis within holding time. Reanalysis was past holding time.
H3 = Sample received and analyzed past holding time.
J- = Qualifid as estimated biased low during data review.
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.
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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-104

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																									
			3/29/2019		4/10/2019		10/25/2019		4/17/2020		10/1/2020		5/26/2021		9/23/2021		4/22/2022		12/10/2022		6/24/2023		11/7/2023		4/17/2024		11/14/2024	
			Characterization																									
Boron	--	mg/L	0.1880	JB	0.2710	JB	ND	D2, U	0.21		0.23	D2	0.26	M4	0.25		0.25		0.26	D1	0.26		0.24		0.29	M2	0.27	
Calcium	--	mg/L	465	B	502		505	D1	527	D1	491	D1	459	D1,M1,M2	466	D1	486	D	536	D1	477	D1	496	D1	504	D1,M3	517	D1
Chloride	--	mg/L	1430		1430	B	1610	D	2630	D	2220	D	1650	D	1430	M2	3080	D	3450	D, M2	3000	D	2490	D, M3	1930	D1	1780	D
Fluoride	4.0	mg/L	ND		0.3230	JB	0.4		0.3		0.3		0.4		0.4	M2, Y2	0.4		0.4	M2,J	<0.2	U	0.30	J-	0.42	M2,Y5	0.3	
pH (Field Measurement)	--	s.u.	6.88		6.99		6.86		6.58		6.91		7.55		6.22		5.98		6.91		7.77		7.33		6.46	J	7.27	J
Sulfate	--	mg/L	2870		2880	B	2440	D	4710	D	2730	D	1970	D	1900	D, M1	1100	D	4480	D, M2	4010		4190	D, M3	1110	D, J+	2300	D
Total Dissolved Solids	--	mg/L	6990		6690		7330		6320		6270		7330		7230		6500		5810		7990		5770		7570		6860	
APPENDIX IV CONSTITUENTS																												
Antimony	0.006	mg/L	0.0001	JB	0.0001	JB	ND	U	<0.005		<0.005		<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Arsenic	0.01	mg/L	0.0022	J	0.0021	J	0.0039		0.0013		0.0013		0.0008	J	0.0010		0.0015		0.001		0.0011		0.0010		0.0012		0.0013	
Barium	2.0	mg/L	0.0243	J	0.0216	JB	0.030		0.018		0.018		0.016		0.017		0.017		0.016		0.016		0.016		0.018		0.016	
Beryllium	0.004	mg/L	ND		ND		ND	U	<0.0020		<0.0020	D2	<0.0020	U	<0.0020	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	M2,UJ	<0.0020	U
Cadmium	0.005	mg/L	ND		ND		0.0004	J	<0.0010		<0.0010		0.0001	J	0.0006	J	0.0004	J	0.0015		0.0003	J	0.0004	J	0.0002	J	0.0002	J
Chromium	0.1	mg/L	0.0047	B	0.0036		0.0066		0.0020		0.0013	J	0.0012	J	<0.0020	U	0.001	J	0.0007	J	<0.0020	U	0.0006	J	<0.0020	U	<0.0020	U, V1
Cobalt	0.006	mg/L	0.0059	B	0.0052		0.011		0.005		0.005		<0.004	U	<0.004	U	0.005		0.004		0.004		0.004		0.004		0.005	
Fluoride	4.0	mg/L	ND		0.3230	JB	0.4		0.3		0.3		0.4		0.4	M2, Y2	0.4		0.4	M2,J	<0.2	U	0.3	J-	0.4	M2,Y5, J-	0.3	
Lead	0.015	mg/L	0.0011	J	0.0002	J	0.003		<0.002		<0.002		<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U
Lithium	0.04	mg/L	0.0281	J	0.0286	J	0.02		0.02		0.02	D2	0.02	M1	0.03		0.03		0.03		0.04		0.05		0.06	M3, J-	0.05	
Mercury	0.002	mg/L	ND		ND	^	ND	U	<0.0005		<0.0005		<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U	<0.0005	U
Molybdenum	0.1	mg/L	0.0015	J	0.0010	J	0.005	J	0.003	J	<0.01	D2	0.002	J	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Radium 226	5.0	pCi/L	0.7760		0.3190	U	0.126		0.655		0.422		0.385		1.36		0.71	J	1.29		0.797	J	0.710	J	0.965	J	1.22	J
Radium 228							1.52																					
Selenium	0.05	mg/L	ND		ND		ND	U	<0.003		<0.003	D2	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Thallium	0.002	mg/L	ND		ND		ND	U	<0.0020		<0.0020		0.0001	J	<0.0020	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.002	U	<0.0020	U

B = Compound was found in the blank and sample.
D1 = Sample required dilution due to high concentration of target analyte.
D2 = Sample required dilution due to matrix interference.
GWPS = groundwater protection standard
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.
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 spike sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
mg/L = milligrams per liter
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.
V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample.

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-105

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																			
			6/24/2023		4/16/2024		4/10/2019		11/21/2024													
			Characterization																			
Boron	--	mg/L	NA		NA		NA		NA													
Calcium	--	mg/L	NA		NA		NA		NA													
Chloride	--	mg/L	NA		NA		NA		NA													
Fluoride	4.0	mg/L	NA		NA		NA		NA													
pH (Field Measurement)	--	s.u.	6.56		6.42		6.22		6.96													
Sulfate	--	mg/L	NA		NA		NA		NA													
Total Dissolved Solids	--	mg/L	NA		NA		NA		NA													
APPENDIX IV CONSTITUENTS																						
Antimony	0.006	mg/L	NA		NA		NA		NA													
Arsenic	0.01	mg/L	0.0153		0.0137		0.0103		0.0071													
Barium	2.0	mg/L	NA		NA		NA		NA													
Beryllium	0.004	mg/L	NA		NA		NA		NA													
Cadmium	0.005	mg/L	NA		NA		NA		NA													
Chromium	0.1	mg/L	NA		NA		NA		NA													
Cobalt	0.006	mg/L	NA		NA		NA		NA													
Fluoride	4.0	mg/L	NA		NA		NA		NA													
Lead	0.015	mg/L	NA		NA		NA		NA													
Lithium	0.04	mg/L	NA		NA		NA		NA													
Mercury	0.002	mg/L	NA		NA		NA		NA													
Molybdenum	0.1	mg/L	NA		NA		NA		NA													
Radium 226 Radium 228	5.0	pCi/L	NA		NA		NA		NA													
Selenium	0.05	mg/L	NA		NA		NA		NA													
Thallium	0.002	mg/L	NA		NA		NA		NA													

GWPS = groundwater protection standard
mg/L = milligrams per liter
NA = not analyzed
pCi/L = picocuries per liter
s.u. = standard units

GREEN LANDFILL - GROUNDWATR ANALYTICAL SUMMARY
MW-106S

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																			
			6/24/2023		4/16/2024		4/10/2019		11/15/2024													
			Characterization																			
Boron	--	mg/L	NA		NA		NA		NA													
Calcium	--	mg/L	NA		NA		NA		NA													
Chloride	--	mg/L	NA		NA		NA		NA													
Fluoride	4.0	mg/L	NA		NA		NA		NA													
pH (Field Measurement)	--	s.u.	6.77		6.71		6.69		7.55													
Sulfate	--	mg/L	NA		NA		NA		NA													
Total Dissolved Solids	--	mg/L	NA		NA		NA		NA													
APPENDIX IV CONSTITUENTS																						
Antimony	0.006	mg/L	NA		NA		NA		NA													
Arsenic	0.01	mg/L	0.0607		0.0824		0.0832		0.0940													
Barium	2.0	mg/L	NA		NA		NA		NA													
Beryllium	0.004	mg/L	NA		NA		NA		NA													
Cadmium	0.005	mg/L	NA		NA		NA		NA													
Chromium	0.1	mg/L	NA		NA		NA		NA													
Cobalt	0.006	mg/L	NA		NA		NA		NA													
Fluoride	4.0	mg/L	NA		NA		NA		NA													
Lead	0.015	mg/L	NA		NA		NA		NA													
Lithium	0.04	mg/L	NA		NA		NA		NA													
Mercury	0.002	mg/L	NA		NA		NA		NA													
Molybdenum	0.1	mg/L	NA		NA		NA		NA													
Radium 226 Radium 228	5.0	pCi/L	NA		NA		NA		NA													
Selenium	0.05	mg/L	NA		NA		NA		NA													
Thallium	0.002	mg/L	NA		NA		NA		NA													

GWPS = groundwater protection standard
mg/L = milligrams per liter
NA = not analyzed
pCi/L = picocuries per liter
s.u. = standard units

GREEN LANDFILL - GROUNDWATER ANALYTICAL SUMMARY
MW-106D

APPENDIX III CONSTITUENTS	2024 GWPS	Units	DATE																					
			6/24/2023		4/16/2024		4/10/2019		11/15/2024															
			Characterization																					
Boron	--	mg/L	NA		NA		NA		NA															
Calcium	--	mg/L	NA		NA		NA		NA															
Chloride	--	mg/L	NA		NA		NA		NA															
Fluoride	4.0	mg/L	NA		NA		NA		NA															
pH (Field Measurement)	--	s.u.	7.26		7.21		7.07		8.08															
Sulfate	--	mg/L	NA		NA		NA		NA															
Total Dissolved Solids	--	mg/L	NA		NA		NA		NA															
APPENDIX IV CONSTITUENTS																								
Antimony	0.006	mg/L	NA		NA		NA		NA															
Arsenic	0.01	mg/L	< 0.10	U	0.0037		0.0012		0.0017															
Barium	2.0	mg/L	NA		NA		NA		NA															
Beryllium	0.004	mg/L	NA		NA		NA		NA															
Cadmium	0.005	mg/L	NA		NA		NA		NA															
Chromium	0.1	mg/L	NA		NA		NA		NA															
Cobalt	0.006	mg/L	NA		NA		NA		NA															
Fluoride	4.0	mg/L	NA		NA		NA		NA															
Lead	0.015	mg/L	NA		NA		NA		NA															
Lithium	0.04	mg/L	NA		NA		NA		NA															
Mercury	0.002	mg/L	NA		NA		NA		NA															
Molybdenum	0.1	mg/L	NA		NA		NA		NA															
Radium 226 + Radium 228	5.0	pCi/L	NA		NA		NA		NA															
Selenium	0.05	mg/L	NA		NA		NA		NA															
Thallium	0.002	mg/L	NA		NA		NA		NA															

GWPS = groundwater protection standard
mg/L = milligrams per liter
NA = not analyzed
pCi/L = picocuries per liter
s.u. = standard units

Appendix E – Green Former Surface Impoundment Groundwater Analytical Summary Tables

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY
MW-11

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																					
			4/1/2016		6/2/2016		8/16/2016		10/25/2016		1/26/2017		5/1/2017		8/11/2017		9/20/2017		10/9/2017		5/7/2018		9/27/2018		4/29/2019	
			Baseline Events																Detection Events						
Boron	1.043	mg/L	0.818	JB	0.645	J	0.736	JB^	0.736	J	0.920	JB	0.754	JB	0.695	JB	0.802	J	0.769	J	0.879		0.671	B	0.717	
Calcium	404.9	mg/L	371		378	B	243		291		276		326	B	321		299		315	B	317		312		345	
Chloride	3,878	mg/L	1070	B	1740	B	1880	B	2000	B	1880	B	1910	B	2360	B	1520	B	1940	B	1860	B	2000	B	1900	
Fluoride	0.891	mg/L	ND	J	ND	J	ND	JB^	ND		ND	JB	ND	JB	ND		ND	JB	ND	J F1	ND	J	ND	J	0.227	J
pH (Field Measurement)	6.319 - 7.561	s.u.	7.23		7.24		7.29		7.22		7.20		7.04		6.89		6.88		6.86		7.18		6.70		7.11	
Sulfate	2,023	mg/L	1170		1400		1150		1150	B	1060		1010	B	1410		797	J	1050	B	1020	B	1080	B	949	B
Total Dissolved Solids	5,130	mg/L	3920	H	4610		4840		4490		4930		4830		5100		4880		5080		5070		5020		4890	B
APPENDIX IV CONSTIUENTS																										
Antimony	--	mg/L	ND		ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	ND	JB	NA		NA		NA		NA	
Arsenic	--	mg/L	ND	J	ND		ND		ND	J	ND	J	ND	JB	ND	J	ND	JB	NA		NA		NA		NA	
Barium	--	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		NA		NA		NA	
Beryllium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA	
Cadmium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA	
Chromium	--	mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J	NA		NA		NA		NA	
Cobalt	--	mg/L	0.00494	J	0.00267	J	0.00277	J	0.00138	J	0.00131	J	0.00129	J	0.000654	J	0.000619	J	NA		NA		NA		NA	
Fluoride	0.891	mg/L	ND	J	ND	J	ND	J	ND		ND	J	ND	J	ND		ND	JB	NA		NA		NA		0.227	J
Lead	--	mg/L	ND		ND	JB	ND		ND		ND		ND		ND	J	ND		NA		NA		NA		NA	
Lithium	--	mg/L	0.0365	J	0.0685		0.0651		0.0544		0.0591		0.0545		0.0615		0.0596		NA		NA		NA		NA	
Mercury	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA	
Molybdenum	--	mg/L	0.0163		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND		NA		NA		NA		NA	
Radium 226 Radium 228	--	pCi/L	1.35		0.975		1.61		1.86		1.66		2.18		2.69		2.08		NA		NA		NA		NA	
Selenium	--	mg/L	ND		ND	J	ND	J	ND		ND	J	ND	JB	ND		ND	J	NA		NA		NA		NA	
Thallium	--	mg/L	ND	J	ND		ND		ND		ND		ND	J	ND	J	ND		NA		NA		NA		NA	

^ = ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,DLCK or MRL standard; Instrument related QC is outside acceptance limits.
B = Compound was found in the blank and sample.
D = Results reported from dilution.
D1 = Sample required dilution due to high concentration of target analysis.
D2 = Sample required dilution due to matrix interference.
F1 = Matrix spike (MS) and/or matrix spike duplicate (MSD) recovery is outside acceptance limits.
H = Sample was prepped or analyzed beyond the specified holding time.
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.
M1 = MS recovery was high; the method control sample recovery was acceptable.
M2 = MS 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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-11

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	10/3/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021		4/21/2022		10/1/2022		6/25/2023		11/6/2023		4/15/2024		11/12/2024	
			Detection Events																					
Boron	1.043	mg/L	ND	D2, M2. M4, U	0.78	M2, M4	<1.00	D2, M2	0.78	M4	<1.0	D2, U	0.84	M1	0.71	M2	0.57		0.44	M2	0.43	M2	0.39	
Calcium	404.9	mg/L	318	D1, M1	316	D1. M2	335	D2,M3	343	D1, M2	347	D1, M1, M2	315	D1,M3	339	D1,M3	131	D1	221	D1, M3	78.9	D1, M1, M2	113	D1
Chloride	3,878	mg/L	3900	D	2270	D	2620	D	3190	D	2040	D	2900	D	2900	D	1790	D	2060	D	864	D, M2, J-	851	D
Fluoride	0.891	mg/L	0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.3	J+	0.2	
pH (Field Measurement)	6.319 - 7.561	s.u.	6.86		6.78		6.98		7.11		6.57		6.85		7.13		6.87		6.81		6.96	J	6.51	
Sulfate	2,023	mg/L	971		1210	D	1280	D	1600	D	1980	D	1710	D	1450	D	568	D	855	D	276	D, M1, J+	318	D
Total Dissolved Solids	5,130	mg/L	682		4650		4510		5130		5030		4760		4850		2960		4340		2200		2220	
APPENDIX IV CONSTIUENTS																								
Antimony	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoride	0.891	mg/L	0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.3		0.2	
Lead	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lithium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Molybdenum	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Radium 226 Radium 228	--	pCi/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

^ = ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,DLCK or MRL standard; Instrument related QC is outside acceptance limits.
B = Compound was found in the blank and sample.
D = Results reported from dilution.
D1 = Sample required dilution due to high concentration of target analysis.
D2 = Sample required dilution due to matrix interference.
F1 = Matrix spike (MS) and/or matrix spike duplicate (MSD) recovery is outside acceptance limits.
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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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY
MW-12

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																	
			4/1/2016	6/2/2016	8/16/2016	10/25/2016	1/27/2017	5/1/2017	8/11/2017	9/20/2017	10/9/2017	4/29/2018	5/7/2018	9/27/2018	4/29/2019
			Baseline Events								Detection Events				
Boron	1.043	mg/L	0.174 JB	0.186 J	0.280 JB	0.286 J	0.335 JB	0.306 JB	0.296 JB	0.334 J	0.274 J	0.717	0.352	0.335 B	0.290
Calcium	404.9	mg/L	68.6	95.1 B	81.0	99.4	87.7	90.9 B	88.5	94.5	92 B	345	93.5	96.4	93.1
Chloride	3,878	mg/L	29.0 B	32.4 B	26.9 B	26.2 B	24.6 JB	21.7 B	21.0 JB	19.8 B	17.4 B	1900	15.4	15.5 B	15.1
Fluoride	0.891	mg/L	ND J	ND J	ND J	ND JB	ND J	ND JB	ND J	ND JB	ND J	0.227 J	ND J	ND J	0.428 J
pH (Field Measurement)	6.319 - 7.561	s.u.	7.85	7.4	7.52	7.33	7.65	5.02	6.56	7.07	7.07	7.11	7.34	6.84	7.36
Sulfate	2,023	mg/L	168	146	95.7	64.0 B	54	41.3 B	33.8 J	25.3 J	19.7 B	949 B	13.5 B	14.3	11.9 B
Total Dissolved Solids	5,130	mg/L	472	745	726	677	679	676	674	758	641	4890 B	649	595	618 B
APPENDIX IV CONSTIUENTS															
Antimony	--	mg/L	0.002	ND JB	ND JB	ND	ND JB	ND JB	ND JB	ND JB	NA		NA	NA	NA
Arsenic	--	mg/L	0.006	0.0057	ND J	ND J	ND J	ND JB	ND J	ND JB	NA		NA	NA	NA
Barium	--	mg/L	ND J	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	NA		NA	NA	NA
Beryllium	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Cadmium	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Chromium	--	mg/L	ND J	ND J	ND	ND	ND	ND	ND	ND J	NA		NA	NA	NA
Cobalt	--	mg/L	ND	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	NA		NA	NA	NA
Fluoride	0.891	mg/L	ND J	ND J	ND J	ND JB	ND J	ND JB	ND J	ND JB	NA	0.227 J	NA	NA	0.428 J
Lead	--	mg/L	ND J	ND JB	ND	ND	ND	ND	ND J	ND J	NA		NA	NA	NA
Lithium	--	mg/L	0.0100 J	0.0194 J	0.0173 J	0.0208 J	0.0215 J	0.0169 JB	0.0244 J	0.0229 J	NA		NA	NA	NA
Mercury	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Molybdenum	--	mg/L	0.0769	0.0234	0.0141	0.0123	0.0100	ND JB	ND J	ND J	NA		NA	NA	NA
Radium 226 Radium 228	--	pCi/L	0.842	ND	ND	0.954	0.361	0.556	0.566	ND	NA		NA	NA	NA
Selenium	--	mg/L	ND J	ND	ND	ND	ND	ND JB	ND	ND	NA		NA	NA	NA
Thallium	--	mg/L	ND	ND	ND	ND	ND	ND JB	ND	ND	NA		NA	NA	NA

B = Compound was found in the blank and sample.
D = Results reported from dilution.
D1 = Sample required dilution due to high concentration of target analysis.
D2 = Sample required dilution due to matrix interference.
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.
M1 = Matrix spike (MS) recovery was high; the method control sample recovery was acceptable.
M2 = MS 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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-12

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																			
			10/4/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021		4/21/2022		10/1/2022		6/25/2023		11/6/2023		4/15/2024		11/12/2024	
			Detection Events																					
Boron	1.043	mg/L	ND	D2, U	0.31		<1.00	D2	0.31		<1.0	D2, U	0.31		0.27		0.31		0.24		0.32		0.31	
Calcium	404.9	mg/L	92.0	D2	98.3	D2	89.6	D2	91.5	D1	91.8	D2	93.6	D1	87.2	D1	94.3	D1	77.2	D1	101	D1	93.0	D1
Chloride	3,878	mg/L	14.0		13.9		13.5		14.7		16.2		11.1		15.7		9.5		20.3		13.4		11.1	
Fluoride	0.891	mg/L	0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.5		0.4		0.3	
pH (Field Measurement)	6.319 - 7.561	s.u.	7.07		6.90		6.83		7.33		6.52		6.77		7.3		6.90		7.33		7.09	J	6.57	
Sulfate	2,023	mg/L	11		9		8		14		31	D	4	J	41		4		64		<1	U	0.6	J
Total Dissolved Solids	5,130	mg/L	546		532		658		576		622		582	J+	684		608		568		646		648	
APPENDIX IV CONSTIUENTS																								
Antimony	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoride	0.891	mg/L	0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.4		0.5		0.4		0.3	
Lead	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lithium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Molybdenum	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Radium 226 Radium 228	--	pCi/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

B = Compound was found in the blank and sample.
D = Results reported from dilution.
D1 = Sample required dilution due to high concentration of target analysis.
D2 = Sample required dilution due to matrix interference.
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.
J+ = Qualified as estimated potential high bias during data review.
M1 = Matrix spike (MS) recovery was high; the method control sample recovery was acceptable.
M2 = MS 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.
mg/L = milligrams per liter
NA = not analyzed
ND = Not detected at or above method detection limit.
pCi/L = picocuries per liter
s.u. = standard units
U = Target analyte was analyzed for, but was below detection limit.

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY
MW-13

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																	
			4/1/2016	6/2/2016	8/16/2016	10/25/2016	1/27/2017	5/1/2017	8/11/2017	9/20/2017	10/9/2017	4/29/2018	5/7/2018	9/27/2018	4/29/2019
			Baseline Events								Detection Events				
Boron	1.043	mg/L	ND B	ND J	ND JB	ND J	ND JB	ND JB	ND JB	ND J	ND J	0.717	ND J	0.0565 JB	0.0392 J
Calcium	404.9	mg/L	93.0	95.1 B	85.1	94.5	82.8	90.2 B	92.3	94.3	92.2 B	345	94.3	95.6	95.1
Chloride	3,878	mg/L	20.5 B	25.2 B	22.3 B	24.8 B	22.2 JB	21.4 B	21.6 JB	21.3 JB	19.9 B	1900	21.0	26.6 B	24.4
Fluoride	0.891	mg/L	ND J	ND J	ND J	ND JB	ND J	ND JB	ND J	ND JB	ND J	0.227 J	ND J	ND J	0.271 J
pH (Field Measurement)	6.319 - 7.561	s.u.	6.78	6.9	6.97	6.86	7.22	8.25	6.48	6.64	6.62	7.11	7.03	6.54	6.94
Sulfate	2,023	mg/L	118	118	106	104 B	96.2	98.1 J	96.6	88.0	96.4 B	949 B	87.6 B	109 B	98.6 B
Total Dissolved Solids	5,130	mg/L	699	721	684	704	678	714	702	727	695	4890 B	673	697	711 B
APPENDIX IV CONSTIUENTS															
Antimony	--	mg/L	ND	ND JB	ND JB	ND	ND JB	ND JB	ND JB	ND JB	NA		NA	NA	NA
Arsenic	--	mg/L	ND J	ND J	ND J	ND J	ND J	ND JB	ND J	ND JB	NA		NA	NA	NA
Barium	--	mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J	NA		NA	NA	NA
Beryllium	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Cadmium	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Chromium	--	mg/L	ND	ND J	ND	ND	ND	ND	ND	ND J	NA		NA	NA	NA
Cobalt	--	mg/L	0.00378 J	0.00221 J	0.00178 J	0.00149 J	0.000720 J	0.00115 J	0.000868 J	0.000981 J	NA		NA	NA	NA
Fluoride	0.891	mg/L	ND J	ND J	ND J	ND JB	ND J	ND JB	ND J	ND JB	NA	0.227 J	NA	NA	0.271 J
Lead	--	mg/L	ND J	ND JB	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Lithium	--	mg/L	0.00929 J	0.0104 J	0.0123 J	0.0104 J	0.0113 J	ND	0.0111 J	ND	NA		NA	NA	NA
Mercury	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA
Molybdenum	--	mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J	NA		NA	NA	NA
Radium 226 Radium 228	--	pCi/L	ND	ND	ND	ND	ND	0.164	0.47	0.749	NA		NA	NA	NA
Selenium	--	mg/L	ND	ND	ND J	ND	ND	ND	ND	ND	NA		NA	NA	NA
Thallium	--	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	NA	NA

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

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-13

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																			
			10/4/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021		4/21/2022		10/1/2022		6/25/2023		11/6/2023		4/15/2024		11/12/2024	
			Detection Events																					
Boron	1.043	mg/L	ND	D2, U	<0.10		<1.00	D2	<0.10	U	<1.0	D2, U	<0.10	U	<0.10	U	<0.10	U	<0.10	U	<0.10	U	<0.10	U
Calcium	404.9	mg/L	87.4	D2	86.6	D2	84.9	D2	90.1	D1	87.9	D2	91.4	D1	94.9	D1	94.0	D1	95.6	D1	113	D1	115	D1
Chloride	3,878	mg/L	24.6		22.8		33.3	D	26.4	D	32.3	D	25.3		23.2		21.0		27.1		35.3		36.2	
Fluoride	0.891	mg/L	0.2		0.3		0.4	D	0.2		0.2		0.2		0.2		0.2		0.2		1.0		0.2	
pH (Field Measurement)	6.319 - 7.561	s.u.	6.75		6.53		6.80		6.77		6.51		6.61		6.88		6.65		6.58		6.63	J	6.31	
Sulfate	2,023	mg/L	41		117	D	87	D	82	D	121	D	93		87		77		100		126		120	
Total Dissolved Solids	5,130	mg/L	586		608		552		706		754		676	J+	840		656		752		736		748	
APPENDIX IV CONSTIUENTS																								
Antimony	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoride	0.891	mg/L	0.2		0.3		0.4	D	0.2		0.2		0.2		0.2		0.2		0.2		1.0		0.2	
Lead	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lithium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Molybdenum	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Radium 226 Radium 228	--	pCi/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

B = Compound was found in the blank and sample.
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U = Target analyte was analyzed for, but was below detection limit.

GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY
MW-14

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																	
			4/1/2016		6/2/2016		8/16/2016		10/25/2016		1/27/2017		5/1/2017		8/11/2017		9/20/2017		10/9/2017		5/7/2018		9/27/2018		4/28/2019		4/29/2019	
			Baseline Events																Detection Events							
Boron	1.043	mg/L	0.196	JB	0.186	J	0.234	JB	0.209	J	0.250	JB	0.234	JB	0.277	JB	0.273	J	0.241	J	0.254		0.232	B	0.717		0.206	
Calcium	404.9	mg/L	194		194	B	171		193		183		193	B	193		187		194	B	189		200		345		206	
Chloride	3,878	mg/L	161	B	184	B	185	B	193	B	191	B	185	B	212	B	230	B	199	B	198	B	189	B	1900		165	
Fluoride	0.891	mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND	JB	ND	JB	ND	J	ND		ND	J	0.227	J	0.342	J
pH (Field Measurement)	6.319 - 7.561	s.u.	6.63		6.35		7.43		7.34		7.78		5.23		7.33		7.13		7.32		7.26		6.57		7.11		7.05	
Sulfate	2,023	mg/L	188		219		216		215	B	221		197	B	179		198	J	185		222	B	231	B	949	B	222	B
Total Dissolved Solids	5,130	mg/L	1080		1130		1140		1130		1150		1170		1150		1240		1170		1180		1100		4890	B	1180	B
APPENDIX IV CONSTIUENTS																												
Antimony	--	mg/L	ND		ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	ND	JB	NA		NA		NA		NA		NA	
Arsenic	--	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	NA		NA		NA		NA		NA	
Barium	--	mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		NA		NA		NA		NA	
Beryllium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA	
Cadmium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA	
Chromium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND	J	NA		NA		NA		NA		NA	
Cobalt	--	mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		NA		NA		NA		NA	
Fluoride	0.891	mg/L	ND	J	ND	J	ND	J	ND	JB	ND		ND	JB	ND	J	ND	JB	NA		NA		NA		0.227	J	0.342	J
Lead	--	mg/L	ND		ND	JB	ND		ND		ND		ND		ND		ND	J	NA		NA		NA		NA		NA	
Lithium	--	mg/L	0.0400	J	0.0488	J	0.0477	J	0.0456	J	0.0486	J	0.0437	J	0.0494	J	0.0496	J	NA		NA		NA		NA		NA	
Mercury	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA	
Molybdenum	--	mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA	
Radium 226 Radium 228	--	pCi/L	1.54		1.42		1.86		1.55		1.31		2.17		2.85		1.8		NA		NA		NA		NA		NA	
Selenium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA	
Thallium	--	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		NA		NA		NA		NA		NA	

B = Compound was found in the blank and sample.
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GREEN FORMER SURFACE IMPOUNDMENT - GROUNDWATER ANALYTICAL SUMMARY (continued)
MW-14

APPENDIX III CONSTITUENTS	2024 Calculated Background	Units	DATE																			
			10/3/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021		4/21/2022		10/1/2022		6/25/2023		11/6/2023		4/15/2024		11/12/2024	
			Detection Events																					
Boron	1.043	mg/L	ND	D2, U	0.20		<1.00	D2	0.17		<1.0	D2, U	0.16		0.14		<0.10	U	0.13		0.14		0.16	
Calcium	404.9	mg/L	194	D1	195	D1	194	D2	199	D1	212	D1	181	D,D1	200	D1	<0.40	U	155	D1	195	D1	177	D1
Chloride	3,878	mg/L	262	D	121	D	131	D	117	D	186	D	159	D	137	D	107		104		113		125	M2
Fluoride	0.891	mg/L	0.3		0.3		0.3		0.2		0.3		0.3		0.3		0.3		0.3		0.4		0.3	
pH (Field Measurement)	6.319 - 7.561	s.u.	6.77		6.57		6.75		6.88		6.52		6.52		6.99		6.69		6.70		6.76	J	6.33	
Sulfate	2,023	mg/L	871	D	183	D	221	D	180	D	324	D	286	D	178		184		176		192		192	M2
Total Dissolved Solids	5,130	mg/L	1120	H2	1030		946		1040		1050		1230		1060		992		940		884		1040	
APPENDIX IV CONSTIUENTS																								
Antimony	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoride	0.891	mg/L	0.3		0.3		0.3		0.2		0.3		0.3		0.3		0.3		0.3		0.4		0.3	
Lead	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lithium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Molybdenum	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Radium 226 Radium 228	--	pCi/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

B = Compound was found in the blank and sample.
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Appendix F – Green Landfill Groundwater Laboratory Analytical Reports

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

Certificate of Analysis
4043422

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 05/10/2024 09:26

Project Name:	Green Landfill Semiannual Groundwater	Workorder:	4043422

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 04/17/2024 15:15.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4043422-01	MW1/	Groundwater	04/17/2024 13:10	04/17/2024 15:15	Eric Brown
4043422-02	MW2/	Groundwater	04/16/2024 10:50	04/17/2024 15:15	Eric Brown
4043422-03	MW3A/	Groundwater	04/17/2024 08:40	04/17/2024 15:15	Eric Brown
4043422-04	MW4/	Groundwater	04/16/2024 15:50	04/17/2024 15:15	Eric Brown
4043422-05	MW5/	Groundwater	04/16/2024 14:20	04/17/2024 15:15	Eric Brown
4043422-06	MW6/	Groundwater	04/17/2024 11:55	04/17/2024 15:15	Eric Brown
4043422-07	DUPLICATE/	Groundwater	04/17/2024 00:00	04/17/2024 15:15	Eric Brown
4043422-08	FIELD BLANK/	Water	04/17/2024 11:30	04/17/2024 15:15	Eric Brown

LabNumber	Measurement	Value
4043422-01	Field Conductance	1096
	Field pH	7.32
	Field Temp (C)	17.8
4043422-02	Field Conductance	2013
	Field pH	6.44
	Field Temp (C)	16.8
4043422-03	Field Conductance	8353
	Field pH	6.72
	Field Temp (C)	15.8
4043422-04	Field Conductance	6844
	Field pH	6.52
	Field Temp (C)	18.5
4043422-05	Field Conductance	6324
	Field pH	6.45
	Field Temp (C)	15.4
4043422-06	Field Conductance	5588
	Field pH	6.48
	Field Temp (C)	17.4

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

ANALYTICAL RESULTS

Lab Sample ID: **4043422-01**
Description: **MW1**

Sample Collection Date Time: 04/17/2024 13:10
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:05	MRWD
Arsenic	**0.0025**		mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Barium	**0.085**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:05	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Boron	**1.84**	D1	mg/L	1.00	1.00	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:06	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:05	MRWD
Calcium	**29.0**	D1	mg/L	5.00	2.50	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:06	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Copper	**0.002**	J	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Iron	**2.19**		mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:03	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:05	MRWD
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:05	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:37	MRWD
Sodium	**186**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:10	AKB
Thallium	**0.0001**	J	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:05	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U	mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**1030**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.95**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**548**		mg/L	50	50	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG
Total Organic Carbon	**1.0**		mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 21:22	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.266**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.565**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**0.831**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.831**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**6.2**	M1, Y5	mg/L	0.5	0.4	SW846 9056	04/28/2024 02:35	04/28/2024 02:35	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Fluoride	**0.7**	M1, Y5	mg/L	0.2	0.2	SW846 9056	04/28/2024 02:35	04/28/2024 02:35	JBP1
Sulfate	**29**	M1	mg/L	1	0.5	SW846 9056	04/28/2024 02:35	04/28/2024 02:35	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-02**
Description: **MW2**

Sample Collection Date Time: 04/16/2024 10:50
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:27	MRWD
Arsenic	**0.0099**		mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Barium	**0.276**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:27	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:13	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:27	MRWD
Calcium	**199**	D1	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:19	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Cobalt	**0.005**		mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Iron	**5.69**		mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:13	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:27	MRWD
Lithium	**0.005**	J	mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Molybdenum	**0.003**	J	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:27	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:41	MRWD
Sodium	**60.4**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:19	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:27	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**13**		mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**1940**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.33**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**1050**		mg/L	100	100	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG
Total Organic Carbon	**1.3**		mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 21:43	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.531**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.749**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**1.28**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**1.28**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**455**	D, M2	mg/L	10.0	7.2	SW846 9056	04/29/2024 19:22	04/29/2024 19:22	JBP1
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	04/29/2024 18:57	04/29/2024 18:57	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	**390**	D, M2	mg/L	20	10	SW846 9056	04/29/2024 19:22	04/29/2024 19:22	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-03**
Description: **MW3A**

Sample Collection Date Time: 04/17/2024 08:40
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:31	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Barium	**0.042**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:31	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Boron	**0.35**		mg/L	0.10	0.10	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:22	AKB
Cadmium	**0.0001**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:31	MRWD
Calcium	**514**	D1	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:29	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:22	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:31	MRWD
Lithium	**0.75**		mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:44	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:31	MRWD
Selenium	ND	D2, U	mg/L	0.030	0.010	SW846-6020 A	04/19/2024 07:45	04/26/2024 17:03	MRWD
Sodium	**293**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:29	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:31	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**90**		mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**7970**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.59**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**5080**		mg/L	25	25	2540 C-2015	04/23/2024 13:10	04/23/2024 13:44	HAG
Total Organic Carbon	**0.4**	J	mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 22:04	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.597**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.407**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**1.00**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**1.00**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1980**	D1	mg/L	50.0	36.0	SW846 9056	05/03/2024 16:16	05/03/2024 16:16	JBP1
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	04/29/2024 19:47	04/29/2024 19:47	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	**3200**	D	mg/L	20	10	SW846 9056	04/29/2024 20:13	04/29/2024 20:13	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-04**
Description: **MW4**

Sample Collection Date Time: 04/16/2024 15:50
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/27/2024 00:48	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Barium	**0.040**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:35	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Boron	**1.08**	D1	mg/L	1.00	1.00	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:45	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Calcium	**744**	D1	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:48	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:42	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:35	MRWD
Lithium	**1.17**	D1	mg/L	0.20	0.05	SW846-6020 A	04/19/2024 07:45	04/26/2024 17:07	MRWD
Mercury	**0.0003**	J	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:48	MRWD
Sodium	**242**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:48	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:35	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**62**		mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**6800**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.29**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**5220**		mg/L	25	25	2540 C-2015	04/23/2024 13:10	04/23/2024 13:44	HAG
Total Organic Carbon	**0.4**	J	mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 22:25	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**-0.170**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.480**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**0.480**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.480**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1440**	D1	mg/L	50.0	36.0	SW846 9056	05/03/2024 16:44	05/03/2024 16:44	JBP1
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	04/29/2024 20:38	04/29/2024 20:38	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	**3850**	D	mg/L	20	10	SW846 9056	04/29/2024 21:03	04/29/2024 21:03	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-05**
Description: **MW5**

Sample Collection Date Time: 04/16/2024 14:20
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:39	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Barium	**0.013**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:39	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:54	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Calcium	**529**	D1	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:58	AKB
Chromium	**0.0007**	J	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:51	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:39	MRWD
Lithium	**0.38**		mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:39	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:52	MRWD
Sodium	**205**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 22:58	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:39	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**54**		mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**6270**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.44**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**3920**		mg/L	250	250	2540 C-2015	04/22/2024 18:34	04/22/2024 18:34	HAG
Total Organic Carbon	**0.5**		mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 22:46	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.448**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**1.15**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**1.60**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**1.60**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2260**	D	mg/L	10.0	7.2	SW846 9056	04/29/2024 22:45	04/29/2024 22:45	JBP1
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	04/29/2024 22:20	04/29/2024 22:20	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	04/29/2024 22:20	04/29/2024 22:20	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-06**
Description: **MW6**

Sample Collection Date Time: 04/17/2024 11:55
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:42	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Barium	**0.017**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:42	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Boron	**0.20**		mg/L	0.10	0.10	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:01	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:42	MRWD
Calcium	**440**	D1	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:07	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:01	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:42	MRWD
Lithium	**0.05**		mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:42	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:55	MRWD
Sodium	**411**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:07	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:42	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**10**	J	mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**5320**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.26**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**4180**		mg/L	250	250	2540 C-2015	04/22/2024 18:34	04/22/2024 18:34	HAG
Total Organic Carbon	**2.2**		mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 23:07	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.158**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.193**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**0.351**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.351**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**319**	D	mg/L	10.0	7.2	SW846 9056	04/29/2024 23:36	04/29/2024 23:36	JBP1
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	04/29/2024 23:10	04/29/2024 23:10	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	**2710**	D1	mg/L	100	50	SW846 9056	05/02/2024 13:52	05/02/2024 13:52	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-07**
Description: **DUPLICATE**

Sample Collection Date Time: 04/17/2024 00:00
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:46	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Barium	**0.043**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:46	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Boron	**0.35**		mg/L	0.10	0.10	SW846 6010 B	04/19/2024 07:45	04/25/2024 13:15	AKB
Cadmium	**0.0001**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Calcium	**542**	D1	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:26	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:20	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:46	MRWD
Lithium	**0.73**		mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:46	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 00:59	MRWD
Sodium	**308**	D1	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:26	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:46	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**103**		mg/L	13	8	HACH 8000	04/23/2024 08:11	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**7970**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.55**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**6870**		mg/L	833	833	2540 C-2015	04/22/2024 18:34	04/22/2024 18:34	HAG
Total Organic Carbon	**0.4**	J	mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/01/2024 23:29	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.394**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**1.34**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**1.73**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**1.73**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1990**	D1	mg/L	50.0	36.0	SW846 9056	05/03/2024 17:11	05/03/2024 17:11	JBP1
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	04/30/2024 00:01	04/30/2024 00:01	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	**2710**	D	mg/L	20	10	SW846 9056	04/30/2024 00:27	04/30/2024 00:27	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043422-08**
Description: **FIELD BLANK**

Sample Collection Date Time: 04/17/2024 11:30
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:50	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:50	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Boron	ND	V1, U	mg/L	0.10	0.10	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:29	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:50	MRWD
Calcium	ND	U	mg/L	0.50	0.25	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:29	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:29	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:50	MRWD
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:50	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:03	MRWD
Sodium	ND	U	mg/L	0.26	0.10	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:29	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:50	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**10**	J	mg/L	13	8	HACH 8000	04/23/2024 08:18	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**10**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**8.03**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2015	04/22/2024 18:34	04/22/2024 18:34	HAG
Total Organic Carbon	**0.2**	J	mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/02/2024 01:36	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.418**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.313**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**0.731**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.731**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	04/30/2024 00:52	04/30/2024 00:52	JBP1
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	04/30/2024 00:52	04/30/2024 00:52	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Sulfate	**0.5**	J	mg/L	1	0.5	SW846 9056	04/30/2024 00:52	04/30/2024 00:52	JBP1

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Notes for work order 4043422

- 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.
E	Concentration exceeds calibration range
G2	Residue yield was greater than the method required 200mg.
H3	Sample received and analyzed past holding time.
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.
Y5	MS/MSD 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

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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 BDD2093 - EPA 200.2										
Blank (BDD2093-BLK1)										
Prepared: 4/19/2024 7:45, Analyzed: 4/24/2024 21:44										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
Blank (BDD2093-BLK3)										
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 23:58										
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
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDD2093-BLK4)										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 16:31										
Beryllium	ND	0.0020	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
LCS (BDD2093-BS1)										
Prepared: 4/19/2024 7:45, Analyzed: 4/24/2024 21:47										
Boron	0.13	0.10	mg/L	0.125		102	85-115			
Calcium	6.42	0.50	mg/L	6.25		103	85-115			
Iron	6.34	0.100	mg/L	6.25		101	85-115			
Sodium	5.67	0.26	mg/L	6.25		90.7	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
LCS (BDD2093-BS2)										
Prepared: 4/19/2024 7:45, Analyzed: 4/24/2024 21:50										
Boron	ND	0.10	mg/L				85-115			U
Calcium	ND	0.50	mg/L				85-115			U
Iron	ND	0.100	mg/L				85-115			U
Sodium	ND	0.26	mg/L				85-115			U
LCS (BDD2093-BS4)										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 0:02										
Mercury	0.0023	0.0005	mg/L	0.00250		93.3	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		98.3	85-115			
Antimony	0.065	0.005	mg/L	0.0625		103	85-115			
Arsenic	0.0584	0.0010	mg/L	0.0625		93.5	85-115			
Barium	0.062	0.004	mg/L	0.0625		98.8	85-115			
Beryllium	0.0547	0.0020	mg/L	0.0625		87.5	85-115			
Cadmium	0.0605	0.0010	mg/L	0.0625		96.8	85-115			
Chromium	0.0577	0.0020	mg/L	0.0625		92.4	85-115			
Cobalt	0.058	0.004	mg/L	0.0625		92.8	85-115			
Copper	0.059	0.003	mg/L	0.0625		93.7	85-115			
Lead	0.062	0.002	mg/L	0.0625		98.9	85-115			
Lithium	0.05	0.02	mg/L	0.0625		87.3	85-115			
Selenium	0.057	0.003	mg/L	0.0625		90.6	85-115			
Thallium	0.0631	0.0020	mg/L	0.0625		101	85-115			
LCS (BDD2093-BS5)										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 16:34										
Beryllium	0.0610	0.0020	mg/L	0.0625		97.7	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.6	85-115			
Selenium	0.062	0.003	mg/L	0.0625		99.4	85-115			
Matrix Spike (BDD2093-MS1) **Source: 4043426-01**										
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 0:11										
Boron	ND	1.00	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	502	5.00	mg/L	6.25	504	NR	80-120			D2, M3
Iron	6.79	1.00	mg/L	6.25	ND	109	80-120			D2
Sodium	733	2.60	mg/L	6.25	747	NR	80-120			D2, M3

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
Matrix Spike (BDD2093-MS2)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 0:17										
Boron	ND	1.00	mg/L		ND		80-120			D2, U
Calcium	504	5.00	mg/L		504		80-120			D2
Iron	0.554	1.00	mg/L		ND		80-120			D2, J
Sodium	739	2.60	mg/L		747		80-120			D2
Matrix Spike (BDD2093-MS3)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 1:19										
Antimony	0.068	0.005	mg/L	0.0625	ND	108	80-120			
Mercury	0.0023	0.0005	mg/L	0.00250	ND	91.7	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	99.8	80-120			
Arsenic	0.0656	0.0010	mg/L	0.0625	0.0012	103	80-120			
Barium	0.081	0.004	mg/L	0.0625	0.018	101	80-120			
Beryllium	0.0489	0.0020	mg/L	0.0625	ND	78.2	80-120			M2
Cadmium	0.0592	0.0010	mg/L	0.0625	0.0002	94.4	80-120			
Chromium	0.0613	0.0020	mg/L	0.0625	ND	98.0	80-120			
Cobalt	0.063	0.004	mg/L	0.0625	0.004	93.1	80-120			
Copper	0.055	0.003	mg/L	0.0625	ND	88.1	80-120			
Lead	0.058	0.002	mg/L	0.0625	ND	92.7	80-120			
Lithium	0.10	0.02	mg/L	0.0625	0.06	65.8	80-120			M3
Selenium	0.062	0.003	mg/L	0.0625	ND	98.8	80-120			
Thallium	0.0589	0.0020	mg/L	0.0625	ND	94.2	80-120			
Matrix Spike Dup (BDD2093-MSD1)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 0:14										
Boron	ND	1.00	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	509	5.00	mg/L	6.25	504	78.6	80-120	1.46	20	D2, M3
Iron	6.80	1.00	mg/L	6.25	ND	109	80-120	0.129	20	D2
Sodium	742	2.60	mg/L	6.25	747	NR	80-120	1.21	20	D2, M3
Matrix Spike Dup (BDD2093-MSD2)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 1:23										
Mercury	0.0023	0.0005	mg/L	0.00250	ND	91.9	80-120	0.149	20	
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120	1.76	20	
Molybdenum	0.06	0.01	mg/L	0.0625	ND	93.0	80-120	7.02	20	
Arsenic	0.0611	0.0010	mg/L	0.0625	0.0012	95.9	80-120	7.12	20	
Barium	0.080	0.004	mg/L	0.0625	0.018	99.2	80-120	1.15	20	
Beryllium	0.0476	0.0020	mg/L	0.0625	ND	76.2	80-120	2.62	20	M2
Cadmium	0.0582	0.0010	mg/L	0.0625	0.0002	92.8	80-120	1.67	20	
Chromium	0.0572	0.0020	mg/L	0.0625	ND	91.6	80-120	6.81	20	
Cobalt	0.058	0.004	mg/L	0.0625	0.004	86.4	80-120	6.96	20	
Copper	0.052	0.003	mg/L	0.0625	ND	83.1	80-120	5.89	20	
Lead	0.057	0.002	mg/L	0.0625	ND	91.6	80-120	1.22	20	
Lithium	0.10	0.02	mg/L	0.0625	0.06	64.0	80-120	1.11	20	M3
Selenium	0.061	0.003	mg/L	0.0625	ND	97.9	80-120	0.854	20	
Thallium	0.0583	0.0020	mg/L	0.0625	ND	93.3	80-120	0.959	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
Post Spike (BDD2093-PS2) **Source: 4043426-01**										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 1:27										
Antimony	64.9		ug/L	62.5	0.068	104	75-125			
Mercury	2.22		ug/L	2.50	0.0134	88.2	75-125			
Molybdenum	60.6		ug/L	62.5	0.44	96.3	75-125			
Arsenic	62.7		ug/L	62.5	1.20	98.4	75-125			
Barium	78.3		ug/L	62.5	17.6	97.0	75-125			
Beryllium	45.5		ug/L	62.5	-0.0265	72.7	75-125			M2
Cadmium	56.8		ug/L	62.5	0.188	90.6	75-125			
Chromium	59.0		ug/L	62.5	0.512	93.5	75-125			
Cobalt	60.2		ug/L	62.5	4.42	89.2	75-125			
Copper	53.2		ug/L	62.5	0.791	83.9	75-125			
Lead	55.9		ug/L	62.5	0.099	89.3	75-115			
Lithium	93.9		ug/L	62.5	58.7	56.3	75-125			M3
Selenium	59.7		ug/L	62.5	0.191	95.1	75-125			
Thallium	57.4		ug/L	62.5	0.0174	91.8	75-125			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD1928 - Default Prep Micro										
LCS (BDD1928-BS1)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.07		Std. Units	5.00		101	98.8-101.2			
LCS (BDD1928-BS2)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.07		Std. Units	5.00		101	98.8-101.2			
LCS (BDD1928-BS3)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.06		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDD1928-DUP1) **Source: 4043422-03**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.60	0.10	Std. Units		7.59			0.132	10	H3
Duplicate (BDD1928-DUP2) **Source: 4043422-06**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.27	0.10	Std. Units		7.26			0.138	10	H3
Duplicate (BDD1928-DUP3) **Source: 4043426-01**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.39	0.10	Std. Units		7.37			0.271	10	H3
Batch BDD1930 - Default Prep Micro										
Blank (BDD1930-BLK1)										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BDD1930-BS1)										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	1440		umhos/cm	1410		102	80-120			
Duplicate (BDD1930-DUP1) **Source: 4043422-06**										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	5330	1	umhos/cm		5320			0.188	0.938	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD1930 - Default Prep Micro										
Duplicate (BDD1930-DUP2) **Source: 4043426-01**										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	9110	1	umhos/cm		9050			0.661	0.938	
Batch BDD2182 - Default Prep Wet Chem										
Blank (BDD2182-BLK1)										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDD2182-BS1)										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDD2182-DUP1) **Source: 4043420-01**										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	2190	50	mg/L		2200			0.182	10	
Duplicate (BDD2182-DUP2) **Source: 4044960-01**										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	13000	100	mg/L		13000			0.0924	10	G2
Batch BDD2340 - Default Prep Wet Chem										
Blank (BDD2340-BLK1)										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDD2340-BS1)										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	89		mg/L	90.0		98.9	80-120			
Duplicate (BDD2340-DUP1) **Source: 4042964-11**										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	3700	250	mg/L		3320			10.8	10	Y1

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2340 - Default Prep Wet Chem										
Duplicate (BDD2340-DUP2) **Source: 4044853-01**										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	118	25	mg/L		119			0.844	10	
Batch BDD2486 - Default Prep Wet Chem										
Blank (BDD2486-BLK1)										
Prepared: 4/23/2024 8:11, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	ND	13	mg/L							U
LCS (BDD2486-BS1)										
Prepared: 4/23/2024 8:11, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	122	13	mg/L	125		97.6	90-110			
Duplicate (BDD2486-DUP1) **Source: 4043422-01**										
Prepared: 4/23/2024 8:11, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	ND	13	mg/L		ND				25	U
Matrix Spike (BDD2486-MS1) **Source: 4043422-01**										
Prepared: 4/23/2024 8:11, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	254	13	mg/L	250	ND	102	90-110			
Matrix Spike Dup (BDD2486-MSD1) **Source: 4043422-01**										
Prepared: 4/23/2024 8:11, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	256	13	mg/L	250	ND	102	90-110	0.784	10	
Batch BDD2489 - Default Prep Wet Chem										
Blank (BDD2489-BLK1)										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	ND	13	mg/L							U
LCS (BDD2489-BS1)										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	122	13	mg/L	125		97.6	90-110			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2489 - Default Prep Wet Chem										
Duplicate (BDD2489-DUP1) **Source: 4042964-11**										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	26	13	mg/L		23			12.2	25	
Matrix Spike (BDD2489-MS1) **Source: 4042964-11**										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	264	13	mg/L	250	23	96.4	90-110			
Matrix Spike Dup (BDD2489-MSD1) **Source: 4042964-11**										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	269	13	mg/L	250	23	98.4	90-110	1.88	10	
Batch BDD2544 - Default Prep Wet Chem										
Blank (BDD2544-BLK1)										
Prepared: 4/23/2024 13:44, Analyzed: 4/23/2024 13:44										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDD2544-BS1)										
Prepared: 4/23/2024 13:44, Analyzed: 4/23/2024 13:44										
Total Dissolved Solids	93		mg/L	90.0		103	80-120			
Duplicate (BDD2544-DUP1) **Source: 4043422-03RE1**										
Prepared: 4/23/2024 13:44, Analyzed: 4/23/2024 13:44										
Total Dissolved Solids	5060	100	mg/L		5080			0.237	10	
Batch BDD2821 - Default Prep Wet Chem										
Blank (BDD2821-BLK1)										
Prepared: 4/25/2024 11:00, Analyzed: 5/1/2024 19:14										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BDD2821-BS1)										
Prepared: 4/25/2024 11:00, Analyzed: 5/1/2024 19:35										
Total Organic Carbon	4.9	0.5	mg/L	5.00		98.2	80-120			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2821 - Default Prep Wet Chem										
Duplicate (BDD2821-DUP1)	**Source: 4040507-01**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 0:53										
Total Organic Carbon	1.3	0.5	mg/L		1.3			0.748	25	
Duplicate (BDD2821-DUP2)	**Source: 4043422-05**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 6:11										
Total Organic Carbon	0.4	0.5	mg/L		0.5			23.4	25	J
Matrix Spike (BDD2821-MS1)	**Source: 4040507-02**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 1:15										
Total Organic Carbon	3.3	0.5	mg/L	2.50	0.9	92.7	80-120			
Matrix Spike (BDD2821-MS2)	**Source: 4043422-06**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 6:32										
Total Organic Carbon	6.9	0.5	mg/L	5.00	2.2	95.3	80-120			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD3029 - Default Prep IC										
Blank (BDD3029-BLK1)										
Prepared: 4/28/2024 6:49, Analyzed: 4/28/2024 6:49										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
Blank (BDD3029-BLK2)										
Prepared: 4/28/2024 9:46, Analyzed: 4/28/2024 9:46										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDD3029-BS1)										
Prepared: 4/28/2024 6:24, Analyzed: 4/28/2024 6:24										
Fluoride	4.9		mg/L	5.00		98.5	90-110			
Chloride	13.4		mg/L	12.5		107	90-110			
Sulfate	27		mg/L	25.0		106	90-110			
LCS (BDD3029-BS2)										
Prepared: 4/28/2024 9:21, Analyzed: 4/28/2024 9:21										
Fluoride	5.3		mg/L	5.00		106	90-110			
Chloride	14.0		mg/L	12.5		112	90-110			L1
Sulfate	27		mg/L	25.0		109	90-110			
Matrix Spike (BDD3029-MS1) **Source: 4043420-01**										
Prepared: 4/28/2024 7:40, Analyzed: 4/28/2024 7:40										
Fluoride	126		mg/L	100	0.2	126	75-125			D
Chloride	989		mg/L	250	778	84.5	75-125			D
Sulfate	895		mg/L	500	249	129	75-125			D, M1
Matrix Spike (BDD3029-MS2) **Source: 4043422-01**										
Prepared: 4/28/2024 8:30, Analyzed: 4/28/2024 8:30										
Fluoride	5.9		mg/L	5.00	0.6	107	75-125			
Chloride	19.4		mg/L	12.5	5.6	110	75-125			
Sulfate	54		mg/L	25.0	26	112	75-125			

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD3029 - Default Prep IC										
Matrix Spike Dup (BDD3029-MSD1) **Source: 4043420-01**										
Prepared: 4/28/2024 8:05, Analyzed: 4/28/2024 8:05										
Fluoride	109		mg/L	100	0.2	109	75-125	14.7	15	D
Chloride	960		mg/L	250	778	72.7	75-125	3.04	15	D, M2
Sulfate	787		mg/L	500	249	108	75-125	12.8	15	D
Matrix Spike Dup (BDD3029-MSD2) **Source: 4043422-01**										
Prepared: 4/28/2024 8:56, Analyzed: 4/28/2024 8:56										
Chloride	21.5		mg/L	12.5	5.6	128	75-125	10.5	15	M1
Fluoride	7.2		mg/L	5.00	0.6	131	75-125	18.9	15	M1, Y5
Sulfate	59		mg/L	25.0	26	132	75-125	8.98	15	M1
Batch BDD3030 - Default Prep IC										
Blank (BDD3030-BLK1)										
Prepared: 4/30/2024 11:26, Analyzed: 4/30/2024 11:26										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDD3030-BS1)										
Prepared: 4/30/2024 11:01, Analyzed: 4/30/2024 11:01										
Chloride	13.7		mg/L	12.5		110	90-110			
Fluoride	5.4		mg/L	5.00		108	90-110			
Sulfate	27		mg/L	25.0		108	90-110			
Matrix Spike (BDD3030-MS1) **Source: 4043422-02**										
Prepared: 4/30/2024 9:20, Analyzed: 4/30/2024 9:20										
Chloride	456		mg/L	250	410	18.5	75-125			D, M2
Fluoride	98.8		mg/L	100	0.3	98.6	75-125			D
Sulfate	681		mg/L	500	351	65.8	75-125			D, M2
Matrix Spike (BDD3030-MS2) **Source: 4043426-01**										
Prepared: 4/30/2024 10:11, Analyzed: 4/30/2024 10:11										
Fluoride	23.0		mg/L	100	0.4	22.6	75-125			D, M2
Chloride	4360		mg/L	250	1740	NR	75-125			D, M1
Sulfate	5490		mg/L	500	19900	NR	75-125			D, M1

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

Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD3030 - Default Prep IC										
Matrix Spike Dup (BDD3030-MSD1)	**Source: 4043422-02**									
Prepared: 4/30/2024 9:45, Analyzed: 4/30/2024 9:45										
Fluoride	97.8		mg/L	100	0.3	97.6	75-125	1.02	15	D
Chloride	447		mg/L	250	410	14.7	75-125	2.08	15	D, M2
Sulfate	668		mg/L	500	351	63.3	75-125	1.86	15	D, M2
Matrix Spike Dup (BDD3030-MSD2)	**Source: 4043426-01**									
Prepared: 4/30/2024 10:36, Analyzed: 4/30/2024 10:36										
Fluoride	19.4		mg/L	100	0.4	19.0	75-125	16.9	15	D, M2, Y5
Chloride	4350		mg/L	250	1740	NR	75-125	0.228	15	D, M1
Sulfate	5470		mg/L	500	19900	NR	75-125	0.280	15	D, M1

Certified Analyses included in this Report

Analyte	Certifications
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 FL Drinking Water Mdv (E871159)
2540 C-2015 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 MS Drinking Water MADV
5310 C-2014 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 MS Drinking Water MADV
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
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 4043422

Shipped By: Client

Temperature: 1.40° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

*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 N/A End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-01 A	4/17/24	1310	Plastic 500mL pH<2 w/HNO3	1	MW1	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-01 B	4/17/24	1310	Plastic 1L	1	MW1	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4043422-01 C	4/17/24	1310	Plastic 500mL pH<2 w/H2SO4	1	MW1	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-01 D	4/17/24	1310	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW1	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 228922

Field data collected by: Eric Brown Date (mm/dd/yy) 4/17/24 Time (24 hr) 1310 MW-1

pH 7.32 Cond ~~(umho)~~ mS 1.096 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.8 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Please Print Legibly

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Collected by (Signature): Eric Bertram *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY
Workorder #
4043422

Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-01 E	4/17/24	1310	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-01 F	4/17/24	1310	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-01 G	4/17/24	1310	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW1	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-01 H	4/17/24	1310	AG 250mL pH<2 w/H2SO4	1	MW1	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Bertram		4/17/24	1515

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Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote#

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Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

*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) ___

N/A

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-02 A	4/16/24	1050	Plastic 500mL pH<2 w/HNO3	1	MW2	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-02 B	4/16/24	1050	Plastic 1L	1	MW2	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4043422-02 C	4/16/24	1050	Plastic 500mL pH<2 w/H2SO4	1	MW2	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-02 D	4/16/24	1050	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW2	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4043422-02 E	4/16/24	1050	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				

Preservation Check Performed by: MK pH Paper Lot #: 228022

MW-2

Field data collected by: Eric Brown Date (mm/dd/yy) 4/16/24 Time (24 hr) 1050

pH 6.44 Cond (~~umho~~ mS) 2.013 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 16.8 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown
required information

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-02 F	4/16/24	1050	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-02 G	4/16/24	1050	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW2	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-02 H	4/16/24	1050	AG 250mL pH<2 w/H2SO4	1	MW2	g / c	TOC
			Preservation Check: pH : ✓				
4043422-03 A	4/17/24	0840	Plastic 500mL pH<2 w/HNO3	1	MW3A	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-03 B	4/17/24	0840	Plastic 1L	1	MW3A	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: MK pH Paper Lot #: 228022

MW-3A

Field data collected by: Eric Brown Date (mm/dd/yy) 4/17/24 Time (24 hr) 0840

pH 6.72 Cond (~~umho~~) mS 8.353 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.8 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: —
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-03 C	4/17/24	0840	Plastic 500mL pH<2 w/H2SO4	1	MW3A	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-03 D	4/17/24	0840	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW3A	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4043422-03 E	4/17/24	0840	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-03 F	4/17/24	0840	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-03 G	4/17/24	0840	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW3A	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-03 H	~~4/17/68~~ 4/17/24	0840	AG 250mL pH<2 w/H2SO4	1 ✓	MW3A	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: MC pH Paper Lot #: 22822

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/17/24	1515

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-04 A	4/16/24	1550	Plastic 500mL pH<2 w/HNO3	1	MW4	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-04 B	4/16/24	1550	Plastic 1L	1	MW4	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4043422-04 C	4/16/24	1550	Plastic 500mL pH<2 w/H2SO4	1	MW4	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-04 D	4/16/24	1550	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW4	g / c	Radium 226 (sub)
			Preservation Check: pH : —				
4043422-04 E	4/16/24	1550	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 228022

MW-4

Field data collected by: Eric Brown Date (mm/dd/yy) 4/16/24 Time (24 hr) 1550

pH 6.52 Cond (~~umho~~) MS 6.844 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.5 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	4/17/24	1515

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

Collected by (Signature): Eric Brown
required information

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-04 F	4/16/24	1550	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-04 G	4/16/24	1550	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW4	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-04 H	4/16/24	1550	AG 250mL pH<2 w/H2SO4	1	MW4	g / c	TOC
			Preservation Check: pH : ✓				
4043422-05 A	4/16/24	1420	Plastic 500mL pH<2 w/HNO3	1	MW5	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-05 B	4/16/24	1420	Plastic 1L	1	MW5	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: Eric Brown Date (mm/dd/yy) 4/16/24 Time (24 hr) 1420 MW-5

pH 6.45 Cond (~~umho~~ mS) 6.324 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.4 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): [signature]

required information

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-05 C	4/16/24	1420	Plastic 500mL pH<2 w/H2SO4	1	MW5	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-05 D	4/16/24	1420	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW5	g / c	Radium 226 (sub)
			Preservation Check: pH : —				
4043422-05 E	4/16/24	1420	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-05 F	4/16/24	1420	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-05 G	4/16/24	1420	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-05 H	4/16/24	1420	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	4/17/24	1515

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Printed: 4/10/2024 8:36:46AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

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9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-06 A	4/17/24	1155	Plastic 500mL pH<2 w/HNO3	1	MW6	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-06 B	4/17/24	1155	Plastic 1L	1	MW6	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4043422-06 C	4/17/24	1155	Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-06 D	4/17/24	1155	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW6	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4043422-06 E	4/17/24	1155	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 278922

Field data collected by: Eric Brown Date (mm/dd/yy) 4/17/24 Time (24 hr) 1155 MW-6

pH 6.48 Cond (~~mmho~~ mS) 5.588 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.4 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time ___ End Date N/A End Time ___ Temp (oC) ___

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

LAB USE ONLY
Workorder # 4043422

Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-06 F	4/17/24	1155	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-06 G	4/17/24	1155	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-06 H	4/17/24	1155	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH : ✓				
4043422-07 A	4/17/24	—	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-07 B	4/17/24	—	Plastic 1L	1	DUPLICATE	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: MIC pH Paper Lot #: 228922

Field data collected by: ___ Date (mm/dd/yy) ___ Time (24 hr) ___

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	4/17/24	1515

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Pace Analytical Services LLC Kentucky
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PWS ID#:
State: KY

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Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY
Workorder # 4043422

Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-07 C	4/17/24	—	Plastic 500mL pH<2 w/H2SO4	1	DUPLICATE	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-07 D	4/17/24	—	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4043422-07 E	4/17/24	—	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-07 F	4/17/24	—	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-07 G	4/17/24	—	Plastic 1L pH<2 w/HNO3 (Sub)	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-07 H	4/17/24	—	AG 250mL pH<2 w/H2SO4	1	DUPLICATE	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: MIC pH Paper Lot #: 228022

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	4/17/24	1515

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PO#: —
Quote#: —

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required Information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-08 A	4/17/24	1130	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4043422-08 B	4/17/24	1130	Plastic 1L	1	FIELD BLANK	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4043422-08 C	4/17/24	1130	Plastic 500mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	COD TOC
			Preservation Check: pH : ✓				
4043422-08 D	4/17/24	1130	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	FIELD BLANK	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4043422-08 E	4/17/24	1130	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/17/24	1515

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Quote# —

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No Y

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

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

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

LAB USE ONLY Workorder # 4043422 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043422-08 F	4/17/24	1130	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4043422-08 G	4/17/24	1130	Plastic 1L pH<2 w/HNO3 (Sub)	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4043422-08 H	4/17/24	1130	AG 250mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	TOC
			Preservation Check: pH : ✓				

Thermometer Serial Number
✓ 181390287
___ 181460057
Temp 1.4°C

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
_____	_____	4/17/24	1515
_____	_____	_____	_____
_____	_____	_____	_____

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 07, 2024

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

RE: Project: 4043422
Pace Project No.: 30677782

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on April 19, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4043422
Pace Project No.: 30677782

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4043422
Pace Project No.: 30677782

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30677782001	**4043422-01**	Water	04/17/24 13:10	04/19/24 10:20
30677782002	**4043422-02**	Water	04/17/24 10:50	04/19/24 10:20
30677782003	**4043422-03**	Water	04/16/24 08:40	04/19/24 10:20
30677782004	**4043422-04**	Water	04/16/24 15:50	04/19/24 10:20
30677782005	**4043422-05**	Water	04/16/24 14:20	04/19/24 10:20
30677782006	**4043422-06**	Water	04/17/24 11:55	04/19/24 10:20
30677782007	**4043422-07**	Water	04/17/24 11:55	04/19/24 10:20
30677782008	**4043422-08**	Water	04/17/24 11:30	04/19/24 10:20

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Greensburg, PA 15601
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SAMPLE ANALYTE COUNT

Project: 4043422
Pace Project No.: 30677782

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30677782001	**4043422-01**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782002	**4043422-02**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782003	**4043422-03**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782004	**4043422-04**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782005	**4043422-05**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782006	**4043422-06**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782007	**4043422-07**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30677782008	**4043422-08**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4043422
Pace Project No.: 30677782

Sample: 4043422-01 **Lab ID: 30677782001** Collected: 04/17/24 13:10 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.266 ± 0.431 (0.750) C:NA T:89%**	pCi/L	05/06/24 15:22	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.565 ± 0.333 (0.600) C:80% T:85%**	pCi/L	04/29/24 12:21	15262-20-1	1c,B
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.831 ± 0.764 (1.35)**	pCi/L	05/07/24 14:02	7440-14-4	

Sample: 4043422-02 **Lab ID: 30677782002** Collected: 04/17/24 10:50 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.531 ± 0.624 (1.03) C:NA T:95%**	pCi/L	05/06/24 15:22	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.749 ± 0.395 (0.683) C:74% T:87%**	pCi/L	04/29/24 12:22	15262-20-1	1c,B
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.28 ± 1.02 (1.71)**	pCi/L	05/07/24 14:02	7440-14-4	

Sample: 4043422-03 **Lab ID: 30677782003** Collected: 04/16/24 08:40 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.597 ± 0.557 (0.861) C:NA T:95%**	pCi/L	05/06/24 15:22	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.407 ± 0.437 (0.907) C:60% T:83%**	pCi/L	04/29/24 12:22	15262-20-1	1c,B
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.00 ± 0.994 (1.77)**	pCi/L	05/07/24 14:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4043422
Pace Project No.: 30677782

Sample: 4043422-04 **Lab ID: 30677782004** Collected: 04/16/24 15:50 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.170 ± 0.710 (1.39) C:NA T:92%**	pCi/L	05/06/24 15:22	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.480 ± 0.367 (0.714) C:78% T:79%**	pCi/L	05/02/24 12:26	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.480 ± 1.08 (2.10)**	pCi/L	05/07/24 14:02	7440-14-4	

Sample: 4043422-05 **Lab ID: 30677782005** Collected: 04/16/24 14:20 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.448 ± 0.405 (0.597) C:NA T:92%**	pCi/L	05/06/24 15:34	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.15 ± 0.495 (0.795) C:78% T:74%**	pCi/L	05/02/24 12:27	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.60 ± 0.900 (1.39)**	pCi/L	05/07/24 14:02	7440-14-4	

Sample: 4043422-06 **Lab ID: 30677782006** Collected: 04/17/24 11:55 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.158 ± 0.401 (0.744) C:NA T:89%**	pCi/L	05/06/24 15:34	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.193 ± 0.307 (0.666) C:78% T:85%**	pCi/L	04/29/24 12:21	15262-20-1	1c,B
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.351 ± 0.708 (1.41)**	pCi/L	05/07/24 14:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4043422
Pace Project No.: 30677782

Sample: 4043422-07 **Lab ID: 30677782007** Collected: 04/17/24 11:55 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.394 ± 0.456 (0.740) C:NA T:91%**	pCi/L	05/06/24 15:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.34 ± 0.619 (1.02) C:90% T:55%**	pCi/L	04/29/24 15:50	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.73 ± 1.08 (1.76)**	pCi/L	05/07/24 14:02	7440-14-4	

Sample: 4043422-08 **Lab ID: 30677782008** Collected: 04/17/24 11:30 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.418 ± 0.544 (0.911) C:NA T:93%**	pCi/L	05/06/24 15:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.313 ± 0.321 (0.662) C:87% T:92%**	pCi/L	04/29/24 15:50	15262-20-1	1c,B
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.731 ± 0.865 (1.57)**	pCi/L	05/07/24 14:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4043422
Pace Project No.: 30677782

QC Batch: 663571 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: 30677782001, 30677782002, 30677782003, 30677782004, 30677782005, 30677782006, 30677782007, 30677782008

METHOD BLANK: 3231432 Matrix: Water
Associated Lab Samples: 30677782001, 30677782002, 30677782003, 30677782004, 30677782005, 30677782006, 30677782007, 30677782008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.366 ± 0.362 (0.742) C:78% T:78%	pCi/L	05/02/24 12:26	
Radium-228	1.25 ± 0.487 (0.738) C:78% T:78%	pCi/L	04/29/24 11:47	

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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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4043422
Pace Project No.: 30677782

QC Batch: 663570 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: 30677782001, 30677782002, 30677782003, 30677782004, 30677782005, 30677782006, 30677782007, 30677782008

METHOD BLANK: 3231431 Matrix: Water
Associated Lab Samples: 30677782001, 30677782002, 30677782003, 30677782004, 30677782005, 30677782006, 30677782007, 30677782008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.317 ± 0.248 (0.291) C:NA T:94%	pCi/L	05/06/24 15:09	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4043422
Pace Project No.: 30677782

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.

SAMPLE QUALIFIERS

Sample: 30677782001
[1] MW-1
Sample: 30677782002
[1] MW-2
Sample: 30677782003
[1] MW-3A
Sample: 30677782004
[1] MW-4

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4043422
Pace Project No.: 30677782

SAMPLE QUALIFIERS

Sample: 30677782005
[1] MW-5
Sample: 30677782006
[1] MW-6
Sample: 30677782007
[1] Duplicate Well
Sample: 30677782008
[1] Field Blank

ANALYTE QUALIFIERS

1c Samples with activity less than the RDl of 1.0 pCi/L are reportable without qualification.
B Analyte was detected in the associated method blank.

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4043422

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: 4043422-01 Water	**Sampled:04/17/2024 13:10**	**Specific Method**	001
Radium 228 (sub)	10/14/2024 13:10	EPA 904.0 Radium Sum C	
Radium Total (sub)	10/14/2024 13:10	EPA 904.0 Radium Sum C	
Radium 226 (sub)	10/14/2024 13:10	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4043422-02 Water	**Sampled:04/17/2024 10:50**	**Specific Method**	002
Radium 226 (sub)	10/14/2024 10:50	EPA 903.1	
Radium 228 (sub)	10/14/2024 10:50	EPA 904.0 Radium Sum C	
Radium Total (sub)	10/14/2024 10:50	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4043422-03 Water	**Sampled:04/16/2024 08:40**	**Specific Method**	003
Radium 226 (sub)	10/13/2024 08:40	EPA 903.1	
Radium 228 (sub)	10/13/2024 08:40	EPA 904.0 Radium Sum C	
Radium Total (sub)	10/13/2024 08:40	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

WO# : 30677782

30677782

Received by Pace Greensburg
Therm ID ___ Corr Factor +/- ___
Receipt Temp ___
Corrected Temp ___
Correct Preservation Y/N

Released By	Date	Received By	Date
	4-18-24	Jack Scott - Pace	4/19/24 1020
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4043422

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4043422-04	**Water**	**Sampled:04/16/2024 15:50**	**Specific Method**	004
Radium Total (sub)		10/13/2024 15:50	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/13/2024 15:50	EPA 903.1	
Radium 228 (sub)		10/13/2024 15:50	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** C

Sample ID: 4043422-05	**Water**	**Sampled:04/16/2024 14:20**	**Specific Method**	005
Radium 228 (sub)		10/13/2024 14:20	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/13/2024 14:20	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/13/2024 14:20	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** C

Sample ID: 4043422-06	**Water**	**Sampled:04/17/2024 11:55**	**Specific Method**	006
Radium 226 (sub)		10/14/2024 11:55	EPA 903.1	
Radium 228 (sub)		10/14/2024 11:55	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/14/2024 11:55	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** C

Sample ID: 4043422-07	**Water**	**Sampled:04/17/2024 11:55**	**Specific Method**	007
Radium Total (sub)		10/14/2024 11:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/14/2024 11:55	EPA 903.1	
Radium 228 (sub)		10/14/2024 11:55	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** C

WO#: 30677782

PM: TAW **Due Date: 05/10/24**

CLIENT: PACE_44_MVKY

Released By	Date	Received By	Date
4-18-24		Jack Smith-Pace	4/19/24 1020
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4043422

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4043422-08	**Water**	**Sampled:04/17/2024 11:30**	**Specific Method**	008
Radium 226 (sub)		10/14/2024 11:30	EPA 903.1	
Radium 228 (sub)		10/14/2024 11:30	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/14/2024 11:30	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY

RUSH MULTIPLIER 0

WO#: 30677782

PM: TAW **Due Date: 05/10/24**

CLIENT: PACE_44_MVKY

[signature]	4-18-24	[signature] - Pace	4/19/24 1020
Released By	Date	Received By	Date
Released By	Date	Received By	Date

ENV-FRM-GBUR-0088 v07_Sample Condition Upon Receipt-Greensburg

Effective Date: 01/04/2024

WO#: 30677782

PM: TAW Due Date: 05/10/24

CLIENT: PACE_44_MVKY

Client Name: Pace KY

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

Tracking Number: 1Z067Y57014065 8868

Initial / Date

Examined By: JS 4/19/24

Labeled By: JS 4/19/24

Temped By:

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	NA	pH paper Lot# 10D243 / D.P.D. Residual Chlorine Lot # —
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
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 samples field filtered:			✓	13.
Organic Samples checked for dechlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation: exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix	✓			16. added 5.0mL HNO3 to each container in Sample 001, 002, 005, 006.
All containers meet method preservation requirements:		✓		Initial when completed JS Date/Time of Preservation 4/19/24 1127 Lot# of added Preservative 30200409
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:		✓		Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed JS Date: 4/19/24 Survey Meter SN: 25014380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Client Pace KY

Site

Page 1 of 1

Profile/EZ Login Number 11851

Notes

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
1	WT						3																						
2	↓						↓																						
3																													
4																													
5																													
6																													
7																													
8	↓						↓																						

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
A[illegible]U	250mL amber glass unpreserved	GN	General

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
BP3B	250mL plastic NAOH
	0mL plastic H2SO4
	0mL plastic unpreserved

EZI	5g Encore
VOAK	Kit Volatile Solid
I	Wipe/Swab
ZPLC	Siploc Bag

WT	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

Qualtrax ID: 55678

WO#: 30677782
Due Date: 05/10/24
PM: TAW
CLIENT: PACE_44_MVKY

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

Certificate of Analysis
4043426

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 05/14/2024 15:21

Project Name:	Green Landfill Semiannual Well MW104	Workorder:	4043426

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 04/17/2024 15:15.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4043426-01	MW-104/	Groundwater	04/17/2024 10:20	04/17/2024 15:15	Eric Brown

LabNumber	Measurement	Value
4043426-01	Field Conductance	9557
	Field pH	6.46
	Field Temp (C)	18.4

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

ANALYTICAL RESULTS

Lab Sample ID: **4043426-01**
Description: **MW-104**

Sample Collection Date Time: 04/17/2024 10:20
Sample Received Date Time: 04/17/2024 15:15

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	04/19/2024 07:45	04/26/2024 00:53	MRWD
Arsenic	**0.0012**		mg/L	0.0010	0.0004	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Barium	**0.018**		mg/L	0.004	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Beryllium	ND	M2, U	mg/L	0.0020	0.0010	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Boron	**0.29**	M2	mg/L	0.10	0.10	SW846 6010 B	04/19/2024 07:45	04/25/2024 13:18	AKB
Cadmium	**0.0002**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Calcium	**504**	D1, M3	mg/L	50.0	25.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:45	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Cobalt	**0.004**		mg/L	0.004	0.004	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Iron	**0.453**		mg/L	0.100	0.050	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:39	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Lithium	**0.06**	M3	mg/L	0.02	0.005	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/19/2024 07:45	04/26/2024 00:53	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD
Sodium	**747**	D1, M3	mg/L	26.0	10.0	SW846 6010 B	04/19/2024 07:45	04/24/2024 23:45	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/19/2024 07:45	04/27/2024 01:07	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**85**		mg/L	13	8	HACH 8000	04/23/2024 08:18	04/23/2024 15:09	ORK
Specific Conductance (Lab)	**9050**		umhos/cm	1	1	2510 B-2011	04/18/2024 14:05	04/18/2024 15:59	AED
pH (Lab)	**7.37**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**7570**		mg/L	833	833	2540 C-2015	04/22/2024 18:34	04/22/2024 18:34	HAG
Total Organic Carbon	**0.5**		mg/L	0.5	0.2	5310 C-2014	04/25/2024 11:00	05/02/2024 01:57	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.103**	_Sub	pCi/L			EPA 903.1	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.862**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
Radium	**0.965**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW
See Attached Subcontract Report	**0.965**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/08/2024 16:43	05/08/2024 16:45	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1930**	D1	mg/L	50.0	36.0	SW846 9056	05/03/2024 17:39	05/03/2024 17:39	JBP1

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Fluoride	**0.4**	M2, Y5	mg/L	0.2	0.2	SW846 9056	04/30/2024 01:43	04/30/2024 01:43	JBP1
Sulfate	**1110**	D	mg/L	100	50	SW846 9056	05/13/2024 14:25	05/13/2024 14:25	JBP1

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Notes for work order 4043426

- 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.
E	Concentration exceeds calibration range
H3	Sample received and analyzed past holding time.
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.
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.
Y5	MS/MSD 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

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
Blank (BDD2093-BLK1)										
Prepared: 4/19/2024 7:45, Analyzed: 4/24/2024 21:44										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
Blank (BDD2093-BLK3)										
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 23:58										
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
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDD2093-BLK4)										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 16:31										
Beryllium	ND	0.0020	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
LCS (BDD2093-BS1)										
Prepared: 4/19/2024 7:45, Analyzed: 4/24/2024 21:47										
Boron	0.13	0.10	mg/L	0.125		102	85-115			
Calcium	6.42	0.50	mg/L	6.25		103	85-115			
Iron	6.34	0.100	mg/L	6.25		101	85-115			
Sodium	5.67	0.26	mg/L	6.25		90.7	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
LCS (BDD2093-BS2)										
Prepared: 4/19/2024 7:45, Analyzed: 4/24/2024 21:50										
Boron	ND	0.10	mg/L				85-115			U
Calcium	ND	0.50	mg/L				85-115			U
Iron	ND	0.100	mg/L				85-115			U
Sodium	ND	0.26	mg/L				85-115			U
LCS (BDD2093-BS4)										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 0:02										
Mercury	0.0023	0.0005	mg/L	0.00250		93.3	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		98.3	85-115			
Antimony	0.065	0.005	mg/L	0.0625		103	85-115			
Arsenic	0.0584	0.0010	mg/L	0.0625		93.5	85-115			
Barium	0.062	0.004	mg/L	0.0625		98.8	85-115			
Beryllium	0.0547	0.0020	mg/L	0.0625		87.5	85-115			
Cadmium	0.0605	0.0010	mg/L	0.0625		96.8	85-115			
Chromium	0.0577	0.0020	mg/L	0.0625		92.4	85-115			
Cobalt	0.058	0.004	mg/L	0.0625		92.8	85-115			
Copper	0.059	0.003	mg/L	0.0625		93.7	85-115			
Lead	0.062	0.002	mg/L	0.0625		98.9	85-115			
Lithium	0.05	0.02	mg/L	0.0625		87.3	85-115			
Selenium	0.057	0.003	mg/L	0.0625		90.6	85-115			
Thallium	0.0631	0.0020	mg/L	0.0625		101	85-115			
LCS (BDD2093-BS5)										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 16:34										
Beryllium	0.0610	0.0020	mg/L	0.0625		97.7	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.6	85-115			
Selenium	0.062	0.003	mg/L	0.0625		99.4	85-115			
Matrix Spike (BDD2093-MS1) **Source: 4043426-01**										
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 0:11										
Boron	ND	1.00	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	502	5.00	mg/L	6.25	504	NR	80-120			D2, M3
Iron	6.79	1.00	mg/L	6.25	ND	109	80-120			D2
Sodium	733	2.60	mg/L	6.25	747	NR	80-120			D2, M3

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
Matrix Spike (BDD2093-MS2)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 0:17										
Boron	ND	1.00	mg/L		ND		80-120			D2, U
Calcium	504	5.00	mg/L		504		80-120			D2
Iron	0.554	1.00	mg/L		ND		80-120			D2, J
Sodium	739	2.60	mg/L		747		80-120			D2
Matrix Spike (BDD2093-MS3)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 1:19										
Antimony	0.068	0.005	mg/L	0.0625	ND	108	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	99.8	80-120			
Mercury	0.0023	0.0005	mg/L	0.00250	ND	91.7	80-120			
Arsenic	0.0656	0.0010	mg/L	0.0625	0.0012	103	80-120			
Barium	0.081	0.004	mg/L	0.0625	0.018	101	80-120			
Beryllium	0.0489	0.0020	mg/L	0.0625	ND	78.2	80-120			M2
Cadmium	0.0592	0.0010	mg/L	0.0625	0.0002	94.4	80-120			
Chromium	0.0613	0.0020	mg/L	0.0625	ND	98.0	80-120			
Cobalt	0.063	0.004	mg/L	0.0625	0.004	93.1	80-120			
Copper	0.055	0.003	mg/L	0.0625	ND	88.1	80-120			
Lead	0.058	0.002	mg/L	0.0625	ND	92.7	80-120			
Lithium	0.10	0.02	mg/L	0.0625	0.06	65.8	80-120			M3
Selenium	0.062	0.003	mg/L	0.0625	ND	98.8	80-120			
Thallium	0.0589	0.0020	mg/L	0.0625	ND	94.2	80-120			
Matrix Spike Dup (BDD2093-MSD1)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/25/2024 0:14										
Boron	ND	1.00	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	509	5.00	mg/L	6.25	504	78.6	80-120	1.46	20	D2, M3
Iron	6.80	1.00	mg/L	6.25	ND	109	80-120	0.129	20	D2
Sodium	742	2.60	mg/L	6.25	747	NR	80-120	1.21	20	D2, M3
Matrix Spike Dup (BDD2093-MSD2)	**Source: 4043426-01**									
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 1:23										
Mercury	0.0023	0.0005	mg/L	0.00250	ND	91.9	80-120	0.149	20	
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120	1.76	20	
Molybdenum	0.06	0.01	mg/L	0.0625	ND	93.0	80-120	7.02	20	
Arsenic	0.0611	0.0010	mg/L	0.0625	0.0012	95.9	80-120	7.12	20	
Barium	0.080	0.004	mg/L	0.0625	0.018	99.2	80-120	1.15	20	
Beryllium	0.0476	0.0020	mg/L	0.0625	ND	76.2	80-120	2.62	20	M2
Cadmium	0.0582	0.0010	mg/L	0.0625	0.0002	92.8	80-120	1.67	20	
Chromium	0.0572	0.0020	mg/L	0.0625	ND	91.6	80-120	6.81	20	
Cobalt	0.058	0.004	mg/L	0.0625	0.004	86.4	80-120	6.96	20	
Copper	0.052	0.003	mg/L	0.0625	ND	83.1	80-120	5.89	20	
Lead	0.057	0.002	mg/L	0.0625	ND	91.6	80-120	1.22	20	
Lithium	0.10	0.02	mg/L	0.0625	0.06	64.0	80-120	1.11	20	M3
Selenium	0.061	0.003	mg/L	0.0625	ND	97.9	80-120	0.854	20	
Thallium	0.0583	0.0020	mg/L	0.0625	ND	93.3	80-120	0.959	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2093 - EPA 200.2										
Post Spike (BDD2093-PS2) **Source: 4043426-01**										
Prepared: 4/19/2024 7:45, Analyzed: 4/26/2024 1:27										
Antimony	64.9		ug/L	62.5	0.068	104	75-125			
Mercury	2.22		ug/L	2.50	0.0134	88.2	75-125			
Molybdenum	60.6		ug/L	62.5	0.44	96.3	75-125			
Arsenic	62.7		ug/L	62.5	1.20	98.4	75-125			
Barium	78.3		ug/L	62.5	17.6	97.0	75-125			
Beryllium	45.5		ug/L	62.5	-0.0265	72.7	75-125			M2
Cadmium	56.8		ug/L	62.5	0.188	90.6	75-125			
Chromium	59.0		ug/L	62.5	0.512	93.5	75-125			
Cobalt	60.2		ug/L	62.5	4.42	89.2	75-125			
Copper	53.2		ug/L	62.5	0.791	83.9	75-125			
Lead	55.9		ug/L	62.5	0.099	89.3	75-115			
Lithium	93.9		ug/L	62.5	58.7	56.3	75-125			M3
Selenium	59.7		ug/L	62.5	0.191	95.1	75-125			
Thallium	57.4		ug/L	62.5	0.0174	91.8	75-125			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD1928 - Default Prep Micro										
LCS (BDD1928-BS1)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.07		Std. Units	5.00		101	98.8-101.2			
LCS (BDD1928-BS2)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.07		Std. Units	5.00		101	98.8-101.2			
LCS (BDD1928-BS3)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.06		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDD1928-DUP1) **Source: 4043422-03**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.60	0.10	Std. Units		7.59			0.132	10	H3
Duplicate (BDD1928-DUP2) **Source: 4043422-06**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.27	0.10	Std. Units		7.26			0.138	10	H3
Duplicate (BDD1928-DUP3) **Source: 4043426-01**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.39	0.10	Std. Units		7.37			0.271	10	H3
Batch BDD1930 - Default Prep Micro										
Blank (BDD1930-BLK1)										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BDD1930-BS1)										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	1440		umhos/cm	1410		102	80-120			
Duplicate (BDD1930-DUP1) **Source: 4043422-06**										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	5330	1	umhos/cm		5320			0.188	0.938	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD1930 - Default Prep Micro										
Duplicate (BDD1930-DUP2) **Source: 4043426-01**										
Prepared: 4/18/2024 14:05, Analyzed: 4/18/2024 15:59										
Specific Conductance (Lab)	9110	1	umhos/cm		9050			0.661	0.938	
Batch BDD2340 - Default Prep Wet Chem										
Blank (BDD2340-BLK1)										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDD2340-BS1)										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	89		mg/L	90.0		98.9	80-120			
Duplicate (BDD2340-DUP1) **Source: 4042964-11**										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	3700	250	mg/L		3320			10.8	10	Y1
Duplicate (BDD2340-DUP2) **Source: 4044853-01**										
Prepared: 4/22/2024 18:34, Analyzed: 4/22/2024 18:34										
Total Dissolved Solids	118	25	mg/L		119			0.844	10	
Batch BDD2489 - Default Prep Wet Chem										
Blank (BDD2489-BLK1)										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	ND	13	mg/L							U
LCS (BDD2489-BS1)										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	122	13	mg/L	125		97.6	90-110			
Duplicate (BDD2489-DUP1) **Source: 4042964-11**										
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	26	13	mg/L		23			12.2	25	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2489 - Default Prep Wet Chem										
Matrix Spike (BDD2489-MS1)	**Source: 4042964-11**									
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	264	13	mg/L	250	23	96.4	90-110			
Matrix Spike Dup (BDD2489-MSD1)	**Source: 4042964-11**									
Prepared: 4/23/2024 8:18, Analyzed: 4/23/2024 15:09										
Chemical Oxygen Demand	269	13	mg/L	250	23	98.4	90-110	1.88	10	
Batch BDD2821 - Default Prep Wet Chem										
Blank (BDD2821-BLK1)										
Prepared: 4/25/2024 11:00, Analyzed: 5/1/2024 19:14										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BDD2821-BS1)										
Prepared: 4/25/2024 11:00, Analyzed: 5/1/2024 19:35										
Total Organic Carbon	4.9	0.5	mg/L	5.00		98.2	80-120			
Duplicate (BDD2821-DUP1)	**Source: 4040507-01**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 0:53										
Total Organic Carbon	1.3	0.5	mg/L		1.3			0.748	25	
Duplicate (BDD2821-DUP2)	**Source: 4043422-05**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 6:11										
Total Organic Carbon	0.4	0.5	mg/L		0.5			23.4	25	J
Matrix Spike (BDD2821-MS1)	**Source: 4040507-02**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 1:15										
Total Organic Carbon	3.3	0.5	mg/L	2.50	0.9	92.7	80-120			
Matrix Spike (BDD2821-MS2)	**Source: 4043422-06**									
Prepared: 4/25/2024 11:00, Analyzed: 5/2/2024 6:32										
Total Organic Carbon	6.9	0.5	mg/L	5.00	2.2	95.3	80-120			

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD3030 - Default Prep IC										
Blank (BDD3030-BLK1)										
Prepared: 4/30/2024 11:26, Analyzed: 4/30/2024 11:26										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDD3030-BS1)										
Prepared: 4/30/2024 11:01, Analyzed: 4/30/2024 11:01										
Chloride	13.7		mg/L	12.5		110	90-110			
Fluoride	5.4		mg/L	5.00		108	90-110			
Sulfate	27		mg/L	25.0		108	90-110			
Matrix Spike (BDD3030-MS1) **Source: 4043422-02**										
Prepared: 4/30/2024 9:20, Analyzed: 4/30/2024 9:20										
Chloride	456		mg/L	250	410	18.5	75-125			D, M2
Fluoride	98.8		mg/L	100	0.3	98.6	75-125			D
Sulfate	681		mg/L	500	351	65.8	75-125			D, M2
Matrix Spike (BDD3030-MS2) **Source: 4043426-01**										
Prepared: 4/30/2024 10:11, Analyzed: 4/30/2024 10:11										
Chloride	4360		mg/L	250	1740	NR	75-125			D, M1
Fluoride	23.0		mg/L	100	0.4	22.6	75-125			D, M2
Sulfate	5490		mg/L	500	19900	NR	75-125			D, M1
Matrix Spike Dup (BDD3030-MSD1) **Source: 4043422-02**										
Prepared: 4/30/2024 9:45, Analyzed: 4/30/2024 9:45										
Chloride	447		mg/L	250	410	14.7	75-125	2.08	15	D, M2
Fluoride	97.8		mg/L	100	0.3	97.6	75-125	1.02	15	D
Sulfate	668		mg/L	500	351	63.3	75-125	1.86	15	D, M2
Matrix Spike Dup (BDD3030-MSD2) **Source: 4043426-01**										
Prepared: 4/30/2024 10:36, Analyzed: 4/30/2024 10:36										
Chloride	4350		mg/L	250	1740	NR	75-125	0.228	15	D, M1
Fluoride	19.4		mg/L	100	0.4	19.0	75-125	16.9	15	D, M2, Y5
Sulfate	5470		mg/L	500	19900	NR	75-125	0.280	15	D, M1

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDE1276 - Default Prep IC										
Blank (BDE1276-BLK1)										
Prepared: 5/10/2024 22:25, Analyzed: 5/10/2024 22:25										
Sulfate	ND	1	mg/L							U
LCS (BDE1276-BS1)										
Prepared: 5/10/2024 22:00, Analyzed: 5/10/2024 22:00										
Sulfate	24		mg/L	25.0		97.0	90-110			
Matrix Spike (BDE1276-MS1) **Source: 4051313-01**										
Prepared: 5/11/2024 7:19, Analyzed: 5/11/2024 7:19										
Sulfate	49		mg/L	25.0	12	149	75-125			M1
Matrix Spike (BDE1276-MS2) **Source: 4043426-01RE1**										
Prepared: 5/11/2024 9:00, Analyzed: 5/11/2024 9:00										
Sulfate	6760		mg/L	2500	1000	230	75-125			D, M2
Matrix Spike Dup (BDE1276-MSD1) **Source: 4051313-01**										
Prepared: 5/11/2024 7:44, Analyzed: 5/11/2024 7:44										
Sulfate	48		mg/L	25.0	12	144	75-125	2.69	15	M1
Matrix Spike Dup (BDE1276-MSD2) **Source: 4043426-01RE1**										
Prepared: 5/11/2024 9:26, Analyzed: 5/11/2024 9:26										
Sulfate	7390		mg/L	2500	1000	255	75-125	8.80	15	D, M2

Certified Analyses included in this Report

Analyte	Certifications
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 FL Drinking Water Mdv (E871159)
2540 C-2015 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 MS Drinking Water MADV
5310 C-2014 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 MS Drinking Water MADV
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
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 4043426

Shipped By: Client

Temperature: 1.40° 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	☐

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

*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 N/A End Date Eric Brown End Time _____ Temp (oC) _____

LAB USE ONLY Workorder # 4043426 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043426-01 A	4/17/24	1020	Plastic 500mL pH<2 w/HNO3	1	MW-104	g / c	Sodium Tot 6010B Antimony Tot 6020 Beryllium Tot 6020 Iron Tot 6010B Thallium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Barium Tot 6020 Copper Tot 6020 Arsenic Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Lead Tot 6020
			Preservation Check: pH : ✓				
4043426-01 B	4/17/24	1020	Plastic 1L	1	MW-104	g / c	Chloride 9056 Conductivity (Lab) Fluoride 9056 pH (Lab) Sulfate 9056 TDS
4043426-01 C	4/17/24	1020	Plastic 500mL pH<2 w/H2SO4	1	MW-104	g / c	COD TOC
			Preservation Check: pH : ✓				
4043426-01 D	4/17/24	1020	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-104	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK

pH Paper Lot #: 226232

Field data collected by: Eric Brown Date (mm/dd/yy) 4/17/24 Time (24 hr) 1020 MW-104

pH 6.46 Cond ~~(umho)~~ mS 9.557 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.4 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 4/10/2024 8:37:51AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown

required information

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043426 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043426-01 E	4/17/24	1020	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				
4043426-01 F	4/17/24	1020	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				
4043426-01 G	4/17/24	1020	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-104	g / c	Radium Total (sub)
			Preservation Check: pH : ___				
4043426-01 H	4/17/24	1020	AG 250mL pH<2 w/H2SO4	1	MW-104	g / c	TOC
			Preservation Check: pH : ___				

Thermometer [illegible]
181390057
181460057
Temp 1.4 °C

Preservation Check Performed by: ML

pH Paper Lot #: 226022

Field data collected by: Eric Brown Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 4/10/2024 8:37:51AM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 07, 2024

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

RE: Project: 4043426
Pace Project No.: 30677784

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on April 19, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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CERTIFICATIONS

Project: 4043426
Pace Project No.: 30677784

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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SAMPLE SUMMARY

Project: 4043426
Pace Project No.: 30677784

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30677784001	**4043426-01**	Water	04/17/24 10:20	04/19/24 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 4043426
Pace Project No.: 30677784

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30677784001	**4043426-01**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4043426
Pace Project No.: 30677784

Sample: 4043426-01 **Lab ID: 30677784001** Collected: 04/17/24 10:20 Received: 04/19/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.103 ± 0.495 (0.935) C:NA T:92%**	pCi/L	05/06/24 15:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.862 ± 0.373 (0.578) C:88% T:90%**	pCi/L	04/29/24 15:50	15262-20-1	1c,B
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.965 ± 0.868 (1.51)**	pCi/L	05/07/24 14:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 4043426
Pace Project No.: 30677784

QC Batch: 663571
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30677784001

METHOD BLANK: 3231432 Matrix: Water
Associated Lab Samples: 30677784001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.366 ± 0.362 (0.742) C:78% T:78%	pCi/L	05/02/24 12:26	
Radium-228	1.25 ± 0.487 (0.738) C:78% T:78%	pCi/L	04/29/24 11:47	

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: 4043426
Pace Project No.: 30677784

QC Batch: 663570
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30677784001

METHOD BLANK: 3231431 Matrix: Water
Associated Lab Samples: 30677784001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.317 ± 0.248 (0.291) C:NA T:94%	pCi/L	05/06/24 15:09	

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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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4043426
Pace Project No.: 30677784

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.

ANALYTE QUALIFIERS

1c	Samples with activity less than the RDl of 1.0 pCi/L are reportable without qualification.
B	Analyte was detected in the associated method blank.

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4043426

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: 4043426-01	**Water**	**Sampled:04/17/2024 10:20**	**Specific Method**	001
Radium Total (sub)		10/14/2024 10:20	EPA 904.0 Radium Sum C	
Radium 228 (sub)		10/14/2024 10:20	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/14/2024 10:20	EPA 903.1	

SAMPLE STATE OF ORIGIN KY

RUSH MULTIPLIER C

Received by Pace Greensburg
Therm ID___Corr Factor +/-___
Receipt Temp___
Corrected Temp___
Correct Preservation Y/N

WO# : 30677784

30677784

Received by Pace Greensburg
Therm ID___ Corr Factor +/-___
Receipt Temp___
Corrected Temp___
Correct Preservation Y/N
JS 4/19/24

Released By	Date	Received By	Date
	4-18-24	Jessica Lentz-Pace	4/19/24 1020
Released By	Date	Received By	Date

ENV-FRM-GBUR-0088 v07_Sample Condition Upon Receipt

Effective Date: 01/04/2024

WO# : 30677784

PM: TAW **Due Date: 05/10/24**

CLIENT: PACE_44_MVKY

Client Name: Pace KY

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

Tracking Number: 1Z067 Y57 0140 65 8868

Initial / Date

Examined By: JS 4/19/24

Labeled By: JS 4/19/24

Temped By: —

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# 10D2931 **D.P.D. Residual Chlorine Lot #** —

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
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 JS 4/19/24	✓	✓		
Containers Intact:	✓			11.
Orthophosphate field filtered:			✓	12.
Hex Cr Aqueous samples field filtered:			✓	13.
Organic Samples checked for dechlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation:	✓			16. added 5.0mL HNO3 to each container
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix				
All containers meet method preservation requirements:		✓		Initial when completed JS Date/Time of Preservation 4/19/24 1127 Lot# of added Preservative 30200409
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:		✓		Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed JS Date: 4/19/24 Survey Meter SN: 25014380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Client Pace KY

Site

Page 1 of 1

Profile/EZ Login Number 11851

Notes

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
1	WT						3																						

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
A[illegible]U	250mL amber glass unpreserved	GN	General

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
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit Volatile Solid
I	Wipe/Swab
ZPLC	Siploc Bag

WT	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

Qualtrax ID: 55678

WO#: 30677784
PM: TAW Due Date: 05/10/24
CLIENT: PACE_44_MVKY

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

Certificate of Analysis
4043427

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 04/29/2024 15:18

Project Name:	Green Landfill Arsenic Wells	Workorder:	4043427

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 04/17/2024 15:15.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Archie Fugate For Rob Whittington, Project Manager

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
4043427-01	MW-105/	Groundwater	04/16/2024 09:30	04/17/2024 15:15	Eric Brown
4043427-02	MW-106S/	Groundwater	04/16/2024 13:10	04/17/2024 15:15	Eric Brown
4043427-03	MW-106D/	Groundwater	04/16/2024 11:55	04/17/2024 15:15	Eric Brown

LabNumber	Measurement	Value
4043427-01	Field Conductance	2835
	Field pH	6.42
	Field Temp (C)	17.4
4043427-02	Field Conductance	1432
	Field pH	6.71
	Field Temp (C)	17.6
4043427-03	Field Conductance	990
	Field pH	7.21
	Field Temp (C)	17.3

ANALYTICAL RESULTS

Lab Sample ID: **4043427-01**
Description: **MW-105**
Sample Collection Date Time: 04/16/2024 09:30
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Arsenic	**0.0137**		mg/L	0.0010	0.0004	SW846-6020 A	04/18/2024 09:18	04/27/2024 00:08	MRWD

ANALYTICAL RESULTS

Lab Sample ID: **4043427-02**
Description: **MW-106S**
Sample Collection Date Time: 04/16/2024 13:10
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Arsenic	**0.0824**		mg/L	0.0010	0.0004	SW846-6020 A	04/18/2024 09:18	04/27/2024 00:11	MRWD

ANALYTICAL RESULTS

Lab Sample ID: **4043427-03**
Description: **MW-106D**
Sample Collection Date Time: 04/16/2024 11:55
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Arsenic	**0.0037**		mg/L	0.0010	0.0004	SW846-6020 A	04/18/2024 09:18	04/27/2024 00:15	MRWD

Pace Analytical Services, LLC
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Madisonville, KY 42431
270.821.7375
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Notes for work order 4043427

- 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

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).

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

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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 BDD2092 - EPA 200.2										
Blank (BDD2092-BLK2)										
Prepared: 4/18/2024 9:18, Analyzed: 4/26/2024 21:41										
Arsenic	ND	0.0010	mg/L							U
LCS (BDD2092-BS2)										
Prepared: 4/18/2024 9:18, Analyzed: 4/26/2024 22:03										
Arsenic	0.0633	0.0010	mg/L	0.0625		101	85-115			
Matrix Spike (BDD2092-MS2)	**Source: 4043420-01**									
Prepared: 4/18/2024 9:18, Analyzed: 4/26/2024 22:25										
Arsenic	0.0612	0.0100	mg/L	0.0625	ND	97.9	80-120			
Matrix Spike Dup (BDD2092-MSD2)	**Source: 4043420-01**									
Prepared: 4/18/2024 9:18, Analyzed: 4/26/2024 22:29										
Arsenic	0.0604	0.0100	mg/L	0.0625	ND	96.6	80-120	1.39	20	
Post Spike (BDD2092-PS2)	**Source: 4043420-01**									
Prepared: 4/18/2024 9:18, Analyzed: 4/26/2024 22:32										
Arsenic	61.9		ug/L	62.5	-0.0189	99.1	75-125			

Sample Acceptance Checklist for Work Order 4043427

Shipped By: Client

Temperature: 1.40° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Arsenic Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043427 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043427-01 A	4/16/24	0930	Plastic 500mL pH<2 w/HNO3	1	MW-105	g / c	Arsenic Tot 6020
			Preservation Check: pH : ✓				
4043427-02 A	4/16/24	1310	Plastic 500mL pH<2 w/HNO3	1	MW-106S	g / c	Arsenic Tot 6020
			Preservation Check: pH : ___				
4043427-03 A	4/16/24	1155	Plastic 500mL pH<2 w/HNO3	1	MW-106D	g / c	Arsenic Tot 6020
			Preservation Check: pH : ___				

Thermometer Serial Number
✓ 181390287
181460057
Temp 1.4 °C

MW-105/MW-106S/MW-106D

Preservation Check Performed by: MK

pH Paper Lot #: 228922

Field data collected by: Eric Brown Date (mm/dd/yy) 4/16/24 Time (24 hr) 0930/1310/1155

pH 6.42/6.71/7.21 Cond (umho) 2.835/1.432/0.990 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.4/17.6/17.3 (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 4/8/2024 12:40:54PM

Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
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Certificate of Analysis
4111774

Stacy Shelton
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson, KY 42419

Customer ID: 44-102032
Report Printed: 12/30/2024 13:13

Project Name:	Green Landfill Semiannual Groundwater	Workorder:	4111774

Dear Stacy Shelton

Enclosed are the analytical results for samples received by the laboratory 11/15/2024 09:50.

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 - 825 Industrial Road, Madisonville, KY 42431

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4111774-01	MW1/	Groundwater	11/21/2024 16:25	11/22/2024 14:54	Client
4111774-02	MW2/	Groundwater	11/13/2024 09:17	11/19/2024 16:41	Hunter Mizell
4111774-03	MW3A/	Groundwater	11/19/2024 13:28	11/19/2024 16:41	Hunter Mizell
4111774-04	MW4/	Groundwater	11/14/2024 14:01	11/15/2024 9:50	Hunter Mizell
4111774-05	MW5/	Groundwater	11/14/2024 16:14	11/15/2024 9:50	Hunter Mizell
4111774-06	MW6/	Groundwater	11/21/2024 13:55	11/22/2024 14:54	Client
4111774-07	DUPLICATE/	Groundwater	11/21/2024 15:20	11/22/2024 14:54	Client
4111774-08	FIELD BLANK/	Water	11/14/2024 16:33	11/15/2024 9:50	Hunter Mizell

LabNumber	Measurement	Value
4111774-01	Field Conductance	0.915
	Field pH	8.07
	Field Temp (C)	14.18
4111774-02	Field pH	2.09
	Field Temp (C)	13.79
4111774-03	Field pH	7.1
	Field Temp (C)	17.64
4111774-04	Field Conductance	5660
	Field pH	7.29
	Field Temp (C)	16.09
4111774-05	Field Conductance	5740
	Field pH	6.34
	Field Temp (C)	15.67
4111774-06	Field Conductance	4.83
	Field pH	7.16
	Field Temp (C)	15.20

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-01**
Description: **MW1**

Sample Collection Date Time: 11/21/2024 16:25
Sample Received Date Time: 11/22/2024 14:54

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	11/26/2024 08:06	11/26/2024 20:08	MRWD
Arsenic	**0.0011**		mg/L	0.0010	0.0004	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Barium	**0.086**		mg/L	0.004	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Boron	**1.71**	D1	mg/L	1.00	1.00	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:24	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Calcium	**29.9**	D1	mg/L	5.00	2.50	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:24	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Iron	**0.695**		mg/L	0.100	0.050	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:20	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD
Sodium	**187**	D1	mg/L	26.0	10.0	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:27	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:08	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U	mg/L	13	8	HACH 8000	11/25/2024 13:00	11/25/2024 13:00	ORK
Specific Conductance (Lab)	**988**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/25/2024 12:58	11/25/2024 13:23	CMB
pH (Lab)	**7.93**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/25/2024 12:57	11/25/2024 13:50	CMB
Total Dissolved Solids	**568**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG
Total Organic Carbon	**1.0**		mg/L	0.5	0.2	5310 C-2014	11/25/2024 15:07	11/26/2024 01:24	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**5.8**		mg/L	0.5	0.4	SW846 9056	11/25/2024 14:58	11/25/2024 14:58	CLS3
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	11/25/2024 14:58	11/25/2024 14:58	CLS3
Sulfate	**37**		mg/L	1	0.5	SW846 9056	11/25/2024 14:58	11/25/2024 14:58	CLS3

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

ANALYTICAL RESULTS

Lab Sample ID: **4111774-02**
Description: **MW2**

Sample Collection Date Time: 11/13/2024 09:17
Sample Received Date Time: 11/19/2024 16:41

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	11/21/2024 08:52	11/21/2024 17:51	MRWD
Arsenic	**0.0298**	M2	mg/L	0.0010	0.0004	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Barium	**0.261**	M2	mg/L	0.004	0.001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Boron	ND	M2, U	mg/L	0.10	0.10	SW846 6010 B	11/21/2024 08:52	11/25/2024 17:30	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Calcium	**215**	D1, M2	mg/L	50.0	25.0	SW846 6010 B	11/21/2024 08:52	11/22/2024 18:17	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Copper	ND	M2, U	mg/L	0.003	0.001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Iron	**13.7**	D1	mg/L	1.00	0.500	SW846 6010 B	11/21/2024 08:52	11/22/2024 18:05	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Lithium	**0.005**	J	mg/L	0.02	0.005	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Mercury	**0.0003**	J	mg/L	0.0005	0.0002	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Molybdenum	**0.004**	J	mg/L	0.01	0.002	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD
Sodium	**53.5**	D1, M1	mg/L	2.60	1.00	SW846 6010 B	11/21/2024 08:52	11/22/2024 18:05	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:51	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**9**	J	mg/L	13	8	HACH 8000	11/20/2024 16:07	11/20/2024 16:07	ORK
Specific Conductance (Lab)	**2290**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/21/2024 13:53	11/22/2024 15:13	CMB
pH (Lab)	**7.48**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/21/2024 13:53	11/22/2024 15:51	CMB
Total Dissolved Solids	**1250**	H1	mg/L	100	100	2540 C-2015	11/21/2024 17:42	11/21/2024 17:42	HAG
Total Organic Carbon	**1.3**	B	mg/L	0.5	0.2	5310 C-2014	11/22/2024 08:08	11/24/2024 17:19	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**194**	D	mg/L	10.0	7.2	SW846 9056	11/22/2024 19:16	11/22/2024 19:16	CLS3
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	11/22/2024 18:51	11/22/2024 18:51	CLS3
Sulfate	**174**		mg/L	1	0.5	SW846 9056	11/22/2024 18:51	11/22/2024 18:51	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-03**
Description: **MW3A**

Sample Collection Date Time: 11/19/2024 13:28
Sample Received Date Time: 11/19/2024 16:41

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	11/21/2024 08:52	11/21/2024 17:54	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/21/2024 08:52	11/22/2024 11:59	MRWD
Barium	**0.040**		mg/L	0.004	0.001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Boron	**0.36**		mg/L	0.10	0.10	SW846 6010 B	11/21/2024 08:52	11/25/2024 17:33	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Calcium	**478**	D1	mg/L	50.0	25.0	SW846 6010 B	11/21/2024 08:52	11/22/2024 18:24	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/21/2024 08:52	11/22/2024 11:59	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/21/2024 08:52	11/22/2024 11:59	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/21/2024 08:52	11/22/2024 11:59	MRWD
Iron	**0.127**		mg/L	0.100	0.050	SW846 6010 B	11/21/2024 08:52	11/25/2024 17:33	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Lithium	**0.69**		mg/L	0.02	0.005	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD
Sodium	**278**	D1	mg/L	26.0	10.0	SW846 6010 B	11/21/2024 08:52	11/22/2024 18:24	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/21/2024 08:52	11/21/2024 17:54	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**76**		mg/L	13	8	HACH 8000	11/20/2024 16:07	11/20/2024 16:07	ORK
Specific Conductance (Lab)	**9**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/21/2024 13:53	11/22/2024 15:13	CMB
pH (Lab)	**7.73**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/21/2024 13:53	11/22/2024 15:51	CMB
Total Dissolved Solids	**4500**		mg/L	25	25	2540 C-2015	11/23/2024 14:31	11/23/2024 14:31	HAG
Total Organic Carbon	**0.4**	B, J	mg/L	0.5	0.2	5310 C-2014	11/22/2024 08:08	11/24/2024 17:41	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1930**	D	mg/L	10.0	7.2	SW846 9056	11/22/2024 20:07	11/22/2024 20:07	CLS3
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	11/22/2024 19:41	11/22/2024 19:41	CLS3
Sulfate	**1280**	D	mg/L	20	10	SW846 9056	11/22/2024 20:07	11/22/2024 20:07	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-04**
Description: **MW4**

Sample Collection Date Time: 11/14/2024 14:01
Sample Received Date Time: 11/15/2024 09:50

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	11/18/2024 09:08	11/21/2024 11:56	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:32	MRWD
Barium	**0.024**		mg/L	0.004	0.001	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:56	MRWD
Beryllium	ND	M2, U	mg/L	0.0020	0.0010	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:56	MRWD
Boron	**0.87**	M1, M2	mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 18:56	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:56	MRWD
Calcium	**676**	D1, M3	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 18:41	AIS
Chromium	**0.0010**	V1, J	mg/L	0.0020	0.0006	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:32	MRWD
Cobalt	ND	V1, U	mg/L	0.004	0.004	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:32	MRWD
Copper	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:32	MRWD
Iron	**0.050**	J	mg/L	0.100	0.050	SW846 6010 B	11/18/2024 09:08	11/25/2024 18:56	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:56	MRWD
Lithium	**1.06**	C6, D1, M3	mg/L	0.20	0.05	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:59	MRWD
Mercury	**0.0002**	M2, J	mg/L	0.0005	0.0002	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:56	MRWD
Molybdenum	ND	V1, U	mg/L	0.01	0.002	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:32	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/21/2024 11:56	MRWD
Sodium	**261**	D1, M3	mg/L	26.0	10.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 18:41	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:32	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**51**		mg/L	13	8	HACH 8000	11/19/2024 08:39	11/19/2024 16:29	ORK
Specific Conductance (Lab)	**6240**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/15/2024 11:39	11/15/2024 14:09	CMB
pH (Lab)	**7.23**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**3930**		mg/L	250	250	2540 C-2015	11/15/2024 20:12	11/15/2024 20:12	HAG
Total Organic Carbon	**0.4**	B, J	mg/L	0.5	0.2	5310 C-2014	11/22/2024 08:08	11/24/2024 18:02	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1270**	D	mg/L	10.0	7.2	SW846 9056	11/22/2024 21:49	11/22/2024 21:49	CLS3

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Fluoride	ND	U	mg/L	4.0	3.6	SW846 9056	11/22/2024 21:49	11/22/2024 21:49	CLS3
Sulfate	**1590**	D	mg/L	20	10	SW846 9056	11/22/2024 21:49	11/22/2024 21:49	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-05**
Description: **MW5**

Sample Collection Date Time: 11/14/2024 16:14
Sample Received Date Time: 11/15/2024 09:50

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	11/18/2024 09:08	11/21/2024 12:01	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:36	MRWD
Barium	**0.015**		mg/L	0.004	0.001	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Boron	**0.23**		mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 18:59	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Calcium	**484**	D1	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 18:47	AIS
Chromium	**0.0008**	V1, J	mg/L	0.0020	0.0006	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:36	MRWD
Cobalt	ND	V1, U	mg/L	0.004	0.004	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:36	MRWD
Copper	**0.001**	V1, J	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:36	MRWD
Iron	**0.119**		mg/L	0.100	0.050	SW846 6010 B	11/18/2024 09:08	11/25/2024 18:59	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Lithium	**0.36**		mg/L	0.02	0.005	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Molybdenum	ND	V1, U	mg/L	0.01	0.002	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:36	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:01	MRWD
Sodium	**198**	D1	mg/L	26.0	10.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 18:47	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:36	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**96**		mg/L	13	8	HACH 8000	11/19/2024 08:39	11/19/2024 16:29	ORK
Specific Conductance (Lab)	**6830**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/15/2024 11:39	11/15/2024 14:09	CMB
pH (Lab)	**7.41**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**4040**		mg/L	250	250	2540 C-2015	11/15/2024 20:12	11/15/2024 20:12	HAG
Total Organic Carbon	**0.5**	B	mg/L	0.5	0.2	5310 C-2014	11/22/2024 08:08	11/24/2024 18:23	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1080**	D	mg/L	10.0	7.2	SW846 9056	11/22/2024 22:39	11/22/2024 22:39	CLS3
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	11/22/2024 22:14	11/22/2024 22:14	CLS3
Sulfate	**1810**	D	mg/L	20	10	SW846 9056	11/22/2024 22:39	11/22/2024 22:39	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-06**
Description: **MW6**

Sample Collection Date Time: 11/21/2024 13:55
Sample Received Date Time: 11/22/2024 14:54

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	D2, U	mg/L	0.050	0.020	SW846-6020 A	11/26/2024 08:06	11/27/2024 14:55	MRWD
Arsenic	ND	D2, U	mg/L	0.0100	0.0040	SW846-6020 A	11/26/2024 08:06	11/27/2024 14:55	MRWD
Barium	**0.015**		mg/L	0.004	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Beryllium	ND	M2, U	mg/L	0.0020	0.0010	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Boron	**0.20**	M2	mg/L	0.10	0.10	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:39	AIS
Cadmium	ND	D2, M2, U	mg/L	0.0100	0.0010	SW846-6020 A	11/26/2024 08:06	11/27/2024 14:55	MRWD
Calcium	**417**	D1, M3	mg/L	50.0	25.0	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:46	AIS
Chromium	ND	M6, U	mg/L	0.0200	0.0060	SW846-6020 A	11/26/2024 08:06	11/27/2024 14:55	MRWD
Cobalt	ND	D2, U	mg/L	0.040	0.040	SW846-6020 A	11/26/2024 08:06	11/27/2024 14:55	MRWD
Copper	ND	D2, U	mg/L	0.030	0.010	SW846-6020 A	11/26/2024 08:06	11/27/2024 14:55	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:39	AIS
Lead	ND	M2, U	mg/L	0.002	0.0005	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Lithium	**0.05**		mg/L	0.02	0.005	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD
Sodium	**427**	D1, M3	mg/L	26.0	10.0	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:46	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:11	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**10**	J	mg/L	13	8	HACH 8000	11/25/2024 13:00	11/25/2024 13:00	ORK
Specific Conductance (Lab)	**5170**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/25/2024 12:58	11/25/2024 13:23	CMB
pH (Lab)	**7.28**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/25/2024 12:57	11/25/2024 13:50	CMB
Total Dissolved Solids	**4520**		mg/L	250	250	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG
Total Organic Carbon	**2.1**		mg/L	0.5	0.2	5310 C-2014	11/25/2024 15:07	11/26/2024 01:45	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	M1, U	mg/L	0.5	0.4	SW846 9056	11/25/2024 16:40	11/25/2024 16:40	CLS3
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	11/25/2024 16:40	11/25/2024 16:40	CLS3
Sulfate	**2710**	D	mg/L	20	10	SW846 9056	11/25/2024 17:05	11/25/2024 17:05	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-07**
Description: **DUPLICATE**

Sample Collection Date Time: 11/21/2024 15:20
Sample Received Date Time: 11/22/2024 14:54

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	11/26/2024 08:06	11/26/2024 20:13	MRWD
Arsenic	**0.0010**		mg/L	0.0010	0.0004	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Barium	**0.083**		mg/L	0.004	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Boron	**1.73**	D1, M2	mg/L	1.00	1.00	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:52	AIS
Cadmium	**0.0002**	J	mg/L	0.0010	0.0001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Calcium	**30.5**	D1	mg/L	5.00	2.50	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:52	AIS
Chromium	**0.115**	M7	mg/L	0.0020	0.0006	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Iron	**0.486**		mg/L	0.100	0.050	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:49	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Molybdenum	**0.12**	M2	mg/L	0.01	0.002	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD
Sodium	**184**	D1, M3	mg/L	26.0	10.0	SW846 6010 B	11/26/2024 08:06	12/03/2024 16:55	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/26/2024 08:06	11/26/2024 20:13	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U	mg/L	13	8	HACH 8000	11/25/2024 13:00	11/25/2024 13:00	ORK
Specific Conductance (Lab)	**970**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/25/2024 12:58	11/25/2024 13:23	CMB
pH (Lab)	**8.02**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/25/2024 12:57	11/25/2024 13:50	CMB
Total Dissolved Solids	**564**		mg/L	100	100	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG
Total Organic Carbon	**1.0**		mg/L	0.5	0.2	5310 C-2014	11/25/2024 15:07	11/26/2024 02:06	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**5.8**		mg/L	0.5	0.4	SW846 9056	11/25/2024 17:31	11/25/2024 17:31	CLS3
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	11/25/2024 17:31	11/25/2024 17:31	CLS3
Sulfate	**37**		mg/L	1	0.5	SW846 9056	11/25/2024 17:31	11/25/2024 17:31	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111774-08**
Description: **FIELD BLANK**

Sample Collection Date Time: 11/14/2024 16:33
Sample Received Date Time: 11/15/2024 09:50

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	11/18/2024 09:08	11/21/2024 12:03	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:40	MRWD
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:02	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Calcium	**0.28**	J	mg/L	0.50	0.25	SW846 6010 B	11/18/2024 09:08	11/26/2024 12:58	AIS
Chromium	ND	V1, U	mg/L	0.0020	0.0006	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:40	MRWD
Cobalt	ND	V1, U	mg/L	0.004	0.004	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:40	MRWD
Copper	**0.002**	V1, J	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:40	MRWD
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:02	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Molybdenum	ND	V1, U	mg/L	0.01	0.002	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:40	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/21/2024 12:03	MRWD
Sodium	**0.21**	J	mg/L	0.26	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:02	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/18/2024 09:08	11/20/2024 16:40	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U	mg/L	13	8	HACH 8000	11/19/2024 08:39	11/19/2024 16:29	ORK
Specific Conductance (Lab)	**8**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/15/2024 11:39	11/15/2024 14:09	CMB
pH (Lab)	**4.98**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	ND	G1, U	mg/L	50	50	2540 C-2015	11/15/2024 20:12	11/15/2024 20:12	HAG
Total Organic Carbon	**0.3**	J, B	mg/L	0.5	0.2	5310 C-2014	11/22/2024 08:08	11/24/2024 18:45	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	11/22/2024 23:05	11/22/2024 23:05	CLS3
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	11/22/2024 23:05	11/22/2024 23:05	CLS3
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	11/22/2024 23:05	11/22/2024 23:05	CLS3

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Notes for work order 4111774

- 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

B	Target analyte detected in method blank at or above the method reporting limit.
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.
E	Concentration exceeds calibration range
G1	Residue yield was less than the method required 2.5mg.
H1	Sample analysis performed past holding time.
H3	Sample received and analyzed past holding time.
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.
M6	Matrix spike recovery was high.
M7	Matrix spike recovery was low.
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.

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

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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 BDK1656 - EPA 200.2										
Blank (BDK1656-BLK1)										
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 16:21										
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
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDK1656-BLK2)										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 18:19										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
LCS (BDK1656-BS1)										
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 16:25										
Mercury	0.0026	0.0005	mg/L	0.00250		102	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		107	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0639	0.0010	mg/L	0.0625		102	85-115			
Barium	0.065	0.004	mg/L	0.0625		103	85-115			
Beryllium	0.0603	0.0020	mg/L	0.0625		96.5	85-115			
Cadmium	0.0636	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0670	0.0020	mg/L	0.0625		107	85-115			
Cobalt	0.067	0.004	mg/L	0.0625		107	85-115			
Copper	0.067	0.003	mg/L	0.0625		107	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		96.9	85-115			
Selenium	0.058	0.003	mg/L	0.0625		93.4	85-115			
Thallium	0.0630	0.0020	mg/L	0.0625		101	85-115			

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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 BDK1656 - EPA 200.2										
LCS (BDK1656-BS2)										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 18:22										
Boron	0.13	0.10	mg/L	0.125		104	85-115			
Calcium	6.45	0.50	mg/L	6.25		103	85-115			
Iron	6.42	0.100	mg/L	6.25		103	85-115			
Sodium	6.36	0.26	mg/L	6.25		102	85-115			
Matrix Spike (BDK1656-MS1)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 17:05										
Molybdenum	0.07	0.01	mg/L	0.0625	ND	106	80-120			
Mercury	0.0025	0.0005	mg/L	0.00250	0.0002	89.2	80-120			
Antimony	0.066	0.005	mg/L	0.0625	ND	106	80-120			
Arsenic	0.0642	0.0010	mg/L	0.0625	ND	103	80-120			
Barium	0.085	0.004	mg/L	0.0625	0.024	97.3	80-120			
Beryllium	0.0507	0.0020	mg/L	0.0625	ND	81.1	80-120			
Cadmium	0.0562	0.0010	mg/L	0.0625	ND	90.0	80-120			
Chromium	0.0687	0.0020	mg/L	0.0625	0.0010	108	80-120			
Cobalt	0.064	0.004	mg/L	0.0625	ND	103	80-120			
Copper	0.061	0.003	mg/L	0.0625	ND	97.9	80-120			
Lead	0.058	0.002	mg/L	0.0625	ND	92.1	80-120			
Lithium	0.98	0.02	mg/L	0.0625	1.06	NR	80-120			M3, E
Selenium	0.052	0.003	mg/L	0.0625	ND	83.3	80-120			
Thallium	0.0575	0.0020	mg/L	0.0625	ND	91.9	80-120			
Matrix Spike (BDK1656-MS2)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:00										
Boron	1.02	1.00	mg/L	0.125	ND	818	80-120			D2, M1
Calcium	680	5.00	mg/L	6.25	676	55.4	80-120			D2, M3
Iron	6.66	1.00	mg/L	6.25	ND	107	80-120			D2
Sodium	264	2.60	mg/L	6.25	261	49.5	80-120			D2, M3
Matrix Spike Dup (BDK1656-MSD1)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 17:09										
Molybdenum	0.07	0.01	mg/L	0.0625	ND	107	80-120	0.970	20	
Mercury	0.0022	0.0005	mg/L	0.00250	0.0002	79.9	80-120	9.87	20	M2
Antimony	0.060	0.005	mg/L	0.0625	ND	96.2	80-120	9.24	20	
Arsenic	0.0640	0.0010	mg/L	0.0625	ND	102	80-120	0.326	20	
Barium	0.076	0.004	mg/L	0.0625	0.024	82.9	80-120	11.2	20	
Beryllium	0.0449	0.0020	mg/L	0.0625	ND	71.9	80-120	12.0	20	M2
Cadmium	0.0512	0.0010	mg/L	0.0625	ND	82.0	80-120	9.25	20	
Chromium	0.0689	0.0020	mg/L	0.0625	0.0010	109	80-120	0.262	20	
Cobalt	0.065	0.004	mg/L	0.0625	ND	103	80-120	0.172	20	
Copper	0.061	0.003	mg/L	0.0625	ND	98.4	80-120	0.437	20	
Lead	0.052	0.002	mg/L	0.0625	ND	83.0	80-120	10.4	20	
Lithium	0.91	0.02	mg/L	0.0625	1.06	NR	80-120	8.20	20	M3, E
Selenium	0.054	0.003	mg/L	0.0625	ND	87.0	80-120	4.33	20	
Thallium	0.0521	0.0020	mg/L	0.0625	ND	83.3	80-120	9.82	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1656 - EPA 200.2										
Matrix Spike Dup (BDK1656-MSD2)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:03										
Boron	1.01	1.00	mg/L	0.125	ND	806	80-120	1.51	20	D2, M1
Calcium	664	5.00	mg/L	6.25	676	NR	80-120	2.38	20	D2, M3
Iron	6.28	1.00	mg/L	6.25	ND	101	80-120	5.80	20	D2
Sodium	261	2.60	mg/L	6.25	261	NR	80-120	1.33	20	D2, M3
Post Spike (BDK1656-PS1)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 17:12										
Antimony	0.066	0.005	mg/L	0.0625	ND	105	75-125			
Mercury	0.0025	0.0005	mg/L	0.00250	0.0002	90.9	75-125			
Molybdenum	0.07	0.01	mg/L	0.0625	ND	106	75-125			
Arsenic	0.0626	0.0010	mg/L	0.0625	ND	100	75-125			
Barium	0.082	0.004	mg/L	0.0625	0.024	93.1	75-125			
Beryllium	0.0485	0.0020	mg/L	0.0625	ND	77.6	75-125			
Cadmium	0.0557	0.0010	mg/L	0.0625	ND	89.1	75-125			
Chromium	0.0673	0.0020	mg/L	0.0625	0.0010	106	75-125			
Cobalt	0.063	0.004	mg/L	0.0625	ND	101	75-125			
Copper	0.059	0.003	mg/L	0.0625	ND	95.1	75-125			
Lead	0.057	0.002	mg/L	0.0625	ND	90.8	75-115			
Lithium	0.97	0.02	mg/L	0.0625	1.06	NR	75-125			M3, E
Selenium	0.051	0.003	mg/L	0.0625	ND	81.1	75-125			
Thallium	0.0569	0.0020	mg/L	0.0625	ND	91.1	75-125			
Post Spike (BDK1656-PS2)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:07										
Boron	ND	1.00	mg/L	0.125	ND		75-125			D2, M2, U
Calcium	654	5.00	mg/L	6.25	676	NR	75-125			D2, M3
Iron	6.19	1.00	mg/L	6.25	ND	99.0	75-125			D2
Sodium	257	2.60	mg/L	6.25	261	NR	75-125			D2, M3

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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 BDK2040 - EPA 200.2										
Blank (BDK2040-BLK1)										
Prepared: 11/21/2024 8:52, Analyzed: 11/21/2024 17:44										
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
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDK2040-BLK2)										
Prepared: 11/21/2024 8:52, Analyzed: 11/22/2024 17:55										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
LCS (BDK2040-BS1)										
Prepared: 11/21/2024 8:52, Analyzed: 11/21/2024 17:47										
Mercury	0.0025	0.0005	mg/L	0.00250		99.0	85-115			
Antimony	0.064	0.005	mg/L	0.0625		103	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		105	85-115			
Arsenic	0.0623	0.0010	mg/L	0.0625		99.7	85-115			
Barium	0.062	0.004	mg/L	0.0625		99.2	85-115			
Beryllium	0.0611	0.0020	mg/L	0.0625		97.8	85-115			
Cadmium	0.0622	0.0010	mg/L	0.0625		99.5	85-115			
Chromium	0.0616	0.0020	mg/L	0.0625		98.6	85-115			
Cobalt	0.062	0.004	mg/L	0.0625		99.3	85-115			
Copper	0.063	0.003	mg/L	0.0625		101	85-115			
Lead	0.063	0.002	mg/L	0.0625		100	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.2	85-115			
Selenium	0.059	0.003	mg/L	0.0625		93.7	85-115			
Thallium	0.0624	0.0020	mg/L	0.0625		99.9	85-115			

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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 BDK2040 - EPA 200.2										
LCS (BDK2040-BS2)										
Prepared: 11/21/2024 8:52, Analyzed: 11/22/2024 17:58										
Boron	0.12	0.10	mg/L	0.125		98.9	85-115			
Calcium	6.62	0.50	mg/L	6.25		106	85-115			
Iron	6.58	0.100	mg/L	6.25		105	85-115			
Sodium	6.08	0.26	mg/L	6.25		97.3	85-115			
Matrix Spike (BDK2040-MS1)	**Source: 4111774-02**									
Prepared: 11/21/2024 8:52, Analyzed: 11/21/2024 18:03										
Antimony	0.062	0.005	mg/L	0.0625	ND	99.0	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	0.004	89.7	80-120			
Mercury	0.0023	0.0005	mg/L	0.00250	0.0003	81.5	80-120			
Arsenic	0.0795	0.0010	mg/L	0.0625	0.0298	79.6	80-120			M2
Barium	0.304	0.004	mg/L	0.0625	0.261	68.8	80-120			M2
Beryllium	0.0514	0.0020	mg/L	0.0625	ND	82.3	80-120			
Cadmium	0.0574	0.0010	mg/L	0.0625	ND	91.8	80-120			
Chromium	0.0518	0.0020	mg/L	0.0625	ND	82.9	80-120			
Cobalt	0.051	0.004	mg/L	0.0625	ND	81.8	80-120			
Copper	0.049	0.003	mg/L	0.0625	ND	78.4	80-120			M2
Lead	0.056	0.002	mg/L	0.0625	ND	88.9	80-120			
Lithium	0.06	0.02	mg/L	0.0625	0.005	81.7	80-120			
Selenium	0.057	0.003	mg/L	0.0625	ND	91.1	80-120			
Thallium	0.0555	0.0020	mg/L	0.0625	ND	88.7	80-120			
Matrix Spike (BDK2040-MS2)	**Source: 4111774-02**									
Prepared: 11/21/2024 8:52, Analyzed: 11/22/2024 18:33										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	188	50.0	mg/L	6.25	215	NR	80-120			D2, M2
Iron	19.7	10.0	mg/L	6.25	13.7	97.2	80-120			D2
Sodium	59.9	26.0	mg/L	6.25	53.5	102	80-120			D2
Matrix Spike Dup (BDK2040-MSD1)	**Source: 4111774-02**									
Prepared: 11/21/2024 8:52, Analyzed: 11/21/2024 18:17										
Molybdenum	0.07	0.01	mg/L	0.0625	0.004	105	80-120	14.7	20	
Mercury	0.0025	0.0005	mg/L	0.00250	0.0003	88.3	80-120	7.19	20	
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120	7.61	20	
Arsenic	0.0934	0.0010	mg/L	0.0625	0.0298	102	80-120	16.1	20	
Barium	0.323	0.004	mg/L	0.0625	0.261	98.5	80-120	5.91	20	
Beryllium	0.0563	0.0020	mg/L	0.0625	ND	90.1	80-120	9.00	20	
Cadmium	0.0624	0.0010	mg/L	0.0625	ND	99.9	80-120	8.38	20	
Chromium	0.0612	0.0020	mg/L	0.0625	ND	97.9	80-120	16.5	20	
Cobalt	0.060	0.004	mg/L	0.0625	ND	96.7	80-120	16.8	20	
Copper	0.058	0.003	mg/L	0.0625	ND	92.7	80-120	16.7	20	
Lead	0.060	0.002	mg/L	0.0625	ND	96.2	80-120	7.87	20	
Lithium	0.06	0.02	mg/L	0.0625	0.005	89.9	80-120	8.71	20	
Selenium	0.058	0.003	mg/L	0.0625	ND	92.9	80-120	1.94	20	
Thallium	0.0601	0.0020	mg/L	0.0625	ND	96.1	80-120	8.00	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2040 - EPA 200.2										
Matrix Spike Dup (BDK2040-MSD2)	**Source: 4111774-02**									
Prepared: 11/21/2024 8:52, Analyzed: 11/22/2024 18:36										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	188	50.0	mg/L	6.25	215	NR	80-120	0.373	20	D2, M2
Iron	19.8	10.0	mg/L	6.25	13.7	97.3	80-120	0.0354	20	D2
Sodium	59.3	26.0	mg/L	6.25	53.5	93.3	80-120	0.968	20	D2
Post Spike (BDK2040-PS1)	**Source: 4111774-02**									
Prepared: 11/21/2024 8:52, Analyzed: 11/21/2024 18:20										
Mercury	0.0026	0.0005	mg/L	0.00250	0.0003	92.4	75-125			
Antimony	0.068	0.005	mg/L	0.0625	ND	109	75-125			
Molybdenum	0.07	0.01	mg/L	0.0625	0.004	108	75-125			
Arsenic	0.0957	0.0010	mg/L	0.0625	0.0298	106	75-125			
Barium	0.334	0.004	mg/L	0.0625	0.261	117	75-125			
Beryllium	0.0571	0.0020	mg/L	0.0625	ND	91.4	75-125			
Cadmium	0.0637	0.0010	mg/L	0.0625	ND	102	75-125			
Chromium	0.0628	0.0020	mg/L	0.0625	ND	100	75-125			
Cobalt	0.062	0.004	mg/L	0.0625	ND	99.3	75-125			
Copper	0.060	0.003	mg/L	0.0625	ND	95.5	75-125			
Lead	0.062	0.002	mg/L	0.0625	ND	99.9	75-115			
Lithium	0.06	0.02	mg/L	0.0625	0.005	92.3	75-125			
Selenium	0.060	0.003	mg/L	0.0625	ND	95.3	75-125			
Thallium	0.0621	0.0020	mg/L	0.0625	ND	99.4	75-125			
Post Spike (BDK2040-PS2)	**Source: 4111774-02**									
Prepared: 11/21/2024 8:52, Analyzed: 11/22/2024 18:40										
Boron	ND	10.0	mg/L	0.125	ND		75-125			D2, M2, U
Calcium	200	50.0	mg/L	6.25	215	NR	75-125			D2, M2
Iron	20.9	10.0	mg/L	6.25	13.7	116	75-125			D2
Sodium	63.2	26.0	mg/L	6.25	53.5	156	75-125			D2, M1

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2574 - EPA 200.2										
Blank (BDK2574-BLK1)										
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 20:04										
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
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDK2574-BLK2)										
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 16:14										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
LCS (BDK2574-BS1)										
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 20:06										
Antimony	0.072	0.005	mg/L	0.0625		115	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Mercury	0.0026	0.0005	mg/L	0.00250		102	85-115			
Arsenic	0.0683	0.0010	mg/L	0.0625		109	85-115			
Barium	0.066	0.004	mg/L	0.0625		106	85-115			
Beryllium	0.0628	0.0020	mg/L	0.0625		100	85-115			
Cadmium	0.0656	0.0010	mg/L	0.0625		105	85-115			
Chromium	0.0658	0.0020	mg/L	0.0625		105	85-115			
Cobalt	0.066	0.004	mg/L	0.0625		105	85-115			
Copper	0.066	0.003	mg/L	0.0625		105	85-115			
Lead	0.064	0.002	mg/L	0.0625		103	85-115			
Lithium	0.06	0.02	mg/L	0.0625		98.7	85-115			
Selenium	0.067	0.003	mg/L	0.0625		107	85-115			
Thallium	0.0645	0.0020	mg/L	0.0625		103	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2574 - EPA 200.2										
LCS (BDK2574-BS2)										
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 16:17										
Boron	0.12	0.10	mg/L	0.125		99.8	85-115			
Calcium	6.40	0.50	mg/L	6.25		102	85-115			
Iron	6.39	0.100	mg/L	6.25		102	85-115			
Sodium	5.95	0.26	mg/L	6.25		95.2	85-115			
Matrix Spike (BDK2574-MS1)	**Source: 4111774-06**									
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 21:09										
Mercury	0.0021	0.0005	mg/L	0.00250	ND	82.2	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	100	80-120			
Antimony	0.066	0.005	mg/L	0.0625	ND	105	80-120			
Arsenic	0.0670	0.0010	mg/L	0.0625	ND	107	80-120			
Barium	0.082	0.004	mg/L	0.0625	0.015	107	80-120			
Beryllium	0.0491	0.0020	mg/L	0.0625	ND	78.6	80-120			M2
Cadmium	0.0514	0.0010	mg/L	0.0625	ND	82.2	80-120			
Chromium	0.0735	0.0020	mg/L	0.0625	0.0007	116	80-120			
Cobalt	0.064	0.004	mg/L	0.0625	ND	103	80-120			
Copper	0.057	0.003	mg/L	0.0625	ND	91.2	80-120			
Lead	0.051	0.002	mg/L	0.0625	ND	82.0	80-120			
Lithium	0.11	0.02	mg/L	0.0625	0.05	94.1	80-120			
Selenium	0.066	0.003	mg/L	0.0625	ND	105	80-120			
Thallium	0.0535	0.0020	mg/L	0.0625	ND	85.5	80-120			
Matrix Spike (BDK2574-MS2)	**Source: 4111774-07**									
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 21:14										
Mercury	0.0025	0.0005	mg/L	0.00250	ND	101	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	0.12	NR	80-120			M2
Antimony	0.073	0.005	mg/L	0.0625	ND	116	80-120			
Arsenic	0.0694	0.0010	mg/L	0.0625	0.0010	110	80-120			
Barium	0.156	0.004	mg/L	0.0625	0.083	116	80-120			
Beryllium	0.0585	0.0020	mg/L	0.0625	ND	93.5	80-120			
Cadmium	0.0603	0.0010	mg/L	0.0625	0.0002	96.2	80-120			
Chromium	0.0711	0.0020	mg/L	0.0625	0.115	NR	80-120			M7
Cobalt	0.066	0.004	mg/L	0.0625	ND	105	80-120			
Copper	0.062	0.003	mg/L	0.0625	ND	99.5	80-120			
Lead	0.058	0.002	mg/L	0.0625	ND	92.5	80-120			
Lithium	0.09	0.02	mg/L	0.0625	0.03	103	80-120			
Selenium	0.061	0.003	mg/L	0.0625	ND	98.3	80-120			
Thallium	0.0582	0.0020	mg/L	0.0625	ND	93.2	80-120			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2574 - EPA 200.2										
Matrix Spike (BDK2574-MS3)	**Source: 4111774-06**									
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 17:17										
Boron	ND	1.00	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	410	5.00	mg/L	6.25	417	NR	80-120			D2, M3
Iron	6.12	1.00	mg/L	6.25	ND	97.9	80-120			D2
Sodium	412	2.60	mg/L	6.25	427	NR	80-120			D2, M3
Matrix Spike (BDK2574-MS4)	**Source: 4111774-07**									
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 17:24										
Boron	1.85	1.00	mg/L	0.125	1.73	96.5	80-120			D2
Calcium	37.0	5.00	mg/L	6.25	30.5	105	80-120			D2
Iron	6.93	1.00	mg/L	6.25	ND	111	80-120			D2
Sodium	195	2.60	mg/L	6.25	184	186	80-120			D2, M3
Matrix Spike Dup (BDK2574-MSD1)	**Source: 4111774-06**									
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 21:11										
Molybdenum	0.06	0.01	mg/L	0.0625	ND	103	80-120	3.12	20	
Antimony	0.067	0.005	mg/L	0.0625	ND	108	80-120	2.58	20	
Mercury	0.0022	0.0005	mg/L	0.00250	ND	87.2	80-120	5.95	20	
Arsenic	0.0683	0.0010	mg/L	0.0625	ND	109	80-120	1.93	20	
Barium	0.084	0.004	mg/L	0.0625	0.015	111	80-120	2.72	20	
Beryllium	0.0506	0.0020	mg/L	0.0625	ND	80.9	80-120	2.88	20	
Cadmium	0.0528	0.0010	mg/L	0.0625	ND	84.5	80-120	2.71	20	
Chromium	0.0757	0.0020	mg/L	0.0625	0.0007	120	80-120	3.03	20	M6
Cobalt	0.066	0.004	mg/L	0.0625	ND	106	80-120	2.71	20	
Copper	0.059	0.003	mg/L	0.0625	ND	93.7	80-120	2.78	20	
Lead	0.053	0.002	mg/L	0.0625	ND	85.0	80-120	3.59	20	
Lithium	0.11	0.02	mg/L	0.0625	0.05	99.6	80-120	3.14	20	
Selenium	0.068	0.003	mg/L	0.0625	ND	109	80-120	3.73	20	
Thallium	0.0554	0.0020	mg/L	0.0625	ND	88.7	80-120	3.64	20	
Matrix Spike Dup (BDK2574-MSD2)	**Source: 4111774-07**									
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 21:16										
Mercury	0.0025	0.0005	mg/L	0.00250	ND	101	80-120	0.158	20	
Molybdenum	0.07	0.01	mg/L	0.0625	0.12	NR	80-120	2.85	20	M2
Antimony	0.073	0.005	mg/L	0.0625	ND	116	80-120	0.0455	20	
Arsenic	0.0688	0.0010	mg/L	0.0625	0.0010	109	80-120	0.913	20	
Barium	0.156	0.004	mg/L	0.0625	0.083	116	80-120	0.115	20	
Beryllium	0.0583	0.0020	mg/L	0.0625	ND	93.3	80-120	0.238	20	
Cadmium	0.0604	0.0010	mg/L	0.0625	0.0002	96.4	80-120	0.194	20	
Chromium	0.0694	0.0020	mg/L	0.0625	0.115	NR	80-120	2.39	20	M7
Cobalt	0.065	0.004	mg/L	0.0625	ND	104	80-120	1.39	20	
Copper	0.061	0.003	mg/L	0.0625	ND	96.9	80-120	2.70	20	
Lead	0.058	0.002	mg/L	0.0625	ND	92.2	80-120	0.412	20	
Lithium	0.09	0.02	mg/L	0.0625	0.03	101	80-120	1.41	20	
Selenium	0.060	0.003	mg/L	0.0625	ND	96.7	80-120	1.64	20	
Thallium	0.0580	0.0020	mg/L	0.0625	ND	92.7	80-120	0.449	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2574 - EPA 200.2										
Matrix Spike Dup (BDK2574-MSD3)	**Source: 4111774-06**									
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 17:20										
Boron	ND	1.00	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	429	5.00	mg/L	6.25	417	187	80-120	4.53	20	D2, M3
Iron	6.46	1.00	mg/L	6.25	ND	103	80-120	5.41	20	D2
Sodium	429	2.60	mg/L	6.25	427	39.6	80-120	4.18	20	D2, M3
Matrix Spike Dup (BDK2574-MSD4)	**Source: 4111774-07**									
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 17:27										
Boron	1.81	1.00	mg/L	0.125	1.73	67.5	80-120	1.98	20	D2, M2
Calcium	36.8	5.00	mg/L	6.25	30.5	101	80-120	0.619	20	D2
Iron	6.80	1.00	mg/L	6.25	ND	109	80-120	1.98	20	D2
Sodium	193	2.60	mg/L	6.25	184	149	80-120	1.21	20	D2, M3
Post Spike (BDK2574-PS1)	**Source: 4111774-06**									
Prepared: 11/26/2024 8:06, Analyzed: 11/26/2024 21:18										
Antimony	57.2		ug/L	62.5	0.698	90.4	75-125			
Mercury	2.37		ug/L	2.50	0.0420	93.1	75-125			
Molybdenum	54.6		ug/L	62.5	1.12	85.6	75-125			
Arsenic	58.4		ug/L	62.5	0.334	92.9	75-125			
Barium	73.7		ug/L	62.5	14.8	94.3	75-125			
Beryllium	42.5		ug/L	62.5	0.0140	68.0	75-125			M2
Cadmium	44.9		ug/L	62.5	0.0185	71.8	75-125			M2
Chromium	62.9		ug/L	62.5	0.720	99.5	75-125			
Cobalt	55.2		ug/L	62.5	0.133	88.2	75-125			
Copper	49.3		ug/L	62.5	0.354	78.4	75-125			
Lead	45.5		ug/L	62.5	0.014	72.8	75-115			M2
Lithium	101		ug/L	62.5	49.4	83.3	75-125			
Selenium	58.4		ug/L	62.5	0.066	93.4	75-125			
Thallium	48.2		ug/L	62.5	0.0140	77.2	75-125			
Post Spike (BDK2574-PS2)	**Source: 4111774-06**									
Prepared: 11/26/2024 8:06, Analyzed: 12/3/2024 17:30										
Boron	333		ug/L	125	198	108	75-125			D2
Calcium	442000		ug/L	6250	417000	391	75-125			D2, M3
Iron	6850		ug/L	6250	37.4	109	75-125			D2
Sodium	440000		ug/L	6250	427000	217	75-125			D2, M3

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1168 - Default Prep Micro										
LCS (BDK1168-BS1)										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	4.99		Std. Units	5.00		99.8	98.8-101.2			
LCS (BDK1168-BS2)										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	5.03		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDK1168-DUP1) **Source: 4111776-04**										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	7.40	0.10	Std. Units		7.39			0.135	10	H3
Duplicate (BDK1168-DUP2) **Source: 4111774-04**										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	7.24	0.10	Std. Units		7.23			0.138	10	H3
Batch BDK1619 - Default Prep Micro										
Blank (BDK1619-BLK1)										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	ND	1	uS/cm @ 25.0 °C							U
LCS (BDK1619-BS1)										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	1580		uS/cm @ 25.0 °C	1410		112	80-120			
Duplicate (BDK1619-DUP1) **Source: 4111774-05**										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	6840	1	uS/cm @ 25.0 °C		6830			0.146	0.938	
Duplicate (BDK1619-DUP2) **Source: 4111775-01**										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	9150	1	uS/cm @ 25.0 °C		9130			0.219	0.938	
Batch BDK1694 - Default Prep Wet Chem										
Blank (BDK1694-BLK1)										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	ND	25	mg/L							U

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1694 - Default Prep Wet Chem										
LCS (BDK1694-BS1)										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDK1694-DUP1) **Source: 4101067-01**										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	110	50	mg/L		116			5.31	10	
Duplicate (BDK1694-DUP2) **Source: 4111776-02**										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	656	100	mg/L		648			1.23	10	
Batch BDK1898 - Default Prep Wet Chem										
Blank (BDK1898-BLK1)										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	ND	13	mg/L							U
LCS (BDK1898-BS1)										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	128	13	mg/L	125		102	90-110			
Duplicate (BDK1898-DUP1) **Source: 4111774-04**										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	48	13	mg/L		51			6.06	25	
Matrix Spike (BDK1898-MS1) **Source: 4111774-04**										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	298	13	mg/L	250	51	98.8	90-110			
Matrix Spike Dup (BDK1898-MSD1) **Source: 4111774-04**										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	302	13	mg/L	250	51	100	90-110	1.33	10	
Batch BDK1961 - Default Prep Micro										
Blank (BDK1961-BLK1)										
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:13										
Specific Conductance (Lab)	ND	1	uS/cm @ 25.0 °C							U

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1961 - Default Prep Micro										
LCS (BDK1961-BS1)										
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:13										
Specific Conductance (Lab)	1600		uS/cm @ 25.0 °C	1410		113	80-120			
Duplicate (BDK1961-DUP1)	**Source: 4111774-03**									
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:13										
Specific Conductance (Lab)	9	1	uS/cm @ 25.0 °C		9			0.111	0.938	
Duplicate (BDK1961-DUP2)	**Source: 4111774-02**									
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:13										
Specific Conductance (Lab)	2290	1	uS/cm @ 25.0 °C		2290			0.0875	0.938	
Batch BDK1978 - Default Prep Micro										
LCS (BDK1978-BS1)										
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:51										
pH (Lab)	4.98		Std. Units	5.00		99.6	98.8-101.2			
LCS (BDK1978-BS2)										
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:51										
pH (Lab)	5.02		Std. Units	5.00		100	98.8-101.2			
Duplicate (BDK1978-DUP1)	**Source: 4111774-03**									
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:51										
pH (Lab)	7.74	0.10	Std. Units		7.73			0.129	10	H3
Duplicate (BDK1978-DUP2)	**Source: 4111774-02**									
Prepared: 11/22/2024 13:53, Analyzed: 11/22/2024 15:51										
pH (Lab)	7.49	0.10	Std. Units		7.48			0.134	10	H3
Batch BDK2031 - Default Prep Wet Chem										
Blank (BDK2031-BLK1)										
Prepared: 11/20/2024 16:07, Analyzed: 11/20/2024 16:07										
Chemical Oxygen Demand	ND	13	mg/L							U

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2031 - Default Prep Wet Chem										
LCS (BDK2031-BS1)										
Prepared: 11/20/2024 16:07, Analyzed: 11/20/2024 16:07										
Chemical Oxygen Demand	126	13	mg/L	125		101	90-110			
Duplicate (BDK2031-DUP1) **Source: 4111774-02**										
Prepared: 11/20/2024 16:07, Analyzed: 11/20/2024 16:07										
Chemical Oxygen Demand	8	13	mg/L		9			11.8	25	J
Matrix Spike (BDK2031-MS1) **Source: 4111774-02**										
Prepared: 11/20/2024 16:07, Analyzed: 11/20/2024 16:07										
Chemical Oxygen Demand	257	13	mg/L	250	9	99.2	90-110			
Matrix Spike Dup (BDK2031-MSD1) **Source: 4111774-02**										
Prepared: 11/20/2024 16:07, Analyzed: 11/20/2024 16:07										
Chemical Oxygen Demand	260	13	mg/L	250	9	100	90-110	1.16	10	
Batch BDK2338 - Default Prep Wet Chem										
Blank (BDK2338-BLK1)										
Prepared: 11/21/2024 17:42, Analyzed: 11/21/2024 17:42										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDK2338-BS1)										
Prepared: 11/21/2024 17:42, Analyzed: 11/21/2024 17:42										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDK2338-DUP1) **Source: 4111774-02**										
Prepared: 11/21/2024 17:42, Analyzed: 11/21/2024 17:42										
Total Dissolved Solids	1260	100	mg/L		1250			0.957	10	H1
Batch BDK2379 - Default Prep Wet Chem										
Blank (BDK2379-BLK1)										
Prepared: 11/22/2024 8:08, Analyzed: 11/24/2024 10:34										
Total Organic Carbon	0.2	0.5	mg/L							J

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2379 - Default Prep Wet Chem										
LCS (BDK2379-BS1)										
Prepared: 11/22/2024 8:08, Analyzed: 11/24/2024 10:55										
Total Organic Carbon	5.0	0.5	mg/L	5.00		101	80-120			B
Duplicate (BDK2379-DUP1) **Source: 4110128-01**										
Prepared: 11/22/2024 8:08, Analyzed: 11/24/2024 16:16										
Total Organic Carbon	1.3	0.5	mg/L		1.3			2.99	25	B
Duplicate (BDK2379-DUP2) **Source: 4114069-01**										
Prepared: 11/22/2024 8:08, Analyzed: 11/24/2024 21:35										
Total Organic Carbon	2.4	0.5	mg/L		2.4			1.33	25	B
Matrix Spike (BDK2379-MS1) **Source: 4110128-02**										
Prepared: 11/22/2024 8:08, Analyzed: 11/24/2024 16:37										
Total Organic Carbon	3.4	0.5	mg/L	2.50	1.0	95.9	80-120			B
Matrix Spike (BDK2379-MS2) **Source: 4114069-02**										
Prepared: 11/22/2024 8:08, Analyzed: 11/24/2024 21:56										
Total Organic Carbon	6.8	0.5	mg/L	5.00	2.1	92.9	80-120			B
Batch BDK2456 - Default Prep Micro										
LCS (BDK2456-BS1)										
Prepared: 11/25/2024 12:57, Analyzed: 11/25/2024 13:50										
pH (Lab)	4.98		Std. Units	5.00		99.6	98.8-101.2			
LCS (BDK2456-BS2)										
Prepared: 11/25/2024 12:57, Analyzed: 11/25/2024 13:50										
pH (Lab)	5.04		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDK2456-DUP1) **Source: 4114937-04**										
Prepared: 11/25/2024 12:57, Analyzed: 11/25/2024 13:50										
pH (Lab)	7.73	0.10	Std. Units		7.72			0.129	10	H3
Duplicate (BDK2456-DUP2) **Source: 4111774-07**										
Prepared: 11/25/2024 12:57, Analyzed: 11/25/2024 13:50										
pH (Lab)	8.03	0.10	Std. Units		8.02			0.125	10	H3

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2457 - Default Prep Micro										
Blank (BDK2457-BLK1)										
Prepared: 11/25/2024 12:58, Analyzed: 11/25/2024 13:23										
Specific Conductance (Lab)	ND	1	uS/cm @ 25.0 °C							U
LCS (BDK2457-BS1)										
Prepared: 11/25/2024 12:58, Analyzed: 11/25/2024 13:23										
Specific Conductance (Lab)	1430		uS/cm @ 25.0 °C	1410		101	80-120			
Duplicate (BDK2457-DUP1) **Source: 4111774-07**										
Prepared: 11/25/2024 12:58, Analyzed: 11/25/2024 13:23										
Specific Conductance (Lab)	972	1	uS/cm @ 25.0 °C		970			0.206	0.938	
Batch BDK2500 - Default Prep Wet Chem										
Blank (BDK2500-BLK1)										
Prepared: 11/23/2024 14:31, Analyzed: 11/23/2024 14:31										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDK2500-BS1)										
Prepared: 11/23/2024 14:31, Analyzed: 11/23/2024 14:31										
Total Dissolved Solids	89		mg/L	90.0		98.9	80-120			
Duplicate (BDK2500-DUP1) **Source: 4111774-03RE1**										
Prepared: 11/23/2024 14:31, Analyzed: 11/23/2024 14:31										
Total Dissolved Solids	4530	250	mg/L		4500			0.664	10	
Batch BDK2552 - Default Prep Wet Chem										
Blank (BDK2552-BLK1)										
Prepared: 11/25/2024 13:00, Analyzed: 11/25/2024 13:00										
Chemical Oxygen Demand	ND	13	mg/L							U
LCS (BDK2552-BS1)										
Prepared: 11/25/2024 13:00, Analyzed: 11/25/2024 13:00										
Chemical Oxygen Demand	126	13	mg/L	125		101	90-110			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2552 - Default Prep Wet Chem										
Duplicate (BDK2552-DUP1) **Source: 4111774-06**										
Prepared: 11/25/2024 13:00, Analyzed: 11/25/2024 13:00										
Chemical Oxygen Demand	11	13	mg/L		10			9.52	25	J
Matrix Spike (BDK2552-MS1) **Source: 4111774-06**										
Prepared: 11/25/2024 13:00, Analyzed: 11/25/2024 13:00										
Chemical Oxygen Demand	261	13	mg/L	250	10	100	90-110			
Matrix Spike Dup (BDK2552-MSD1) **Source: 4111774-06**										
Prepared: 11/25/2024 13:00, Analyzed: 11/25/2024 13:00										
Chemical Oxygen Demand	258	13	mg/L	250	10	99.2	90-110	1.16	10	
Batch BDK2642 - Default Prep Wet Chem										
Blank (BDK2642-BLK1)										
Prepared: 11/25/2024 15:07, Analyzed: 11/25/2024 18:39										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BDK2642-BS1)										
Prepared: 11/25/2024 15:07, Analyzed: 11/25/2024 18:18										
Total Organic Carbon	5.0	0.5	mg/L	5.00		101	80-120			
Duplicate (BDK2642-DUP1) **Source: 4110178-01**										
Prepared: 11/25/2024 15:07, Analyzed: 11/25/2024 23:59										
Total Organic Carbon	2.0	0.5	mg/L		2.3			11.2	25	
Duplicate (BDK2642-DUP2) **Source: 4114903-01**										
Prepared: 11/25/2024 15:07, Analyzed: 11/26/2024 5:18										
Total Organic Carbon	0.3	0.5	mg/L		0.3			3.70	25	J
Matrix Spike (BDK2642-MS1) **Source: 4110178-02**										
Prepared: 11/25/2024 15:07, Analyzed: 11/26/2024 0:20										
Total Organic Carbon	3.6	0.5	mg/L	2.50	1.3	90.9	80-120			
Matrix Spike (BDK2642-MS2) **Source: 4114903-01**										
Prepared: 11/25/2024 15:07, Analyzed: 11/26/2024 5:40										
Total Organic Carbon	5.1	0.5	mg/L	5.00	0.3	95.4	80-120			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2960 - Default Prep Wet Chem										
Blank (BDK2960-BLK1)										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDK2960-BS1)										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	90		mg/L	90.0		100	80-120			
Duplicate (BDK2960-DUP1) **Source: 4111774-06**										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	4480	250	mg/L		4520			0.889	10	
Duplicate (BDK2960-DUP2) **Source: 4114716-01**										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	376	50	mg/L		366			2.70	10	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2446 - Default Prep IC										
Blank (BDK2446-BLK1)										
Prepared: 11/23/2024 9:13, Analyzed: 11/23/2024 9:13										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDK2446-BS1)										
Prepared: 11/23/2024 8:48, Analyzed: 11/23/2024 8:48										
Fluoride	4.6		mg/L	5.00		92.2	90-110			
Chloride	12.6		mg/L	12.5		101	90-110			
Sulfate	25		mg/L	25.0		98.1	90-110			
Matrix Spike (BDK2446-MS1) **Source: 4111774-02**										
Prepared: 11/23/2024 6:16, Analyzed: 11/23/2024 6:16										
Chloride	427		mg/L	250	175	101	75-125			
Fluoride	100		mg/L	100	0.2	99.8	75-125			
Sulfate	652		mg/L	500	157	99.0	75-125			
Matrix Spike (BDK2446-MS2) **Source: 4111776-04**										
Prepared: 11/23/2024 7:57, Analyzed: 11/23/2024 7:57										
Fluoride	5.0		mg/L	5.00	0.2	95.8	75-125			
Chloride	12.5		mg/L	12.5	112	NR	75-125			M2
Sulfate	25		mg/L	25.0	173	NR	75-125			M2
Matrix Spike Dup (BDK2446-MSD1) **Source: 4111774-02**										
Prepared: 11/23/2024 6:41, Analyzed: 11/23/2024 6:41										
Chloride	429		mg/L	250	175	102	75-125	0.454	15	
Fluoride	102		mg/L	100	0.2	102	75-125	2.51	15	
Sulfate	660		mg/L	500	157	101	75-125	1.32	15	
Matrix Spike Dup (BDK2446-MSD2) **Source: 4111776-04**										
Prepared: 11/23/2024 8:22, Analyzed: 11/23/2024 8:22										
Chloride	12.5		mg/L	12.5	112	NR	75-125	0.488	15	M2
Fluoride	4.9		mg/L	5.00	0.2	94.1	75-125	1.63	15	
Sulfate	25		mg/L	25.0	173	NR	75-125	0.669	15	M2

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2563 - Default Prep IC										
Blank (BDK2563-BLK1)										
Prepared: 11/26/2024 1:33, Analyzed: 11/26/2024 1:33										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDK2563-BS1)										
Prepared: 11/26/2024 1:08, Analyzed: 11/26/2024 1:08										
Chloride	12.7		mg/L	12.5		102	90-110			
Fluoride	5.2		mg/L	5.00		103	90-110			
Sulfate	25		mg/L	25.0		101	90-110			
Matrix Spike (BDK2563-MS1) **Source: 4111774-06**										
Prepared: 11/25/2024 23:27, Analyzed: 11/25/2024 23:27										
Fluoride	102		mg/L	100	0.4	102	75-125			D
Chloride	398		mg/L	250	0.0	159	75-125			D, M1
Sulfate	2890		mg/L	500	2440	89.1	75-125			D
Matrix Spike (BDK2563-MS2) **Source: 4120096-01**										
Prepared: 11/26/2024 0:17, Analyzed: 11/26/2024 0:17										
Chloride	34.5		mg/L	12.5	26.2	66.0	75-125			M2
Fluoride	6.7		mg/L	5.00	4.4	47.1	75-125			M2
Sulfate	28		mg/L	25.0	12	62.1	75-125			M2
Matrix Spike Dup (BDK2563-MSD1) **Source: 4111774-06**										
Prepared: 11/25/2024 23:52, Analyzed: 11/25/2024 23:52										
Fluoride	103		mg/L	100	0.4	102	75-125	0.312	15	D
Chloride	398		mg/L	250	0.0	159	75-125	0.181	15	D, M1
Sulfate	2870		mg/L	500	2440	86.1	75-125	0.514	15	D
Matrix Spike Dup (BDK2563-MSD2) **Source: 4120096-01**										
Prepared: 11/26/2024 0:43, Analyzed: 11/26/2024 0:43										
Fluoride	6.4		mg/L	5.00	4.4	40.2	75-125	5.27	15	M2
Chloride	33.5		mg/L	12.5	26.2	58.0	75-125	2.96	15	M2
Sulfate	24		mg/L	25.0	12	47.8	75-125	13.7	15	M2

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

Certified Analyses included in this Report

Analyte	Certifications
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 FL Drinking Water Mdv (E871159)
2540 C-2015 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 MS Drinking Water MADV
5310 C-2014 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 MS Drinking Water MADV
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
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 4111774

Shipped By: Client

Temperature: 4.80° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time N/A End Date ___ End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-04 A	11/14/24	1401	Plastic 500mL pH<2 w/HNO3	1	MW4	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4111774-04 B	11/14/24	1401	Plastic 1L	1	MW4	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4111774-04 C	11/14/24	1401	Plastic 500mL pH<2 w/H2SO4	1	MW4	g / c	COD TOC
			Preservation Check: pH : ✓				
4111774-04 D	11/14/24	1401	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW4	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4111774-04 E	11/14/24	1401	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Thermometer Serial Number
✓230753815
240381205
Temperature 4.8 °C

Preservation Check Performed by: ACL pH Paper Lot #: 728022

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/14/24 Time (24 hr) 1401

pH 7.29 Cond (umho) 5.66 mS Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 16.09 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/15/24	0950

☐ PACE- Check here if trip charge applied to associated COC

Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-04 F	11/14/24	1401	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-04 G	11/14/24	1401	Plastic 1L pH<2 w/HNO3 Sub	1	MW4	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4111774-04 H	11/14/24	1401	AG 250mL pH<2 w/H2SO4	1	MW4	g / c	TOC
			Preservation Check: pH : ✓				
4111774-05 A	11/12/24	1614	Plastic 500mL pH<2 w/HNO3	1	MW5	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4111774-05 B	11/12/24	1614	Plastic 1L	1	MW5	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: AM pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____ MW-5

pH 6.34 Cond (~~umho~~ mS) 5.74 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.67 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/15/24	0930

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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 Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-05 C	11/12/24	1614	Plastic 500mL pH<2 w/H2SO4	1	MW5	g / c	COD TOC
			Preservation Check: pH : ✓				
4111774-05 D	11/12/24	1614	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW5	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4111774-05 E	11/12/24	1614	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-05 F	11/12/24	1614	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-05 G	11/12/24	1614	Plastic 1L pH<2 w/HNO3 Sub	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4111774-05 H	11/12/24	1614	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: _____ pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/15/24	0935

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Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-08 F	11/14/24	1633	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-08 G	11/14/24	1633	Plastic 1L pH<2 w/HNO3 Sub	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4111774-08 H	11/14/24	1633	AG 250mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: ACL pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/15/24	0950

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

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

Samples Chlorinated? Yes ___ No X

Influent: Start Date ___ Start time N/A End Date ___ End Time ___ Temp (oC) ___

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

LAB USE ONLY
Workorder # 4111774

Sample ID#	*required Information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-02 A	11/13/24	0917	Plastic 500mL pH<2 w/HNO3	1	MW2	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : 1				
4111774-02 B	11/13/24	0917	Plastic 1L	1	MW2	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4111774-02 C	11/13/24	0917	Plastic 500mL pH<2 w/H2SO4	1	MW2	g / c	COD TOC
			Preservation Check: pH : 1				
4111774-02 D	11/13/24	0917	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW2	g / c	Radium 226 (sub)
			Preservation Check: pH : 1				
4111774-02 E	11/13/24	0917	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : 1				

Preservation Check Performed by: KLJ pH Paper Lot #: 228022

Field data collected by: Hunter Smith Date (mm/dd/yy) 11/13/24 Time (24 hr) 0917

pH 7.09 Cond (umho) 1.86 (mS) Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.79 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11-19-24	16:41

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Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Please Print Legibly

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: _____

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

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 Workorder # 4111774 Sample ID#	*required Information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-02 F	11/13/24	0917	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : +				
4111774-02 G	11/13/24	0917	Plastic 1L pH<2 w/HNO3 Sub	1	MW2	g / c	Radium Total (sub)
			Preservation Check: pH : +				
4111774-02 H	11/13/24	0917	AG 250mL pH<2 w/H2SO4	1	MW2	g / c	TOC
			Preservation Check: pH : +				
4111774-03 A	11/19/24	1328	Plastic 500mL pH<2 w/HNO3	1	MW3A	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : +				
4111774-03 B	11/19/24	1328	Plastic 1L	1	MW3A	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: KLS pH Paper Lot #: 228022

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11-19-24	16:41

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Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date N/A Start time ___ End Date ___ End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-03 C	11/19/24	1328	Plastic 500mL pH<2 w/H2SO4	1	MW3A	g / c	COD TOC
			Preservation Check: pH : /				
4111774-03 D	11/19/24	1328	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW3A	g / c	Radium 226 (sub)
			Preservation Check: pH : /				
4111774-03 E	11/19/24	1328	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH : /				
4111774-03 F	11/19/24	1328	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH : /				
4111774-03 G	11/19/24	1328	Plastic 1L pH<2 w/HNO3 Sub	1	MW3A	g / c	Radium Total (sub)
			Preservation Check: pH : /				
4111774-03 H	11/19/24	1328	AG 250mL pH<2 w/H2SO4	1	MW3A	g / c	TOC
			Preservation Check: pH : /				

4111450.

Thermometer Serial Number
230753815
240381205
Temperature 6.7 °C
On Ice

Preservation Check Performed by: KLJ pH Paper Lot #: 228022

Field data collected by: Hunter Hill Date (mm/dd/yy) 11/19/24 Time (24 hr) 1328

pH 7.17 Cond (umho) 2.18 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 17.64 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11-19-24	16:41

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Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-01 A	11/21/24	1625	Plastic 500mL pH<2 w/HNO3	1	MW1	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4111774-01 B	11/21/24	1625	Plastic 1L	1	MW1	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4111774-01 C	11/21/24	1625	Plastic 500mL pH<2 w/H2SO4	1	MW1	g / c	COD TOC
			Preservation Check: pH : ✓				
4111774-01 D	11/21/24	1625	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW1	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11-22-24	2:54p

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Printed: 11/2/2024 10:09:48AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY
Workorder #
4111774

Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-01 E	11/21/24	1625	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-01 F	11/21/24	1625	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-01 G	11/21/24	1625	Plastic 1L pH<2 w/HNO3 Sub	1	MW1	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4111774-01 H	11/21/24	1625	AG 250mL pH<2 w/H2SO4	1	MW1	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: MC pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/21/24 Time (24 hr) 1625

pH 8.07 Cond (umho) 0.415 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 14.6 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11-22-24	2:54p

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9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time ___ End Date N/A End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-06 A	11/21/24	1355	Plastic 500mL pH<2 w/HNO3	1	MW6	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4111774-06 B	11/21/24	1355	Plastic 1L	1	MW6	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
4111774-06 C	11/21/24	1355	Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
			Preservation Check: pH : ✓				
4111774-06 D	11/21/24	1355	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW6	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4111774-06 E	11/21/24	1355	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/21/24 Time (24 hr) 1355

pH 7.16 Cond (umho) 483 (mS) Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.20 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11-22-24	2:54p

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
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Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-06 F	11/21/24	1355	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : —				
4111774-06 G	11/21/24	1355	Plastic 1L pH<2 w/HNO3 Sub	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH : —				
4111774-06 H	11/21/24	1355	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH : —				
4111774-07 A	11/21/24	1520	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Beryllium Tot 6020 Cadmium Tot 6020 Calcium Tot 6010B Barium Tot 6020 Chromium Tot 6020 Cobalt Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Copper Tot 6020 Antimony Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Sodium Tot 6010B
			Preservation Check: pH : ✓				
4111774-07 B	11/21/24	1520	Plastic 1L	1	DUPLICATE	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11-22-24	2:54p

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Thermometer Serial Number
230753815
240381205
Temperature 6.5 °C

Please Print Legibly

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111774 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111774-07 C	11/21/24	1520	Plastic 500mL pH<2 w/H2SO4	1	DUPLICATE	g / c	COD TOC
			Preservation Check: pH : ✓				
4111774-07 D	11/21/24	1520	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4111774-07 E	11/21/24	1520	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-07 F	11/21/24	1520	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111774-07 G	11/21/24	1520	Plastic 1L pH<2 w/HNO3 Sub	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4111774-07 H	11/21/24	1520	AG 250mL pH<2 w/H2SO4	1	DUPLICATE	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter on 24 Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11-22-24	2:54p

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BIG RIVERS ELECTRIC CORP.
CHAIN OF CUSTODY RECORD

No. 4111774

Sampling Location: Green Landfill MW-6

Plant ID. Sample Number	Date Time	Central Lab ID. Sample Number	Station Description	Sampling Method	Sample Size	Type of Preservation	Analysis Requested
MK 11/22/24 4115081	11/21/24 1445						Matrix Spike Duplicate
MK 11/22/24 4115081	11/21/24 1430						Matrix Spike
							Thermometer Serial Number 230753815 240381205 Temperature 5.5°C

Samplers (Signatures)

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
	11-22-24	2:54p		11/22/24	1454
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time

White Copy - Central Lab
Yellow Copy - Plant (Final Copy)
Pink Copy - Plant Env. Contact
Gold Copy - Plant Lab

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 10, 2024

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

RE: Project: 4111774
Pace Project No.: 30735632

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on November 19, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4111774
Pace Project No.: 30735632

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4111774
Pace Project No.: 30735632

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30735632001	**4111774-04**	Water	11/14/24 14:01	11/19/24 10:15
30735632002	**4111774-05**	Water	11/14/24 16:14	11/19/24 10:15
30735632003	**4111774-08**	Water	11/14/24 16:33	11/19/24 10:15

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 4111774
Pace Project No.: 30735632

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30735632001	**4111774-04**	EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30735632002	**4111774-05**	EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30735632003	**4111774-08**	EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30735632

Sample: 4111774-04 **Lab ID: 30735632001** Collected: 11/14/24 14:01 Received: 11/19/24 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.293 ± 0.599 (1.06) C:NA T:97%**	pCi/L	12/08/24 16:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.76 ± 0.610 (0.863) C:70% T:86%**	pCi/L	12/05/24 14:59	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**2.05 ± 1.21 (1.92)**	pCi/L	12/09/24 13:24	7440-14-4	

Sample: 4111774-05 **Lab ID: 30735632002** Collected: 11/14/24 16:14 Received: 11/19/24 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.332 ± 0.598 (1.29) C:NA T:94%**	pCi/L	12/08/24 16:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.21 ± 0.535 (0.873) C:68% T:85%**	pCi/L	12/05/24 14:59	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.21 ± 1.13 (2.16)**	pCi/L	12/09/24 13:24	7440-14-4	

Sample: 4111774-08 **Lab ID: 30735632003** Collected: 11/14/24 16:33 Received: 11/19/24 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.262 ± 0.655 (1.36) C:NA T:103%**	pCi/L	12/08/24 16:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.663 ± 0.450 (0.866) C:68% T:92%**	pCi/L	12/05/24 14:59	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.663 ± 1.11 (2.23)**	pCi/L	12/09/24 13:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30735632

QC Batch: 710896
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30735632001, 30735632002, 30735632003

METHOD BLANK: 3462184 Matrix: Water
Associated Lab Samples: 30735632001, 30735632002, 30735632003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.258 ± 0.321 (0.679) C:73% T:91%	pCi/L	12/05/24 14:58	

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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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30735632

QC Batch: 710895
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30735632001, 30735632002, 30735632003

METHOD BLANK: 3462183 Matrix: Water
Associated Lab Samples: 30735632001, 30735632002, 30735632003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.142 ± 0.308 (0.568) C:NA T:93%	pCi/L	12/08/24 16:21	

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REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4111774
Pace Project No.: 30735632

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.

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4111774
Pace Project No.: 30735632

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30735632001	**4111774-04**	EPA 903.1	710895		
30735632002	**4111774-05**	EPA 903.1	710895		
30735632003	**4111774-08**	EPA 903.1	710895		
30735632001	**4111774-04**	EPA 904.0	710896		
30735632002	**4111774-05**	EPA 904.0	710896		
30735632003	**4111774-08**	EPA 904.0	710896		
30735632001	**4111774-04**	Total Radium Calculation	714146		
30735632002	**4111774-05**	Total Radium Calculation	714146		
30735632003	**4111774-08**	Total Radium Calculation	714146		

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4111774

WO# : 30735632

30735632

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:

Received by Pace Greensburg
Therm ID 17 Corr Factor +0.4
Receipt Temp 2.4
Corrected Temp 2.0
Correct Preservation (Y) / N

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4111774-04	**Water**	**Sampled: 11/14/2024 14:01**	**Specific Method**	001
Radium Total (sub)	Ground	05/13/2025 14:01	EPA 904.0 Radium Sum C	
Radium 228 (sub)		05/13/2025 14:01	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/13/2025 14:01	EPA 903.1	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER 0

Sample ID: 4111774-05	**Water**	**Sampled: 11/14/2024 16:14**	**Specific Method**	002
Radium 228 (sub)	Ground	05/13/2025 16:14	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/13/2025 16:14	EPA 903.1	
Radium Total (sub)		05/13/2025 16:14	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER 0

Sample ID: 4111774-08	**Water**	**Sampled: 11/14/2024 16:33**	**Specific Method**	003
Radium Total (sub)	Ground	05/13/2025 16:33	EPA 904.0 Radium Sum C	
Radium 228 (sub)		05/13/2025 16:33	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/13/2025 16:33	EPA 903.1	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER 0

Released By	Date	Received By	Date
[signature]	11-18-24	Evan Laughlin	11/19/24 1015
Released By	Date	Received By	Date

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Condition Upon Receipt-Greensburg

Effective Date: 01/04/2024

WO# : 30735632

PM: TAW Due Date: 12/12/24

CLIENT: PACE_44_MVKY

Client Name: Pace - Madisonville, KY Proj

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

Tracking Number: 1Z 067 Y57 13 1503 3147

Initial / Date

Examined By: EL 11/19/24

Labeled By: EL 11/19/24

Temped By: EL 11/19/24

Custody Seal on Cooler/Box Present: ☐ Yes ☒ No Seals Intact: ☐ Yes ☒ No

Thermometer Used: 17 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 2.4 °C Correction Factor: -0.4 °C Final Temp: 2.0 °C

Temp should be above freezing to 6°C

pH paper Lot# 10P1041 D.P.D. Residual Chlorine Lot # —

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
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 samples field filtered:			✓	13.
Organic Samples checked for dichlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation:	✓			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix				pH<2
All containers meet method preservation requirements:	✓			Initial when completed EL / Date/Time of Preservation
				Lot# of added Preservative
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:			✓	Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed EL / Date: 11/19/24 / Survey Meter SN: 2S014380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Qualtrax ID: 55680

Client _____

Site 4111774

Page _____ of _____

Profile/EZ Login Number 11851

Notes _____

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						3																						
002	↓						↓																						
003	↓						↓																						

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
B	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
A	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
A	250mL amber glass unpreserved	GN	General

Plastic/Misc.

GCUB	1 gallon cubitainer
12GN	1/2 gallon cubitainer
BP3U	250mL plastic unpreserved
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

WO#: 30735632

PM: TAW Due Date: 12/12/24

CLIENT: PACE_44_MVKY

EZI	5g Encore
VOAK	Kit Volatile Solid
I	Wipe/Swab
ZPLC	Siploc Bag

WT	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

Qualtrax ID: 55678

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 30, 2024

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

RE: Project: 4111774
Pace Project No.: 30739382

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4111774
Pace Project No.: 30739382

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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SAMPLE SUMMARY

Project: 4111774
Pace Project No.: 30739382

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30739382001	**4111774-01 MW-1**	Water	11/21/24 16:25	12/04/24 00:00
30739382002	**4111774-02 MW-2**	Water	11/13/24 09:17	12/04/24 00:00
30739382003	**4111774-03 MW-3A**	Water	11/19/24 13:28	12/04/24 00:00
30739382004	**4111774-06 MW-6**	Water	11/21/24 13:55	12/04/24 00:00
30739382005	**4111774-06 MW-6 MS**	Water	11/21/24 13:55	12/04/24 00:00
30739382006	**4111774-06 MW-6 MSD**	Water	11/21/24 13:55	12/04/24 00:00
30739382007	**4111774-07 Duplicate**	Water	11/21/24 15:20	12/04/24 00:00

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SAMPLE ANALYTE COUNT

Project: 4111774
Pace Project No.: 30739382

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30739382001	**4111774-01 MW-1**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739382002	**4111774-02 MW-2**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739382003	**4111774-03 MW-3A**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739382004	**4111774-06 MW-6**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739382005	**4111774-06 MW-6 MS**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30739382006	**4111774-06 MW-6 MSD**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30739382007	**4111774-07 Duplicate**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30739382

Sample: 4111774-01 MW-1 **Lab ID: 30739382001** Collected: 11/21/24 16:25 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.176 ± 0.641 (1.18) C:NA T:91%**	pCi/L	12/18/24 14:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.56 ± 0.568 (0.854) C:70% T:89%**	pCi/L	12/18/24 11:39	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.74 ± 1.21 (2.03)**	pCi/L	12/19/24 14:39	7440-14-4	

Sample: 4111774-02 MW-2 **Lab ID: 30739382002** Collected: 11/13/24 09:17 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.239 ± 0.599 (1.09) C:NA T:94%**	pCi/L	12/18/24 14:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.05 ± 0.484 (0.829) C:77% T:83%**	pCi/L	12/18/24 11:39	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.29 ± 1.08 (1.92)**	pCi/L	12/19/24 14:39	7440-14-4	

Sample: 4111774-03 MW-3A **Lab ID: 30739382003** Collected: 11/19/24 13:28 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**1.20 ± 0.837 (1.21) C:NA T:91%**	pCi/L	12/18/24 14:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.50 ± 0.543 (0.798) C:76% T:82%**	pCi/L	12/18/24 11:39	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.70 ± 1.38 (2.01)**	pCi/L	12/19/24 14:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30739382

Sample: 4111774-06 MW-6 **Lab ID: 30739382004** Collected: 11/21/24 13:55 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.397 ± 0.399 (0.915) C:NA T:94%**	pCi/L	12/18/24 14:21	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.523 ± 0.361 (0.692) C:74% T:94%**	pCi/L	12/18/24 11:39	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.523 ± 0.760 (1.61)**	pCi/L	12/19/24 14:39	7440-14-4	

Sample: 4111774-06 MW-6 MS **Lab ID: 30739382005** Collected: 11/21/24 13:55 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**103.86 %REC ± NA (NA) C:NA T:NA**	pCi/L	12/18/24 14:21	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**106.32 %REC ± NA (NA) C:NA T:NA**	pCi/L	12/18/24 11:39	15262-20-1	

Sample: 4111774-06 MW-6 MSD **Lab ID: 30739382006** Collected: 11/21/24 13:55 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**96.46 %REC 7.38RPD ± NA (NA) C:NA T:NA**	pCi/L	12/18/24 14:21	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**91.56 %REC 14.91RPD ± NA (NA) C:NA T:NA**	pCi/L	12/18/24 11:40	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30739382

Sample: 4111774-07 Duplicate **Lab ID: 30739382007** Collected: 11/21/24 15:20 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.200 ± 0.680 (1.25) C:NA T:98%**	pCi/L	12/18/24 14:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.38 ± 0.494 (0.718) C:74% T:94%**	pCi/L	12/18/24 11:40	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.58 ± 1.17 (1.97)**	pCi/L	12/19/24 14:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30739382

QC Batch: 713714 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: 30739382001, 30739382002, 30739382003, 30739382004, 30739382005, 30739382006, 30739382007

METHOD BLANK: 3476264 Matrix: Water
Associated Lab Samples: 30739382001, 30739382002, 30739382003, 30739382004, 30739382005, 30739382006, 30739382007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.558 ± 0.325 (0.591) C:77% T:97%	pCi/L	12/18/24 11:38	

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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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4111774
Pace Project No.: 30739382

QC Batch: 713713 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: 30739382001, 30739382002, 30739382003, 30739382004, 30739382005, 30739382006, 30739382007

METHOD BLANK: 3476263 Matrix: Water
Associated Lab Samples: 30739382001, 30739382002, 30739382003, 30739382004, 30739382005, 30739382006, 30739382007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.572 ± 0.514 (0.781) C:NA T:96%	pCi/L	12/18/24 14:04	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4111774
Pace Project No.: 30739382

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.

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4111774
Pace Project No.: 30739382

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30739382001	**4111774-01 MW-1**	EPA 903.1	713713		
30739382002	**4111774-02 MW-2**	EPA 903.1	713713		
30739382003	**4111774-03 MW-3A**	EPA 903.1	713713		
30739382004	**4111774-06 MW-6**	EPA 903.1	713713		
30739382005	**4111774-06 MW-6 MS**	EPA 903.1	713713		
30739382006	**4111774-06 MW-6 MSD**	EPA 903.1	713713		
30739382007	**4111774-07 Duplicate**	EPA 903.1	713713		
30739382001	**4111774-01 MW-1**	EPA 904.0	713714		
30739382002	**4111774-02 MW-2**	EPA 904.0	713714		
30739382003	**4111774-03 MW-3A**	EPA 904.0	713714		
30739382004	**4111774-06 MW-6**	EPA 904.0	713714		
30739382005	**4111774-06 MW-6 MS**	EPA 904.0	713714		
30739382006	**4111774-06 MW-6 MSD**	EPA 904.0	713714		
30739382007	**4111774-07 Duplicate**	EPA 904.0	713714		
30739382001	**4111774-01 MW-1**	Total Radium Calculation	716641		
30739382002	**4111774-02 MW-2**	Total Radium Calculation	716641		
30739382003	**4111774-03 MW-3A**	Total Radium Calculation	716641		
30739382004	**4111774-06 MW-6**	Total Radium Calculation	716641		
30739382007	**4111774-07 Duplicate**	Total Radium Calculation	716641		

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WO# : 30739382

30739382

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4111774

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: 4111774-01	**Water**	**Sampled:11/21/2024 16:25**	**Specific Method**	MW1 001
Radium 228 (sub)	Ground	05/20/2025 16:25	EPA 904.0 Radium Sum C	
Radium Total (sub)		05/20/2025 16:25	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/20/2025 16:25	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4111774-02	**Water**	**Sampled:11/13/2024 09:17**	**Specific Method**	**Temp is 6.7** MW2 002
Radium 226 (sub)	Ground	05/12/2025 09:17	EPA 903.1	
Radium 228 (sub)		05/12/2025 09:17	EPA 904.0 Radium Sum C	
Radium Total (sub)		05/12/2025 09:17	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4111774-03	**Water**	**Sampled:11/19/2024 13:28**	**Specific Method**	**Temp was 6.7** MW3A 003
Radium 226 (sub)	Ground	05/18/2025 13:28	EPA 903.1	
Radium 228 (sub)		05/18/2025 13:28	EPA 904.0 Radium Sum C	
Radium Total (sub)		05/18/2025 13:28	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Received by Pace Greensburg
Therm ID 19 Corr Factor +/- 0.5
Receipt Temp 3.6
Corrected Temp 3.1
Correct Preservation Y/N

Released By	12-2-24 Date	Received By	12/4/24 Date
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4111774

WO# : 30739382

30739382

Analysis		Expires	Laboratory ID
Sample ID: 4111774-04	**Water**	**Sampled:11/14/2024 14:01**	**Specific Method**
Radium Total (sub)		05/13/2025 14:01	EPA 904.0 Radium Sum C
Radium 226 (sub)		05/13/2025 14:01	EPA 903.1
Radium 228 (sub)		05/13/2025 14:01	EPA 904.0 Radium Sum C

SAMPLE STATE OF ORIGIN _____ **RUSH MULTIPLIER** _____

Sample ID: 4111774-05	**Water**	**Sampled:11/14/2024 16:14**	**Specific Method**
Radium 226 (sub)		05/13/2025 16:14	EPA 903.1
Radium 228 (sub)		05/13/2025 16:14	EPA 904.0 Radium Sum C
Radium Total (sub)		05/13/2025 16:14	EPA 904.0 Radium Sum C

SAMPLE STATE OF ORIGIN _____ **RUSH MULTIPLIER** _____

Sample ID: 4111774-06	**Water**	**Sampled:11/21/2024 13:55**	**Specific Method**	MW6 MSD/MS 004
Radium 226 (sub)	Ground	05/20/2025 13:55	EPA 903.1	005
Radium 228 (sub)		05/20/2025 13:55	EPA 904.0 Radium Sum C	006
Radium Total (sub)		05/20/2025 13:55	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4111774-07	**Water**	**Sampled:11/21/2024 15:20**	**Specific Method**	Duplicate
Radium Total (sub)	Ground	05/20/2025 15:20	EPA 904.0 Radium Sum C	007
Radium 226 (sub)		05/20/2025 15:20	EPA 903.1	
Radium 228 (sub)		05/20/2025 15:20	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

MW6 is MS/MSD

Released By	Date	Received By	Date
	10-2-24		12/4/24
Released By	Date	Received By	Date

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Co...
Greensburg

Effective Date: 01/04/2024

WO# : 30739382

PM: TAW Due Date: 12/26/24
CLIENT: PACE_44_MVKY

Proj

Client Name: Pace Analytical Services, LLC Kentucky

Initial/Date

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

Tracking Number: 1Z 067 Y57 13 0497 2457

Examined By: JML 12/4/24
Labeled By: JML 12/5/24
Temped By: JML 12/4/24

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals Intact: ☐ Yes ☑ No

Thermometer Used: 19 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 3.6 °C Correction Factor: -0.5 °C Final Temp: 3.1 °C

Temp should be above freezing to 6°C

	Yes	No	NA	pH paper Lot# 10D3241 / D.P.D. Residual Chlorine Lot #
Comments:				1.
Chain of Custody Present	✓			2.
Chain of Custody Filled Out:	✓			
-Were client corrections present on COC		✓		3.
Chain of Custody Relinquished	✓			4.
Sampler Name & Signature on COC:		✓		5.
Sample Labels match COC: -Includes date/time/ID		✓		MS bottles times = 14:20 & times do not match MSD bottles times = 14:45 parent sample (13:55)
Matrix: WT	✓			6.
Samples Arrived within Hold Time:		✓		7.
Short Hold Time Analysis (<72hr remaining):		✓		8.
Rush Turn Around Time Requested:	✓			9.
Sufficient Volume:	✓			10.
Correct Containers Used:	✓			
-Pace Containers Used	✓			11.
Containers Intact:			✓	12.
Orthophosphate field filtered:			✓	13.
Hex Cr Aqueous samples field filtered:			✓	14:
Organic Samples checked for dichlorination			✓	15:
Filtered volume received for dissolved tests:	✓			16.
All containers checked for preservation: exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix		✓		5.0mL HNO3 added to 917 bottles except 4111774-03 E,G,F → 4111774-03 E,F & G bottles received 2.5mL HNO3
All containers meet method preservation requirements:				Initial when completed: JML Date/Time of Preservation: 12/5/24 11:24 Lot# of added Preservative: 302097009
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:	✓			Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed: JML Date: 12/4/24 Survey Meter SN: 25014380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Page 1 of 1

Qualtrax ID: 55680

Client

Site 41174

Page 1 of 1

Profile/EZ Login Number 11851

Notes

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						3																						
002	WT						3																						
003	WT						3																						
004	WT						3																						
005	WT						3																						
006	WT						3																						
007	WT						3																						

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
		G2U	500mL amber glass unpreserved
		/GKU	8oz wide jar unpreserved
		N	General

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
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit Volatile Solid
I	Wipe/Swab
ZPLC	Siploc Bag

WT	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

WO#: 30739382

PM: TAW Due Date: 12/26/24

CLIENT: PACE_44_MVKY

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-226
Analyst:	CLM
Date:	12/9/2024
Batch ID:	82690
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	3476263
MB concentration:	0.572
M/B Counting Uncertainty:	0.510
MB MDC:	0.781
MB Numerical Performance Indicator:	2.20
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS82690	**LCSD82690**
Count Date:	12/18/2024	
Spike I.D.:	24-046	
Spike Concentration (pCi/mL):	31.837	
Volume Used (mL):	0 10	
Aliquot Volume (L, g, F):	0.653	
Target Conc. (pCi/L, g, F):	4.872	
Uncertainty (Calculated):	0.229	
Result (pCi/L, g, F):	5.352	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.108	
Numerical Performance Indicator:	0.83	
Percent Recovery:	109.86%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	133%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	11/21/2024	
Sample I.D.	30739382004	
Sample MS I.D.	30739382005	
Sample MSD I.D.	30739382006	
Spike I.D.:	24-046	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	31.838	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.659	
MS Target Conc.(pCi/L, g, F):	9.661	
MSD Aliquot (L, g, F):	0.653	
MSD Target Conc. (pCi/L, g, F):	9.750	
MS Spike Uncertainty (calculated):	0.454	
MSD Spike Uncertainty (calculated):	0.458	
Sample Result:	-0.397	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.397	
Sample Matrix Spike Result:	9.636	
Metrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.401	
Sample Matrix Spike Duplicate Result:	9.008	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.331	
MS Numerical Performance Indicator:	0.479	
MSD Numerical Performance Indicator:	-0.462	
MS Percent Recovery:	103.86%	
MSD Percent Recovery:	96.46%	
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:	N/A	
MS Status vs Recovery:	Pass	
MSD Stetus vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Dupilcate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.	30739382004	
Sample MS I.D.	30739382005	
Sample MSD I.D.	30739382006	
Sample Matrix Spike Result:	9.636	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.401	
Sample Matrix Spike Duplicate Result:	9.008	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.331	
Duplicate Numerical Performance Indicator:	0.638	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	7.38%	
MS/ MSD Duplicate Status vs Numerical Indicator:	N/A	
MS/ MSD Duplicate Status vs RPD:	Pess	
% RPD Limit:	32%	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

CLM 12/18/24

REH 12/18/24

Arizona DHES requires qualification for any AZ DW samples reported where the QC does not meet the recommended limits of the Manual for the Certification of Labs Analyzing Drinking Waters, 5th Edition , section 7.7 of Chapter VI.

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	12/16/2024
Worklist:	82691
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	3476264
MB concentration:	0.558
M/B 2 Sigma CSU:	0.325
MB MDC:	0.591
MB Numerical Performance Indicator:	3.36
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS82691	LCSD82691
Count Date:	12/18/2024	
Spike I.D.:	23-043	
Decay Corrected Spike Concentration (pCi/mL):	34.206	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.825	
Target Conc. (pCi/L, g, F):	4.145	
Uncertainty (Calculated):	0.203	
Result (pCi/L, g, F):	5.059	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.125	
Numerical Performance Indicator:	1.57	
Percent Recovery:	122.06%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	11/21/2024	
Sample I.D.	30739382004	
Sample MS I.D.	30739382005	
Sample MSD I.D.	30739382006	
Spike I.D.:	23-043	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	34.511	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.805	
MS Target Conc.(pCi/L, g, F):	8.570	
MSD Aliquot (L, g, F):	0.807	
MSD Target Conc. (pCi/L, g, F):	8.555	
MS Spike Uncertainty (calculated):	0.420	
MSD Spike Uncertainty (calculated):	0.419	
Sample Result:	0.523	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.361	
Sample Matrix Spike Result:	9.634	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.934	
Sample Matrix Spike Duplicate Result:	8.356	
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.685	
MS Numerical Performance Indicator:	0.528	
MSD Numerical Performance Indicator:	-0.798	
MS Percent Recovery:	106.32%	
MSD Percent Recovery:	91.56%	
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:	Pass	
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.	30739382004
Sample MS I.D.	30739382005
Sample MSD I.D.	30739382006
Sample Matrix Spike Result:	9.634
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.934
Sample Matrix Spike Duplicate Result:	8.356
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.685
Duplicate Numerical Performance Indicator:	0.977
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	14.91%
MS/ MSD Duplicate Status vs Numerical Indicator:	Pass
MS/ MSD Duplicate Status vs RPD:	Pass
% RPD Limit:	36%

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.~~ MB activity < MDC, Pass

12/19/24

Su

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

Certificate of Analysis
4111775

Stacy Shelton
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson, KY 42419

Customer ID: 44-102032
Report Printed: 12/11/2024 15:52

Project Name:	Green Landfill Semiannual Well MW104	Workorder:	4111775

Dear Stacy Shelton

Enclosed are the analytical results for samples received by the laboratory 11/15/2024 09:50.

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 - 825 Industrial Road, Madisonville, KY 42431

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4111775-01	MW-104/	Groundwater	11/14/2024 16:40	11/15/2024 9:50	Client

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

ANALYTICAL RESULTS

Lab Sample ID: **4111775-01**
Description: **MW-104**

Sample Collection Date Time: 11/14/2024 16:40
Sample Received Date Time: 11/15/2024 09:50

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	11/18/2024 09:08	11/20/2024 17:01	MRWD
Arsenic	**0.0013**		mg/L	0.0010	0.0004	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Barium	**0.016**		mg/L	0.004	0.001	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Boron	**0.27**		mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:05	AIS
Cadmium	**0.0002**	J	mg/L	0.0010	0.0001	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Calcium	**517**	D1	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:00	AIS
Chromium	ND	U, V1	mg/L	0.0020	0.0006	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Cobalt	**0.005**		mg/L	0.004	0.004	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Iron	**0.649**		mg/L	0.100	0.050	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:05	AIS
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Lithium	**0.05**		mg/L	0.02	0.005	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	11/18/2024 09:08	11/22/2024 11:35	MRWD
Sodium	**803**	D1	mg/L	26.0	10.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:00	AIS
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/18/2024 09:08	11/20/2024 17:01	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**82**		mg/L	13	8	HACH 8000	11/19/2024 08:39	11/19/2024 16:29	ORK
Specific Conductance (Lab)	**9130**		uS/cm @ 25.0 °C	1	1	2510 B-2011	11/15/2024 11:39	11/15/2024 14:09	CMB
pH (Lab)	**7.27**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**6860**		mg/L	250	250	2540 C-2015	11/15/2024 20:12	11/15/2024 20:12	HAG
Total Organic Carbon	**0.8**		mg/L	0.5	0.2	5310 C-2014	11/22/2024 08:10	11/25/2024 05:24	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/11/2024 11:58	12/11/2024 12:01	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1780**	D	mg/L	10.0	7.2	SW846 9056	11/22/2024 23:56	11/22/2024 23:56	CLS3
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	11/22/2024 23:30	11/22/2024 23:30	CLS3
Sulfate	**2300**	D	mg/L	20	10	SW846 9056	11/22/2024 23:56	11/22/2024 23:56	CLS3

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Notes for work order 4111775

- 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

D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
E	Concentration exceeds calibration range
H3	Sample received and analyzed past holding time.
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.
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.

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

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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 BDK1656 - EPA 200.2										
Blank (BDK1656-BLK1)										
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 16:21										
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
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDK1656-BLK2)										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 18:19										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
LCS (BDK1656-BS1)										
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 16:25										
Mercury	0.0026	0.0005	mg/L	0.00250		102	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		107	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0639	0.0010	mg/L	0.0625		102	85-115			
Barium	0.065	0.004	mg/L	0.0625		103	85-115			
Beryllium	0.0603	0.0020	mg/L	0.0625		96.5	85-115			
Cadmium	0.0636	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0670	0.0020	mg/L	0.0625		107	85-115			
Cobalt	0.067	0.004	mg/L	0.0625		107	85-115			
Copper	0.067	0.003	mg/L	0.0625		107	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		96.9	85-115			
Selenium	0.058	0.003	mg/L	0.0625		93.4	85-115			
Thallium	0.0630	0.0020	mg/L	0.0625		101	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1656 - EPA 200.2										
LCS (BDK1656-BS2)										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 18:22										
Boron	0.13	0.10	mg/L	0.125		104	85-115			
Calcium	6.45	0.50	mg/L	6.25		103	85-115			
Iron	6.42	0.100	mg/L	6.25		103	85-115			
Sodium	6.36	0.26	mg/L	6.25		102	85-115			
Matrix Spike (BDK1656-MS1)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 17:05										
Antimony	0.066	0.005	mg/L	0.0625	ND	106	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	ND	106	80-120			
Mercury	0.0025	0.0005	mg/L	0.00250	0.0002	89.2	80-120			
Arsenic	0.0642	0.0010	mg/L	0.0625	ND	103	80-120			
Barium	0.085	0.004	mg/L	0.0625	0.024	97.3	80-120			
Beryllium	0.0507	0.0020	mg/L	0.0625	ND	81.1	80-120			
Cadmium	0.0562	0.0010	mg/L	0.0625	ND	90.0	80-120			
Chromium	0.0687	0.0020	mg/L	0.0625	0.0010	108	80-120			
Cobalt	0.064	0.004	mg/L	0.0625	ND	103	80-120			
Copper	0.061	0.003	mg/L	0.0625	ND	97.9	80-120			
Lead	0.058	0.002	mg/L	0.0625	ND	92.1	80-120			
Lithium	0.98	0.02	mg/L	0.0625	1.06	NR	80-120			M3, E
Selenium	0.052	0.003	mg/L	0.0625	ND	83.3	80-120			
Thallium	0.0575	0.0020	mg/L	0.0625	ND	91.9	80-120			
Matrix Spike (BDK1656-MS2)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:00										
Boron	1.02	1.00	mg/L	0.125	ND	818	80-120			D2, M1
Calcium	680	5.00	mg/L	6.25	676	55.4	80-120			D2, M3
Iron	6.66	1.00	mg/L	6.25	ND	107	80-120			D2
Sodium	264	2.60	mg/L	6.25	261	49.5	80-120			D2, M3
Matrix Spike Dup (BDK1656-MSD1)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 17:09										
Antimony	0.060	0.005	mg/L	0.0625	ND	96.2	80-120	9.24	20	
Molybdenum	0.07	0.01	mg/L	0.0625	ND	107	80-120	0.970	20	
Mercury	0.0022	0.0005	mg/L	0.00250	0.0002	79.9	80-120	9.87	20	M2
Arsenic	0.0640	0.0010	mg/L	0.0625	ND	102	80-120	0.326	20	
Barium	0.076	0.004	mg/L	0.0625	0.024	82.9	80-120	11.2	20	
Beryllium	0.0449	0.0020	mg/L	0.0625	ND	71.9	80-120	12.0	20	M2
Cadmium	0.0512	0.0010	mg/L	0.0625	ND	82.0	80-120	9.25	20	
Chromium	0.0689	0.0020	mg/L	0.0625	0.0010	109	80-120	0.262	20	
Cobalt	0.065	0.004	mg/L	0.0625	ND	103	80-120	0.172	20	
Copper	0.061	0.003	mg/L	0.0625	ND	98.4	80-120	0.437	20	
Lead	0.052	0.002	mg/L	0.0625	ND	83.0	80-120	10.4	20	
Lithium	0.91	0.02	mg/L	0.0625	1.06	NR	80-120	8.20	20	M3, E
Selenium	0.054	0.003	mg/L	0.0625	ND	87.0	80-120	4.33	20	
Thallium	0.0521	0.0020	mg/L	0.0625	ND	83.3	80-120	9.82	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1656 - EPA 200.2										
Matrix Spike Dup (BDK1656-MSD2)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:03										
Boron	1.01	1.00	mg/L	0.125	ND	806	80-120	1.51	20	D2, M1
Calcium	664	5.00	mg/L	6.25	676	NR	80-120	2.38	20	D2, M3
Iron	6.28	1.00	mg/L	6.25	ND	101	80-120	5.80	20	D2
Sodium	261	2.60	mg/L	6.25	261	NR	80-120	1.33	20	D2, M3
Post Spike (BDK1656-PS1)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/20/2024 17:12										
Antimony	0.066	0.005	mg/L	0.0625	ND	105	75-125			
Molybdenum	0.07	0.01	mg/L	0.0625	ND	106	75-125			
Mercury	0.0025	0.0005	mg/L	0.00250	0.0002	90.9	75-125			
Arsenic	0.0626	0.0010	mg/L	0.0625	ND	100	75-125			
Barium	0.082	0.004	mg/L	0.0625	0.024	93.1	75-125			
Beryllium	0.0485	0.0020	mg/L	0.0625	ND	77.6	75-125			
Cadmium	0.0557	0.0010	mg/L	0.0625	ND	89.1	75-125			
Chromium	0.0673	0.0020	mg/L	0.0625	0.0010	106	75-125			
Cobalt	0.063	0.004	mg/L	0.0625	ND	101	75-125			
Copper	0.059	0.003	mg/L	0.0625	ND	95.1	75-125			
Lead	0.057	0.002	mg/L	0.0625	ND	90.8	75-115			
Lithium	0.97	0.02	mg/L	0.0625	1.06	NR	75-125			M3, E
Selenium	0.051	0.003	mg/L	0.0625	ND	81.1	75-125			
Thallium	0.0569	0.0020	mg/L	0.0625	ND	91.1	75-125			
Post Spike (BDK1656-PS2)	**Source: 4111774-04**									
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:07										
Boron	ND	1.00	mg/L	0.125	ND		75-125			D2, M2, U
Calcium	654	5.00	mg/L	6.25	676	NR	75-125			D2, M3
Iron	6.19	1.00	mg/L	6.25	ND	99.0	75-125			D2
Sodium	257	2.60	mg/L	6.25	261	NR	75-125			D2, M3

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1168 - Default Prep Micro										
LCS (BDK1168-BS1)										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	4.99		Std. Units	5.00		99.8	98.8-101.2			
LCS (BDK1168-BS2)										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	5.03		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDK1168-DUP1) **Source: 4111776-04**										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	7.40	0.10	Std. Units		7.39			0.135	10	H3
Duplicate (BDK1168-DUP2) **Source: 4111774-04**										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	7.24	0.10	Std. Units		7.23			0.138	10	H3
Batch BDK1619 - Default Prep Micro										
Blank (BDK1619-BLK1)										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	ND	1	uS/cm @ 25.0 °C							U
LCS (BDK1619-BS1)										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	1580		uS/cm @ 25.0 °C	1410		112	80-120			
Duplicate (BDK1619-DUP1) **Source: 4111774-05**										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	6840	1	uS/cm @ 25.0 °C		6830			0.146	0.938	
Duplicate (BDK1619-DUP2) **Source: 4111775-01**										
Prepared: 11/15/2024 11:39, Analyzed: 11/15/2024 14:09										
Specific Conductance (Lab)	9150	1	uS/cm @ 25.0 °C		9130			0.219	0.938	
Batch BDK1694 - Default Prep Wet Chem										
Blank (BDK1694-BLK1)										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	ND	25	mg/L							U

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1694 - Default Prep Wet Chem										
LCS (BDK1694-BS1)										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDK1694-DUP1) **Source: 4101067-01**										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	110	50	mg/L		116			5.31	10	
Duplicate (BDK1694-DUP2) **Source: 4111776-02**										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	656	100	mg/L		648			1.23	10	
Batch BDK1898 - Default Prep Wet Chem										
Blank (BDK1898-BLK1)										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	ND	13	mg/L							U
LCS (BDK1898-BS1)										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	128	13	mg/L	125		102	90-110			
Duplicate (BDK1898-DUP1) **Source: 4111774-04**										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	48	13	mg/L		51			6.06	25	
Matrix Spike (BDK1898-MS1) **Source: 4111774-04**										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	298	13	mg/L	250	51	98.8	90-110			
Matrix Spike Dup (BDK1898-MSD1) **Source: 4111774-04**										
Prepared: 11/19/2024 8:39, Analyzed: 11/19/2024 16:29										
Chemical Oxygen Demand	302	13	mg/L	250	51	100	90-110	1.33	10	
Batch BDK2380 - Default Prep Wet Chem										
Blank (BDK2380-BLK1)										
Prepared: 11/22/2024 8:10, Analyzed: 11/24/2024 22:39										
Total Organic Carbon	ND	0.5	mg/L							U

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2380 - Default Prep Wet Chem										
LCS (BDK2380-BS1)										
Prepared: 11/22/2024 8:10, Analyzed: 11/24/2024 23:00										
Total Organic Carbon	5.0	0.5	mg/L	5.00		99.6	80-120			
Duplicate (BDK2380-DUP1) **Source: 4110988-01**										
Prepared: 11/22/2024 8:10, Analyzed: 11/25/2024 4:20										
Total Organic Carbon	4.8	0.5	mg/L		4.8			0.358	25	
Duplicate (BDK2380-DUP2) **Source: 4112748-01**										
Prepared: 11/22/2024 8:10, Analyzed: 11/25/2024 9:40										
Total Organic Carbon	2.3	0.5	mg/L		2.2			2.33	25	
Matrix Spike (BDK2380-MS1) **Source: 4110988-02**										
Prepared: 11/22/2024 8:10, Analyzed: 11/25/2024 4:42										
Total Organic Carbon	5.5	0.5	mg/L	2.50	3.1	95.3	80-120			
Matrix Spike (BDK2380-MS2) **Source: 4112748-02**										
Prepared: 11/22/2024 8:10, Analyzed: 11/25/2024 10:01										
Total Organic Carbon	6.4	0.5	mg/L	5.00	1.4	99.5	80-120			

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2446 - Default Prep IC										
Blank (BDK2446-BLK1)										
Prepared: 11/23/2024 9:13, Analyzed: 11/23/2024 9:13										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDK2446-BS1)										
Prepared: 11/23/2024 8:48, Analyzed: 11/23/2024 8:48										
Chloride	12.6		mg/L	12.5		101	90-110			
Fluoride	4.6		mg/L	5.00		92.2	90-110			
Sulfate	25		mg/L	25.0		98.1	90-110			
Matrix Spike (BDK2446-MS1) **Source: 4111774-02**										
Prepared: 11/23/2024 6:16, Analyzed: 11/23/2024 6:16										
Fluoride	100		mg/L	100	0.2	99.8	75-125			
Chloride	427		mg/L	250	175	101	75-125			
Sulfate	652		mg/L	500	157	99.0	75-125			
Matrix Spike (BDK2446-MS2) **Source: 4111776-04**										
Prepared: 11/23/2024 7:57, Analyzed: 11/23/2024 7:57										
Chloride	12.5		mg/L	12.5	112	NR	75-125			M2
Fluoride	5.0		mg/L	5.00	0.2	95.8	75-125			
Sulfate	25		mg/L	25.0	173	NR	75-125			M2
Matrix Spike Dup (BDK2446-MSD1) **Source: 4111774-02**										
Prepared: 11/23/2024 6:41, Analyzed: 11/23/2024 6:41										
Chloride	429		mg/L	250	175	102	75-125	0.454	15	
Fluoride	102		mg/L	100	0.2	102	75-125	2.51	15	
Sulfate	660		mg/L	500	157	101	75-125	1.32	15	
Matrix Spike Dup (BDK2446-MSD2) **Source: 4111776-04**										
Prepared: 11/23/2024 8:22, Analyzed: 11/23/2024 8:22										
Chloride	12.5		mg/L	12.5	112	NR	75-125	0.488	15	M2
Fluoride	4.9		mg/L	5.00	0.2	94.1	75-125	1.63	15	
Sulfate	25		mg/L	25.0	173	NR	75-125	0.669	15	M2

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

Certified Analyses included in this Report

Analyte	Certifications
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 FL Drinking Water Mdv (E871159)
2540 C-2015 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 MS Drinking Water MADV
5310 C-2014 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 MS Drinking Water MADV
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
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 4111775

Shipped By: Client

Temperature: 4.80° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

*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 # 4111775 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111775-01 A	11/14/24	1640	Plastic 500mL pH<2 w/HNO3	1	MW-104	g / c	Sodium Tot 6010B Antimony Tot 6020 Beryllium Tot 6020 Iron Tot 6010B Thallium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Barium Tot 6020 Copper Tot 6020 Arsenic Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Lead Tot 6020
			Preservation Check: pH : ✓				
4111775-01 B	11/14/24	1640	Plastic 1L	1	MW-104	g / c	Chloride 9056 Conductivity (Lab) Fluoride 9056 pH (Lab) Sulfate 9056 TDS
4111775-01 C	11/14/24	1640	Plastic 500mL pH<2 w/H2SO4	1	MW-104	g / c	COD TOC
			Preservation Check: pH : ✓				
4111775-01 D	11/14/24	1640	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW-104	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: AM pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/15/24	0950

☐ PACE- Check here if trip charge applied to associated COC

Printed: 11/2/2024 10:10:02AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111775 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111775-01 E	11/14/24	1640	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111775-01 F	11/14/24	1640	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4111775-01 G	11/14/24	1640	Plastic 1L pH<2 w/HNO3 Sub	1	MW-104	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4111775-01 H	11/14/24	1640	AG 250mL pH<2 w/H2SO4	1	MW-104	g / c	TOC
			Preservation Check: pH : ✓				

Thermometer Serial Number
✓230753815
240381205
Temperature 1.8 °C

Preservation Check Performed by: RLee pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/14/24 Time (24 hr) 1640

pH 7.24 Cond (umho) MS 8.32 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.52 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/15/24	0950

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 11/2/2024 10:10:02AM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 10, 2024

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

RE: Project: 4111775
Pace Project No.: 30735631

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on November 19, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4111775
Pace Project No.: 30735631

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4111775
Pace Project No.: 30735631

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30735631001	**4111775-01**	Water	11/14/24 16:40	11/19/24 10:15

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 4111775
Pace Project No.: 30735631

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30735631001	**4111775-01**	EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4111775
Pace Project No.: 30735631

Sample: 4111775-01 **Lab ID: 30735631001** Collected: 11/14/24 16:40 Received: 11/19/24 10:15 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, where the method requires preservation, in ground water. The samples were not preserved pH <2 within the required 5 days of collection (EPA 815-R-05-004).
• Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.236 ± 0.590 (1.07) C:NA T:100%**	pCi/L	12/08/24 16:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.981 ± 0.523 (0.946) C:70% T:87%**	pCi/L	12/05/24 14:59	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.22 ± 1.11 (2.02)**	pCi/L	12/09/24 13:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4111775
Pace Project No.: 30735631

QC Batch: 710896
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30735631001

METHOD BLANK: 3462184 Matrix: Water
Associated Lab Samples: 30735631001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.258 ± 0.321 (0.679) C:73% T:91%	pCi/L	12/05/24 14:58	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4111775
Pace Project No.: 30735631

QC Batch: 710895
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30735631001

METHOD BLANK: 3462183 Matrix: Water
Associated Lab Samples: 30735631001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.142 ± 0.308 (0.568) C:NA T:93%	pCi/L	12/08/24 16:21	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4111775
Pace Project No.: 30735631

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.

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4111775
Pace Project No.: 30735631

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30735631001	**4111775-01**	EPA 903.1	710895		
30735631001	**4111775-01**	EPA 904.0	710896		
30735631001	**4111775-01**	Total Radium Calculation	714146		

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4111775

WO# : 30735631

30735631

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 LABORA...

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: 4111775-01	**Water**	**Sampled:11/14/2024 16:40**	**Specific Method**	
Radium Total (sub)	Ground	05/13/2025 16:40	EPA 904.0 Radium Sum C	
Radium 228 (sub)		05/13/2025 16:40	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/13/2025 16:40	EPA 903.1	

SAMPLE STATE OF ORIGIN KY

RUSH MULTIPLIER C

Received by Pace Greensburg
Therm ID 17 Corr Factor +0.4
Receipt Temp 2.8
Corrected Temp 2.4
Correct Preservation Y / N

Released By	Date	Received By	Date
[signature]	11-18-24	[signature]	11/19/24 1015
Released By	Date	Received By	Date

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Condition Upon Receipt-Greensburg

Effective Date: 01/04/2024

WO# : 30735631

PM: TAW Due Date: 12/12/24

CLIENT: PACE_44_MVKY

Client Name: Pace - Madisonville, KY Projec

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

Tracking Number: 1Z 067 Y57 13 1503 3147

Initial / Date

Examined By: EZ 11/19/24

Labeled By: EZ 11/19/24

Temped By: EZ 11/19/24

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals Intact: ☐ Yes ☑ No

Thermometer Used: 17 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 2.8 °C Correction Factor: -0.4 °C Final Temp: 2.4 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D1041 D.P.D. Residual Chlorine Lot # —

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
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 samples field filtered:			✓	13.
Organic Samples checked for dichlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation:	✓			16. Added 2.5mL HNO3 to each of the 3 BP1Ns provided
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix				
All containers meet method preservation requirements:		✓		Initial when completed EZ Date/Time of Preservation 11/19/24 1510
				Lot# of added Preservative 30209709
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:			✓	Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed EZ Date: 11/19/24 Survey Meter SN: 2501438

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Qualtrax ID: 55680

DC#_Title: ENV-FRM-GBUR-0072 v04_Sample Container Count Offshore Projects
Effective Date: 04/18/2024

Client

Site 4111775

Page ____ of ____

Profile/EZ Login Number 11851

Notes

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						3																						

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
B	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
A	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
A	250mL amber glass unpreserved	GN	General

Plastic/Misc.

GCUB	1 gallon cubitainer
12G	
SP5	
BP1	
BP1	
BP3	
BP3	
BP3U	250mL plastic unpreserved
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
	Kit Volatile Solid
	Wipe/Swab
	Siploc Bag

	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

WO#: 30735631
PM: TAW Due Date: 12/12/24
CLIENT: PACE_44_MVKY

Qualtrax ID: 55678

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

Certificate of Analysis
4111777

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 12/03/2024 16:08

Project Name:	Green Landfill Arsenic Wells	Workorder:	4111777

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 11/22/2024 14:54.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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Rob Whittington, Project Manager

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
4111777-01	MW-105/	Groundwater	11/21/2024 10:45	11/22/2024 14:54	Client
4111777-02	MW-106S/	Groundwater	11/15/2024 10:56	11/22/2024 14:54	Client
4111777-03	MW-106D/	Groundwater	11/15/2024 09:46	11/22/2024 14:54	Client

LabNumber	Measurement	Value
4111777-01	Field Conductance	2.60
	Field pH	6.96
4111777-02	Field Conductance	0.87
	Field pH	7.55
4111777-03	Field Conductance	1.38
	Field pH	8.08

ANALYTICAL RESULTS

Lab Sample ID: **4111777-01**
Description: **MW-105**
Sample Collection Date Time: 11/21/2024 10:45
Sample Received Date Time: 11/22/2024 14:54

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Arsenic	**0.0071**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:37	MRWD

ANALYTICAL RESULTS

Lab Sample ID: **4111777-02**
Description: **MW-106S**
Sample Collection Date Time: 11/15/2024 10:56
Sample Received Date Time: 11/22/2024 14:54

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Arsenic	**0.0940**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:41	MRWD

ANALYTICAL RESULTS

Lab Sample ID: **4111777-03**
Description: **MW-106D**
Sample Collection Date Time: 11/15/2024 09:46
Sample Received Date Time: 11/22/2024 14:54

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Arsenic	**0.0017**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:45	MRWD

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Notes for work order 4111777

- 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

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).

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

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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 BDK2944 - EPA 200.2										
Blank (BDK2944-BLK1)										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 14:26										
Arsenic	ND	0.0010	mg/L							U
LCS (BDK2944-BS1)										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 14:30										
Arsenic	0.0627	0.0010	mg/L	0.0625		100	85-115			
Matrix Spike (BDK2944-MS1) **Source: 4111777-01**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:40										
Arsenic	0.0682	0.0010	mg/L	0.0625	0.0071	97.9	80-120			
Matrix Spike (BDK2944-MS2) **Source: 4114046-03**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:47										
Arsenic	0.0618	0.0010	mg/L	0.0625	0.0013	96.8	80-120			
Matrix Spike Dup (BDK2944-MSD1) **Source: 4111777-01**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:43										
Arsenic	0.0700	0.0010	mg/L	0.0625	0.0071	101	80-120	2.58	20	

Sample Acceptance Checklist for Work Order 4111777

Shipped By: Client

Temperature: 5.50° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Arsenic Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4111777 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111777-01 A	11/21/24	1045	Plastic 500mL pH<2 w/HNO3	1	MW-105	g / c	Arsenic Tot 6020
			Preservation Check: pH : ~				
4111777-02 A	11/15/24	1056	Plastic 500mL pH<2 w/HNO3	1	MW-106S	g / c	Arsenic Tot 6020
			Preservation Check: pH : ~				
4111777-03 A	11/15/24	0946	Plastic 500mL pH<2 w/HNO3	1	MW-106D	g / c	Arsenic Tot 6020
			Preservation Check: pH : ~				

Thermometer Serial Number
230753815
240381205
Temperature 5.5 °C

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell

	MW-105	MW-106S	MW-106D
Date (mm/dd/yy)	11/21/24	11/15/24	11/15/24
Time (24 hr)	1045	1056	0946
pH	6.96	7.55	8.08
Cond (umho)	2.60	0.87	1.38

Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) _____ or ~5 (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11-22-24	2:54p

☐ PACE- Check here if trip charge applied to associated COC

Printed: 11/2/2024 10:10:22AM

Appendix G – Green Former Surface Impoundment Groundwater Laboratory Analytical Reports

Pace Analytical Services, LLC
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Certificate of Analysis
4043420

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 04/30/2024 16:06

Project Name:	Green Surface Impoundment	Workorder:	4043420

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 04/17/2024 15:15.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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Brett Davis For Rob Whittington, Project Manager

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Madisonville, KY 42431
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SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
4043420-01	MW11/	Groundwater	04/15/2024 16:00	04/17/2024 15:15	Eric Brown
4043420-02	MW12/	Groundwater	04/15/2024 14:45	04/17/2024 15:15	Eric Brown
4043420-03	MW13/	Groundwater	04/15/2024 12:20	04/17/2024 15:15	Eric Brown
4043420-04	MW14/	Groundwater	04/15/2024 10:35	04/17/2024 15:15	Eric Brown
4043420-05	DUPLICATE/	Groundwater	04/15/2024 10:35	04/17/2024 15:15	Eric Brown
4043420-06	FIELD BLANK/	Water	04/15/2024 15:00	04/17/2024 15:15	Eric Brown

LabNumber	Measurement	Value
4043420-01	Field Conductance	3585
	Field pH	6.96
	Field Temp (C)	20.0
4043420-02	Field Conductance	1052
	Field pH	7.09
	Field Temp (C)	19.3
4043420-03	Field Conductance	1309
	Field pH	6.63
	Field Temp (C)	18.7
4043420-04	Field Conductance	1537
	Field pH	6.76
	Field Temp (C)	17.8

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ANALYTICAL RESULTS

Lab Sample ID: **4043420-01**
Description: **MW11**

Sample Collection Date Time: 04/15/2024 16:00
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.43**	M2	mg/L	0.10	0.10	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:23	AKB
Calcium	**78.9**	D1, M1, M2	mg/L	50.0	25.0	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:26	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.62**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**2200**		mg/L	50	50	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**864**	D, M2	mg/L	10.0	7.2	SW846 9056	04/27/2024 23:12	04/27/2024 23:12	JBP1
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	04/29/2024 17:15	04/29/2024 17:15	JBP1
Sulfate	**276**	D, M1	mg/L	20	10	SW846 9056	04/27/2024 23:12	04/27/2024 23:12	JBP1

ANALYTICAL RESULTS

Lab Sample ID: **4043420-02**
Description: **MW12**

Sample Collection Date Time: 04/15/2024 14:45
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.32**		mg/L	0.10	0.10	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:29	AKB
Calcium	**101**	D1	mg/L	50.0	25.0	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:42	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.60**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**646**		mg/L	50	50	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**13.4**		mg/L	0.5	0.4	SW846 9056	04/27/2024 23:37	04/27/2024 23:37	JBP1
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/27/2024 23:37	04/27/2024 23:37	JBP1
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	04/27/2024 23:37	04/27/2024 23:37	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043420-03**
Description: **MW13**

Sample Collection Date Time: 04/15/2024 12:20
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:45	AKB
Calcium	**113**	D1	mg/L	50.0	25.0	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:48	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.53**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**736**		mg/L	50	50	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**35.3**		mg/L	0.5	0.4	SW846 9056	04/28/2024 00:02	04/28/2024 00:02	JBP1
Fluoride	**1.0**		mg/L	0.2	0.2	SW846 9056	04/28/2024 00:02	04/28/2024 00:02	JBP1
Sulfate	**126**		mg/L	1	0.5	SW846 9056	04/28/2024 00:02	04/28/2024 00:02	JBP1

ANALYTICAL RESULTS

Lab Sample ID: **4043420-04**
Description: **MW14**

Sample Collection Date Time: 04/15/2024 10:35
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.14**		mg/L	0.10	0.10	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:52	AKB
Calcium	**195**	D1	mg/L	50.0	25.0	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:55	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.59**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**884**		mg/L	100	100	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**113**		mg/L	0.5	0.4	SW846 9056	04/28/2024 00:28	04/28/2024 00:28	JBP1
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/28/2024 00:28	04/28/2024 00:28	JBP1
Sulfate	**192**		mg/L	1	0.5	SW846 9056	04/28/2024 00:28	04/28/2024 00:28	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4043420-05**
Description: **DUPLICATE**

Sample Collection Date Time: 04/15/2024 10:35
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.15**		mg/L	0.10	0.10	SW846 6010 B	04/18/2024 09:18	04/25/2024 21:58	AKB
Calcium	**206**	D1	mg/L	50.0	25.0	SW846 6010 B	04/18/2024 09:18	04/25/2024 22:01	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.59**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	**1020**		mg/L	100	100	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**120**		mg/L	0.5	0.4	SW846 9056	04/29/2024 17:41	04/29/2024 17:41	JBP1
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/29/2024 17:41	04/29/2024 17:41	JBP1
Sulfate	**202**		mg/L	1	0.5	SW846 9056	04/29/2024 17:41	04/29/2024 17:41	JBP1

ANALYTICAL RESULTS

Lab Sample ID: **4043420-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 04/15/2024 15:00
Sample Received Date Time: 04/17/2024 15:15

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	04/18/2024 09:18	04/25/2024 22:04	AKB
Calcium	ND	U	mg/L	0.50	0.25	SW846 6010 B	04/18/2024 09:18	04/25/2024 22:04	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.62**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	04/17/2024 08:56	04/18/2024 14:17	AED
Total Dissolved Solids	ND	G1, U	mg/L	50	50	2540 C-2015	04/18/2024 17:09	04/18/2024 17:09	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	04/28/2024 02:10	04/28/2024 02:10	JBP1
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	04/28/2024 02:10	04/28/2024 02:10	JBP1
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	04/28/2024 02:10	04/28/2024 02:10	JBP1

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Notes for work order 4043420

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- 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

D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
G1	Residue yield was less than the method required 2.5mg.
G2	Residue yield was greater than the method required 200mg.
H3	Sample received and analyzed past holding time.
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.
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).
Y5	MS/MSD 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

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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 BDD2092 - EPA 200.2										
Blank (BDD2092-BLK1)										
Prepared: 4/18/2024 9:18, Analyzed: 4/25/2024 21:16										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
LCS (BDD2092-BS1)										
Prepared: 4/18/2024 9:18, Analyzed: 4/25/2024 21:20										
Boron	0.12	0.10	mg/L	0.125		98.7	85-115			
Calcium	6.42	0.50	mg/L	6.25		103	85-115			
Matrix Spike (BDD2092-MS1) **Source: 4043420-01**										
Prepared: 4/18/2024 9:18, Analyzed: 4/25/2024 22:20										
Boron	ND	1.00	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	83.5	5.00	mg/L	6.25	78.9	72.2	80-120			D2, M2
Matrix Spike Dup (BDD2092-MSD1) **Source: 4043420-01**										
Prepared: 4/18/2024 9:18, Analyzed: 4/25/2024 22:23										
Boron	ND	1.00	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	80.7	5.00	mg/L	6.25	78.9	28.8	80-120	3.30	20	D2, M2
Post Spike (BDD2092-PS1) **Source: 4043420-01**										
Prepared: 4/18/2024 9:18, Analyzed: 4/25/2024 22:27										
Boron	569		ug/L	125	430	111	75-125			D2
Calcium	90800		ug/L	6250	78900	190	75-125			D2, M1

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD1928 - Default Prep Micro										
LCS (BDD1928-BS1)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.07		Std. Units	5.00		101	98.8-101.2			
LCS (BDD1928-BS2)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.07		Std. Units	5.00		101	98.8-101.2			
LCS (BDD1928-BS3)										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	5.06		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDD1928-DUP1) **Source: 4043422-03**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.60	0.10	Std. Units		7.59			0.132	10	H3
Duplicate (BDD1928-DUP2) **Source: 4043422-06**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.27	0.10	Std. Units		7.26			0.138	10	H3
Duplicate (BDD1928-DUP3) **Source: 4043426-01**										
Prepared: 4/17/2024 8:56, Analyzed: 4/18/2024 14:17										
pH (Lab)	7.39	0.10	Std. Units		7.37			0.271	10	H3
Batch BDD2182 - Default Prep Wet Chem										
Blank (BDD2182-BLK1)										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDD2182-BS1)										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDD2182-DUP1) **Source: 4043420-01**										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	2190	50	mg/L		2200			0.182	10	

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD2182 - Default Prep Wet Chem										
Duplicate (BDD2182-DUP2) **Source: 4044960-01**										
Prepared: 4/18/2024 17:09, Analyzed: 4/18/2024 17:09										
Total Dissolved Solids	13000	100	mg/L		13000			0.0924	10	G2

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD3029 - Default Prep IC										
Blank (BDD3029-BLK1)										
Prepared: 4/28/2024 6:49, Analyzed: 4/28/2024 6:49										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
Blank (BDD3029-BLK2)										
Prepared: 4/28/2024 9:46, Analyzed: 4/28/2024 9:46										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDD3029-BS1)										
Prepared: 4/28/2024 6:24, Analyzed: 4/28/2024 6:24										
Chloride	13.4		mg/L	12.5		107	90-110			
Fluoride	4.9		mg/L	5.00		98.5	90-110			
Sulfate	27		mg/L	25.0		106	90-110			
LCS (BDD3029-BS2)										
Prepared: 4/28/2024 9:21, Analyzed: 4/28/2024 9:21										
Fluoride	5.3		mg/L	5.00		106	90-110			
Chloride	14.0		mg/L	12.5		112	90-110			L1
Sulfate	27		mg/L	25.0		109	90-110			
Matrix Spike (BDD3029-MS1) **Source: 4043420-01**										
Prepared: 4/28/2024 7:40, Analyzed: 4/28/2024 7:40										
Fluoride	126		mg/L	100	0.2	126	75-125			D
Chloride	989		mg/L	250	778	84.5	75-125			D
Sulfate	895		mg/L	500	249	129	75-125			D, M1
Matrix Spike (BDD3029-MS2) **Source: 4043422-01**										
Prepared: 4/28/2024 8:30, Analyzed: 4/28/2024 8:30										
Chloride	19.4		mg/L	12.5	5.6	110	75-125			
Fluoride	5.9		mg/L	5.00	0.6	107	75-125			
Sulfate	54		mg/L	25.0	26	112	75-125			

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDD3029 - Default Prep IC										
Matrix Spike Dup (BDD3029-MSD1) **Source: 4043420-01**										
Prepared: 4/28/2024 8:05, Analyzed: 4/28/2024 8:05										
Fluoride	109		mg/L	100	0.2	109	75-125	14.7	15	D
Chloride	960		mg/L	250	778	72.7	75-125	3.04	15	D, M2
Sulfate	787		mg/L	500	249	108	75-125	12.8	15	D
Matrix Spike Dup (BDD3029-MSD2) **Source: 4043422-01**										
Prepared: 4/28/2024 8:56, Analyzed: 4/28/2024 8:56										
Chloride	21.5		mg/L	12.5	5.6	128	75-125	10.5	15	M1
Fluoride	7.2		mg/L	5.00	0.6	131	75-125	18.9	15	M1, Y5
Sulfate	59		mg/L	25.0	26	132	75-125	8.98	15	M1

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2015 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 MS Drinking Water MADV
EPA 300.0 REV 2.1 in Water	
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
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 4043420

Shipped By: Client

Temperature: 1.40° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time ___ End Date N/A End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4043420 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043420-01 A	4/15/24	1600	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-01 B	4/15/24	1600	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-01 C	4/15/24	1600	Plastic 1L	1	MW11	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4043420-02 A	4/15/24	1445	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-02 B	4/15/24	1445	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-02 C	4/15/24	1445	Plastic 1L	1	MW12	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: Eric Brown Date (mm/dd/yy) 4/15/24 Time (24 hr) 1600/1445 MW-11/MW-12

pH 6.96/7.09 Cond (~~umho~~) mS 3.585/1.052 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 20.0/19.3 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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Printed: 4/10/2024 8:35:45AM

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Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: —
Quote# —

Please Print Legibly

Collected by (Signature): Eric Brown *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4043420 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043420-03 A	4/15/24	1220	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-03 B	4/15/24	1220	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-03 C	4/15/24	1220	Plastic 1L	1	MW13	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4043420-04 A	4/15/24	1035	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-04 B	4/15/24	1035	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-04 C	4/15/24	1035	Plastic 1L	1	MW14	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4043420-05 A	4/15/24	—	Plastic 500mL pH<2 w/HNO3	1 ✓	DUPLICATE	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ____				

Preservation Check Performed by: MK pH Paper Lot #: 228022

Field data collected by: Eric Brown Date (mm/dd/yy) 4/15/24 Time (24 hr) 1220/1035 MW-13/mw-14

pH 6.63/6.76 Cond (~~umho~~) mS 1.309/1.537 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.7/17.8 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/17/24	1515

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Printed: 4/10/2024 8:35:45AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 04/15/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

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Collected by (Signature): Eric Brown
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 # 4043420 Sample ID#	*required Information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4043420-05 B	4/15/24	—	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-05 C	4/15/24	—	Plastic 1L	1	DUPLICATE	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4043420-06 A	4/15/24	1500	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-06 B	4/15/24	1500	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4043420-06 C	4/15/24	1500	Plastic 1L	1	FIELD BLANK	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056

NK 4/17/24

Thermometer Serial Number
✓ 181390287
181460057
Temp 1.4 °C

Preservation Check Performed by: MK

pH Paper Lot #: 228027

Field data collected by: Eric Brown Date (mm/dd/yy) 4/15/24 Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Eric Brown		4/17/24	1515

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Printed: 4/10/2024 8:35:45AM

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Certificate of Analysis
4111776

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 11/27/2024 15:12

Project Name:	Green Surface Impoundment	Workorder:	4111776

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 11/15/2024 09:50.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4111776-01	MW11/	Groundwater	11/12/2024 14:56	11/15/2024 9:50	Hunter Mizell
4111776-02	MW12/	Groundwater	11/12/2024 12:18	11/15/2024 9:50	Hunter Mizell
4111776-03	MW13/	Groundwater	11/12/2024 11:19	11/15/2024 9:50	Hunter Mizell
4111776-04	MW14/	Groundwater	11/12/2024 09:42	11/15/2024 9:50	Hunter Mizell
4111776-05	DUPLICATE/	Groundwater	11/12/2024 15:10	11/15/2024 9:50	Hunter Mizell
4111776-06	FIELD BLANK/	Water	11/12/2024 12:30	11/15/2024 9:50	Hunter Mizell

LabNumber	Measurement	Value
4111776-01	Field Conductance	3760
	Field pH	6.51
	Field Temp (C)	16.98
4111776-02	Field Conductance	949
	Field pH	6.57
	Field Temp (C)	16.71
4111776-03	Field Conductance	1300
	Field pH	6.31
	Field Temp (C)	16.24
4111776-04	Field Conductance	1540
	Field pH	6.33
	Field Temp (C)	16.85

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ANALYTICAL RESULTS

Lab Sample ID: **4111776-01**
Description: **MW11**

Sample Collection Date Time: 11/12/2024 14:56
Sample Received Date Time: 11/15/2024 09:50

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.39**		mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:08	AIS
Calcium	**113**	D1	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:16	AIS

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.49**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**2220**		mg/L	250	250	2540 C-2015	11/15/2024 20:12	11/15/2024 20:12	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**851**	D	mg/L	10.0	7.2	SW846 9056	11/23/2024 00:46	11/23/2024 00:46	CLS3
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	11/23/2024 00:21	11/23/2024 00:21	CLS3
Sulfate	**318**	D	mg/L	20	10	SW846 9056	11/23/2024 00:46	11/23/2024 00:46	CLS3

ANALYTICAL RESULTS

Lab Sample ID: **4111776-02**
Description: **MW12**

Sample Collection Date Time: 11/12/2024 12:18
Sample Received Date Time: 11/15/2024 09:50

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.31**		mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:11	AIS
Calcium	**93.0**	D1	mg/L	5.00	2.50	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:19	AIS

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.50**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**648**		mg/L	100	100	2540 C-2015	11/15/2024 20:12	11/15/2024 20:12	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**11.1**		mg/L	0.5	0.4	SW846 9056	11/23/2024 01:12	11/23/2024 01:12	CLS3
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	11/23/2024 01:12	11/23/2024 01:12	CLS3
Sulfate	**0.6**	J	mg/L	1	0.5	SW846 9056	11/23/2024 01:12	11/23/2024 01:12	CLS3

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Madisonville, KY 42431
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ANALYTICAL RESULTS

Lab Sample ID: **4111776-03**
Description: **MW13**

Sample Collection Date Time: 11/12/2024 11:19
Sample Received Date Time: 11/15/2024 09:50

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:15	AIS
Calcium	**115**	D1	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:28	AIS

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.15**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**748**		mg/L	100	100	2540 C-2015	11/15/2024 20:36	11/15/2024 20:36	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**36.2**		mg/L	0.5	0.4	SW846 9056	11/23/2024 02:53	11/23/2024 02:53	CLS3
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	11/23/2024 02:53	11/23/2024 02:53	CLS3
Sulfate	**120**		mg/L	1	0.5	SW846 9056	11/23/2024 02:53	11/23/2024 02:53	CLS3

ANALYTICAL RESULTS

Lab Sample ID: **4111776-04**
Description: **MW14**

Sample Collection Date Time: 11/12/2024 09:42
Sample Received Date Time: 11/15/2024 09:50

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.16**		mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:18	AIS
Calcium	**177**	D1	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:35	AIS

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.39**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**1040**		mg/L	100	100	2540 C-2015	11/15/2024 20:36	11/15/2024 20:36	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**125**	M2	mg/L	0.5	0.4	SW846 9056	11/23/2024 03:44	11/23/2024 03:44	CLS3
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	11/23/2024 03:44	11/23/2024 03:44	CLS3
Sulfate	**192**	M2	mg/L	1	0.5	SW846 9056	11/23/2024 03:44	11/23/2024 03:44	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4111776-05**
Description: **DUPLICATE**

Sample Collection Date Time: 11/12/2024 15:10
Sample Received Date Time: 11/15/2024 09:50

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.39**		mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:27	AIS
Calcium	**113**	D1	mg/L	50.0	25.0	SW846 6010 B	11/18/2024 09:08	11/22/2024 19:51	AIS

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.60**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	**1980**		mg/L	250	250	2540 C-2015	11/15/2024 20:36	11/15/2024 20:36	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**847**	D	mg/L	10.0	7.2	SW846 9056	11/23/2024 05:00	11/23/2024 05:00	CLS3
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	11/23/2024 04:34	11/23/2024 04:34	CLS3
Sulfate	**312**	D	mg/L	20	10	SW846 9056	11/23/2024 05:00	11/23/2024 05:00	CLS3

ANALYTICAL RESULTS

Lab Sample ID: **4111776-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 11/12/2024 12:30
Sample Received Date Time: 11/15/2024 09:50

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	11/18/2024 09:08	11/25/2024 19:39	AIS
Calcium	ND	U	mg/L	0.50	0.25	SW846 6010 B	11/18/2024 09:08	11/26/2024 13:01	AIS

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**5.40**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	11/15/2024 13:00	11/15/2024 15:28	CMB
Total Dissolved Solids	ND	G1, U	mg/L	50	50	2540 C-2015	11/15/2024 20:36	11/15/2024 20:36	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	11/23/2024 05:25	11/23/2024 05:25	CLS3
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	11/23/2024 05:25	11/23/2024 05:25	CLS3
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	11/23/2024 05:25	11/23/2024 05:25	CLS3

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Notes for work order 4111776

- 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

D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
G1	Residue yield was less than the method required 2.5mg.
H3	Sample received and analyzed past holding time.
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.
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).

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

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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 BDK1656 - EPA 200.2										
Blank (BDK1656-BLK2)										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 18:19										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
LCS (BDK1656-BS2)										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 18:22										
Boron	0.13	0.10	mg/L	0.125		104	85-115			
Calcium	6.45	0.50	mg/L	6.25		103	85-115			
Matrix Spike (BDK1656-MS2) **Source: 4111774-04**										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:00										
Boron	1.02	1.00	mg/L	0.125	ND	818	80-120			D2, M1
Calcium	680	5.00	mg/L	6.25	676	55.4	80-120			D2, M3
Matrix Spike Dup (BDK1656-MSD2) **Source: 4111774-04**										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:03										
Boron	1.01	1.00	mg/L	0.125	ND	806	80-120	1.51	20	D2, M1
Calcium	664	5.00	mg/L	6.25	676	NR	80-120	2.38	20	D2, M3
Post Spike (BDK1656-PS2) **Source: 4111774-04**										
Prepared: 11/18/2024 9:08, Analyzed: 11/22/2024 20:07										
Boron	ND	1.00	mg/L	0.125	ND		75-125			D2, M2, U
Calcium	654	5.00	mg/L	6.25	676	NR	75-125			D2, M3

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1168 - Default Prep Micro										
LCS (BDK1168-BS1)										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	4.99		Std. Units	5.00		99.8	98.8-101.2			
LCS (BDK1168-BS2)										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	5.03		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDK1168-DUP1) **Source: 4111776-04**										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	7.40	0.10	Std. Units		7.39			0.135	10	H3
Duplicate (BDK1168-DUP2) **Source: 4111774-04**										
Prepared: 11/15/2024 13:00, Analyzed: 11/15/2024 15:28										
pH (Lab)	7.24	0.10	Std. Units		7.23			0.138	10	H3
Batch BDK1694 - Default Prep Wet Chem										
Blank (BDK1694-BLK1)										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDK1694-BS1)										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDK1694-DUP1) **Source: 4101067-01**										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	110	50	mg/L		116			5.31	10	
Duplicate (BDK1694-DUP2) **Source: 4111776-02**										
Prepared: 11/15/2024 20:12, Analyzed: 11/15/2024 20:12										
Total Dissolved Solids	656	100	mg/L		648			1.23	10	
Batch BDK1695 - Default Prep Wet Chem										
Blank (BDK1695-BLK1)										
Prepared: 11/15/2024 20:36, Analyzed: 11/15/2024 20:36										
Total Dissolved Solids	ND	25	mg/L							U

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK1695 - Default Prep Wet Chem										
LCS (BDK1695-BS1)										
Prepared: 11/15/2024 20:36, Analyzed: 11/15/2024 20:36										
Total Dissolved Solids	88		mg/L	90.0		97.8	80-120			
Duplicate (BDK1695-DUP1) **Source: 4111776-03**										
Prepared: 11/15/2024 20:36, Analyzed: 11/15/2024 20:36										
Total Dissolved Solids	724	100	mg/L		748			3.26	10	

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2446 - Default Prep IC										
Blank (BDK2446-BLK1)										
Prepared: 11/23/2024 9:13, Analyzed: 11/23/2024 9:13										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDK2446-BS1)										
Prepared: 11/23/2024 8:48, Analyzed: 11/23/2024 8:48										
Fluoride	4.6		mg/L	5.00		92.2	90-110			
Chloride	12.6		mg/L	12.5		101	90-110			
Sulfate	25		mg/L	25.0		98.1	90-110			
Matrix Spike (BDK2446-MS1) **Source: 4111774-02**										
Prepared: 11/23/2024 6:16, Analyzed: 11/23/2024 6:16										
Fluoride	100		mg/L	100	0.2	99.8	75-125			
Chloride	427		mg/L	250	175	101	75-125			
Sulfate	652		mg/L	500	157	99.0	75-125			
Matrix Spike (BDK2446-MS2) **Source: 4111776-04**										
Prepared: 11/23/2024 7:57, Analyzed: 11/23/2024 7:57										
Fluoride	5.0		mg/L	5.00	0.2	95.8	75-125			
Chloride	12.5		mg/L	12.5	112	NR	75-125			M2
Sulfate	25		mg/L	25.0	173	NR	75-125			M2
Matrix Spike Dup (BDK2446-MSD1) **Source: 4111774-02**										
Prepared: 11/23/2024 6:41, Analyzed: 11/23/2024 6:41										
Chloride	429		mg/L	250	175	102	75-125	0.454	15	
Fluoride	102		mg/L	100	0.2	102	75-125	2.51	15	
Sulfate	660		mg/L	500	157	101	75-125	1.32	15	
Matrix Spike Dup (BDK2446-MSD2) **Source: 4111776-04**										
Prepared: 11/23/2024 8:22, Analyzed: 11/23/2024 8:22										
Fluoride	4.9		mg/L	5.00	0.2	94.1	75-125	1.63	15	
Chloride	12.5		mg/L	12.5	112	NR	75-125	0.488	15	M2
Sulfate	25		mg/L	25.0	173	NR	75-125	0.669	15	M2

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2015 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 MS Drinking Water MADV
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 4111776

Shipped By: Client

Temperature: 4.80° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time N/A End Date ___ End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4111776 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111776-01 A	11/12/24	1456	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-01 B	11/12/24	1456	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-01 C	11/12/24	1456	Plastic 1L	1	MW11	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4111776-02 A	11/12/24	1218	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-02 B	11/12/24	1218	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-02 C	11/12/24	1218	Plastic 1L	1	MW12	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056

Preservation Check Performed by: ADC pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/12/24 Time (24 hr) MW11: 1456 | MW12: 1218

	MW11	MW12
pH	6.51	6.57
Cond (umho) MS	2.76	0.949
Temp (oC)	16.96	16.71

or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/15/24	0950

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Printed: 11/2/2024 10:10:12AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

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

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time N/A End Date ___ End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4111776 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111776-03 A	11/12/24	1119	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-03 B	11/12/24	1119	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-03 C	11/12/24	1119	Plastic 1L	1	MW13	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4111776-04 A	11/12/24	0942	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-04 B	11/12/24	0942	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-04 C	11/12/24	0942	Plastic 1L	1	MW14	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4111776-05 A	11/12/24	1510	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ___				

Thermometer Serial Number
✓230753815
240381205
Temperature 4.8 °C

Preservation Check Performed by: AM pH Paper Lot #: 228022

MW-13

Field data collected by: Hunter Nicell Date (mm/dd/yy) 11/12/24 Time (24 hr) 1119

pH 6.31 Cond (umho) 1.30 MS Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 16.24 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/15/24	0950

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Printed: 11/2/2024 10:10:12AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/11/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date ___ Start time N/A End Date ___ End Time ___ Temp (oC) ___

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

LAB USE ONLY Workorder # 4111776 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4111776-05 B	11/12/24	1510	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-05 C	11/12/24	1510	Plastic 1L	1	DUPLICATE	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
4111776-06 A	11/12/24	1230	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-06 B	11/12/24	1230	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
4111776-06 C	11/12/24	1230	Plastic 1L	1	FIELD BLANK	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056

Preservation Check Performed by: AH pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/12/24 Time (24 hr) 0947 MW-14

pH 6.33 Cond (umho) 1.54 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 16.85 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

Flow: ___ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/15/24	0950

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 11/2/2024 10:10:12AM

Appendix H – Green Landfill Groundwater Data Validation

Memorandum

Date: May 14, 2024

To: Christopher Hoglund

From: Omkar Parab

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Big Rivers Electric Company (BREC) - Sebree Station, Landfill Site,
Webster County, Kentucky
Project No. 170774

Groundwater samples were collected at the BREC Sebree Landfill Site in Webster County, Kentucky on April 16 and 17, 2024. The samples were analyzed by Pace Analytical Services of Madisonville, Kentucky (Pace Madisonville) or Pace Analytical of Greensburg, Pennsylvania (Pace Greensburg) for one or more of the following parameters:

Parameter	Analytical Method	Laboratory
Metals	SW846 6010 B SW846 6020 A	Pace - Madisonville
Specific Conductance	2510 B-2011	
Total Dissolved Solids (TDS)	2540 C-2015	
Total Organic Carbon (TOC)	5310 C-2014	
Chemical Oxygen Demand (COD)	HACH Method 8000	
pH	SM 4500-H+B-2011	
Chloride, fluoride, and sulfate	SW846 9056	
Radium-226 Radium-228 *total calculated from radium-226 + radium-228 analyses	EPA 903.1 EPA 904.0 Total Radium by calculation	Pace - Greensburg

The following data sets were reviewed in support of this investigation:

Sample Delivery Group (SDG)	Date(s) Sampled	Matrix
4043422	04/16/2024 and 04/17/2024	Groundwater
4043426	04/17/2024	Groundwater
4043427	04/16/2024	Groundwater

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2020). The QA/QC review results are discussed below, and qualifiers added during this review are summarized in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates were present on the COCs for all samples.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – The pH for all the samples was analyzed outside the 24-hour holding time, and therefore, these results were qualified as estimated (J). All the other samples/analyses were completed within their recommended holding time.

4. Sample Preservation – All samples were received by Pace-Madisonville below the preservation temperature range of 4 degrees Celsius (°C) +/- 2°C. Upon arrival, the laboratory noted that the samples were received on ice and in good condition. No data qualifiers were necessary. The radium samples sent to Pace Greensburg did not require thermal preservation.

5. Field Blank – Field blanks assess the potential for cross-contamination during the sample activities and/or transport. For this review, the field blank was associated with samples collected on 04/17/2024, which included MW1, MW3A, MW6, and DUPLICATE. The following field blank detections were noted during this review:

    - Specific conductance: All the associated sample detections were greater than five times the blank detection. No qualifiers were added.
    - COD: Low-level detection in MW6 was qualified as non-detect (U). No other samples required qualification.
    - TOC: Low-level detections in MW3A and DUPLICATE were qualified as non-detect (U). No other samples required qualification.
    - Sulfate: All the associated sample detections were greater than five times the blank detection. No qualifiers were added.
    - Radium-226 and radium-228: Because of the uncertainty associated with radium results, the review criteria were slightly altered to account for this. The associated radium-226 or radium-228 detections were less than five times the field blank concentration plus/minus its uncertainty, and the respective result was qualified as estimated (J). Additionally, because this result was used in the calculation to report total radium, the total radium result for said samples was also qualified as estimated (J).

6. Method Blanks – Method blanks assess the potential for cross-contamination during the sample preparation and/or analyses. The following method blank detections were noted during this review:

    - Radium: Radium-226 and radium-228 were detected in all method blanks. Because of the uncertainty associated with radium results, the review criteria were slightly altered to account for this. For any associated radium-226 or radium-228 detection less than five times the corresponding method blank concentration plus its uncertainty, the respective result was qualified as estimated (J). Additionally, because this result was used in the calculation to report total radium, the total radium result for said sample was also

qualified as estimated (J).
Based on this, all samples (except the field blank) were qualified and estimated (J) for the radium fractions. Note, several samples were previously qualified estimated (J) for the field blank detections. Note, blanks are not typically qualified based on other blanks. Therefore, the field blank was excluded from this qualification.

7. Laboratory Control Samples (LCS) – The LCS contains a matrix similar to that of the sample that has been spiked with known concentrations of target analytes. The LCS is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS are compared against the known analyte concentrations in the spike to determine percent recovery (REC). The purpose of the LCS is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

   The LCS for chloride in QC batch BDD3029 exceeded its QC limit. A second LCS was included in this QC batch and was within limits; therefore, no qualifiers were added.

   All other LCS RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). They are also compared against the unspiked portion of the sample for REC of the spike. For one or more MS/MSDs, the lab did not calculate a REC, and no result was reported and accuracy and precision were assessed by review of LCS results. Only site-specific MS/MSD results were evaluated during this review. The following site-specific MS/MSD results were outside their respective control limits:

   - MS/MSD RECs performed on sample MW1 (Lab ID 4043422-01):
     - The MSD RECs for chloride, fluoride, and sulfate were above their control limits. Because all the noted analytes were detected in the parent spiked sample, they were qualified as estimated potential high bias (J+).
   - MS/MSD RECs performed on sample MW2 (Lab ID 4043422-02):
     - The MS/MSD RECs for chloride and sulfate were below the control limits. Because chloride and sulfate were detected in the parent spiked sample, they were qualified as estimated potential low bias (J-).
   - MS/MSD RECs performed on sample MW-104 (Lab ID 4043426-01):
     - The MS/MSD RECs for beryllium and lithium were below the control limits. Note, the post-spike sample was also performed on this same sample and also

yielded RECs below the control limits. Because beryllium was not detected in the parent spiked sample it was qualified as estimated at the reporting limit (UJ). Lithium was detected in the parent spiked sample; it was qualified as estimated potential low bias (J-).

- The MS/MSD RECs for fluoride were below the control limits. Because fluoride was detected in the parent spiked sample, it was qualified as estimated potential low bias (J-).
- The MS/MSD RECs for sulfate were above the control limits. Because sulfate was detected in the parent spiked sample, It was qualified as estimated potential high bias (J+). The MS and/or MSD RECs for chloride were reported as 'NR'. The lab spikes were less than ¼ the concentration of the parent sample, and the MS/MSD result was inconclusive.
- The MS and/or MSD RECs for calcium and sodium were reported as 'NR'. The lab spikes were less than ¼ the concentration of the parent sample, and the MS/MSD results were inconclusive.

9. Laboratory Duplicates – Laboratory duplicates were performed to evaluate analytical precision between samples when an MS/MSD may not be appropriate. Only project-specific laboratory duplicates were compared and used for qualification. All site-specific laboratory duplicates were within QC limits.

10. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

- Is the compound detected in both portions?
- If the sample concentrations are greater than 5 times the detection limit, then the maximum allowable RPD is 20 percent for water samples.
- If the sample concentrations are less than 5 times the detection limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the lower detection limit for water samples.

The following field duplicate pair was included in this review.

- MW3A // DUPLICATE: TDS did not meet the duplication criteria since it yielded an elevated RPD. As such, the parent/duplicate pair was qualified as estimated (J) for this analyte.
- General: The field duplicate pair exhibited variable differences in the radium results due to their associated uncertainty. As noted previously, all radium results were qualified

estimated (J) for one or more reasons. As such, no further qualifiers were added for these results based solely on the field duplicate review.

11. Detection and Quantitation Limits – Dilutions were required to account for high concentrations of target analytes and/or matrix interferences in one or more samples. RLs were adjusted accordingly, and no data qualifiers were added based on these dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. The data are valid for use, as qualified, in reporting the results of this groundwater monitoring event.

Attachments
Table 1 – Data Qualifier Table
Table 2 – Field Duplicate Comparison

Table 1
Data Qualifier Table
BREC Sebree Green Landfill - April 2024 Sampling Event
Webster County, Kentucky

Analytical Method	Analyte(s)	Sample Identification	Laboratory Number	Data Validation Qualifier	Reason(s) for Qualification
SM 4500-H+B-2011	pH	MW1	4043422-01	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Field/Method blank detection
SW846 9056	Chloride			J+	MSD REC > QC limit
	Fluoride				
	Sulfate				
SM 4500-H+B-2012	pH	MW2	4043422-02	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Method blank detection
SW846 9056	Chloride			J-	MS/MSD RECs < QC limits
	Sulfate				
SM 4500-H+B-2013	pH	MW3A	4043422-03	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Field/Method blank detection
5310 C-2014	TOC			JU	Field blank detection
2540 C-2015	TDS			J	Parent/ Duplicate failed RPD test
SM 4500-H+B-2014	pH	MW4	4043422-04	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Method blank detection
SM 4500-H+B-2015	pH	MW5	4043422-05	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Method blank detection
SM 4500-H+B-2016	pH	MW6	4043422-06	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Field/Method blank detection
HACH 8000	COD			JU	Field blank detection
SM 4500-H+B-2017	pH	DUPLICATE	4043422-07	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Field/Method blank detection
5310 C-2014	TOC			JU	Field blank detection
2540 C-2015	TDS			J	Parent/ Duplicate failed RPD test

Table 1
Data Qualifier Table
BREC Sebree Green Landfill - April 2024 Sampling Event
Webster County, Kentucky

Analytical Method	Analyte(s)	Sample Identification	Laboratory Number	Data Validation Qualifier	Reason(s) for Qualification
SM 4500-H+B-2015	pH	MW-104	4043422-05	J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium			J	Method blank detection
SW846-6020 A	Beryllium			UJ	MS/MSD RECs < QC limits Post spike REC < QC limit
	Lithium			J-	
SW846 9056	Fluoride			J-	MS/MSD RECs < QC limits
	Sulfate			J+	MS/MSD RECs > QC limits

Notes:

COD = Chemical oxygen demand
J = Qualified as estimated
J- = Qualified as estimated potential low bias
J+ = Qualified as estimated potential high bias
JU = Estimated trace concentration was qualified as non detect
MS = Matrix spike
MSD = Matrix spike duplicate
MW = Monitoring well
QC = Qualitiy control
REC = Percent recovery
RPD = Relative percent difference
TDS = Total dissolved solids
TOC = Total organic carbon
UJ = Qualified as estimated at the reporting limit

Table 2
Field Duplicate Comparison
BREC Sebree Green Landfill - April 2024 Sampling Event
Webster County, Kentucky

Sample ID:	MW3A	DUPLICATE	Units	Meets QC
Lab ID:	4043422-03	4043422-07		
Date Sampled:	4/17/2024	4/17/2024		
Barium	0.042	0.043	mg/L	Yes
Boron	0.35	0.35	mg/L	Yes
Cadmium	0.0001 J	0.0001 J	mg/L	Yes
Calcium	514	542	mg/L	Yes
Lithium	0.75	0.73	mg/L	Yes
Sodium	293	308	mg/L	Yes
Chemical Oxygen Demand	90	103	mg/L	Yes
Chloride	1980	1990	mg/L	Yes
Fluoride	0.5	0.5	mg/L	Yes
pH (Lab)	7.59 J	7.55 J	Std. Units	Yes
Radium 228 (sub)	0.41 J	1.34 J	pCi/L	See Text
Radium Total (sub)	1.00 J	1.73 J	pCi/L	See Text
Radium 226 (sub)	0.597 J	0.394 J	pCi/L	See Text
Specific Conductance (Lab)	7970	7970	umhos/cm	Yes
Sulfate	3200	2710	mg/L	Yes
Total Dissolved Solids	5080 J	6870 J	mg/L	No, (RPD 30%)
Total Organic Carbon	0.4 J	0.4 J	mg/L	Yes

Notes:

ID - Identification
J = Estimated value / qualified as Estimated
mg/L - milligram per liter
MW = Monitoring Well
pCi/L = picoCurie per liter
QC = Quality Control
RPD = Relative percent difference
std. unit = standard unit
umhos/cm = microsiemens per centimeter

Memorandum

Date: January 27, 2025

To: Christopher Hoglund

From: Omkar Parab

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Big Rivers Electric Company (BREC) - Sebree Station, Landfill Site,
Webster County, Kentucky
Project No. 170774

Groundwater samples were collected at the BREC Sebree Landfill Site in Webster County, Kentucky from November 12 through 21, 2024. The samples were analyzed by Pace Analytical Services of Madisonville, Kentucky (Pace Madisonville) or Pace Analytical of Greensburg, Pennsylvania (Pace Greensburg) for one or more of the following parameters:

Parameter	Analytical Method	Laboratory
Metals	SW846 6010 B SW846 6020 A	Pace - Madisonville
Specific Conductance	2510 B-2011	
Total Dissolved Solids (TDS)	2540 C-2015	
Total Organic Carbon (TOC)	5310 C-2014	
Chemical Oxygen Demand (COD)	HACH Method 8000	
pH	SM 4500-H+B-2011	
Chloride, Fluoride, and Sulfate	SW846 9056	
Radium-226 Radium-228 *total calculated from radium-226 + radium-228 analyses	EPA 903.1 EPA 904.0 Total Radium by calculation	Pace - Greensburg

The following data sets were reviewed in support of this investigation:

Sample Delivery Group (SDG)	Date(s) Sampled	Matrix
4111774	*11/12/2024 - 11/21/2024 *see Section 1	Groundwater
4111775	11/14/2024	Groundwater
4111777	11/15/2024 through 11/21/2024	Groundwater

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2020). The QA/QC review results are discussed below, and qualifiers added during this review are summarized in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates were present on the COCs for all samples. The sample collection date for MW5 was logged incorrectly as follows: The sample collection date noted on the COC for MW5 was 11/12/24 while it was incorrectly logged as 11/14/2024 in the lab report.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – The pH for all the samples was analyzed outside the 24-hour holding time, and therefore, these results were qualified as estimated (J). All the other samples/analyses were completed within their recommended holding time.

4. Sample Preservation – All samples were received by Pace-Madisonville within the preservation temperature range of 4 degrees Celsius (°C) ± 2°C. The radium samples sent to Pace Greensburg did not require thermal preservation.

   All radium samples (except MW3A: Lab ID 4111774-03) were noted as lacking appropriate preservation of a pH less than 2 (pH<2). Upon arrival, Pace Greenburg added 5.0 milliliter (ml) of nitric acid (HNO_3). However, because this preservation was added several days after sample collection, the affected sample/result pairs were all qualified as estimated (J).

5. Field Blank – Field blanks assess the potential for cross-contamination during the sample activities and/or transport. For this review, the field blank was associated with samples collected on 11/14/2024, which included MW4 and MW-104. The following field blank detections were noted during this review:

   - Calcium: All the associated sample detections were greater than five times the blank detection. No qualifiers were added.

   - Copper: All the associated sample detections were non-detect. No qualifiers were necessary.

   - Sodium: All the associated sample detections were greater than five times the blank detection. No qualifiers were added.

   - Specific conductance: All the associated sample detections were greater than five times the blank detection. No qualifiers were added.

   - TOC: The detection in associated sample MW-104 (Lab ID 4111775-01) was greater than its reporting limit (RL) but less than five times the blank detection and was qualified as estimated potential high bias (J+). The low-level detection (J-flagged) in MW4 was qualified as non-detect (U).

- Radium-226 and radium-228: Because of the uncertainty associated with radium results, the review criteria were slightly altered to account for this. The associated radium-226 or radium-228 detections were less than five times the field blank concentration plus/minus its uncertainty, and the respective result was qualified as estimated (J). Additionally, because this result was used in the calculation to report total radium, the total radium result for said samples was also qualified as estimated (J).

6. Method Blanks – Method blanks assess the potential for cross-contamination during the sample preparation and/or analyses. The following method blank detections were noted during this review:

   - TOC was detected in the laboratory blank in QC batch BDK2379. The detection in associated sample MW5 was greater than the RL but less than five times the blank detection and was qualified as estimated potential high bias (J+). Low-level detections in samples MW3A and MW4 were qualified as non-detect (U). No other samples required qualification.

   - Radium: Radium-226 and radium-228 were detected in all method blanks. Because of the uncertainty associated with radium results, the review criteria were slightly altered to account for this. For any associated radium-226 or radium-228 detection less than five times the corresponding method blank concentration plus its uncertainty, the respective result was qualified as estimated (J). Additionally, because this result was used in the calculation to report total radium, the total radium result for said sample was also qualified as estimated (J).

     Based on this, all samples (except the field blank) were qualified and estimated (J) for the radium fractions. Note, several samples were previously qualified estimated (J) for the field blank detections. Note, blanks are not typically qualified based on other blanks. Therefore, the field blank was excluded from this qualification.

7. Laboratory Control Sample/ Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS contains a matrix similar to that of the sample that has been spiked with known concentrations of target analytes. The LCS is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS are compared against the known analyte concentrations in the spike to determine REC. The purpose of the LCS is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference. A LCSD is a duplicate sample of the LCS. The difference between the LCS/LCSD RECs is calculated to evaluate precision and reported as the relative percent difference (RPD).

   With the following exception(s), all LCS/LCSD results were within their respective QC limits.

   - SDG 4111775:

- For QC batch 82483, The LCS/LCSD RPD for radium-226 exceeded its QC limit. The radium-226 detection in the associated sample MW-104 (Lab ID 4111775-01) was qualified as estimated (J). Additionally, because this result was used in the calculation to report total radium, the total radium result for said sample was also qualified as estimated (J).

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. For one or more MS/MSDs, the lab did not calculate a REC, and no result was reported and accuracy and precision were assessed by review of the associated LCS and/or LCSD results. Only site-specific MS/MSD results were evaluated during this review. In instances where a corresponding post-spike sample was reported, it was also reviewed when MS/MSD results were outside their respective QC limits. The following site-specific MS/MSD and/or post-spike results were outside their respective control limits:

- General MS/MSD and/or post-spike review: For several site-specific MS/MSDs and/or post-spikes, the spike amount was less than ¼ the respective concentration in the spiked parent sample. These were generally noted as "NR" by the laboratory to indicate this. No conclusions could be made regarding the accuracy of these results. All other associated QC results for these scenarios were reviewed, and were found to be within limits. No qualifiers were added based solely on the MS/MSD and/or post-spike results for these samples.

- MS/MSD RECs performed on sample MW4 (Lab ID 4111774-04):

  - The MSD RECs for mercury and beryllium were below their control limits. Because beryllium was not detected in the parent spiked sample, it was qualified as estimated at the reporting limit (UJ). Mercury was detected in the parent spiked sample, and it was qualified as estimated potential low bias (J-).

  - The MS/MSD RECs for boron were above their control limits. Boron was detected in the parent spiked sample, and it was qualified as estimated potential high bias (J+).

- MS/MSD RECs performed on sample MW2 (Lab ID 4111774-02):

  - The MS RECs for arsenic and copper were below their control limits. Arsenic was detected in the parent spiked sample, and it was qualified as estimated potential low bias (J-). Because copper was not detected in the spiked parent sample, it was qualified as estimated at the reporting limit (UJ).

- MS/MSD RECs performed on sample MW6 (Lab ID 4111774-06):
    - The MS REC and post-spike REC for beryllium were below the control limits. Because beryllium was not detected in the spiked parent sample, it was qualified as estimated at the reporting limit (UJ).
    - The post-spike RECs for cadmium and lead were below the control limits. Since the corresponding MS/MSD results were within control limits, no actions were necessary based on these post-spike results since they serve as a secondary QC component following the MS/MSD review.
    - The MSD REC for chromium was above the control limits. Because chromium was not detected in the parent spiked sample, no qualifier was added.
    - The MS and MSD RECs for chloride exceeded the control limits. Because chloride was not detected in the spiked parent sample, no qualifiers were added.
- MS/MSD RECs performed on sample DUPLICATE (Lab ID 4111774-07):
    - Although the spike amounts noted met the ¼ ratio, the MS/MSD RECs for molybdenum and chromium were reported as 'NR'. These RECs were calculated based on the information provided by the lab and were determined to be less than the noted control limits. Both analytes exhibited detections in the spiked parent sample and were qualified as estimated (J) based on professional judgment.

9. Laboratory Duplicates – Laboratory duplicates were performed to evaluate analytical precision between samples when an MS/MSD may not be appropriate. Only project-specific laboratory duplicates were compared and used for qualification. All site-specific laboratory duplicates were within QC limits.

10. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:
    - Is the compound detected in both portions?
    - If the sample concentrations are greater than 5 times the detection limit, then the maximum allowable RPD is 20 percent for water samples.

- If the sample concentrations are less than 5 times the detection limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the lower detection limit for water samples.

The following field duplicate pair was included in this review:

- MW1 // DUPLICATE: Chromium, iron, and molybdenum did not meet the duplication criteria since they yielded an elevated RPD. As such, the parent/duplicate pair was qualified as estimated (J) for noted analytes.

  General: The field duplicate pair exhibited variable differences in the radium results due to their associated uncertainty. As noted previously, all radium results were qualified estimated (J) for one or more reasons. As such, no further qualifiers were added for these results based solely on the field duplicate review.

11. Detection and Quantitation Limits – Dilutions were required to account for high concentrations of target analytes and/or matrix interferences in one or more samples. RLs were adjusted accordingly, and no data qualifiers were added based on these dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. The data are valid for use, as qualified, in reporting the results of this groundwater monitoring event.

Attachments
Table 1 – Data Qualifier Table
Table 2 – Field Duplicate Comparison

Table 1
Data Qualifier Table
BREC Sebree Green Landfill - November 2024 Sampling Event
Webster County, Kentucky

Analytical Method	Analyte(s)	Sample Identification	Laboratory Number	Data Validation Qualifier	Reason(s) for Qualification
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	MW-1	4111774-01	J	Inadequate preservation Method blank detection
SM 4500-H+B-2011	pH			J	Holding time exceedance
SW846-6020 A	Molybdenum			UJ	MS/MSD RECs < QC limits Parent/ Duplicate failed RPD test
SW846-6020 A	Chromium			UJ	MS/MSD RECs < QC limits Parent/ Duplicate failed RPD test
SW846 6010 B	Iron			J	Parent/ Duplicate failed RPD test
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	MW-2	4111774-02	J	Inadequate preservation Method blank detection
SW846-6020 A	Arsenic			J-	MS REC < QC limit
SW846-6020 A	Copper			UJ	MS REC < QC limit
SM 4500-H+B-2011	pH			J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	MW-3A	4111774-03	J	Method blank detection
5310 C-2014	TOC			JU	Method blank detection
SM 4500-H+B-2011	pH			J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	MW4	4111774-04	J	Inadequate preservation Field/Method blank detection
5310 C-2014	TOC			JU	Field blank detection Method blank detection
SW846-6020 A	Beryllium			UJ	MSD REC < QC limit
SW846-6020 A	Mercury			J-	MSD REC < QC limit
SW846 6010 B	Boron			J+	MS/MSD RECs > QC limits
SM 4500-H+B-2011	pH			J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	MW5	4111774-05	J	Inadequate preservation Method blank detection
5310 C-2014	TOC			J+	Method blank detection
SM 4500-H+B-2011	pH			J	Holding time exceedance

Table 1
Data Qualifier Table
BREC Sebree Green Landfill - November 2024 Sampling Event
Webster County, Kentucky

Analytical Method	Analyte(s)	Sample Identification	Laboratory Number	Data Validation Qualifier	Reason(s) for Qualification
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	MW-6	4111774-06	J	Inadequate preservation Method blank detection
SW846-6020 A	Beryllium			UJ	MS REC < QC limit PDS REC < QC limit
SM 4500-H+B-2011	pH			J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	Duplicate	4111774-07	J	Inadequate preservation Method blank detection
SM 4500-H+B-2011	pH			J	Holding time exceedance
SW846-6020 A	Molybdenum			J	MS/MSD RECs < QC limits Parent/ Duplicate failed RPD test
SW846-6020 A	Chromium			J	MS/MSD RECs < QC limits Parent/ Duplicate failed RPD test
SW846 6010 B	Iron			J	Parent/ Duplicate failed RPD test
5310 C-2014	TOC	MW-104	4111775-01	J+	Field blank detection
EPA 903.1 Total Radium	Radium 226 Total Radium			J	Inadequate preservation Field/Method blank detection LCS/LCSD RPD > QC limit
EPA 904.0	Radium 228			J	Inadequate preservation Field/Method blank detection
SM 4500-H+B-2011	pH			J	Holding time exceedance
EPA 903.1 EPA 904.0 Total Radium	Radium 226 Radium 228 Total Radium	FIELD BLANK	4111774-08	J	Inadequate preservation

Notes:

J = Qualified as estimated
J- = Qualified as estimated potential low bias
J+ = Qualified as estimated potential high bias
JU = Estimated trace concentration was qualified as non-detect
LCS/LCSD = Laboratory control sample duplicate/Laboratory control sample duplicate
MS = Matrix spike
MSD = Matrix spike duplicate
MW = Monitoring well
PDS = Post digestion spike
QC = Qualitiy control
REC = Percent recovery
RPD = Relative percent difference
TOC = Total organic carbon
UJ = Qualified as estimated at the reporting limit

Table 2
Field Duplicate Comparison
BREC Sebree Green Landfill - November 2024 Sampling Event
Webster County, Kentucky

Sample ID: / Lab ID: / Date Sampled:	MW1 / 11/21/2024 / 4111774-01	DUPLICATE / 11/21/2024 / 4111774-07	Units	Meets QC
Arsenic	0.0011	0.0010	mg/L	Yes
Barium	0.086	0.083	mg/L	Yes
Boron	1.71	1.73	mg/L	Yes
Cadmium	0.0010 U	0.0002 J	mg/L	Yes
Calcium	29.9	30.5	mg/L	Yes
Chromium	0.0020 UJ	0.115 J	mg/L	No, (RPD 193%)
Iron	0.695 J	0.486 J	mg/L	No, (RPD 35%)
Lithium	0.03	0.03	mg/L	Yes
Molybdenum	0.01 UJ	0.12 J	mg/L	No, (RPD 169%)
Sodium	187	184	mg/L	Yes
Specific Conductance (Lab)	988	970	uS/cm	Yes
pH (Lab)	7.93 J	8.02 J	Std. Units	Yes
Radium 226	0.176 J	0.200 J	pCi/L	Yes
Radium 228	1.56 J	1.38 J	pCi/L	Yes
Radium Total	1.74 J	1.58 J	pCi/L	Yes
Chloride	5.8	5.8	mg/L	Yes
Fluoride	0.5	0.5	mg/L	Yes
Sulfate	37	37	mg/L	Yes
Total Dissolved Solids	568	564	mg/L	Yes
Total Organic Carbon	1.0	1.0	mg/L	Yes

Notes:

ID = identification
J = estimated value / qualified as estimated
mg/L = milligrams per liter
MW = monitoring Well
pCi/L = picoCuries per liter
QC = quality Control
RPD = relative percent difference
std. unit = standard unit
U = non-detect sample result
UJ = qualified as estimated at the reporting limit
umhos/cm = microsiemens per centimeter

Appendix I – Green Former Surface Impoundment Groundwater Data Validation

Memorandum

Date: May 16, 2024

To: Christopher Hoglund

From: Omkar Parab

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Big Rivers Electric Company (BREC) - Sebree Station, Surface Impoundment Site,
Webster County, Kentucky
Project No. 170781

Groundwater samples were collected at the BREC Sebree Green Surface Impoundment Site in Webster County, Kentucky on April 15, 2024. The samples were analyzed by Pace Analytical Services of Madisonville, Kentucky (Pace Madisonville) for one or more of the following parameters:

Parameter(s)	Analytical Method	Laboratory
Metals boron and calcium	SW-846 6010B	Pace - Madisonville
pH	4500-H+ B-2011	
Total Dissolved Solids (TDS)	2540 C-2015	
Anions chloride, fluoride, and sulfate	SW-846 9056	

The quality assurance (QA)/quality control (QC) results in association with the groundwater samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data in accordance with recommendations in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2020). The QA/QC review results are discussed below, and any data qualifiers added during the course of this review are summarized in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates were present on the COCs for all samples.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – The pH for all the samples was analyzed outside the 24-hour holding time, and therefore, these results were qualified as estimated (J). All the other samples/analyses were completed within their recommended holding time.

4. Sample Preservation – All samples were received by Pace-Madisonville below the preservation temperature range of 4 degrees Celsius (°C) +/- 2°C. Upon arrival, no samples were noted as frozen, therefore, they were considered viable, and all analyses were completed. No data qualifiers were necessary.

5. Field Blank – One field blank was collected in the field to assess potential cross-contamination during the sample activities and/or transport. No target analytes were detected in the field blanks.

6. Method Blanks – Method blanks were reviewed to assess possible cross-contamination or carryover in sample preparation or analysis. No target analytes were detected in the method blanks.

7. Laboratory Control Samples (LCS) – The LCS contains a matrix similar to that of the sample that has been spiked with known concentrations of target analytes. The LCS is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS are compared against the known analyte concentrations in the spike to determine the REC. The purpose of the LCS is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference. All LCS results were within QC limits, except for:

   The LCS for chloride in QC batch BDD3029 exceeded its QC limit. A second LCS was included in this QC batch and was within limits; therefore, no qualifiers were added.

   All other LCS RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note that only site-specific MS/MSD results were evaluated during this QA/QC review. All site-specific MS/MSD results were within their respective QC limits except for the following:

   - MS/MSD RECs performed on sample MW11 (Lab ID 4043420-01):
     - The MS REC for sulfate and fluoride was above their control limits. Because sulfate and fluoride were detected in the parent spiked sample, they were qualified as estimated potential high bias (J+).
     - The MSD REC for chloride was below its control limits. Because chloride was detected in the parent spiked sample, it qualified as estimated potential low bias (J-).
     - The MS/MSD RECs for calcium were below their control limits. Upon further review, the laboratory spike amount for calcium was less than ¼ the concentration of the spiked sample. The corresponding post spike was also performed on this same sample and also did not meet the ¼ requirement. As such, no conclusion could be made regarding this MS/MSD and post spike RECs, no qualifiers were added.

9. Laboratory Duplicates – Laboratory duplicates were performed to evaluate analytical precision between samples when an MS/MSD may not be appropriate. Only project-specific laboratory duplicates were compared and used for qualification. All the site-specific laboratory duplicates were within QC limits and no qualifiers were necessary.

10. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

    - Is the compound detected in both portions?
    - If the sample concentrations are greater than 5 times the detection limit, then the maximum allowable RPD is 20 percent for water samples.
    - If the sample concentrations are less than 5 times the detection limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the lower detection limit for water samples.

    The following field duplicate pair was included in this review.

    - MW14 // DUPLICATE (4043420-04 // 4043420-05): All results were adequately replicated.

11. Detection and Quantitation Limits – Dilutions were required to account for high concentrations of target analytes and/or matrix interferences in one or more samples. Reporting limits (RLs) were adjusted accordingly, and no data qualifiers were added based on these dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. The data are valid for use, as qualified, in reporting the results of this groundwater monitoring event.

    Attachments
    Table 1 – Data Qualifier Table
    Table 2 – Field Duplicate Comparison

Table 1
Data Qualifier Table
BREC Sebree Green Surface Impoundment - April 2024 Sampling Event
Webster County, Kentucky

SDG	Sample Identification	Laboratory Number	Analytical Method	Analyte(s)	Data Validation Qualifier	Reason(s) for Qualification
4043420	MW11	4043420-01	4500-H+ B-2000	pH	J	Holding time exceedance
			SW846 9056	Sulfate	J+	MS REC > QC limit
				Fluoride	J+	MS REC > QC limit
				Chloride	J-	MSD REC < QC limit
	MW12	4043420-02	4500-H+ B-2000	pH	J	Holding time exceedance
	MW13	4043420-03	4500-H+ B-2000	pH	J	Holding time exceedance
	MW14	4043420-04	4500-H+ B-2000	pH	J	Holding time exceedance
	DUPLICATE	4043420-05	4500-H+ B-2000	pH	J	Holding time exceedance
	FIELD BLANK	4043420-06	4500-H+ B-2000	pH	J	Holding time exceedance

Notes:

J = Qualified as estimated
J- = Qualified as estimated biased low
J+ = Qualified as estimated biased high
MS = Matrix spike
MSD = Matrix spike duplicate
MW = Monitoring Well
QC = Quality control
REC = Percent Recovery
SDG = Sample Delivery Group

Table 2
Field Duplicate Comparison
BREC Sebree Green Surface Impoundment - April 2024 Sampling Event
Webster County, Kentucky

Sample ID:	MW14	DUPLICATE	Units	Meets QC
Lab ID:	4043420-04	4043420-05		
Date Sampled:	4/15/2024	4/15/2024		
Boron	0.14	0.15	mg/L	Yes
Calcium	195	206	mg/L	Yes
pH	7.59 J	7.59 J	std. unit	Yes
Total Dissolved Solids (TDS)	884	1020	mg/L	Yes
Chloride	113	120	mg/L	Yes
Fluoride	0.4	0.4	mg/L	Yes
Sulfate	192	202	mg/L	Yes

Notes:

ID - Identification
J - Estimated
mg/L - milligram per Liter
MW = Monitoring Well
QC = Quality Control
std. unit = standard unit

Memorandum

Date: January 15, 2025

To: Christopher Hoglund

From: Omkar Parab

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Big Rivers Electric Company (BREC) - Sebree Station, Surface Impoundment Site,
Webster County, Kentucky
Project No. 170781

Groundwater samples were collected at the BREC Sebree Green Surface Impoundment Site in Webster County, Kentucky on November 12, 2024. Additional pH samples were also collected and measured on December 17, 2024, to serve as a confirmation analysis for the November 12, 2024, samples. The samples were analyzed by Pace Analytical Services of Madisonville, Kentucky (Pace Madisonville) for one or more of the following parameters:

Parameter(s)	Analytical Method	Laboratory
Metals boron and calcium	SW-846 6010B	Pace - Madisonville
pH	4500-H+B-2011	
Total Dissolved Solids (TDS)	2540C-2015	
Anions chloride, fluoride, and sulfate	SW-846 9056	

The quality assurance (QA)/quality control (QC) results in association with the groundwater samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data in accordance with recommendations in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2020). The QA/QC review results are discussed below, and any data qualifiers added during the course of this review are summarized in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates were present on the COCs for all samples.

2. Requested Analyses Completed – All analyses were completed as requested.

   Due to a questionable pH result for MW13 that did not match historical measurements, this sample point was resampled and measured on December 17, 2024. Prior to this resample, the Burns & McDonnell Project Manager contacted the field technician to obtain additional information and/or any suspected issues encountered during the collection of the original pH sample. The field technician indicated that issues with the field meter were noted at this monitoring well during well stabilization and/or the sampling process. Based on this, it was requested that this data point be resampled. This resample was performed on December 17, 2024 and both a field and laboratory pH measurement were obtained. These resampled pH results were more consistent with the historical pH results for this location. Therefore, the original pH results (both field and laboratory) were rejected (R), and these resampled pH results should be used for final reporting of the data for this sample/analyte pair. Note that the field pH is used for the statistical analyses as it is considered more of a "real-time" measurement. The statistical analysis(ses) for this sample/analyte pair using this resample data is/are provided under separate cover.

3. Holding Times – Although pH should be measured immediately in the field, samples were sent to the laboratory for pH analysis. The laboratory pH for all of the samples (both events) was analyzed outside 24-hours. Therefore, all laboratory pH results were qualified as estimated (J). All the other samples/analyses were completed within their recommended holding time.

4. Sample Preservation – All samples were received by Pace-Madisonville within the preservation temperature range of 4 degrees Celsius (°C) +/- 2°C.

5. Field Blank – One field blank was collected to assess potential cross-contamination during the sample activities and/or transport of the samples. No target analytes were detected in the field blank.

6. Method Blanks – Method blanks were reviewed to assess possible cross-contamination or carryover in sample preparation or analysis. No target analytes were detected in the method blanks.

7. Laboratory Control Samples (LCS) – The LCS contains a matrix similar to that of the sample that has been spiked with known concentrations of target analytes. The LCS is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS are compared against the known analyte concentrations in the spike to determine the percent recovery (REC). The purpose of the LCS is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

   All the LCS RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the relative percent difference relative percent difference (RPD). They are also compared against the unspiked portion of the sample for REC of the spike. Note that only site-specific MS/MSD results were evaluated during this QA/QC review. All site-specific MS/MSD results were within their respective QC limits except for the following:

   - MS/MSD performed on sample MW14 (Lab ID 4111776-04):
     - The site-specific MS/MSD RECs for chloride and sulfate were reported as 'NR'. Upon further review, the laboratory spike amounts for chloride and sulfate were less than ¼ the concentration of the noted spiked sample. As such, no conclusion could be made regarding these site-specific MS/MSD RECs, and no qualifiers were added.

9. Laboratory Duplicates – Laboratory duplicates were performed to evaluate analytical precision between samples when an MS/MSD may not be appropriate. Only project-specific laboratory duplicates were compared and used for qualification. All site-specific laboratory duplicates were within QC limits, and no qualifiers were necessary.

10. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

    - Is the compound detected in both portions?
    - If the sample concentrations are greater than 5 times the detection limit, then the maximum allowable RPD is 20 percent for water samples.
    - If the sample concentrations are less than 5 times the detection limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the lower detection limit for water samples.

    The following field duplicate pair was included in this review.

    - MW-11 // DUPLICATE (4111776-01 // 4111776-05): All results were adequately replicated.

11. Detection and Quantitation Limits – Dilutions were required to account for high concentrations of target analytes and/or matrix interferences in one or more samples. Reporting limits (RLs) were adjusted accordingly, and no data qualifiers were added based on these dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. The November 12, 2024 pH result for MW13 was rejected due to reasons noted herein. Acceptable replacement data was collected in a resample event on December 17, 2024. With this exception, the data are valid for use, as qualified, in reporting the results of this groundwater monitoring event.

    Attachments
    Table 1 – Data Qualifier Table
    Table 2 – Field Duplicate Comparison

Table 1
Data Qualifier Table
BREC Sebree Green Surface Impoundment - November 2024 Sampling Event
Webster County, Kentucky

SDG	Sample Identification	Laboratory Number	Analytical Method	Analyte(s)	Data Validation Qualifier	Reason(s) for Qualification
4111776 11/12/2024 original samples	MW11	4111776-01	SM 4500-H+ B-2011	pH	J	Holding time exceedance
	MW12	4111776-02	SM 4500-H+ B-2011	pH	J	Holding time exceedance
	MW13	4111776-03	SM 4500-H+ B-2011	pH	R	Holding time exceedance - see text sections 2 & 3
	MW14	4111776-04	SM 4500-H+ B-2011	pH	J	Holding time exceedance
	DUPLICATE	4111776-05	SM 4500-H+ B-2011	pH	J	Holding time exceedance
	FIELD BLANK	4111776-06	SM 4500-H+ B-2011	pH	J	Holding time exceedance
4124283 12/17/2024 resample	MW13	4124283-01	SM 4500-H+ B-2011	pH	J	Holding time exceedance

Notes:

J = Qualified as estimated
MW = Monitoring Well
R = Rejected (see text sections noted for details)
SDG = Sample Delivery Group

Table 2
Field Duplicate Comparison
BREC Sebree Green Surface Impoundment - November 2024 Sampling Event
Webster County, Kentucky

Sample ID:	MW11	DUPLICATE	Units	Meets QC
Lab ID:	4111776-01	4111776-05		
Date Sampled:	11/12/2024	11/12/2024		
Boron	0.39	0.39	mg/L	Yes
Calcium	113	113	mg/L	Yes
pH	7.49 J	7.60 J	std. unit	Yes
Total Dissolved Solids (TDS)	2220	1980	mg/L	Yes
Chloride	851	847	mg/L	Yes
Fluoride	0.2	0.2	mg/L	Yes
Sulfate	318	312	mg/L	Yes

Notes:

ID - Identification
J = Qualified as estimated
mg/L - milligram per Liter
MW = Monitoring Well
QC = Quality Control
std. unit = standard unit

Appendix J – Green Landfill Groundwater Statistical Evaluations

June 16, 2024

Mr. Mark Bertram
Big Rivers Electric Corporation
9000 Highway 2096
Robards, KY 42452

Re: Statistical Evaluation of April 2024 Assessment Monitoring Groundwater Data
Sebree Generating Station Green Landfill in Robards, Kentucky
Agency Interest ID #: 4196

Dear Mr. Bertram:

This letter presents the results of the statistical evaluation of analytical data from the April 2024 assessment monitoring event performed at the Sebree Generating Station's Green Landfill in Webster County, Robarbs, Kentucky in accordance with the requirements of U.S. Environmental Protection Agency's *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (40 Code of Federal Regulations [CFR] Part 257, Subpart D)*. This letter also presents a comparison of the April 2024 sampling results to calculated background concentrations and groundwater protection standards (GWPSs). The background and GWPSs for the groundwater monitoring network were reviewed and updated as part of the statistical evaluation completed for the April 2024 sampling event and are presented on **Table 1**. These background concentrations and GWPSs will continue to be reviewed and updated as additional data are collected. A comparison of the April 2024 data to the updated GWPSs is presented on **Table 2**. The statistical evaluation presented herein was performed in accordance with the *Groundwater Monitoring System and Statistical Methods* document prepared by Associated Engineers, Inc. and dated June 28, 2016.

In April 2024, the Green Landfill groundwater monitoring well network was sampled for Appendix III and Appendix IV parameters per the assessment monitoring program requirements of 40 CFR §257.95(d). Interwell prediction limit statistical analyses were performed for these well/constituent pairs and are discussed subsequently. GWPSs were also developed in accordance with 40 CFR §257.95(h) which describes a GWPS as the higher value between a determined background concentration for the coal combustion residuals unit and the established maximum concentration limit (MCL) or the GWPS criteria presented in 40 CFR §257.95(h)(2) for select Appendix IV parameters without an MCL. This letter presents the results of the statistical evaluation of the April 2024 assessment monitoring event for inclusion in the Sebree Generating Station Operating Record.

Statistical Evaluation of Sebree Green Landfill Compliance Monitoring Well Network Evaluation

An interwell prediction limit evaluation was performed to compare the concentrations of Appendix III and Appendix IV parameters observed in April 2024 compliance (downgradient)

monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 to calculated prediction limits (i.e., background limits) that were established using data collected from March of 2016 through April of 2024 from upgradient monitoring well MW-1. Certain Appendix III and Appendix IV parameters were detected in April 2024 at concentrations at or above the laboratory method detection limit . One or more of these resulted in statistically significant increases (SSI) above the calculated background limits (equivalent to the MW-1 prediction limits). A comparison of the April 2024 data to the updated background limits and GWPSs is presented in **Table 2** and a summary of the statistical evaluation is included in **Attachment 1**. This included the following well/constituent pairs for downgradient compliance monitoring wells with SSIs above calculated background limits:

Appendix III Parameters:
- Calcium (MW-2, MW-3A, MW-4, MW-5, and MW-6)
- Chloride (MW-2, MW-3A, MW-4, MW-5, and MW-6)
- Sulfate (MW-2, MW-3A, MW-4, and MW-6)
- Total Dissolved Solids (TDS) (MW-2, MW-3A, MW-4, MW-5, and MW-6)

Appendix IV Parameters:
- Arsenic (MW-2)
- Barium (MW-2)
- Cobalt (MW-2)
- Lithium (MW-3A, MW-4, MW-5, and MW-6)
- Mercury (MW-4)
- Molybdenum (MW-2)

Results of SSIs above background were generally consistent with the 2016 through November 2023 statistical results. The Appendix III SSIs for calcium, chloride, sulfate, and TDS continue to occur at downgradient compliance monitoring wells. The reported Appendix IV SSIs for arsenic, barium, cobalt, lithium, mercury, and molybdenum in this event are consistent with previous events. However, the reported sulfate SSI (MW-5) in the November 2023 event was not present in this event. Lastly, the reported cobalt SSI (MW-2) in this event was not present in the November 2023 event but has been historically.

The Appendix IV constituents with SSIs (arsenic, barium, cobalt, lithium, mercury, and molybdenum) were further evaluated to determine whether they are present at statistically significant levels (SSLs) over the GWPS by calculating the lower confidence limit (LCL) at 95% confidence for each well and constituent using all the baseline, detection, and assessment

monitoring results collected to date from each monitoring well. For a constituent to be present at an SSL over the GWPS, its LCL must be greater than the GWPS. The comparison of the calculated LCLs with the GWPSs for arsenic, barium, cobalt, lithium, mercury, and molybdenum at downgradient compliance monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 resulted in the following well/constituent pairs with SSLs above the GWPS:

- Arsenic (MW-2)
- Lithium (MW-3A, MW-4, MW-5, and MW-6)

The LCLs for the remaining well/constituent pairs for arsenic, barium, cobalt, and lithium are less than the GWPS and thus, are not considered SSLs. A comparison of the April 2024 data to the GWPSs is presented in **Table 2** and **Attachment 1** provides a summary of the calculated LCLs in comparison with the GWPSs. Results of SSLs above the GWPSs were consistent with the June and November 2023 results.

Given that certain Appendix III and IV constituents were observed at the Green Landfill groundwater monitoring network at concentrations above their respective calculated background limit and the LCL for certain Appendix IV constituents was greater than the corresponding GWPSs, these results do not warrant a transition to detection monitoring per the requirements of 40 CFR §257.95(e) and assessment monitoring will continue for the next semiannual monitoring event in 2024.

Sincerely,

Burns & McDonnell Engineering Company, Inc.

Chris Hoglund, PG
Project Manager

Attachments:

Table 1 – Summary of Groundwater Protection Standards
Table 2 – Summary of April 2024 Analytical Results

Attachment 1 – Sanitas™ Statistical Outputs

cc: Hunter Mizell, BREC Sebree Station

TABLES

TABLE 1
Calculated Background and Groundwater Protection Standards for Groundwater
Sebree Generating Station Green Landfill in Robards, Kentucky

Detection Constituents (Appendix III)	Units	Background*	MCL	40 CFR §257.95(h)(2) Criteria	Groundwater Protection Standard
Boron	mg/L	2.196	--	--	--
Calcium	mg/L	35.8	--	--	--
Chloride	mg/L	13.9	--	--	--
Fluoride	mg/L	0.888	4	--	4
pH (field)	SU	4.86 - 7.63	--	--	--
Sulfate	mg/L	47.94	--	--	--
TDS	mg/L	728.7	--	--	--
Assessment Constituents (Appendix IV)	**Units**	**Background***	**MCL**	**40 CFR §257.95(h)(2) Criteria**	**Groundwater Protection Standard**
Antimony	mg/L	0.00297	0.006	--	0.006
Arsenic	mg/L	0.004599	0.01	--	0.01
Barium	mg/L	0.1003	2	--	2
Beryllium	mg/L	0.000533	0.004	--	0.004
Cadmium	mg/L	0.000299	0.005	--	0.005
Chromium	mg/L	0.00354	0.1	--	0.1
Cobalt	mg/L	0.002	--	0.006	0.006
Fluoride	mg/L	0.888	4	--	4
Lead	mg/L	0.000279	--	0.015	0.015
Lithium	mg/L	0.0396	--	0.04	0.04
Mercury	mg/L	0.0002	0.002	--	0.002
Molybdenum	mg/L	0.002	--	0.1	0.1
Combined Radium 226 and 228**	pCi/L	2.412	5	--	5
Selenium	mg/L	0.00105	0.05	--	0.05
Thallium	mg/L	0.000498	0.002	--	0.002

Notes:

*Groundwater Protection Standards were developed in accordance with §257.95(h). Background concentrations were determined utilizing interwell prediction limits (see Attachment 1). Upgradient Monitoring Well MW-1 was used to calculate background concentrations. This included background data ranging from March 2016 through April 2024

**Combined radium is reported with an uncertainty range. However, this range cannot be incorporated into statistical calculations as it varies per result and is not a standard value. Therefore, to maintain consistency in reporting these results, the reported laboratory concentration was used for the statistical analyses.

CFR - Code of Federal Regulations

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

pCi/L - picocuries per Liter

SU - standard units

TDS - Total dissolved solids

TABLE 2
Green Landfill - April 2024 Analytical Summary
Sebree Generating Station

APPENDIX III CONSTITUENTS	1H2024 Calculated Background	1H2024 GWPS	Units	MW-1	MW-2	MW-3A	MW-4	MW-5	MW-6
				Background Well	Downgradient Compliance Wells				
				Detection Monitoring					
Boron	2.196	--	mg/L	1.84 D1	0.10 U	0.35	1.08 D1	1.00 D2, U	0.20
Calcium	35.8	--	mg/L	29.0 D1	**199** D1	**514** D1	**744** D1	**529** D1	**440** D1
Chloride	13.9	--	mg/L	6.2 M1, Y5	**455** D, M2	**1980** D1	**1440** D1	**2260** D	**319** D
Fluoride	0.888	4.0	mg/L	0.7 M1, Y5	0.3	0.5	0.2	0.3	0.5
pH (Field Measurement)	4.86 - 7.63	--	SU	7.32	6.44	6.72	6.52	6.45	6.48
Sulfate	47.94	--	mg/L	29 M1	**390** D, M2	**3200** D	**3850** D	0.5 U	**2710** D1
Total Dissolved Solids	728.7	--	mg/L	548	**1050**	**5080**	**5220**	**3920**	**4180**
APPENDIX IV CONSTIUENTS									
Antimony	0.00297	0.006	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Arsenic	0.004599	0.01	mg/L	0.0025	**0.0099**	0.0004 U	0.0004 U	0.0004 U	0.0004 U
Barium	0.1003	2	mg/L	0.085	**0.276**	0.042	0.040	0.013	0.017
Beryllium	0.000533	0.004	mg/L	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U
Cadmium	0.000299	0.005	mg/L	0.0001 U	0.0001 U	0.0001 J	0.0001 U	0.0001 U	0.0001 U
Chromium	0.00354	0.1	mg/L	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0007 J	0.0006 U
Cobalt	0.002	0.006	mg/L	0.004 U	**0.005**	0.004 U	0.004 U	0.004 U	0.004 U
Fluoride	0.888	4.0	mg/L	0.7 M1, Y5	0.3	0.5	0.2	0.3	0.5
Lead	0.000279	0.015	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
Lithium	0.0396	0.04	mg/L	**0.03**	0.005 J	**0.75**	**1.17** D1	**0.38**	**0.05**
Mercury	0.0002	0.002	mg/L	0.0002 U	0.0002 U	0.0002 U	**0.0003** J	0.0002 U	0.0002 U
Molybdenum	0.002	0.1	mg/L	0.002 U	**0.003** J	0.002 U	0.002 U	0.002 U	0.002 U
Radium 226 + 228	2.412	5	pCi/L	0.831	1.28	1.00	0.480	1.60	0.351
Selenium	0.00105	0.05	mg/L	0.001 U	0.001 U	0.001 D2, U	0.001 U	0.001 U	0.001 U
Thallium	0.000498	0.002	mg/L	0.0001 J	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U

Bold - Analyte detected above calculated background concentration.

Appendix IV constituent was detected in compliance monitoring well located downgradient of the CCR Landfill at a statistically significant level above its GWPS (see Attachment 1 for statistical output).

D = Results reported from dilution.

D1 = Sample required dilution due to high concentration of target analysis.

D2 = Sample required dilution due to matrix interference.

GWPS = Groundwater Protection Standard

J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is qualified as estimated.

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.

MCL = Maximum contamination level

mg/L = milligrams per Liter

pCi/L = picoCuries per Liter

SU = standard units

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

Y5 = MS/MSD RPD exceeded the method control limit.

ATTACHMENT 1 – SANITAS™ STATISTICAL OUTPUTS

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 6/11/2024, 8:23 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-2	0.00297	n/a	4/16/2024	0.001ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Antimony (mg/L)	MW-3A	0.00297	n/a	4/17/2024	0.001ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Antimony (mg/L)	MW-4	0.00297	n/a	4/16/2024	0.001ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Antimony (mg/L)	MW-5	0.00297	n/a	4/16/2024	0.001ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Antimony (mg/L)	MW-6	0.00297	n/a	4/17/2024	0.001ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Arsenic (mg/L)	**MW-2**	**0.004599**	**n/a**	**4/16/2024**	**0.0099**	**Yes**	**22**	**9.091**	**ln(x)**	**0.01**	**Param Inter**
Arsenic (mg/L)	MW-3A	0.004599	n/a	4/17/2024	0.0002ND	No	22	9.091	ln(x)	0.01	Param Inter
Arsenic (mg/L)	MW-4	0.004599	n/a	4/16/2024	0.0002ND	No	22	9.091	ln(x)	0.01	Param Inter
Arsenic (mg/L)	MW-5	0.004599	n/a	4/16/2024	0.0002ND	No	22	9.091	ln(x)	0.01	Param Inter
Arsenic (mg/L)	MW-6	0.004599	n/a	4/17/2024	0.0002ND	No	22	9.091	ln(x)	0.01	Param Inter
Barium (mg/L)	**MW-2**	**0.1003**	**n/a**	**4/16/2024**	**0.276**	**Yes**	**22**	**0**	**No**	**0.01**	**Param Inter**
Barium (mg/L)	MW-3A	0.1003	n/a	4/17/2024	0.042	No	22	0	No	0.01	Param Inter
Barium (mg/L)	MW-4	0.1003	n/a	4/16/2024	0.04	No	22	0	No	0.01	Param Inter
Barium (mg/L)	MW-5	0.1003	n/a	4/16/2024	0.013	No	22	0	No	0.01	Param Inter
Barium (mg/L)	MW-6	0.1003	n/a	4/17/2024	0.017	No	22	0	No	0.01	Param Inter
Beryllium (mg/L)	MW-2	0.000533	n/a	4/16/2024	0.0005ND	No	21	95.24	n/a	0.04182	NP Inter (NDs)
Beryllium (mg/L)	MW-3A	0.000533	n/a	4/17/2024	0.0005ND	No	21	95.24	n/a	0.04182	NP Inter (NDs)
Beryllium (mg/L)	MW-4	0.000533	n/a	4/16/2024	0.0005ND	No	21	95.24	n/a	0.04182	NP Inter (NDs)
Beryllium (mg/L)	MW-5	0.000533	n/a	4/16/2024	0.0005ND	No	21	95.24	n/a	0.04182	NP Inter (NDs)
Beryllium (mg/L)	MW-6	0.000533	n/a	4/17/2024	0.0005ND	No	21	95.24	n/a	0.04182	NP Inter (NDs)
Boron (mg/L)	MW-2	2.196	n/a	4/16/2024	0.05ND	No	23	0	No	0.01	Param Inter
Boron (mg/L)	MW-3A	2.196	n/a	4/17/2024	0.35	No	23	0	No	0.01	Param Inter
Boron (mg/L)	MW-4	2.196	n/a	4/16/2024	1.08	No	23	0	No	0.01	Param Inter
Boron (mg/L)	MW-5	2.196	n/a	4/16/2024	0.05ND	No	23	0	No	0.01	Param Inter
Boron (mg/L)	MW-6	2.196	n/a	4/17/2024	0.2	No	23	0	No	0.01	Param Inter
Cadmium (mg/L)	MW-2	0.000299	n/a	4/16/2024	0.00005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Cadmium (mg/L)	MW-3A	0.000299	n/a	4/17/2024	0.0001J	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Cadmium (mg/L)	MW-4	0.000299	n/a	4/16/2024	0.00005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Cadmium (mg/L)	MW-5	0.000299	n/a	4/16/2024	0.00005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Cadmium (mg/L)	MW-6	0.000299	n/a	4/17/2024	0.00005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Calcium (mg/L)	**MW-2**	**35.8**	**n/a**	**4/16/2024**	**199**	**Yes**	**23**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-3A**	**35.8**	**n/a**	**4/17/2024**	**514**	**Yes**	**23**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-4**	**35.8**	**n/a**	**4/16/2024**	**744**	**Yes**	**23**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-5**	**35.8**	**n/a**	**4/16/2024**	**529**	**Yes**	**23**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-6**	**35.8**	**n/a**	**4/17/2024**	**440**	**Yes**	**23**	**0**	**No**	**0.01**	**Param Inter**
Chloride (mg/L)	**MW-2**	**13.9**	**n/a**	**4/16/2024**	**455**	**Yes**	**23**	**0**	**n/a**	**0.03858**	**NP Inter (normality)**
Chloride (mg/L)	**MW-3A**	**13.9**	**n/a**	**4/17/2024**	**1980**	**Yes**	**23**	**0**	**n/a**	**0.03858**	**NP Inter (normality)**
Chloride (mg/L)	**MW-4**	**13.9**	**n/a**	**4/16/2024**	**1440**	**Yes**	**23**	**0**	**n/a**	**0.03858**	**NP Inter (normality)**
Chloride (mg/L)	**MW-5**	**13.9**	**n/a**	**4/16/2024**	**2260**	**Yes**	**23**	**0**	**n/a**	**0.03858**	**NP Inter (normality)**
Chloride (mg/L)	**MW-6**	**13.9**	**n/a**	**4/17/2024**	**319**	**Yes**	**23**	**0**	**n/a**	**0.03858**	**NP Inter (normality)**
Chromium (mg/L)	MW-2	0.00354	n/a	4/16/2024	0.0003ND	No	21	76.19	n/a	0.04182	NP Inter (NDs)
Chromium (mg/L)	MW-3A	0.00354	n/a	4/17/2024	0.0003ND	No	21	76.19	n/a	0.04182	NP Inter (NDs)
Chromium (mg/L)	MW-4	0.00354	n/a	4/16/2024	0.0003ND	No	21	76.19	n/a	0.04182	NP Inter (NDs)
Chromium (mg/L)	MW-5	0.00354	n/a	4/16/2024	0.0007J	No	21	76.19	n/a	0.04182	NP Inter (NDs)
Chromium (mg/L)	MW-6	0.00354	n/a	4/17/2024	0.0003ND	No	21	76.19	n/a	0.04182	NP Inter (NDs)
Cobalt (mg/L)	**MW-2**	**0.002**	**n/a**	**4/16/2024**	**0.005**	**Yes**	**21**	**47.62**	**n/a**	**0.04182**	**NP Inter (normality)**
Cobalt (mg/L)	MW-3A	0.002	n/a	4/17/2024	0.002ND	No	21	47.62	n/a	0.04182	NP Inter (normality)
Cobalt (mg/L)	MW-4	0.002	n/a	4/16/2024	0.002ND	No	21	47.62	n/a	0.04182	NP Inter (normality)
Cobalt (mg/L)	MW-5	0.002	n/a	4/16/2024	0.002ND	No	21	47.62	n/a	0.04182	NP Inter (normality)
Cobalt (mg/L)	MW-6	0.002	n/a	4/17/2024	0.002ND	No	21	47.62	n/a	0.04182	NP Inter (normality)

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 6/11/2024, 8:23 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	MW-2	0.888	n/a	4/16/2024	0.3	No	23	0	n/a	0.03858	NP Inter (normality)
Fluoride (mg/L)	MW-3A	0.888	n/a	4/17/2024	0.5	No	23	0	n/a	0.03858	NP Inter (normality)
Fluoride (mg/L)	MW-4	0.888	n/a	4/16/2024	0.2	No	23	0	n/a	0.03858	NP Inter (normality)
Fluoride (mg/L)	MW-5	0.888	n/a	4/16/2024	0.3	No	23	0	n/a	0.03858	NP Inter (normality)
Fluoride (mg/L)	MW-6	0.888	n/a	4/17/2024	0.5	No	23	0	n/a	0.03858	NP Inter (normality)
Lead (mg/L)	MW-2	0.000279	n/a	4/16/2024	0.00025ND	No	21	71.43	n/a	0.04182	NP Inter (NDs)
Lead (mg/L)	MW-3A	0.000279	n/a	4/17/2024	0.00025ND	No	21	71.43	n/a	0.04182	NP Inter (NDs)
Lead (mg/L)	MW-4	0.000279	n/a	4/16/2024	0.00025ND	No	21	71.43	n/a	0.04182	NP Inter (NDs)
Lead (mg/L)	MW-5	0.000279	n/a	4/16/2024	0.00025ND	No	21	71.43	n/a	0.04182	NP Inter (NDs)
Lead (mg/L)	MW-6	0.000279	n/a	4/17/2024	0.00025ND	No	21	71.43	n/a	0.04182	NP Inter (NDs)
Lithium (mg/L)	MW-2	0.0396	n/a	4/16/2024	0.005J	No	22	9.091	n/a	0.04013	NP Inter (normality)
Lithium (mg/L)	**MW-3A**	**0.0396**	**n/a**	**4/17/2024**	**0.75**	**Yes**	**22**	**9.091**	**n/a**	**0.04013**	**NP Inter (normality)**
Lithium (mg/L)	**MW-4**	**0.0396**	**n/a**	**4/16/2024**	**1.17**	**Yes**	**22**	**9.091**	**n/a**	**0.04013**	**NP Inter (normality)**
Lithium (mg/L)	**MW-5**	**0.0396**	**n/a**	**4/16/2024**	**0.38**	**Yes**	**22**	**9.091**	**n/a**	**0.04013**	**NP Inter (normality)**
Lithium (mg/L)	**MW-6**	**0.0396**	**n/a**	**4/17/2024**	**0.05**	**Yes**	**22**	**9.091**	**n/a**	**0.04013**	**NP Inter (normality)**
Mercury (ug/L)	MW-2	0.2	n/a	4/16/2024	0.1ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Mercury (ug/L)	MW-3A	0.2	n/a	4/17/2024	0.1ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Mercury (ug/L)	**MW-4**	**0.2**	**n/a**	**4/16/2024**	**0.3**	**Yes**	**22**	**95.45**	**n/a**	**0.04013**	**NP Inter (NDs)**
Mercury (ug/L)	MW-5	0.2	n/a	4/16/2024	0.1ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Mercury (ug/L)	MW-6	0.2	n/a	4/17/2024	0.1ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Molybdenum (mg/L)	**MW-2**	**0.002**	**n/a**	**4/16/2024**	**0.003**	**Yes**	**21**	**52.38**	**n/a**	**0.04182**	**NP Inter (NDs)**
Molybdenum (mg/L)	MW-3A	0.002	n/a	4/17/2024	0.001ND	No	21	52.38	n/a	0.04182	NP Inter (NDs)
Molybdenum (mg/L)	MW-4	0.002	n/a	4/16/2024	0.001ND	No	21	52.38	n/a	0.04182	NP Inter (NDs)
Molybdenum (mg/L)	MW-5	0.002	n/a	4/16/2024	0.001ND	No	21	52.38	n/a	0.04182	NP Inter (NDs)
Molybdenum (mg/L)	MW-6	0.002	n/a	4/17/2024	0.001ND	No	21	52.38	n/a	0.04182	NP Inter (NDs)
pH [Field] (SU)	MW-2	7.63	4.86	4/16/2024	6.44	No	23	0	n/a	0.07716	NP Inter (normality)
pH [Field] (SU)	MW-3A	7.63	4.86	4/17/2024	6.72	No	23	0	n/a	0.07716	NP Inter (normality)
pH [Field] (SU)	MW-4	7.63	4.86	4/16/2024	6.52	No	23	0	n/a	0.07716	NP Inter (normality)
pH [Field] (SU)	MW-5	7.63	4.86	4/16/2024	6.45	No	23	0	n/a	0.07716	NP Inter (normality)
pH [Field] (SU)	MW-6	7.63	4.86	4/17/2024	6.48	No	23	0	n/a	0.07716	NP Inter (normality)
Radium 226 + 228 (pCi/L)	MW-2	2.412	n/a	4/16/2024	1.28	No	20	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	MW-3A	2.412	n/a	4/17/2024	1	No	20	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	MW-4	2.412	n/a	4/16/2024	0.48	No	20	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	MW-5	2.412	n/a	4/16/2024	1.6	No	20	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	MW-6	2.412	n/a	4/17/2024	0.351	No	20	0	sqrt(x)	0.01	Param Inter
Selenium (mg/L)	MW-2	0.00105	n/a	4/16/2024	0.0005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Selenium (mg/L)	MW-3A	0.00105	n/a	4/17/2024	0.0005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Selenium (mg/L)	MW-4	0.00105	n/a	4/16/2024	0.0005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Selenium (mg/L)	MW-5	0.00105	n/a	4/16/2024	0.0005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Selenium (mg/L)	MW-6	0.00105	n/a	4/17/2024	0.0005ND	No	21	90.48	n/a	0.04182	NP Inter (NDs)
Sulfate (mg/L)	**MW-2**	**47.94**	**n/a**	**4/16/2024**	**390**	**Yes**	**23**	**0**	**ln(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	**MW-3A**	**47.94**	**n/a**	**4/17/2024**	**3200**	**Yes**	**23**	**0**	**ln(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	**MW-4**	**47.94**	**n/a**	**4/16/2024**	**3850**	**Yes**	**23**	**0**	**ln(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	MW-5	47.94	n/a	4/16/2024	0.25ND	No	23	0	ln(x)	0.01	Param Inter
Sulfate (mg/L)	**MW-6**	**47.94**	**n/a**	**4/17/2024**	**2710**	**Yes**	**23**	**0**	**ln(x)**	**0.01**	**Param Inter**
Thallium (mg/L)	MW-2	0.000498	n/a	4/16/2024	0.00005ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Thallium (mg/L)	MW-3A	0.000498	n/a	4/17/2024	0.00005ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Thallium (mg/L)	MW-4	0.000498	n/a	4/16/2024	0.00005ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Thallium (mg/L)	MW-5	0.000498	n/a	4/16/2024	0.00005ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)
Thallium (mg/L)	MW-6	0.000498	n/a	4/17/2024	0.00005ND	No	21	61.9	n/a	0.04182	NP Inter (NDs)

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 6/11/2024, 8:23 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Total Dissolved Solids (mg/L)	**MW-2**	**728.7**	**n/a**	**4/16/2024**	**1050**	**Yes**	**23**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-3A**	**728.7**	**n/a**	**4/17/2024**	**5080**	**Yes**	**23**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-4**	**728.7**	**n/a**	**4/16/2024**	**5220**	**Yes**	**23**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-5**	**728.7**	**n/a**	**4/16/2024**	**3920**	**Yes**	**23**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-6**	**728.7**	**n/a**	**4/17/2024**	**4180**	**Yes**	**23**	**0**	**x^2**	**0.01**	**Param Inter**

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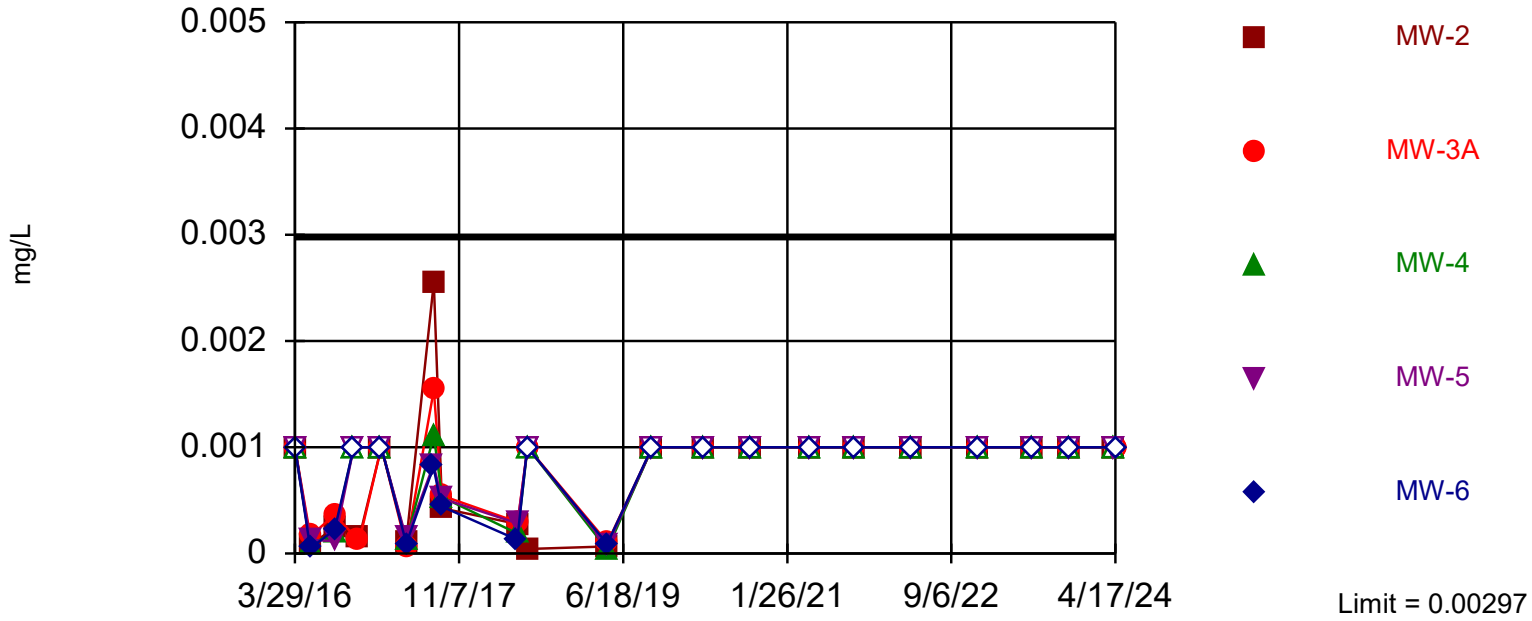
Hollow symbols indicate censored values.

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 21 background values. 61.9% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Antimony Analysis Run 6/11/2024 8:22 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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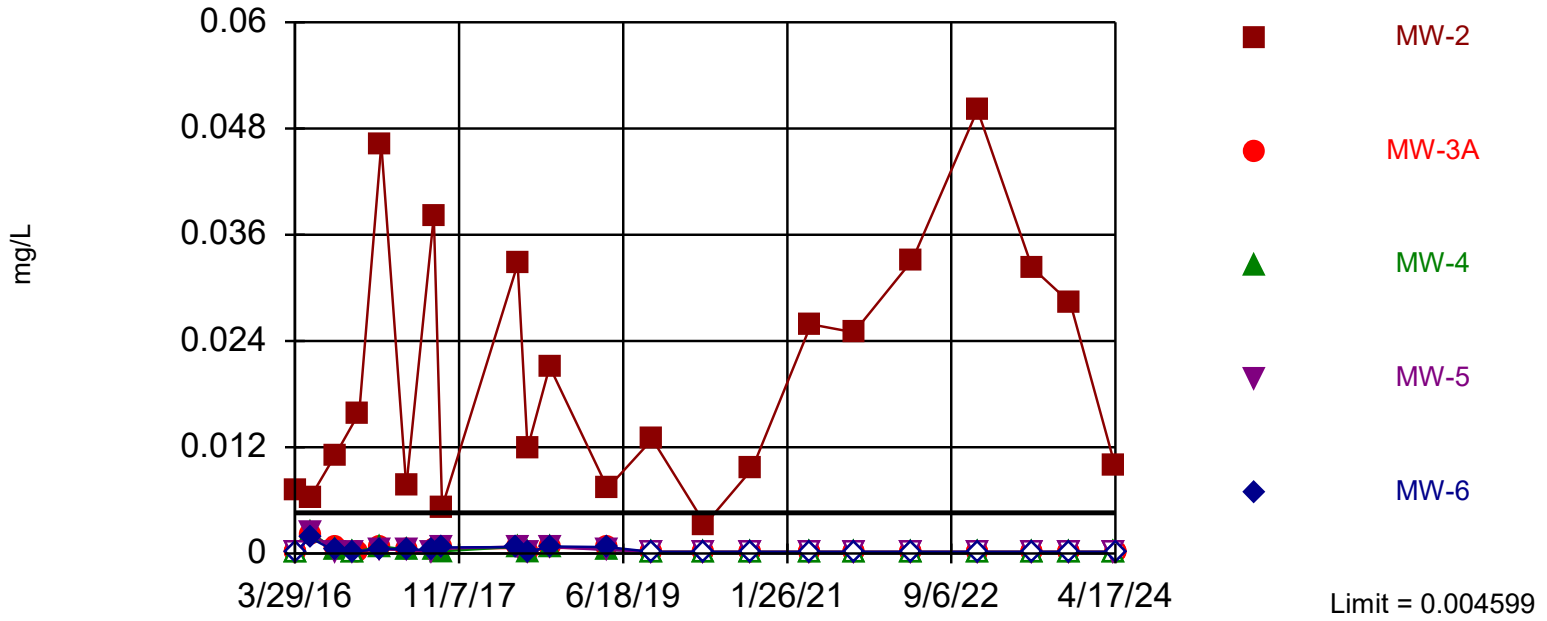
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-7.232, Std. Dev.=0.7185, n=22, 9.091% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9188, critical = 0.911. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Arsenic Analysis Run 6/11/2024 8:22 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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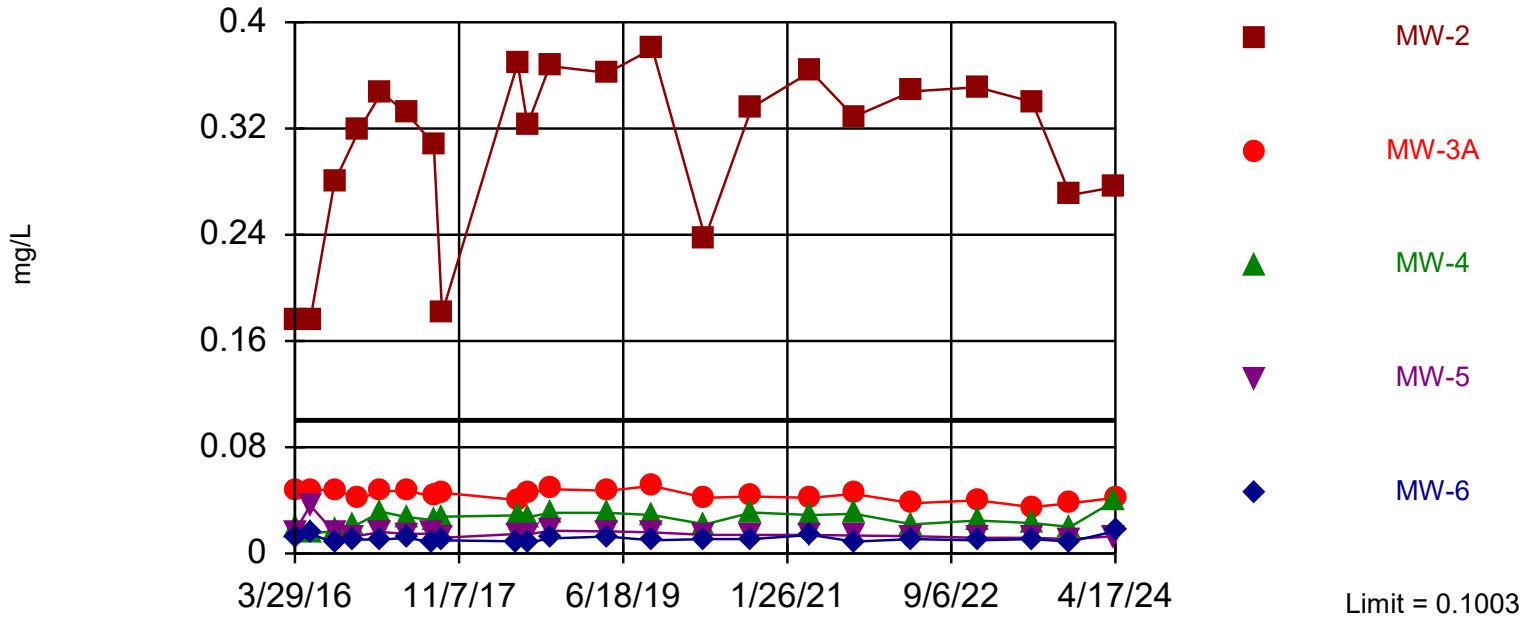
Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.08132, Std. Dev.=0.007386, n=22. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9717, critical = 0.911. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Barium Analysis Run 6/11/2024 8:22 AM

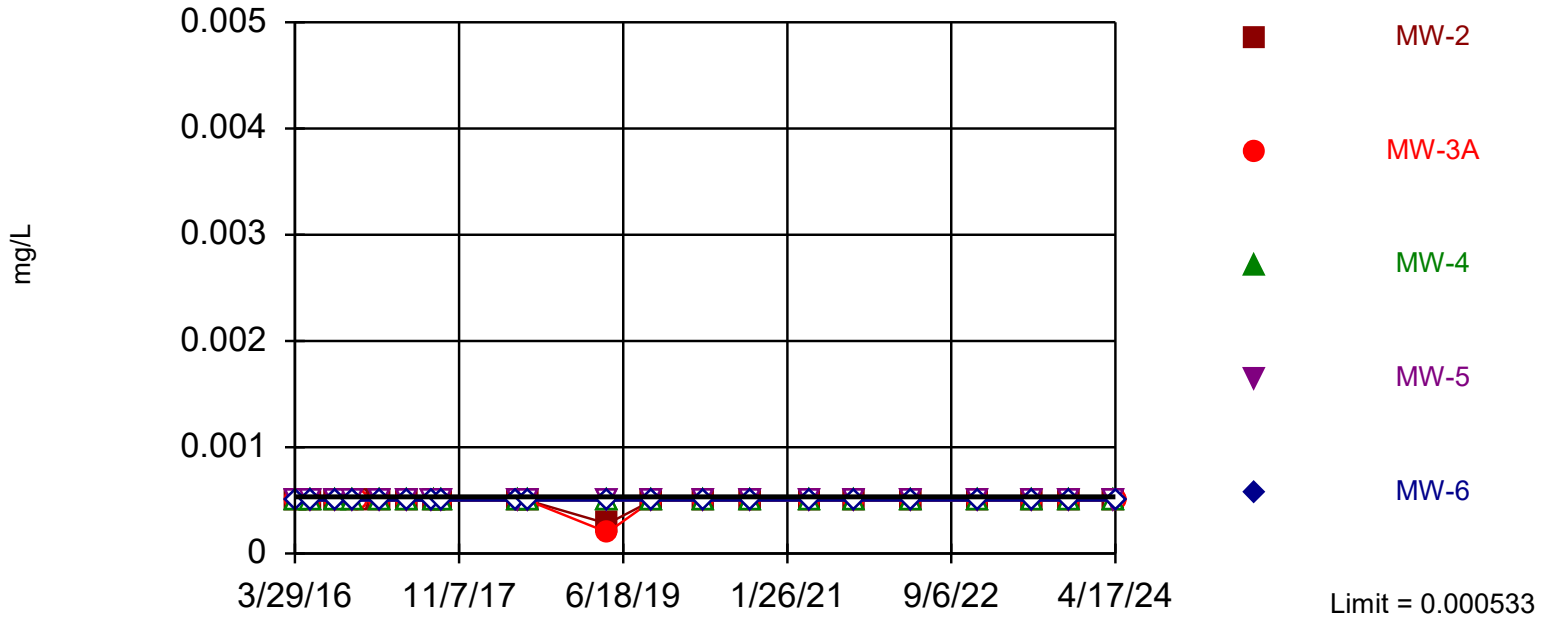
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 21 background values. 95.24% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Beryllium Analysis Run 6/11/2024 8:22 AM

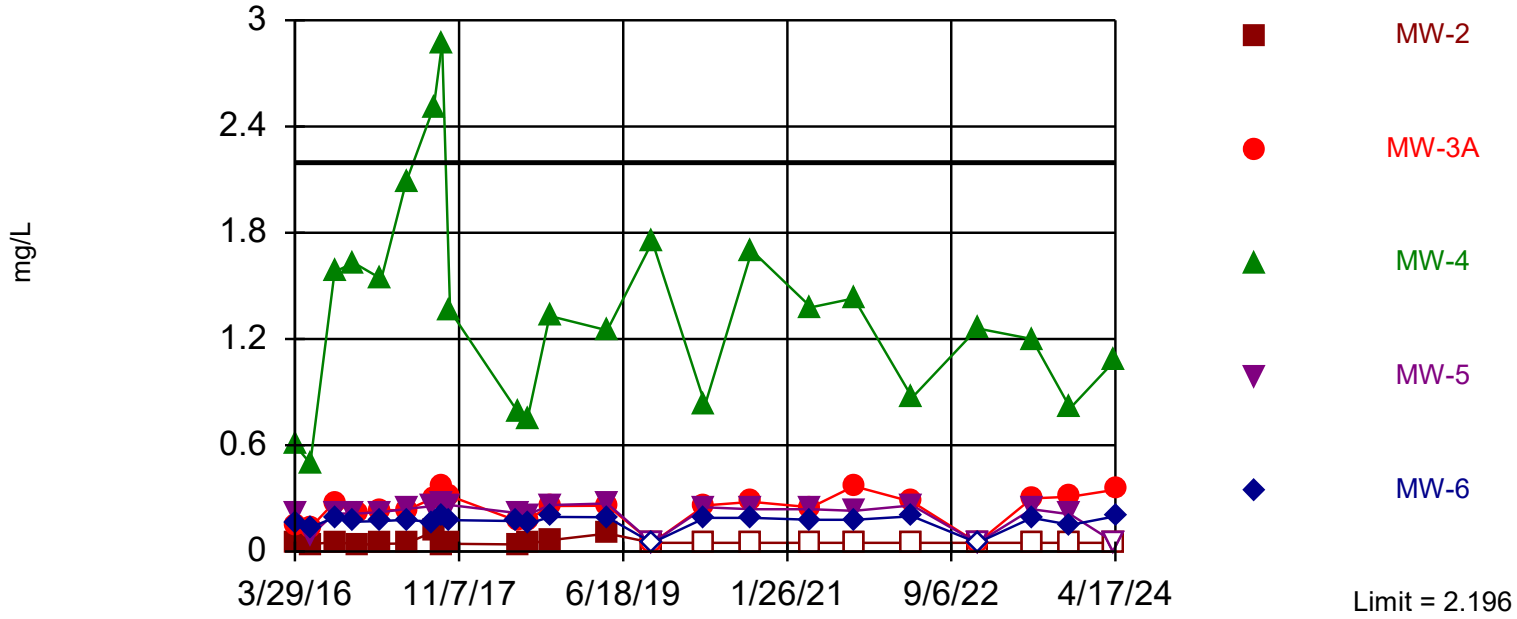
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1.741, Std. Dev.=0.1774, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9255, critical = 0.914. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Boron Analysis Run 6/11/2024 8:22 AM

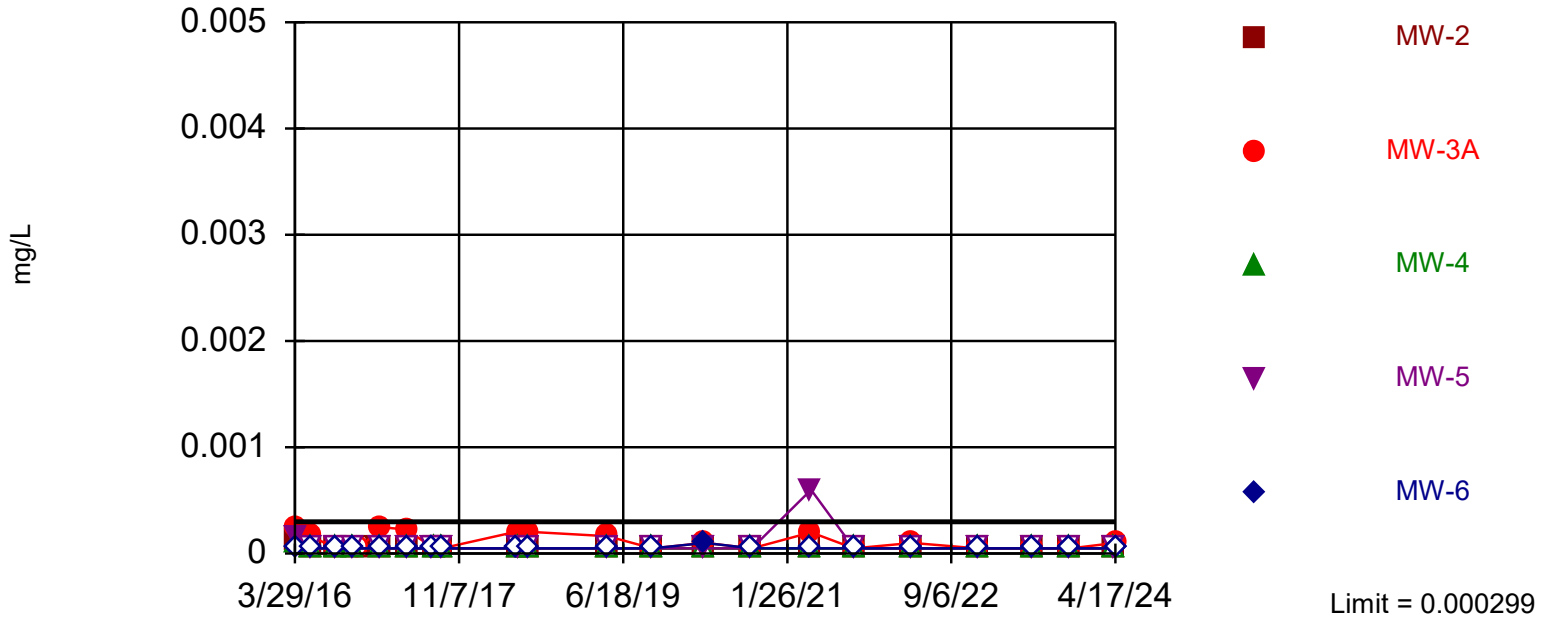
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 21 background values. 90.48% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. 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 6/11/2024 8:22 AM

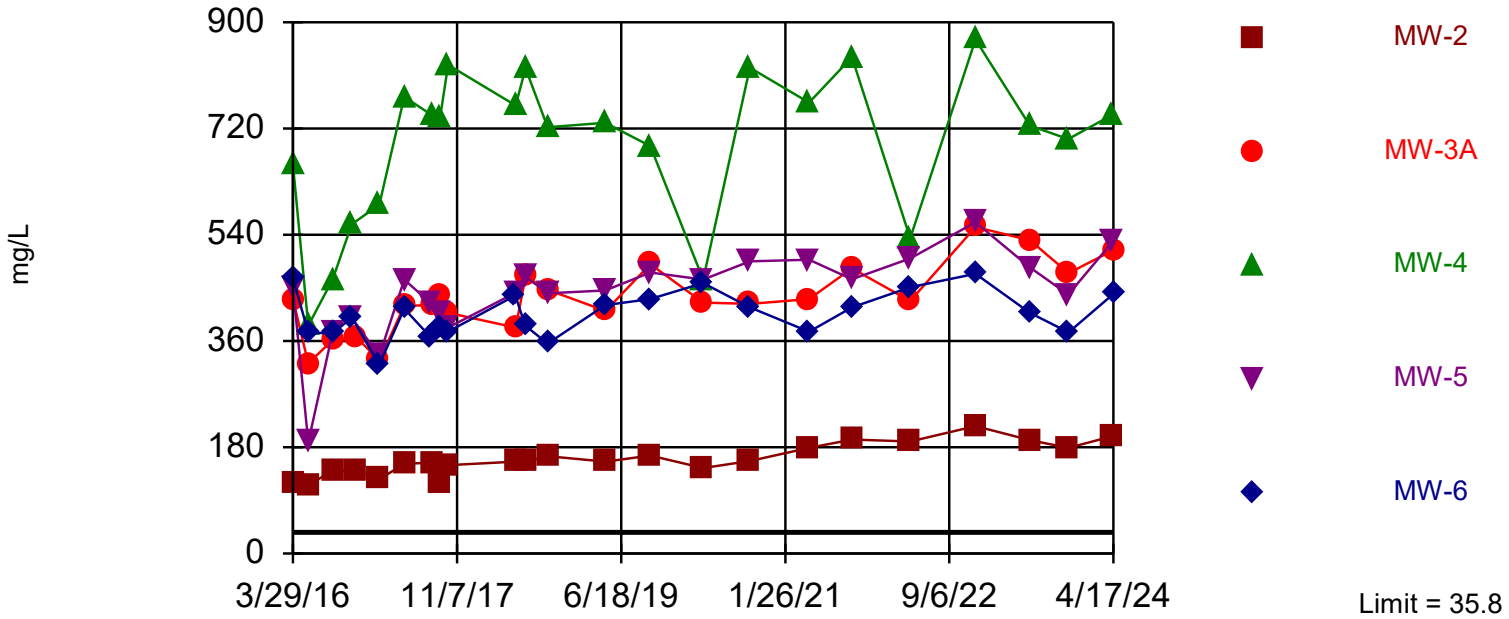
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=28.72, Std. Dev.=2.762, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9418, critical = 0.914. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. At least one background value was a statistical outlier but was below the user-set cutoff of 3 times the median. No background outliers were found.

Constituent: Calcium Analysis Run 6/11/2024 8:22 AM

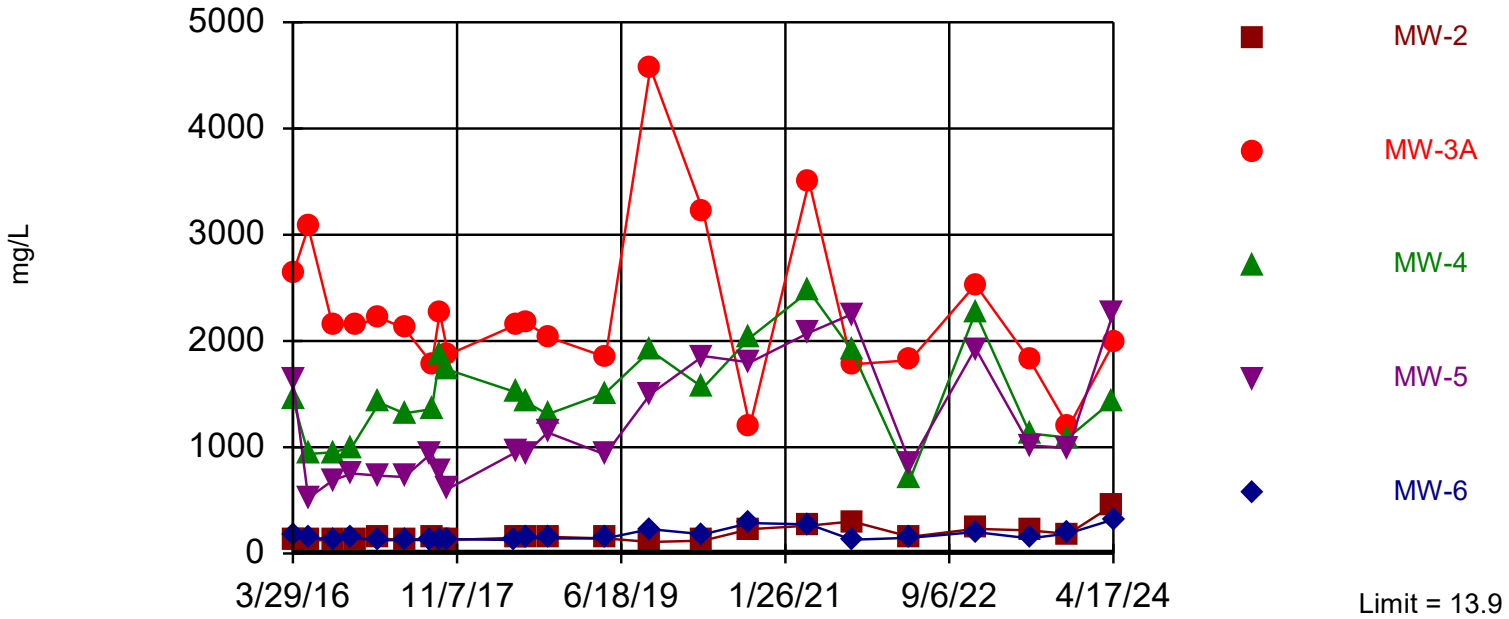
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 23 background values. Report alpha = 0.1786. Individual comparison alpha = 0.03858. 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: Chloride Analysis Run 6/11/2024 8:22 AM

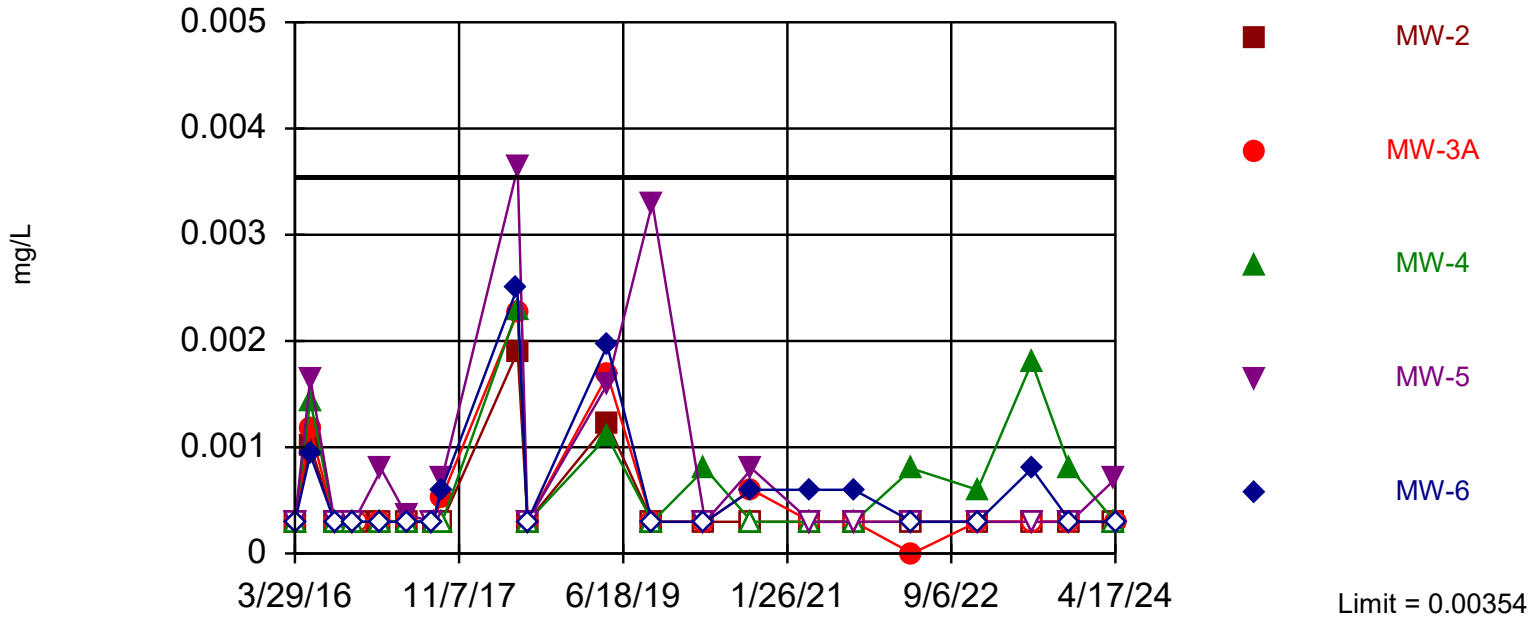
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 21 background values. 76.19% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. 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 6/11/2024 8:22 AM

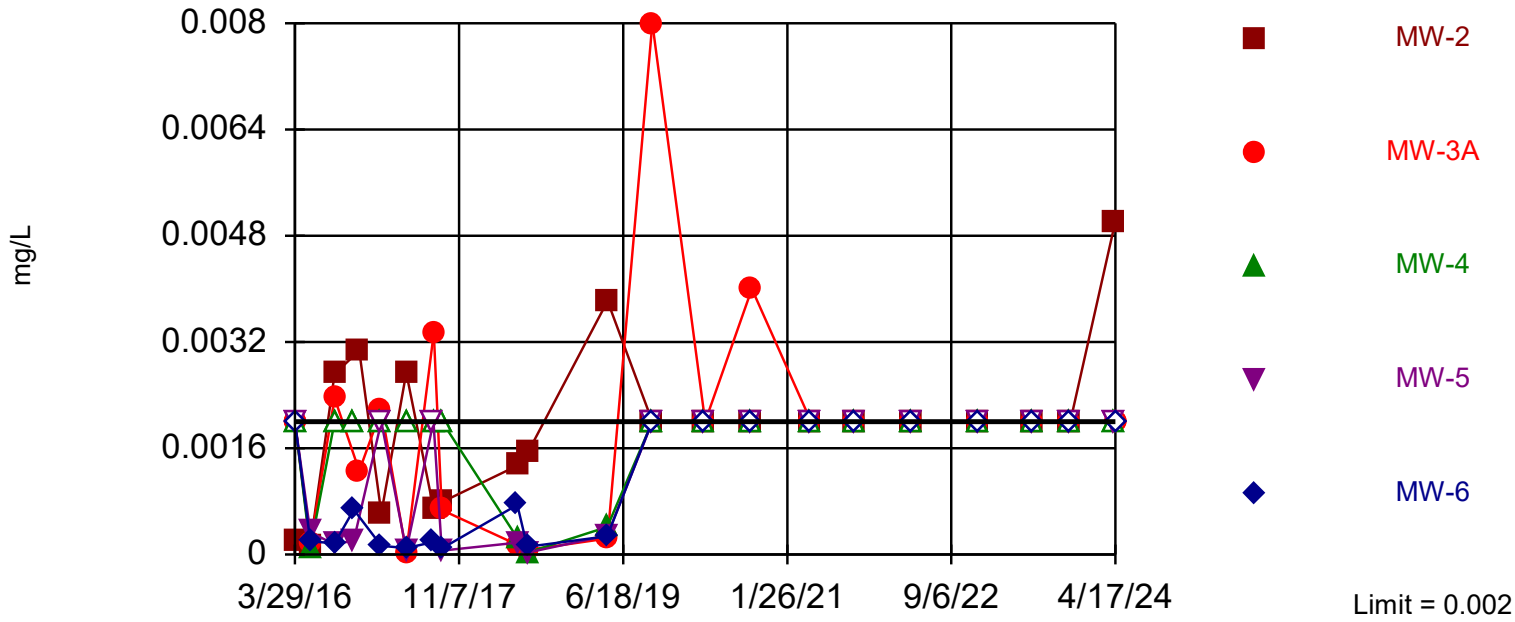
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 21 background values. 47.62% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. 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: Cobalt Analysis Run 6/11/2024 8:22 AM

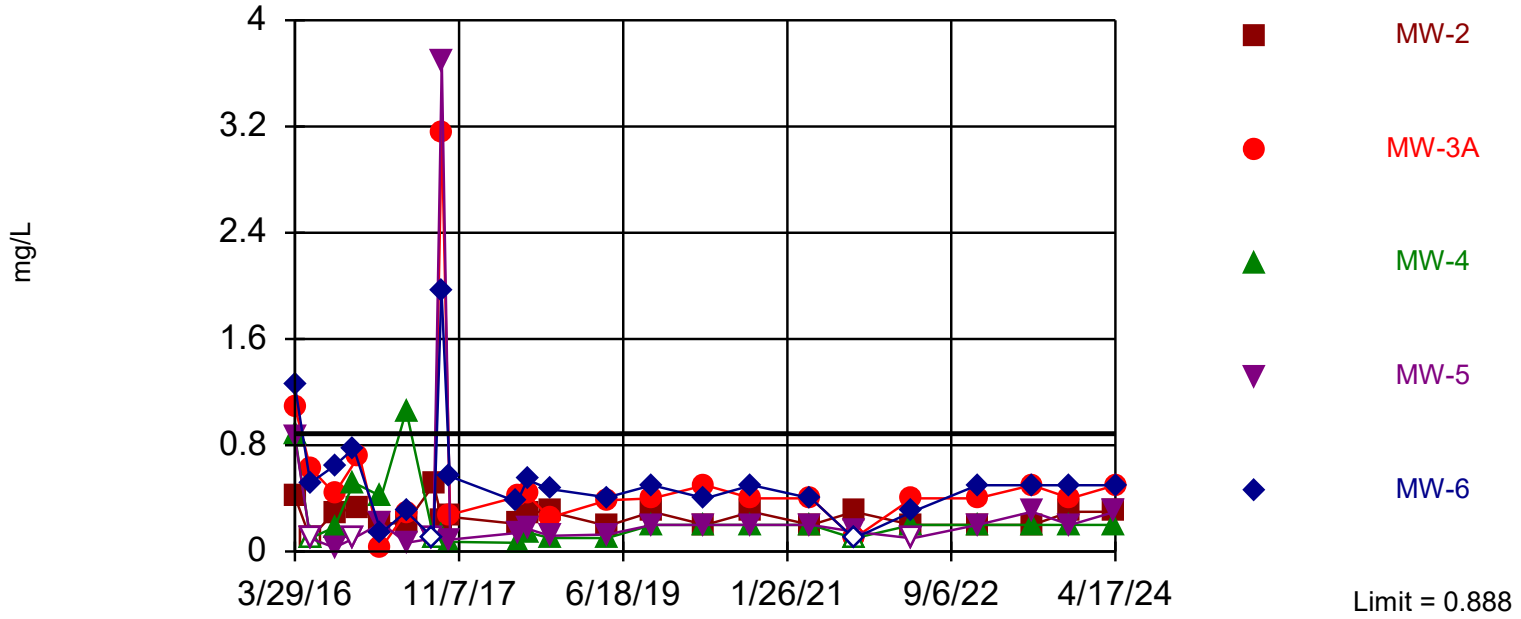
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 23 background values. Report alpha = 0.1786. Individual comparison alpha = 0.03858. 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: Fluoride Analysis Run 6/11/2024 8:22 AM

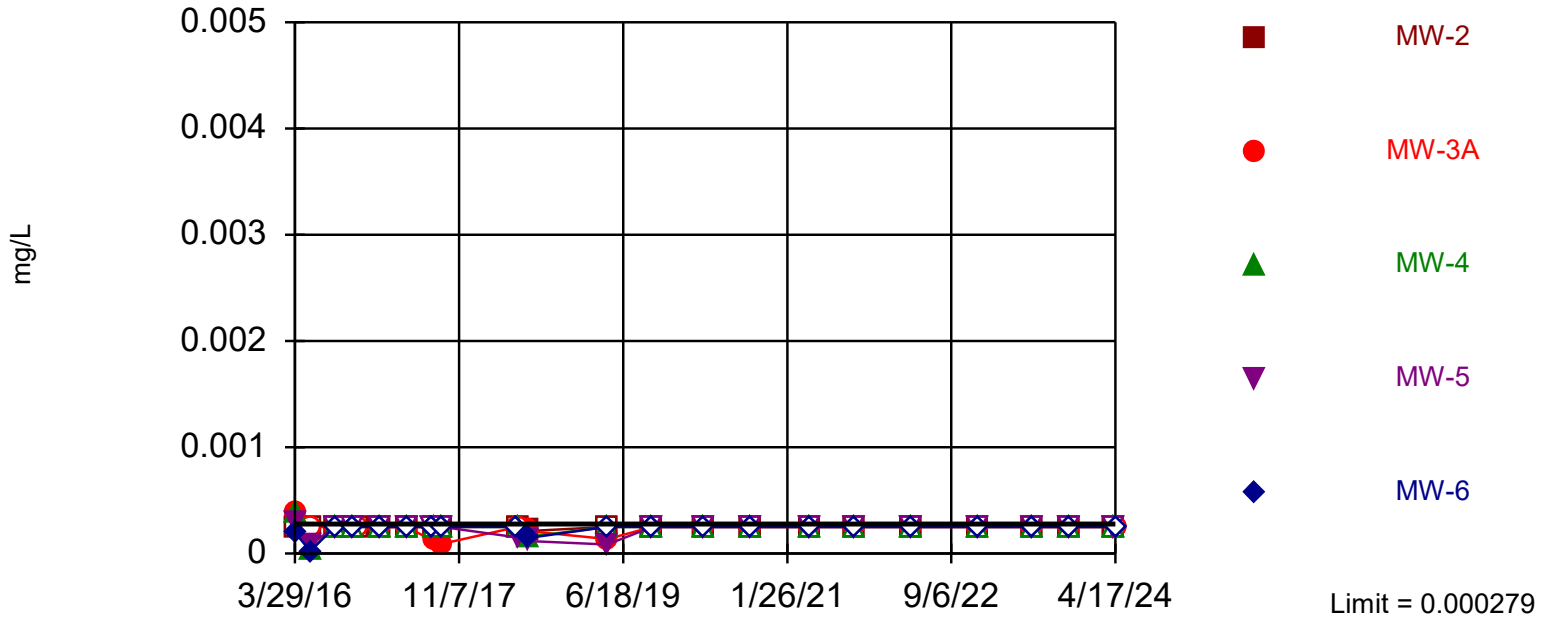
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 21 background values. 71.43% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. 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 6/11/2024 8:22 AM

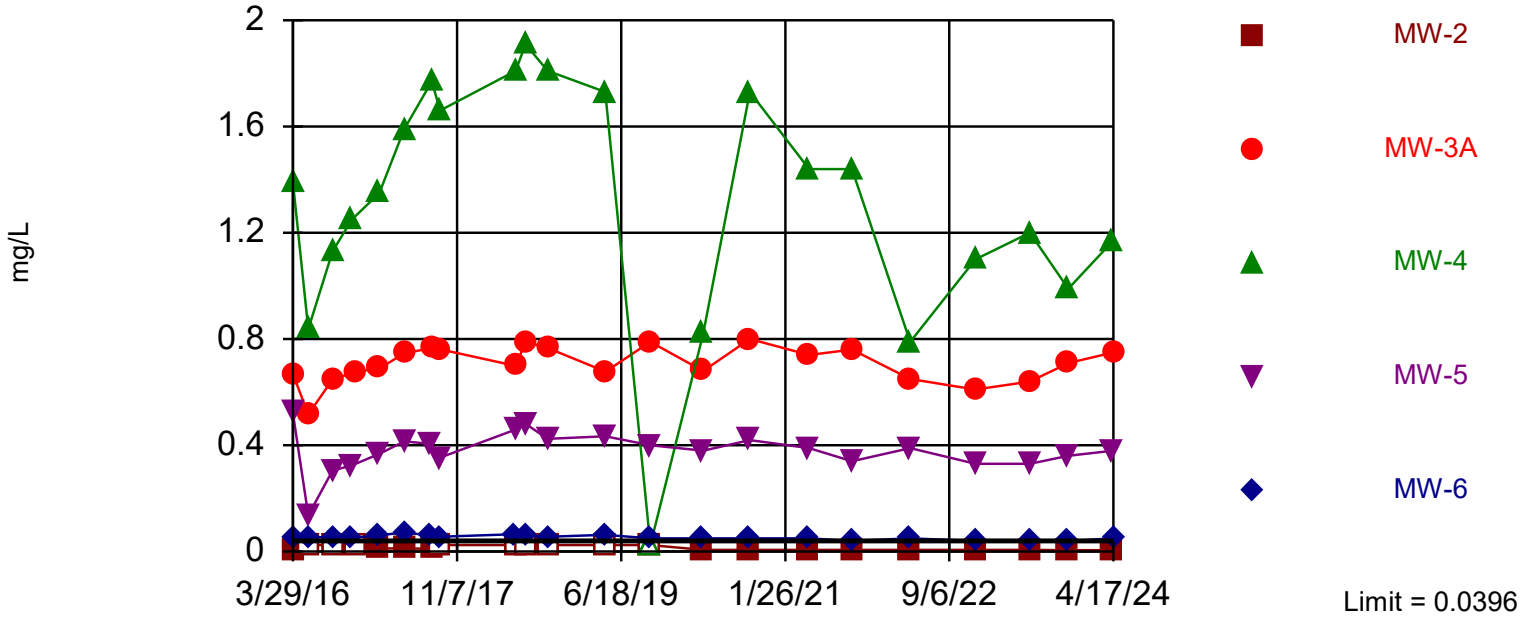
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 22 background values. 9.091% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Lithium Analysis Run 6/11/2024 8:22 AM

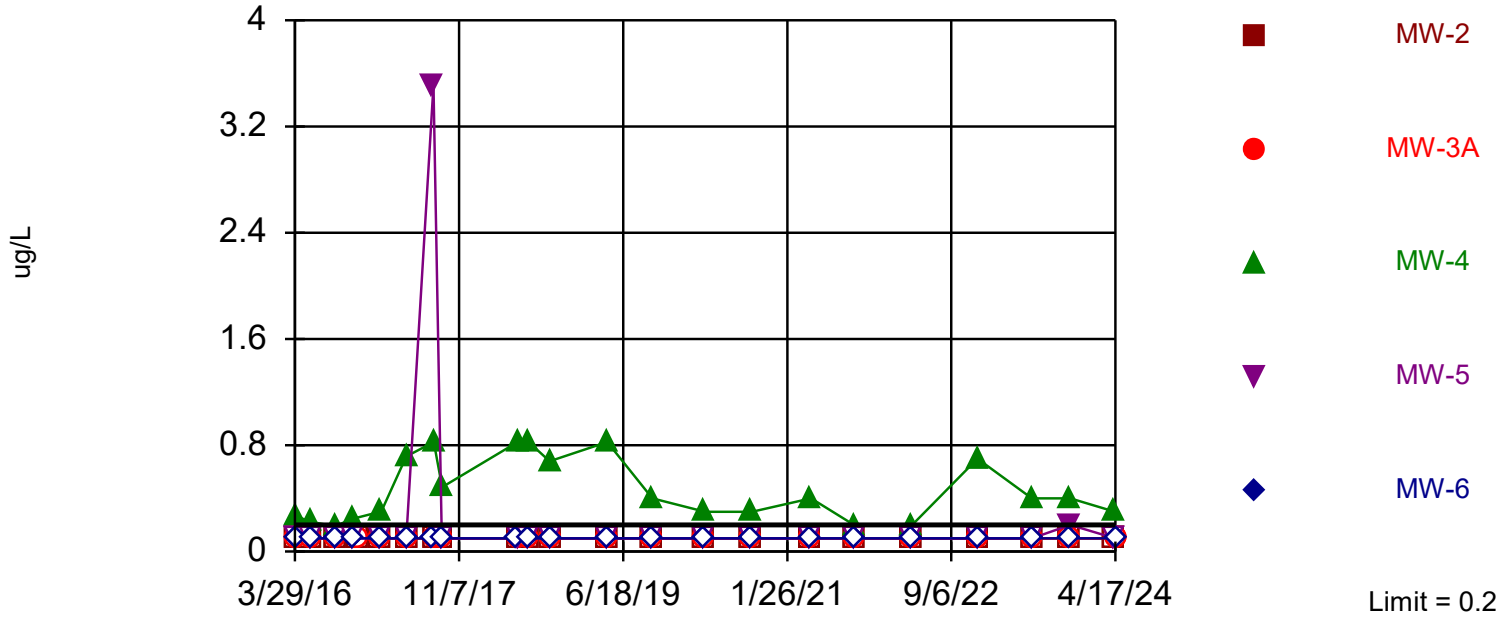
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-4

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 22 background values. 95.45% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Mercury Analysis Run 6/11/2024 8:22 AM

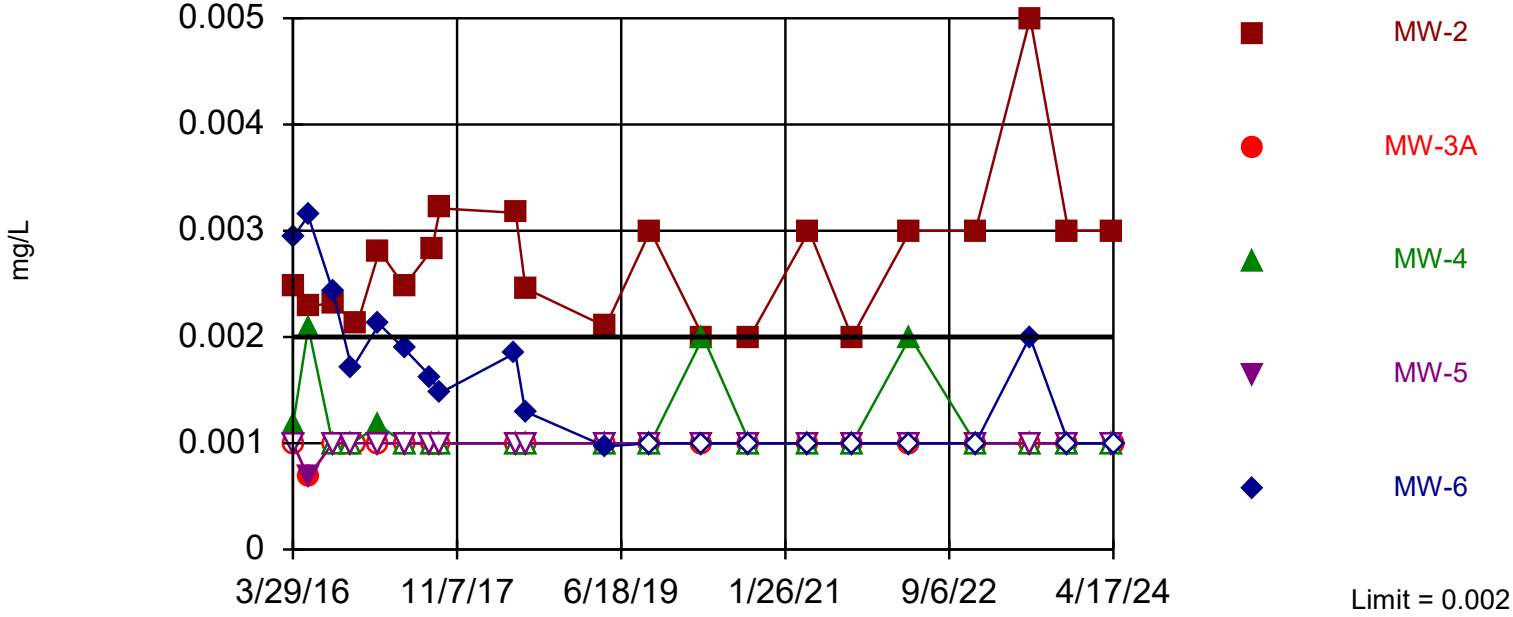
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 21 background values. 52.38% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Molybdenum Analysis Run 6/11/2024 8:22 AM

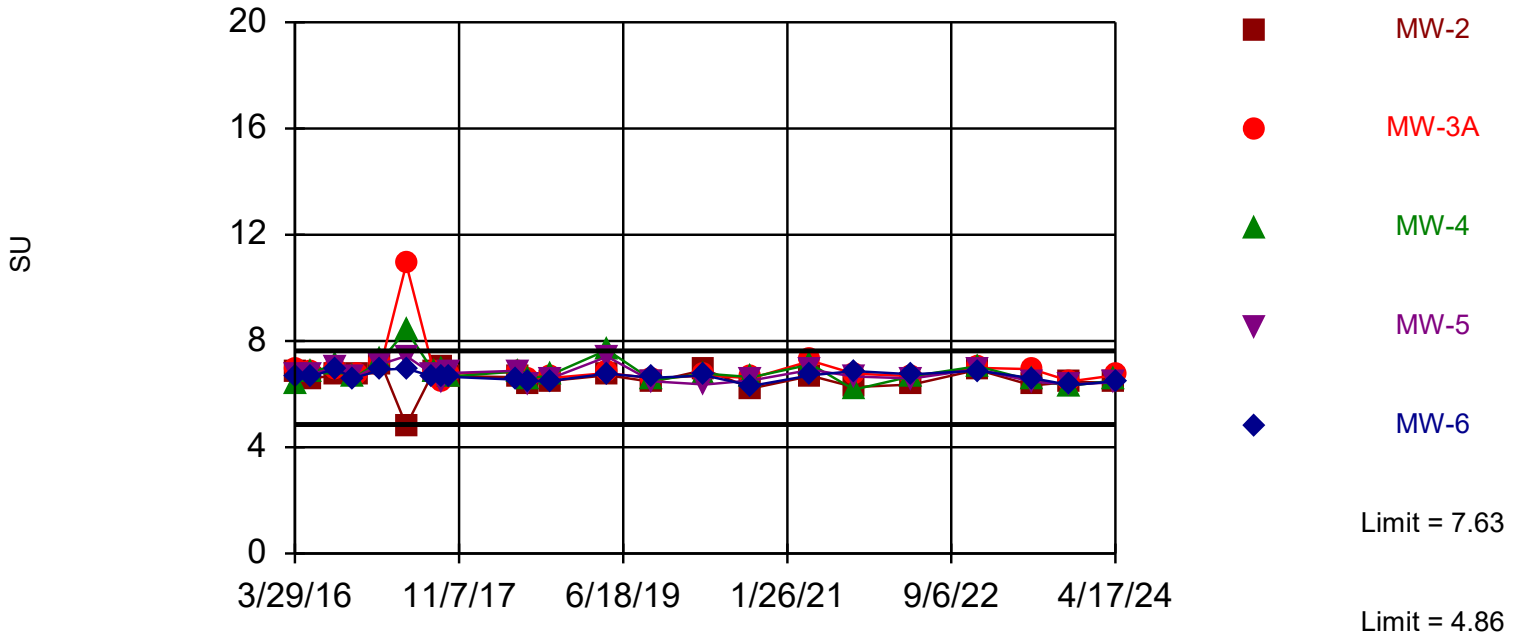
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Within Limits

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limits are highest and lowest of 23 background values. Report alpha = 0.3571. Individual comparison alpha = 0.07716. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: pH [Field] Analysis Run 6/11/2024 8:22 AM

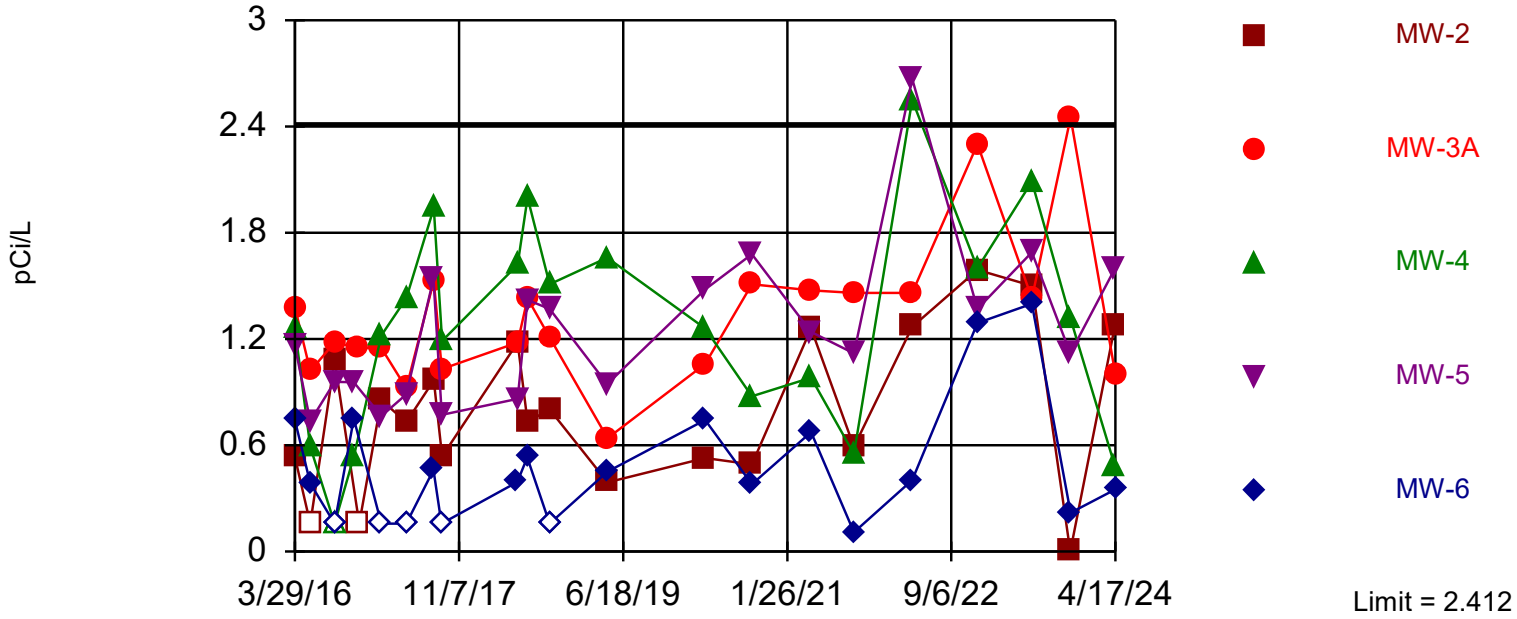
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=0.959, Std. Dev.=0.2283, n=20. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9058, critical = 0.905. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. One background outlier was removed: 0.176 (11/7/2023).

Constituent: Radium 226 + 228 Analysis Run 6/11/2024 8:22 AM

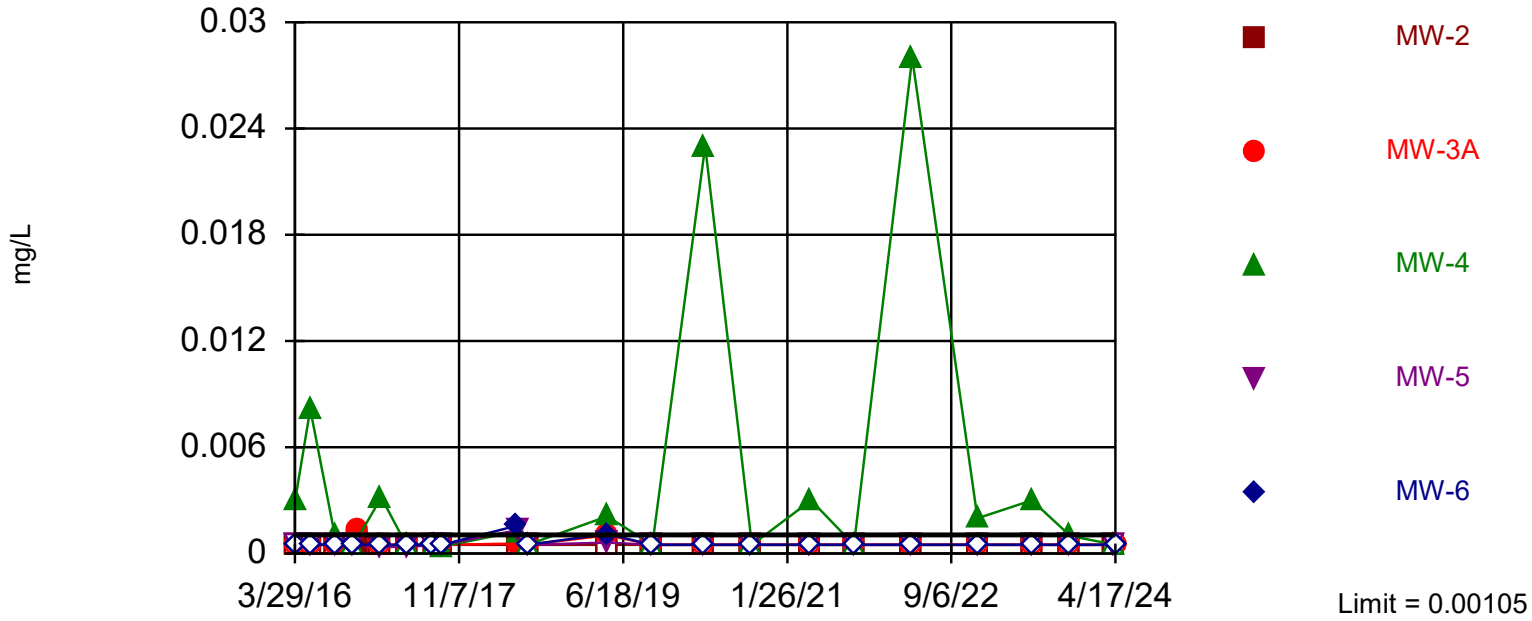
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 21 background values. 90.48% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Selenium Analysis Run 6/11/2024 8:22 AM

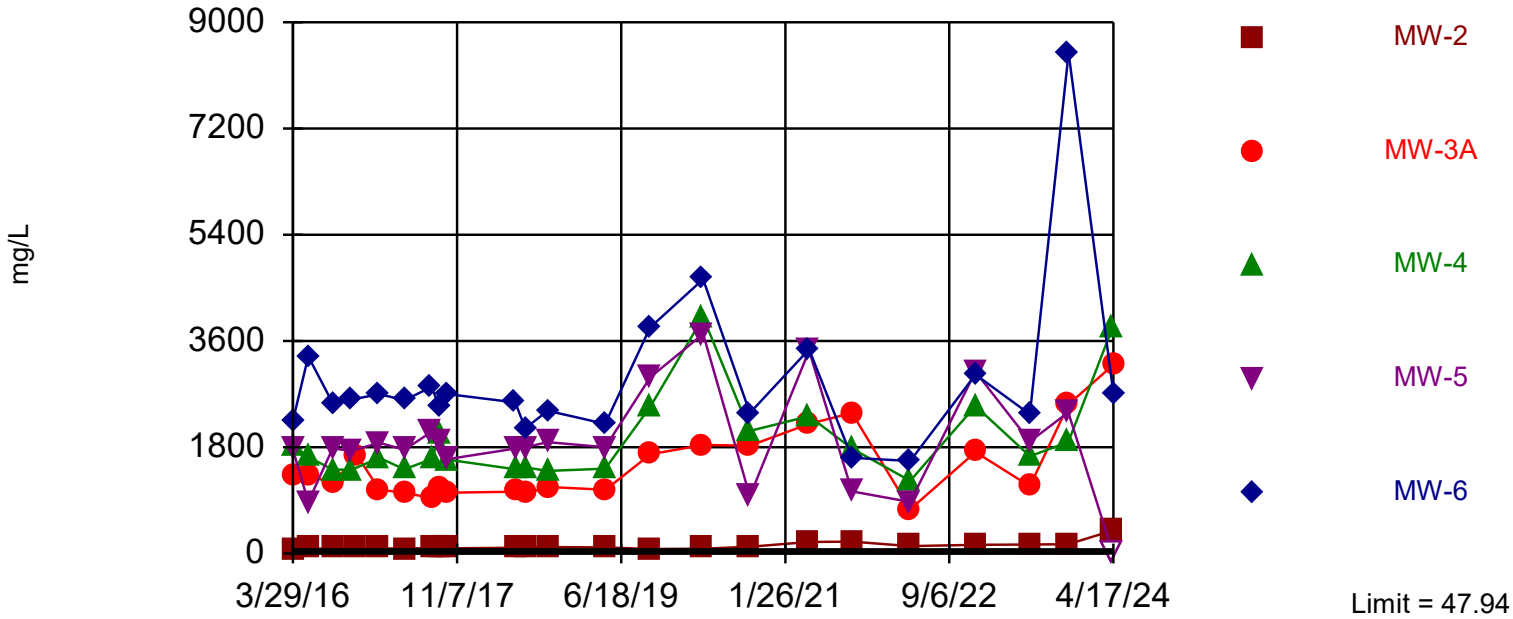
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2, MW-3A, MW-4, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=3.292, Std. Dev.=0.2256, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9333, critical = 0.914. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Sulfate Analysis Run 6/11/2024 8:22 AM

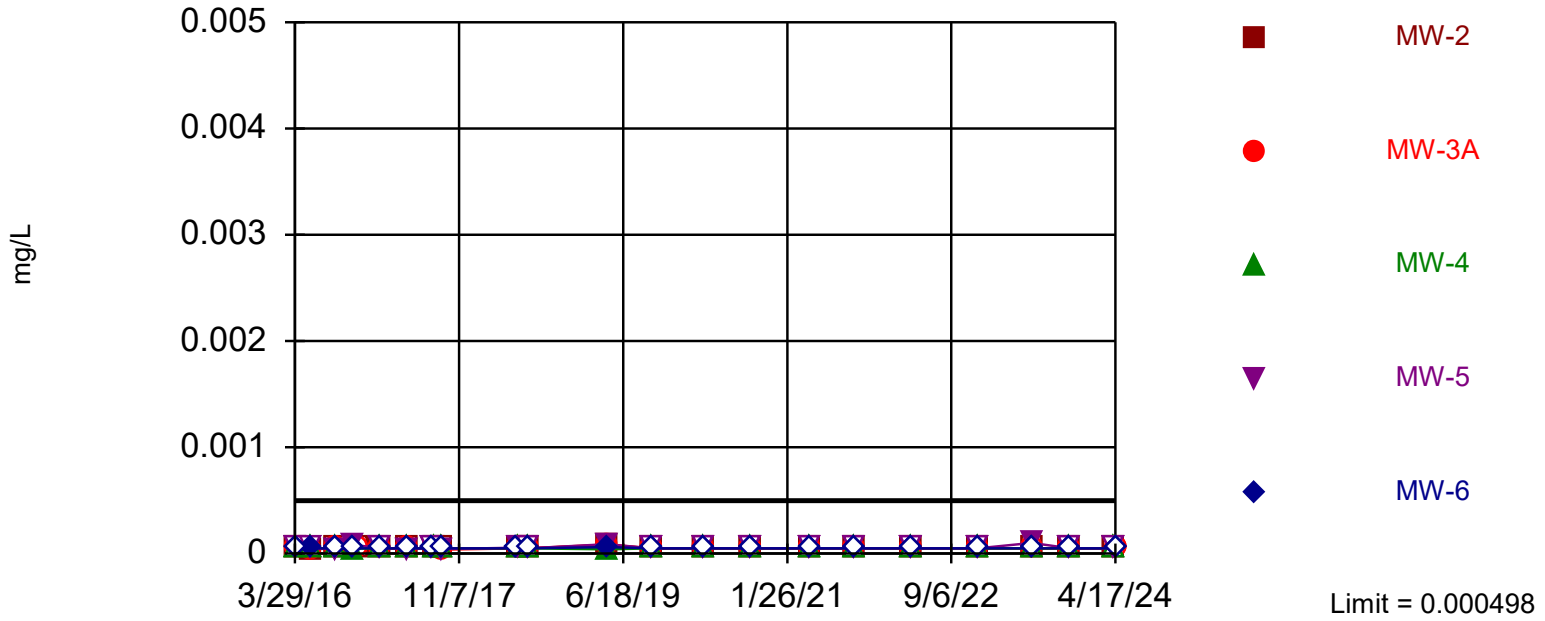
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 21 background values. 61.9% NDs. Report alpha = 0.1923. Individual comparison alpha = 0.04182. 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 6/11/2024 8:22 AM

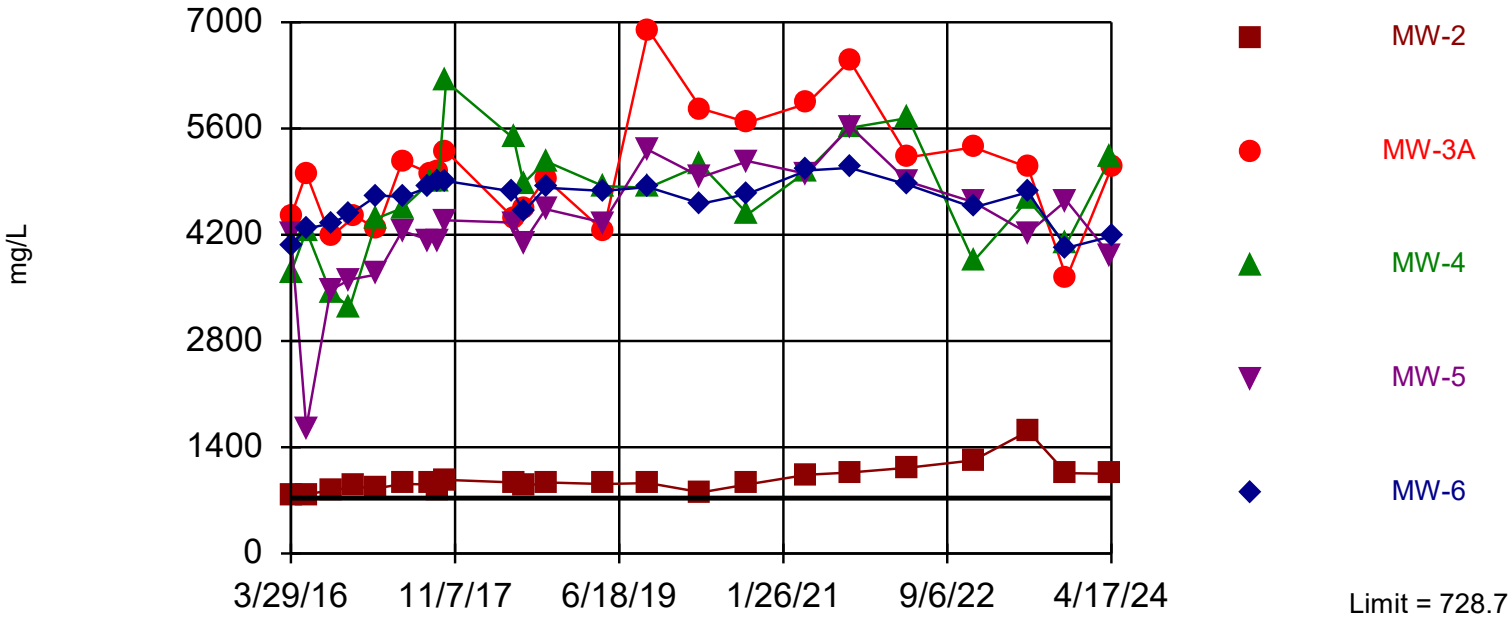
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary (based on square transformation): Mean=342486, Std. Dev.=73602, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9195, critical = 0.914. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Total Dissolved Solids Analysis Run 6/11/2024 8:22 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Confidence Interval

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 6/11/2024, 8:29 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	MW-1 (bg)	0.00102	0.0005914	0.01	No	22	9.091	x^(1/3)	0.05	Param.
Arsenic (mg/L)	**MW-2**	**0.02518**	**0.01489**	**0.01**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Arsenic (mg/L)	MW-3A	0.000569	0.0002	0.01	No	22	50	No	0.05	NP (normality)
Arsenic (mg/L)	MW-4	0.000445	0.0002	0.01	No	22	54.55	No	0.05	NP (NDs)
Arsenic (mg/L)	MW-5	0.000356	0.0002	0.01	No	22	50	No	0.05	NP (normality)
Arsenic (mg/L)	MW-6	0.000467	0.0002	0.01	No	22	50	No	0.05	NP (normality)
Barium (mg/L)	MW-1 (bg)	0.08403	0.07861	2	No	22	0	No	0.05	Param.
Barium (mg/L)	MW-2	0.334	0.2926	2	No	22	0	x^2	0.05	Param.
Barium (mg/L)	MW-3A	0.04543	0.04241	2	No	22	0	No	0.05	Param.
Barium (mg/L)	MW-4	0.0281	0.02386	2	No	22	0	No	0.05	Param.
Barium (mg/L)	MW-5	0.0158	0.013	2	No	22	0	No	0.05	NP (normality)
Barium (mg/L)	MW-6	0.01181	0.01016	2	No	22	0	No	0.05	Param.
Cobalt (mg/L)	MW-1 (bg)	0.002	0.000793	0.006	No	21	47.62	No	0.05	NP (normality)
Cobalt (mg/L)	MW-2	0.004489	0.002648	0.006	No	21	42.86	No	0.05	Param.
Cobalt (mg/L)	MW-3A	0.00218	0.00126	0.006	No	21	42.86	No	0.05	NP (Cohens/xfrm)
Cobalt (mg/L)	MW-4	0.002	0.000415	0.006	No	21	80.95	No	0.05	NP (NDs)
Cobalt (mg/L)	MW-5	0.002	0.000288	0.006	No	21	61.9	No	0.05	NP (NDs)
Cobalt (mg/L)	MW-6	0.002	0.0002	0.006	No	21	52.38	No	0.05	NP (NDs)
Lithium (mg/L)	MW-1 (bg)	0.0314	0.0298	0.04	No	22	9.091	No	0.05	NP (normality)
Lithium (mg/L)	MW-2	0.025	0.006	0.04	No	22	40.91	No	0.05	NP (normality)
Lithium (mg/L)	**MW-3A**	**0.7317**	**0.6808**	**0.04**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-4**	**1.481**	**1.15**	**0.04**	**Yes**	**22**	**4.545**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-5**	**0.4073**	**0.3515**	**0.04**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-6**	**0.05581**	**0.04953**	**0.04**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Mercury (ug/L)	MW-1 (bg)	0.1	0.1	2	No	22	95.45	No	0.05	NP (NDs)
Mercury (ug/L)	MW-2	0.1	0.1	2	No	22	100	No	0.05	NP (NDs)
Mercury (ug/L)	MW-3A	0.1	0.1	2	No	22	100	No	0.05	NP (NDs)
Mercury (ug/L)	MW-4	0.504	0.3431	2	No	22	0	x^(1/3)	0.05	Param.
Mercury (ug/L)	MW-5	0.2	0.1	2	No	22	90.91	No	0.05	NP (NDs)
Mercury (ug/L)	MW-6	0.1	0.1	2	No	22	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-1 (bg)	0.0013	0.001	0.1	No	21	52.38	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-2	0.00289	0.00245	0.1	No	21	0	ln(x)	0.05	Param.
Molybdenum (mg/L)	MW-3A	0.001	0.001	0.1	No	21	95.24	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-4	0.00117	0.001	0.1	No	21	76.19	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-5	0.001	0.001	0.1	No	21	95.24	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-6	0.00185	0.001	0.1	No	21	42.86	No	0.05	NP (normality)

Confidence Interval

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 6/11/2024, 8:29 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	**MW-2**	**0.02518**	**0.01489**	**0.01**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-3A**	**0.7317**	**0.6808**	**0.04**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-4**	**1.481**	**1.15**	**0.04**	**Yes**	**22**	**4.545**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-5**	**0.4073**	**0.3515**	**0.04**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-6**	**0.05581**	**0.04953**	**0.04**	**Yes**	**22**	**0**	**No**	**0.05**	**Param.**

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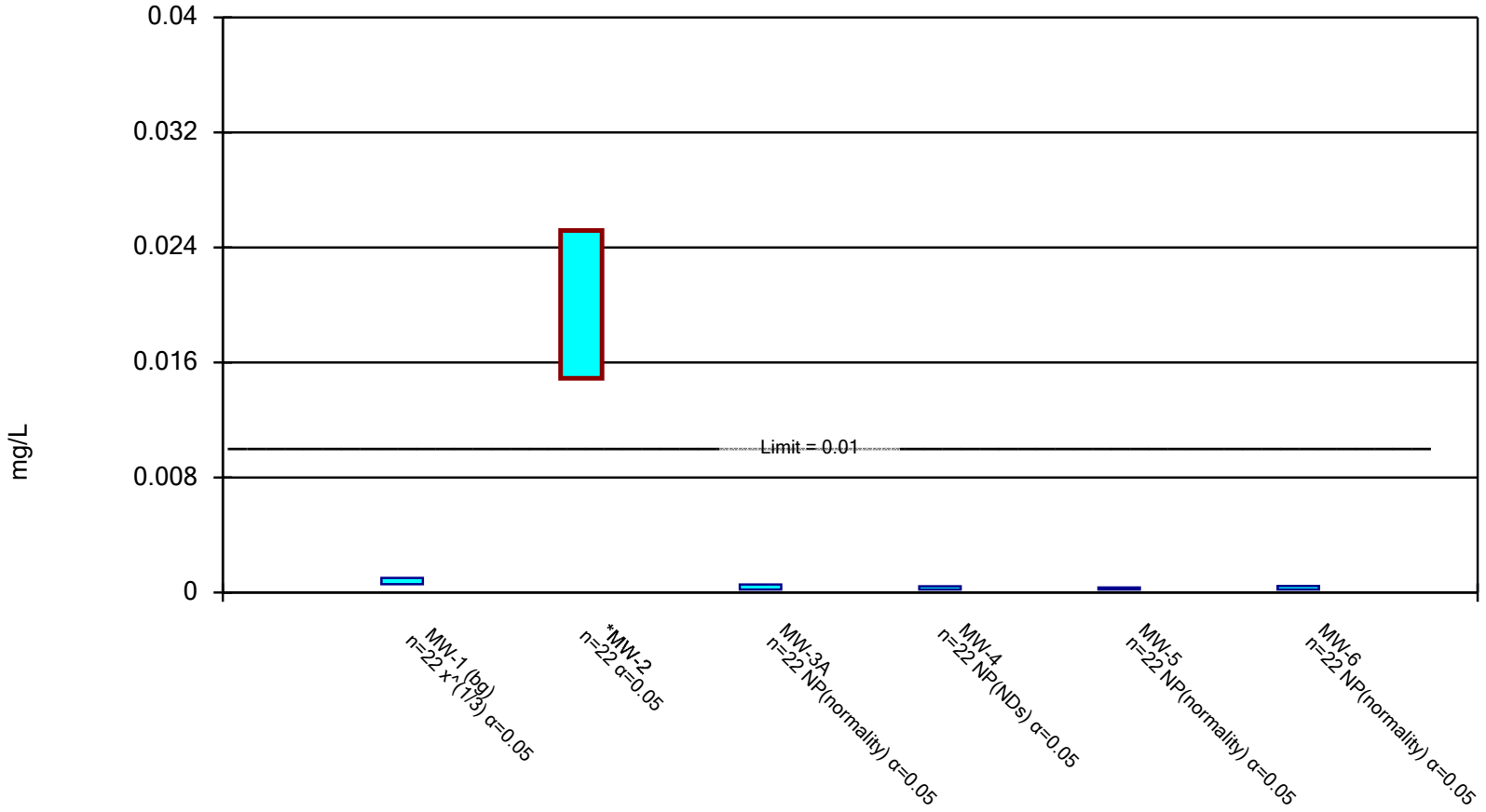
Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Normality Test: Shapiro Wilk, alpha based on n.

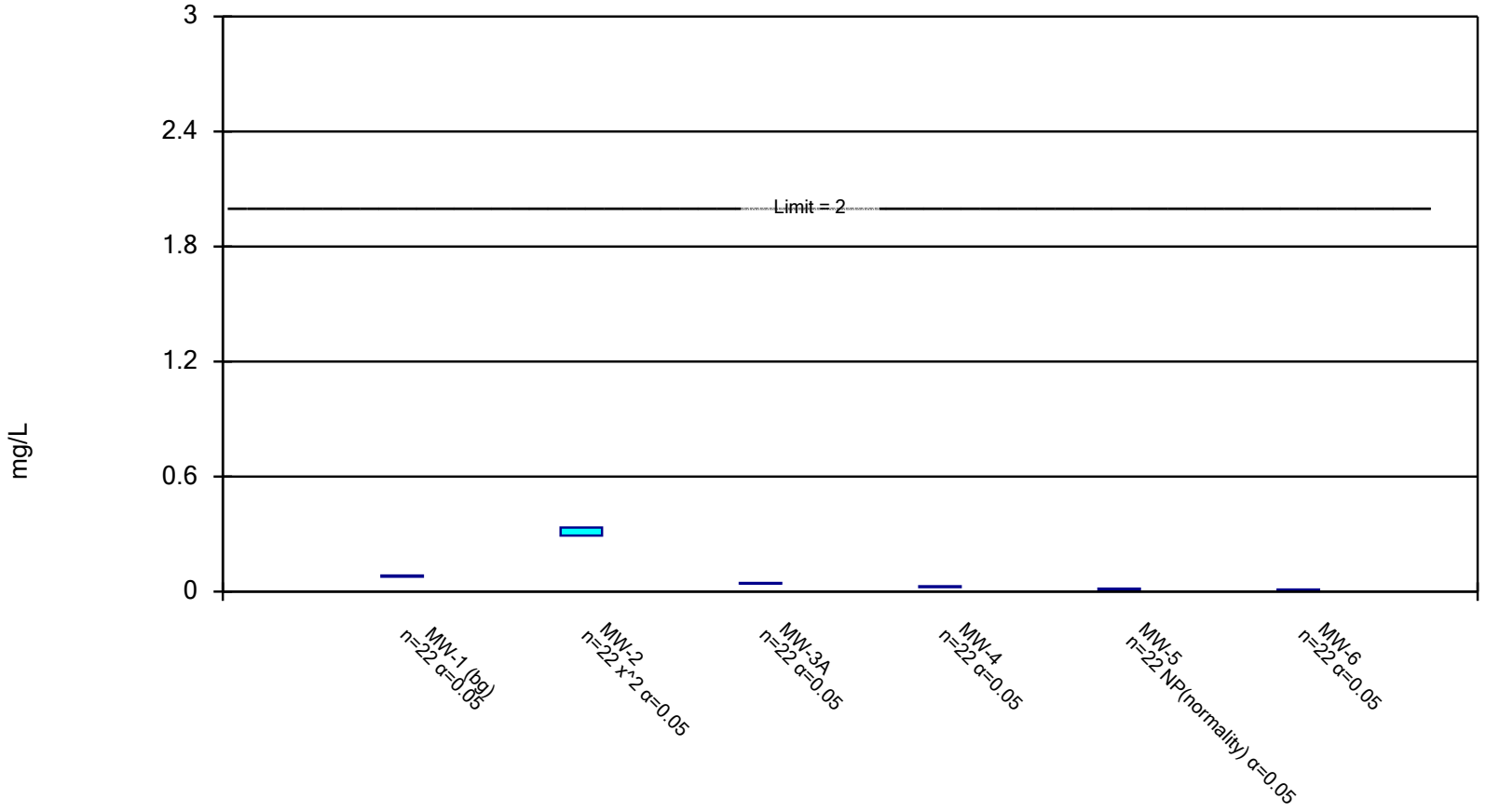


Constituent: Arsenic Analysis Run 6/11/2024 8:26 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 6/11/2024 8:26 AM

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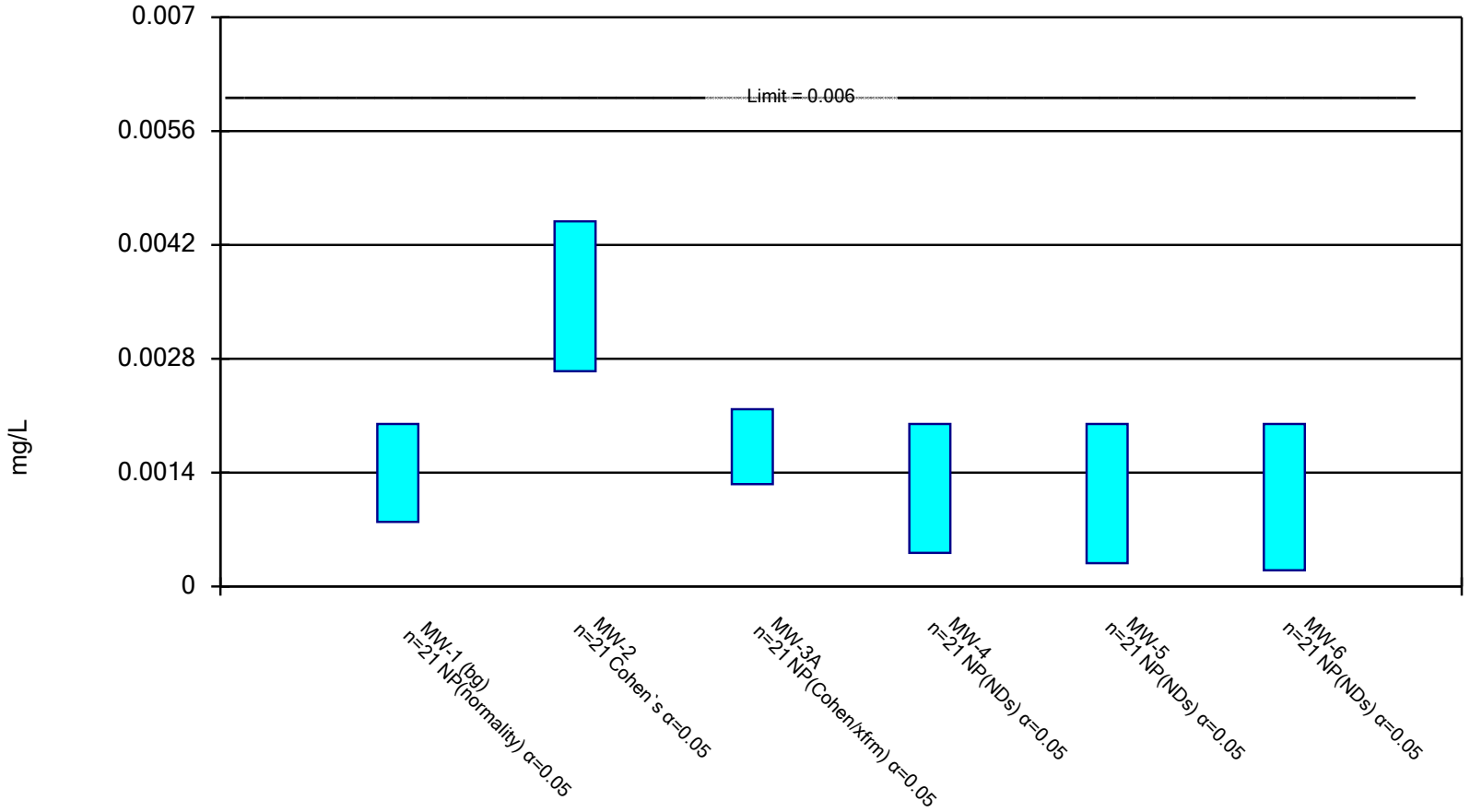
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/11/2024 8:26 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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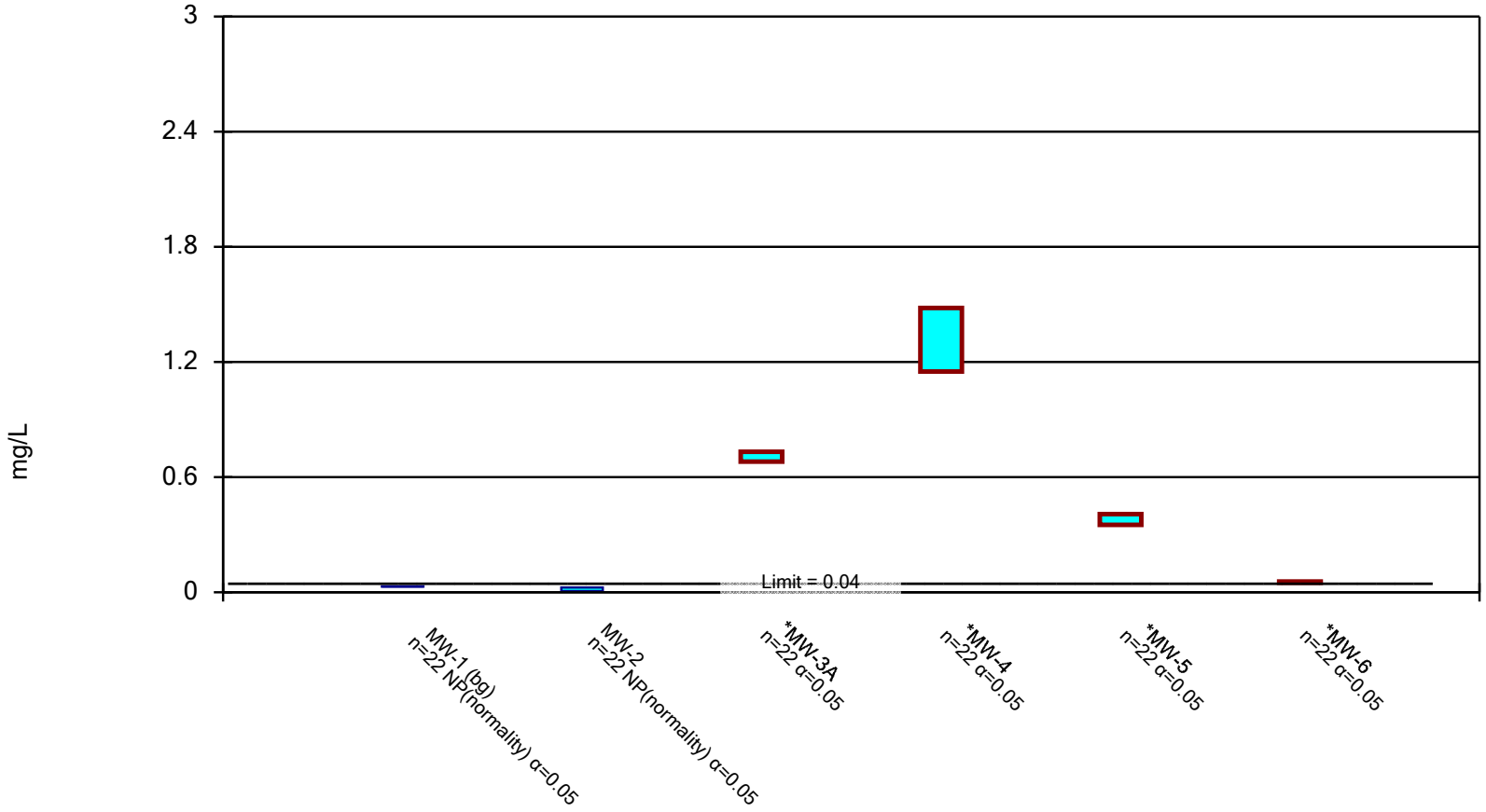
Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 6/11/2024 8:26 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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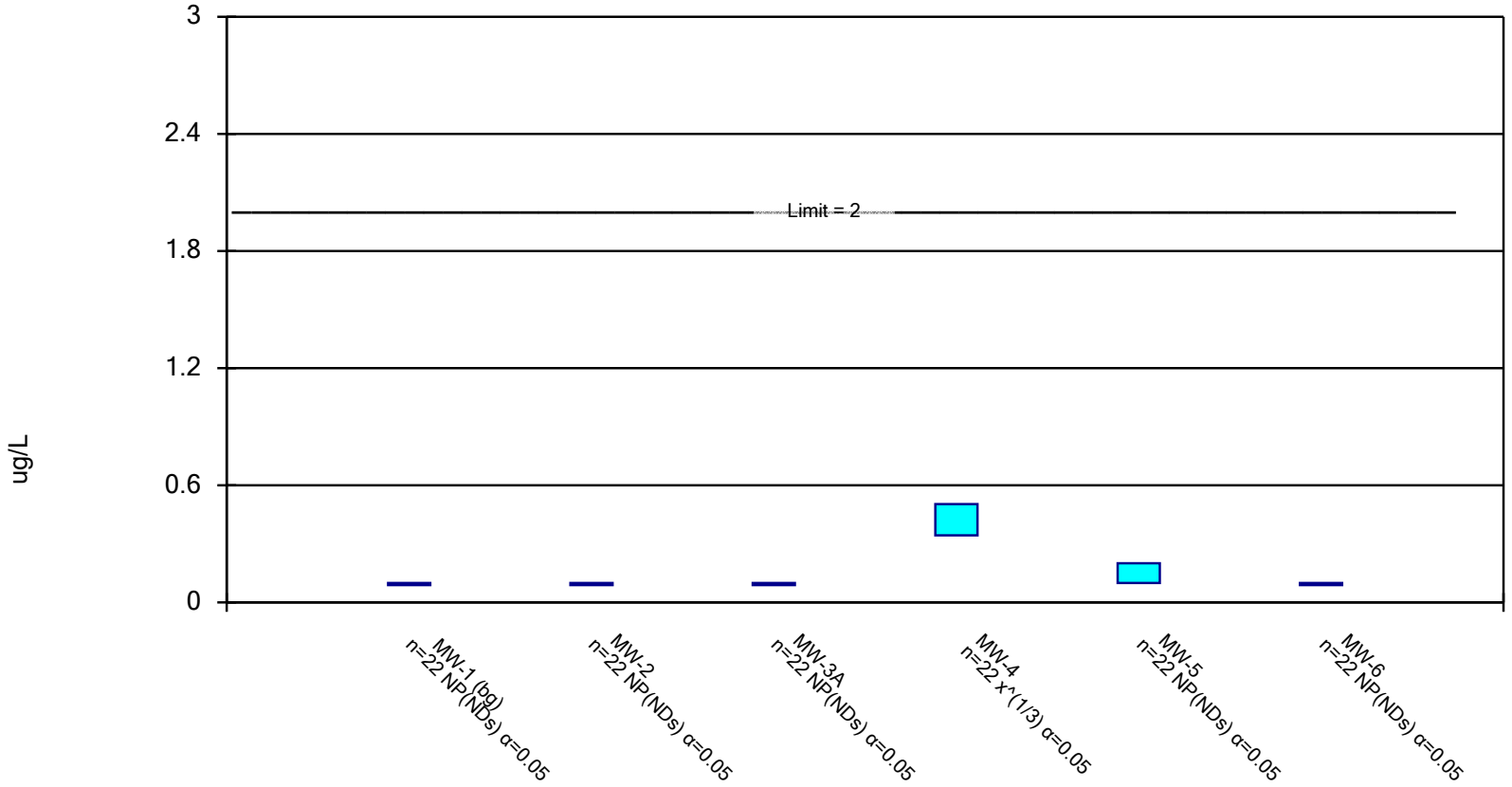
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

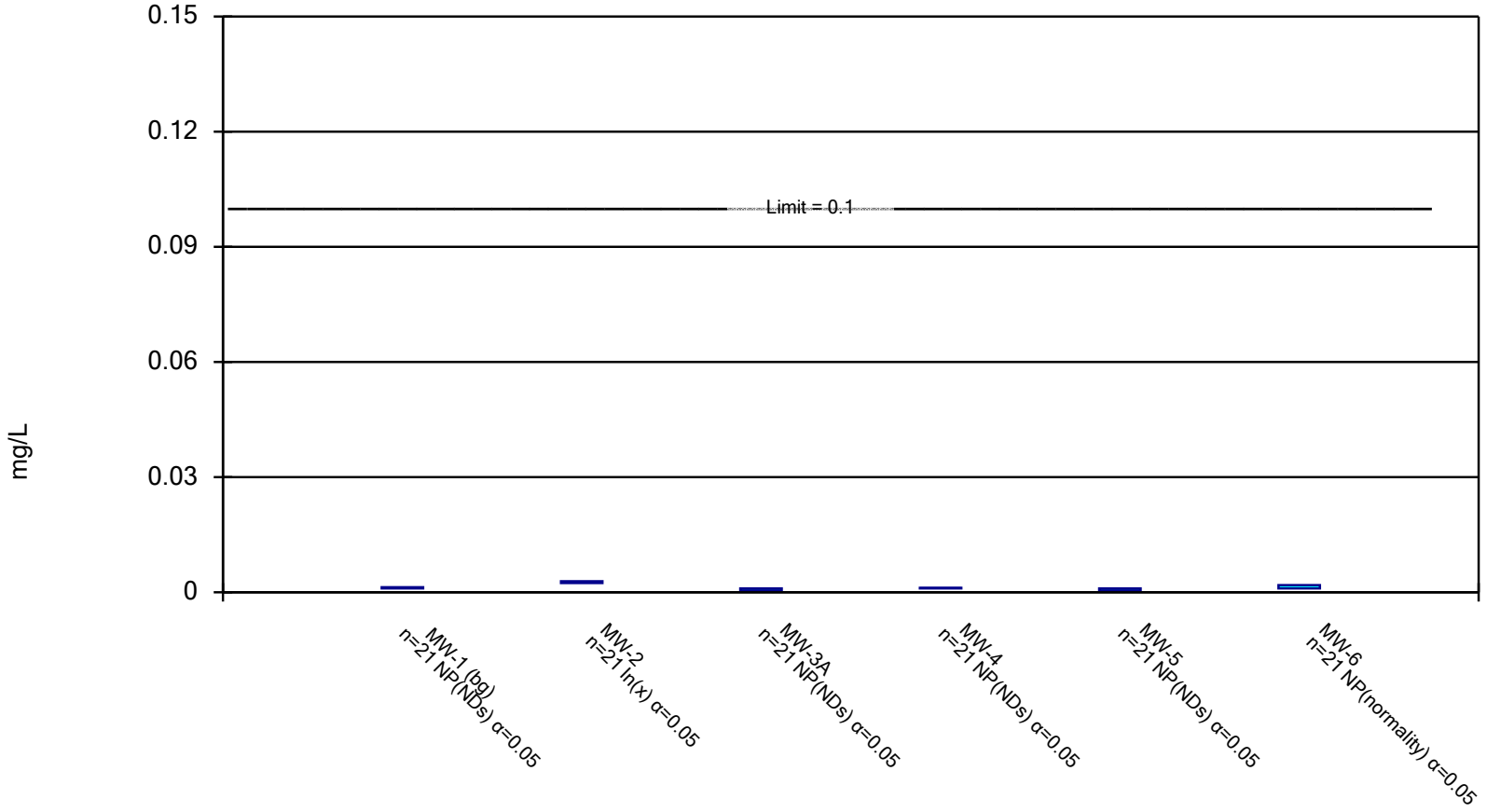


Constituent: Mercury Analysis Run 6/11/2024 8:26 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 6/11/2024 8:26 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

January 29, 2025

Mr. Mark Bertram
Big Rivers Electric Corporation
9000 Highway 2096
Robards, KY 42452

Re: Statistical Evaluation of November 2024 Assessment Monitoring Groundwater Data
Sebree Generating Station Green Landfill in Robards, Kentucky
Agency Interest ID #: 4196

Dear Mr. Bertram:

This letter presents the results of the statistical evaluation of analytical data from the November 2024 assessment monitoring event performed at the Sebree Generating Station's Green Landfill in Webster County, Robarbs, Kentucky in accordance with the requirements of U.S. Environmental Protection Agency's *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (40 Code of Federal Regulations [CFR] Part 257, Subpart D)*. This letter also presents a comparison of the November 2024 sampling results to calculated background concentrations and groundwater protection standards (GWPSs). The background and GWPSs for the groundwater monitoring network were reviewed and updated as part of the statistical evaluation completed for the November 2024 sampling event and are presented in **Table 1**. These background concentrations and GWPSs will continue to be reviewed and updated as additional data are collected. A comparison of the November 2024 data to the updated GWPSs is presented on **Table 2**. The statistical evaluation presented herein was performed in accordance with the *Groundwater Monitoring System and Statistical Methods* document prepared by Associated Engineers, Inc. and dated June 28, 2016.

In November 2024, the Green Landfill groundwater monitoring well network was sampled for Appendix III and Appendix IV parameters per the assessment monitoring program requirements of 40 CFR §257.95(d). Interwell prediction limit statistical analyses were performed for these well/constituent pairs and are discussed subsequently. GWPSs were also developed in accordance with 40 CFR §257.95(h) which describes a GWPS as the higher value between a determined background concentration for the coal combustion residuals unit and the established maximum concentration limit (MCL) or the GWPS criteria presented in 40 CFR §257.95(h)(2) for select Appendix IV parameters without an MCL. This letter presents the results of the statistical evaluation of the November 2024 assessment monitoring event for inclusion in the Sebree Generating Station Operating Record.

Statistical Evaluation of Sebree Green Landfill Compliance Monitoring Well Network Evaluation

An interwell prediction limit evaluation was performed to compare the concentrations of Appendix III and Appendix IV parameters observed in November 2024 compliance

(downgradient) monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 to calculated prediction limits (i.e., background limits) that were established using data collected from March of 2016 through November of 2024 from upgradient monitoring well MW-1. Certain Appendix III and Appendix IV parameters were detected in November 2024 at concentrations at or above the laboratory method detection limit. One or more of these resulted in statistically significant increases (SSI) above the calculated background limits (equivalent to the MW-1 prediction limits). A comparison of the November 2024 data to the updated background limits and GWPSs is presented in **Table 2** and a summary of the statistical evaluation is included in **Attachment 1**. This included the following well/constituent pairs for downgradient compliance monitoring wells with SSIs above calculated background limits:

Appendix III Parameters:

- Calcium (MW-2, MW-3A, MW-4, MW-5, and MW-6)
- Chloride (MW-2, MW-3A, MW-4, and MW-5)
- Sulfate (MW-2, MW-3A, MW-4, MW-5, and MW-6)
- Total Dissolved Solids (TDS) (MW-2, MW-3A, MW-4, MW-5, and MW-6)

Appendix IV Parameters:

- Arsenic (MW-2)
- Barium (MW-2)
- Lithium (MW-3A, MW-4, MW-5, and MW-6)
- Mercury (MW-2)
- Molybdenum (MW-2)
- Radium 226 + 228 (MW-3A)

Results of SSIs above background were generally consistent with the 2016 through April 2024 statistical results. The Appendix III SSIs for calcium, chloride, sulfate, and TDS continue to occur at downgradient compliance monitoring wells except for chloride in MW-6. Additionally, the SSI for sulfate (MW-5) was not present in the April 2024 event. The reported Appendix IV SSIs for arsenic, barium, molybdenum, and lithium in this event are consistent with previous events. However, the reported cobalt (MW-2) and mercury (MW-4) SSIs in the April 2024 event were not present in this event. Lastly, the mercury (MW-2) and radium 226 + 228 (MW-3A) SSIs were present within this event but were not present in the April 2024 event.

The Appendix IV constituents with SSIs (arsenic, barium, lithium, mercury, molybdenum, and radium 226 + 228) were further evaluated to determine whether they are present at statistically significant levels (SSLs) over the GWPS by calculating the lower confidence limit (LCL) at 95%

confidence for each well and constituent using all the baseline, detection, and assessment monitoring results collected to date from each monitoring well. For a constituent to be present at an SSL over the GWPS, its LCL must be greater than the GWPS. The comparison of the calculated LCLs with the GWPSs for arsenic, barium, lithium, mercury, molybdenum, and radium 226 + 228 at downgradient compliance monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 resulted in the following well/constituent pairs with SSLs above the GWPS:

- Arsenic (MW-2)
- Lithium (MW-3A, MW-4, MW-5, and MW-6)

The LCLs for the remaining well/constituent pairs for barium, mercury, molybdenum, and radium 226 + 228 are less than their respective GWPS and thus, are not considered SSLs. A comparison of the November 2024 data to the GWPSs is presented in **Table 2** and **Attachment 1** provides a summary of the calculated LCLs in comparison with the GWPSs. Results of SSLs above the GWPSs were consistent with the April 2024 results.

Given that certain Appendix III and IV constituents were observed at the Green Landfill groundwater monitoring network at concentrations above their respective calculated background limit and the LCL for certain Appendix IV constituents was greater than the corresponding GWPSs, these results do not warrant a transition to detection monitoring per the requirements of 40 CFR §257.95(e) and assessment monitoring will continue for the next semiannual monitoring event in 2025.

Sincerely,

Burns & McDonnell Engineering Company, Inc.

Chris Hoglund, PG
Project Manager

Attachments:

Table 1 – Calculated Background and Groundwater Protection Standards for Groundwater
Table 2 – Summary of November 2024 Analytical Results

Attachment 1 – Sanitas™ Statistical Outputs

cc: Hunter Mizell, BREC Sebree Station

TABLES

TABLE 1
Calculated Background and Groundwater Protection Standards for Groundwater
Sebree Generating Station - Green Landfill
Robards, Kentucky

Detection Constituents (Appendix III)	Units	Background*	MCL	40 CFR §257.95(h)(2) Criteria	Groundwater Protection Standard
Boron	mg/L	2.183	--	--	--
Calcium	mg/L	35.69	--	--	--
Chloride	mg/L	13.9	--	--	--
Fluoride	mg/L	0.888	4.0	--	4.0
pH (field)	SU	4.373 - 8.110	--	--	--
Sulfate	mg/L	47.12	--	--	--
TDS	mg/L	725	--	--	--
Assessment Constituents (Appendix IV)	**Units**	**Background***	**MCL**	**40 CFR §257.95(h)(2) Criteria**	**Groundwater Protection Standard**
Antimony	mg/L	0.00297	0.006	--	0.006
Arsenic	mg/L	0.004513	0.01	--	0.01
Barium	mg/L	0.1002	2	--	2
Beryllium	mg/L	0.000533	0.004	--	0.004
Cadmium	mg/L	0.000299	0.005	--	0.005
Chromium	mg/L	0.00354	0.1	--	0.1
Cobalt	mg/L	0.002	--	0.006	0.006
Fluoride	mg/L	0.888	4	--	4
Lead	mg/L	0.000279	--	0.015	0.015
Lithium	mg/L	0.0396	--	0.04	0.04
Mercury	mg/L	0.0002	0.002	--	0.002
Molybdenum	mg/L	0.002	--	0.1	0.1
Combined Radium 226 and 228**	pCi/L	2.518	5	--	5
Selenium	mg/L	0.00105	0.05	--	0.05
Thallium	mg/L	0.000498	0.002	--	0.002

Notes:

*Groundwater Protection Standards were developed in accordance with §257.95(h). Background concentrations were determined utilizing interwell prediction limits (see Attachment 1). Upgradient Monitoring Well MW-1 was used to calculate background concentrations. This included background data ranging from March 2016 through November 2024

**Combined radium is reported with an uncertainty range. However, this range cannot be incorporated into statistical calculations as it varies per result and is not a standard value. Therefore, to maintain consistency in reporting these results, the reported laboratory concentration was used for the statistical analyses.

CFR - Code of Federal Regulations
MCL - Maximum Contaminant Level
mg/L - milligrams per Liter
pCi/L - picocuries per Liter
SU - standard units
TDS - Total dissolved solids

TABLE 2
Summary of November 2024 Analytical Results
Sebree Generating Station - Green Landfill
Robards, Kentucky

APPENDIX III CONSTITUENTS	2H2024 Calculated Background	2H2024 GWPS	2024 GWPS Reference	Units	MW-1	MW-2	MW-3A	MW-4	MW-5	MW-6
					Background Well	Downgradient Compliance Wells				
					Assessment Monitoring					
Boron	2.183	--	Background	mg/L	1.71 D1	0.10 M2,U	0.36	0.87 M1,M2	0.23	0.20 M2
Calcium	35.69	--	Background	mg/L	29.9 D1	**215 D1,M2**	**478 D1**	**676 D1,M3**	**484 D1**	**417 D1,M3**
Chloride	13.9	--	Background	mg/L	5.8	**194 D**	**1930 D**	**1270 D**	**1080 D**	0.4 M1,U
Fluoride	0.888	4.0	MCL	mg/L	0.5	0.2	0.3	3.6 U	0.2 U	0.4
pH (Field Measurement)	4.373 - 8.110	--	Background	SU	8.07	7.09	7.17	7.29	6.34	7.16
Sulfate	47.12	--	Background	mg/L	37	**174**	**1280 D**	**1590 D**	**1810 D**	**2710 D**
Total Dissolved Solids	725	--	Background	mg/L	568	**1250 H1**	**4500**	**3930**	**4040**	**4520**
APPENDIX IV CONSTIUENTS										
Antimony	0.00297	0.006	MCL	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.020 D2,U
Arsenic	0.004513	0.01	MCL	mg/L	0.0011	**0.0298 M2**	0.0004 U	0.0004 U	0.0004 U	0.0040 D2,U
Barium	0.1002	2	MCL	mg/L	0.086	**0.261 M2**	0.040	0.024	0.015	0.015
Beryllium	0.000533	0.004	MCL	mg/L	0.0010 U	0.0010 U	0.0010 U	0.0010 M2,U	0.0010 U	0.0010 M2,U
Cadmium	0.000299	0.005	MCL	mg/L	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0010 D2, M2, U
Chromium	0.00354	0.1	MCL	mg/L	0.0006 U	0.0006 U	0.0006 U	0.0010 V1,J	0.0008 V1,J	0.0060 M6,U
Cobalt	0.002	0.006	40 CFR §257.95(h)(2) Criteria	mg/L	0.004 U	0.004 U	0.004 U	0.004 V1,U	0.004 V1,U	0.040 D2,U
Fluoride	0.888	4.0	MCL	mg/L	0.5	0.2	0.3	3.6 U	0.2 U	0.4
Lead	0.000279	0.015	40 CFR §257.95(h)(2) Criteria	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 M2,U
Lithium	0.0396	0.04	40 CFR §257.95(h)(2) Criteria	mg/L	0.03	0.005 J	**0.69**	**1.06 C6, D1, M3**	**0.36**	**0.05**
Mercury	0.0002	0.002	MCL	mg/L	0.0002 U	**0.0003 J**	0.0002 U	0.0002 M2, J	0.0002 U	0.0002 U
Molybdenum	0.002	0.1	40 CFR §257.95(h)(2) Criteria	mg/L	0.002 U	**0.004 J**	0.002 U	0.002 V1,U	0.002 V1,U	0.002 U
Radium 226 + 228	2.518	5	MCL	pCi/L	1.740	1.290	**2.700**	2.050	1.210	0.523
Selenium	0.00105	0.05	MCL	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Thallium	0.000498	0.002	MCL	mg/L	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U

Bold - Analyte detected above calculated background concentration.
Appendix IV constituent was detected in compliance monitoring well located downgradient of the CCR Landfill at a statistically significant level above its GWPS (see Attachment 1 for statistical output).
C6 = Quantitative confirmation performed. Sample ran twice
D = Results reported from dilution.
D1 = Sample required dilution due to high concentration of target analysis.
D2 = Sample required dilution due to matrix interference.
GWPS = Groundwater Protection Standard
H1 = Sample analysis performed past holding time.
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is qualified as estimated.
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.
M6 = Matrix spike recovery was high.
MCL = Maximum contamination level
mg/L = milligrams per Liter
pCi/L = picoCuries per Liter
SU = standard units
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

ATTACHMENT 1 – SANITAS™ STATISTICAL OUTPUTS

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 1/28/2025, 8:25 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-2	0.00297	n/a	11/13/2024	0.001ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Antimony (mg/L)	MW-3A	0.00297	n/a	11/19/2024	0.001ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Antimony (mg/L)	MW-4	0.00297	n/a	11/14/2024	0.001ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Antimony (mg/L)	MW-5	0.00297	n/a	11/14/2024	0.001ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Antimony (mg/L)	MW-6	0.00297	n/a	11/21/2024	0.001ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Arsenic (mg/L)	**MW-2**	**0.004513**	**n/a**	**11/13/2024**	**0.0298**	**Yes**	**23**	**8.696**	**ln(x)**	**0.01**	**Param Inter**
Arsenic (mg/L)	MW-3A	0.004513	n/a	11/19/2024	0.0002ND	No	23	8.696	ln(x)	0.01	Param Inter
Arsenic (mg/L)	MW-4	0.004513	n/a	11/14/2024	0.0002ND	No	23	8.696	ln(x)	0.01	Param Inter
Arsenic (mg/L)	MW-5	0.004513	n/a	11/14/2024	0.0002ND	No	23	8.696	ln(x)	0.01	Param Inter
Arsenic (mg/L)	MW-6	0.004513	n/a	11/21/2024	0.0002ND	No	23	8.696	ln(x)	0.01	Param Inter
Barium (mg/L)	**MW-2**	**0.1002**	**n/a**	**11/13/2024**	**0.261**	**Yes**	**23**	**0**	**No**	**0.01**	**Param Inter**
Barium (mg/L)	MW-3A	0.1002	n/a	11/19/2024	0.04	No	23	0	No	0.01	Param Inter
Barium (mg/L)	MW-4	0.1002	n/a	11/14/2024	0.024	No	23	0	No	0.01	Param Inter
Barium (mg/L)	MW-5	0.1002	n/a	11/14/2024	0.015	No	23	0	No	0.01	Param Inter
Barium (mg/L)	MW-6	0.1002	n/a	11/21/2024	0.015	No	23	0	No	0.01	Param Inter
Beryllium (mg/L)	MW-2	0.000533	n/a	11/13/2024	0.0005ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Beryllium (mg/L)	MW-3A	0.000533	n/a	11/19/2024	0.0005ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Beryllium (mg/L)	MW-4	0.000533	n/a	11/14/2024	0.0005ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Beryllium (mg/L)	MW-5	0.000533	n/a	11/14/2024	0.0005ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Beryllium (mg/L)	MW-6	0.000533	n/a	11/21/2024	0.0005ND	No	22	95.45	n/a	0.04013	NP Inter (NDs)
Boron (mg/L)	MW-2	2.183	n/a	11/13/2024	0.05ND	No	24	0	No	0.01	Param Inter
Boron (mg/L)	MW-3A	2.183	n/a	11/19/2024	0.36	No	24	0	No	0.01	Param Inter
Boron (mg/L)	MW-4	2.183	n/a	11/14/2024	0.87	No	24	0	No	0.01	Param Inter
Boron (mg/L)	MW-5	2.183	n/a	11/14/2024	0.23	No	24	0	No	0.01	Param Inter
Boron (mg/L)	MW-6	2.183	n/a	11/21/2024	0.2	No	24	0	No	0.01	Param Inter
Cadmium (mg/L)	MW-2	0.000299	n/a	11/13/2024	0.00005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Cadmium (mg/L)	MW-3A	0.000299	n/a	11/19/2024	0.00005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Cadmium (mg/L)	MW-4	0.000299	n/a	11/14/2024	0.00005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Cadmium (mg/L)	MW-5	0.000299	n/a	11/14/2024	0.00005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Cadmium (mg/L)	MW-6	0.000299	n/a	11/21/2024	0.00005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Calcium (mg/L)	**MW-2**	**35.69**	**n/a**	**11/13/2024**	**215**	**Yes**	**24**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-3A**	**35.69**	**n/a**	**11/19/2024**	**478**	**Yes**	**24**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-4**	**35.69**	**n/a**	**11/14/2024**	**676**	**Yes**	**24**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-5**	**35.69**	**n/a**	**11/14/2024**	**484**	**Yes**	**24**	**0**	**No**	**0.01**	**Param Inter**
Calcium (mg/L)	**MW-6**	**35.69**	**n/a**	**11/21/2024**	**417**	**Yes**	**24**	**0**	**No**	**0.01**	**Param Inter**
Chloride (mg/L)	**MW-2**	**13.9**	**n/a**	**11/13/2024**	**194**	**Yes**	**24**	**0**	**n/a**	**0.03714**	**NP Inter (normality)**
Chloride (mg/L)	**MW-3A**	**13.9**	**n/a**	**11/19/2024**	**1930**	**Yes**	**24**	**0**	**n/a**	**0.03714**	**NP Inter (normality)**
Chloride (mg/L)	**MW-4**	**13.9**	**n/a**	**11/14/2024**	**1270**	**Yes**	**24**	**0**	**n/a**	**0.03714**	**NP Inter (normality)**
Chloride (mg/L)	**MW-5**	**13.9**	**n/a**	**11/14/2024**	**1080**	**Yes**	**24**	**0**	**n/a**	**0.03714**	**NP Inter (normality)**
Chloride (mg/L)	MW-6	13.9	n/a	11/21/2024	0.2ND	No	24	0	n/a	0.03714	NP Inter (normality)
Chromium (mg/L)	MW-2	0.00354	n/a	11/13/2024	0.0003ND	No	22	77.27	n/a	0.04013	NP Inter (NDs)
Chromium (mg/L)	MW-3A	0.00354	n/a	11/19/2024	0.0003ND	No	22	77.27	n/a	0.04013	NP Inter (NDs)
Chromium (mg/L)	MW-4	0.00354	n/a	11/14/2024	0.001J	No	22	77.27	n/a	0.04013	NP Inter (NDs)
Chromium (mg/L)	MW-5	0.00354	n/a	11/14/2024	0.0008J	No	22	77.27	n/a	0.04013	NP Inter (NDs)
Chromium (mg/L)	MW-6	0.00354	n/a	11/21/2024	0.0003ND	No	22	77.27	n/a	0.04013	NP Inter (NDs)
Cobalt (mg/L)	MW-2	0.002	n/a	11/13/2024	0.002ND	No	22	50	n/a	0.04013	NP Inter (normality)
Cobalt (mg/L)	MW-3A	0.002	n/a	11/19/2024	0.002ND	No	22	50	n/a	0.04013	NP Inter (normality)
Cobalt (mg/L)	MW-4	0.002	n/a	11/14/2024	0.002ND	No	22	50	n/a	0.04013	NP Inter (normality)
Cobalt (mg/L)	MW-5	0.002	n/a	11/14/2024	0.002ND	No	22	50	n/a	0.04013	NP Inter (normality)
Cobalt (mg/L)	MW-6	0.002	n/a	11/21/2024	0.002ND	No	22	50	n/a	0.04013	NP Inter (normality)

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 1/28/2025, 8:25 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	MW-2	0.888	n/a	11/13/2024	0.2	No	24	0	n/a	0.03714	NP Inter (normality)
Fluoride (mg/L)	MW-3A	0.888	n/a	11/19/2024	0.3	No	24	0	n/a	0.03714	NP Inter (normality)
Fluoride (mg/L)	MW-4	0.888	n/a	11/14/2024	0.1ND	No	24	0	n/a	0.03714	NP Inter (normality)
Fluoride (mg/L)	MW-5	0.888	n/a	11/14/2024	0.1ND	No	24	0	n/a	0.03714	NP Inter (normality)
Fluoride (mg/L)	MW-6	0.888	n/a	11/21/2024	0.4	No	24	0	n/a	0.03714	NP Inter (normality)
Lead (mg/L)	MW-2	0.000279	n/a	11/13/2024	0.00025ND	No	22	72.73	n/a	0.04013	NP Inter (NDs)
Lead (mg/L)	MW-3A	0.000279	n/a	11/19/2024	0.00025ND	No	22	72.73	n/a	0.04013	NP Inter (NDs)
Lead (mg/L)	MW-4	0.000279	n/a	11/14/2024	0.00025ND	No	22	72.73	n/a	0.04013	NP Inter (NDs)
Lead (mg/L)	MW-5	0.000279	n/a	11/14/2024	0.00025ND	No	22	72.73	n/a	0.04013	NP Inter (NDs)
Lead (mg/L)	MW-6	0.000279	n/a	11/21/2024	0.00025ND	No	22	72.73	n/a	0.04013	NP Inter (NDs)
Lithium (mg/L)	MW-2	0.0396	n/a	11/13/2024	0.005J	No	23	8.696	n/a	0.03858	NP Inter (normality)
Lithium (mg/L)	**MW-3A**	**0.0396**	**n/a**	**11/19/2024**	**0.69**	**Yes**	**23**	**8.696**	**n/a**	**0.03858**	**NP Inter (normality)**
Lithium (mg/L)	**MW-4**	**0.0396**	**n/a**	**11/14/2024**	**1.06**	**Yes**	**23**	**8.696**	**n/a**	**0.03858**	**NP Inter (normality)**
Lithium (mg/L)	**MW-5**	**0.0396**	**n/a**	**11/14/2024**	**0.36**	**Yes**	**23**	**8.696**	**n/a**	**0.03858**	**NP Inter (normality)**
Lithium (mg/L)	**MW-6**	**0.0396**	**n/a**	**11/21/2024**	**0.05**	**Yes**	**23**	**8.696**	**n/a**	**0.03858**	**NP Inter (normality)**
Mercury (ug/L)	**MW-2**	**0.2**	**n/a**	**11/13/2024**	**0.3**	**Yes**	**23**	**95.65**	**n/a**	**0.03858**	**NP Inter (NDs)**
Mercury (ug/L)	MW-3A	0.2	n/a	11/19/2024	0.1ND	No	23	95.65	n/a	0.03858	NP Inter (NDs)
Mercury (ug/L)	MW-4	0.2	n/a	11/14/2024	0.2	No	23	95.65	n/a	0.03858	NP Inter (NDs)
Mercury (ug/L)	MW-5	0.2	n/a	11/14/2024	0.1ND	No	23	95.65	n/a	0.03858	NP Inter (NDs)
Mercury (ug/L)	MW-6	0.2	n/a	11/21/2024	0.1ND	No	23	95.65	n/a	0.03858	NP Inter (NDs)
Molybdenum (mg/L)	**MW-2**	**0.002**	**n/a**	**11/13/2024**	**0.004**	**Yes**	**22**	**54.55**	**n/a**	**0.04013**	**NP Inter (NDs)**
Molybdenum (mg/L)	MW-3A	0.002	n/a	11/19/2024	0.001ND	No	22	54.55	n/a	0.04013	NP Inter (NDs)
Molybdenum (mg/L)	MW-4	0.002	n/a	11/14/2024	0.001ND	No	22	54.55	n/a	0.04013	NP Inter (NDs)
Molybdenum (mg/L)	MW-5	0.002	n/a	11/14/2024	0.001ND	No	22	54.55	n/a	0.04013	NP Inter (NDs)
Molybdenum (mg/L)	MW-6	0.002	n/a	11/21/2024	0.001ND	No	22	54.55	n/a	0.04013	NP Inter (NDs)
pH [Field] (SU)	MW-2	8.11	4.373	11/13/2024	7.09	No	24	0	x^6	0.005	Param Inter
pH [Field] (SU)	MW-3A	8.11	4.373	11/19/2024	7.17	No	24	0	x^6	0.005	Param Inter
pH [Field] (SU)	MW-4	8.11	4.373	11/14/2024	7.29	No	24	0	x^6	0.005	Param Inter
pH [Field] (SU)	MW-5	8.11	4.373	11/12/2024	6.34	No	24	0	x^6	0.005	Param Inter
pH [Field] (SU)	MW-6	8.11	4.373	11/21/2024	7.16	No	24	0	x^6	0.005	Param Inter
Radium 226 + 228 (pCi/L)	MW-2	2.518	n/a	11/13/2024	1.29	No	21	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	**MW-3A**	**2.518**	**n/a**	**11/19/2024**	**2.7**	**Yes**	**21**	**0**	**sqrt(x)**	**0.01**	**Param Inter**
Radium 226 + 228 (pCi/L)	MW-4	2.518	n/a	11/14/2024	2.05	No	21	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	MW-5	2.518	n/a	11/14/2024	1.21	No	21	0	sqrt(x)	0.01	Param Inter
Radium 226 + 228 (pCi/L)	MW-6	2.518	n/a	11/21/2024	0.523	No	21	0	sqrt(x)	0.01	Param Inter
Selenium (mg/L)	MW-2	0.00105	n/a	11/13/2024	0.0005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Selenium (mg/L)	MW-3A	0.00105	n/a	11/19/2024	0.0005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Selenium (mg/L)	MW-4	0.00105	n/a	11/14/2024	0.0005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Selenium (mg/L)	MW-5	0.00105	n/a	11/14/2024	0.0005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Selenium (mg/L)	MW-6	0.00105	n/a	11/21/2024	0.0005ND	No	22	90.91	n/a	0.04013	NP Inter (NDs)
Sulfate (mg/L)	**MW-2**	**47.12**	**n/a**	**11/13/2024**	**174**	**Yes**	**24**	**0**	**sqrt(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	**MW-3A**	**47.12**	**n/a**	**11/19/2024**	**1280**	**Yes**	**24**	**0**	**sqrt(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	**MW-4**	**47.12**	**n/a**	**11/14/2024**	**1590**	**Yes**	**24**	**0**	**sqrt(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	**MW-5**	**47.12**	**n/a**	**11/14/2024**	**1810**	**Yes**	**24**	**0**	**sqrt(x)**	**0.01**	**Param Inter**
Sulfate (mg/L)	**MW-6**	**47.12**	**n/a**	**11/21/2024**	**2710**	**Yes**	**24**	**0**	**sqrt(x)**	**0.01**	**Param Inter**
Thallium (mg/L)	MW-2	0.000498	n/a	11/13/2024	0.00005ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Thallium (mg/L)	MW-3A	0.000498	n/a	11/19/2024	0.00005ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Thallium (mg/L)	MW-4	0.000498	n/a	11/14/2024	0.00005ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Thallium (mg/L)	MW-5	0.000498	n/a	11/14/2024	0.00005ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)
Thallium (mg/L)	MW-6	0.000498	n/a	11/21/2024	0.00005ND	No	22	63.64	n/a	0.04013	NP Inter (NDs)

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 1/28/2025, 8:25 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Total Dissolved Solids (mg/L)	**MW-2**	**725**	**n/a**	**11/13/2024**	**1250**	**Yes**	**24**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-3A**	**725**	**n/a**	**11/19/2024**	**4500**	**Yes**	**24**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-4**	**725**	**n/a**	**11/14/2024**	**3930**	**Yes**	**24**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-5**	**725**	**n/a**	**11/14/2024**	**4040**	**Yes**	**24**	**0**	**x^2**	**0.01**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-6**	**725**	**n/a**	**11/21/2024**	**4520**	**Yes**	**24**	**0**	**x^2**	**0.01**	**Param Inter**

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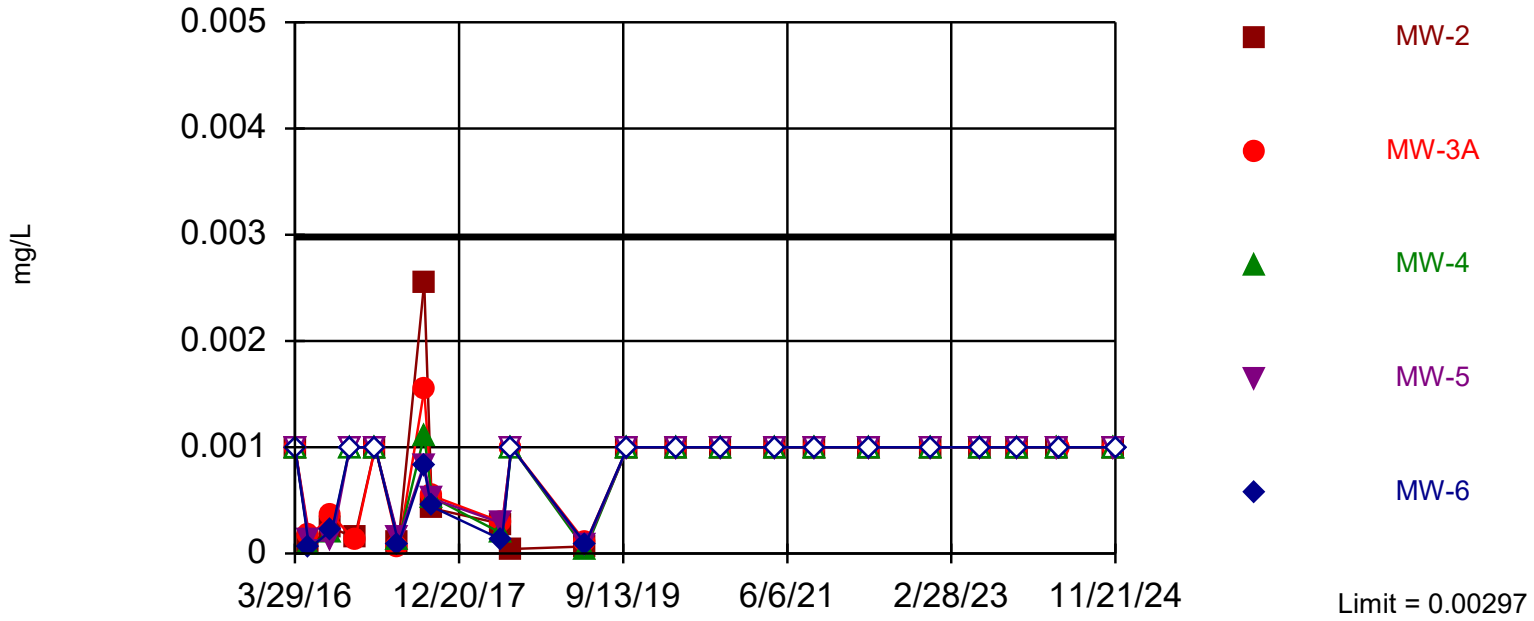
Hollow symbols indicate censored values.

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 22 background values. 63.64% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Antimony Analysis Run 1/28/2025 8:17 AM

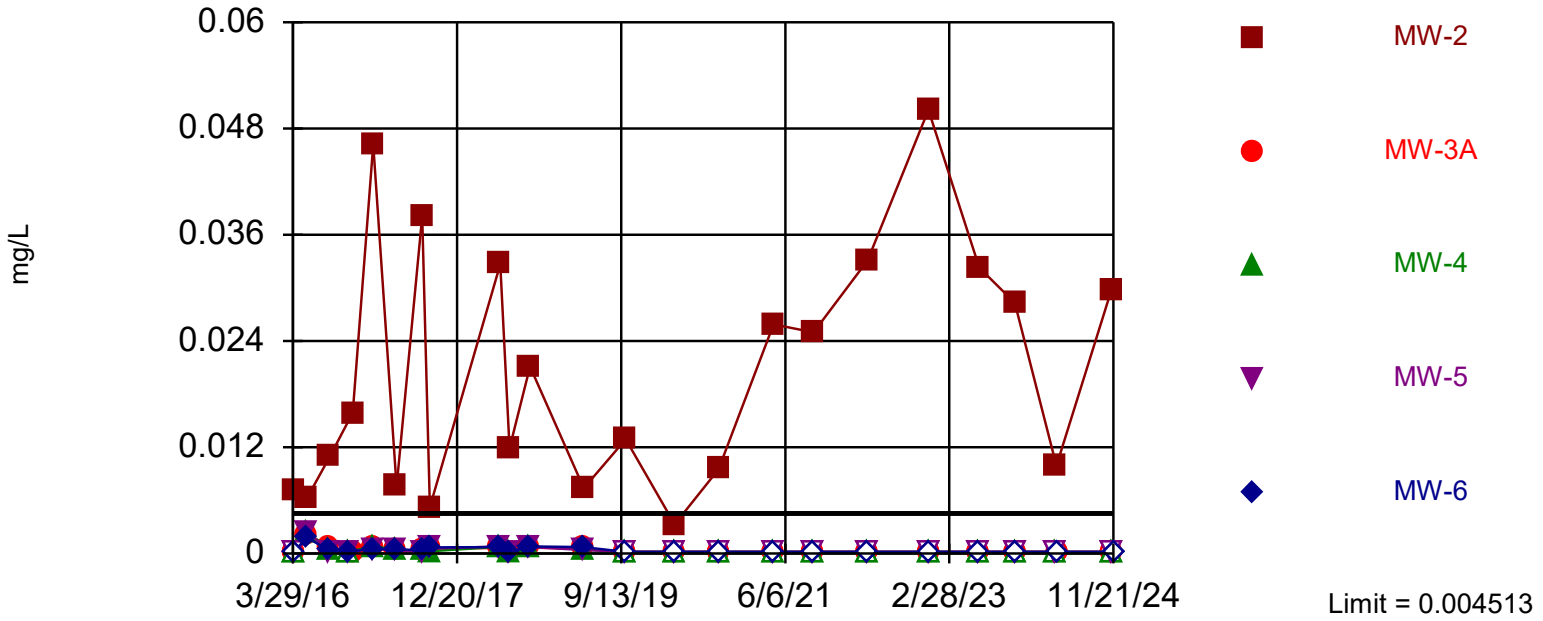
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-7.213, Std. Dev.=0.7074, n=23, 8.696% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9329, critical = 0.914. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Arsenic Analysis Run 1/28/2025 8:17 AM

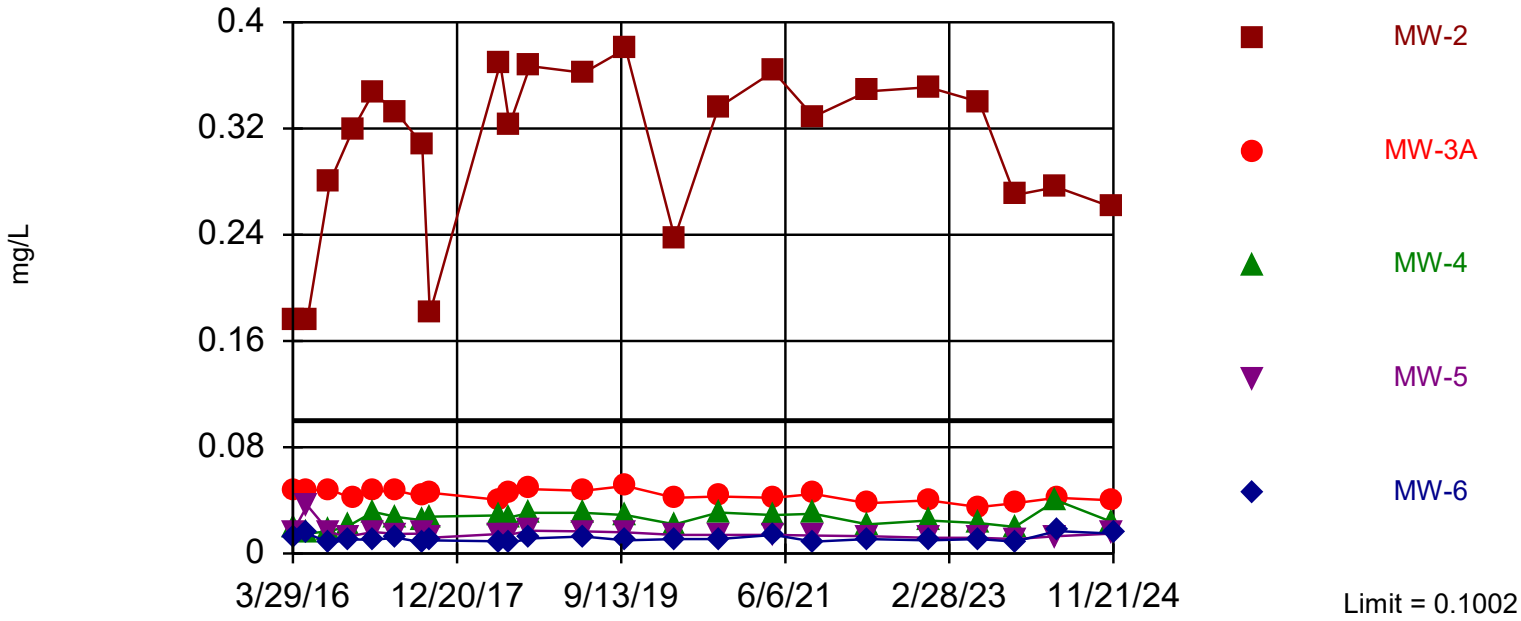
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.08152, Std. Dev.=0.007282, n=23. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9761, critical = 0.914. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Barium Analysis Run 1/28/2025 8:17 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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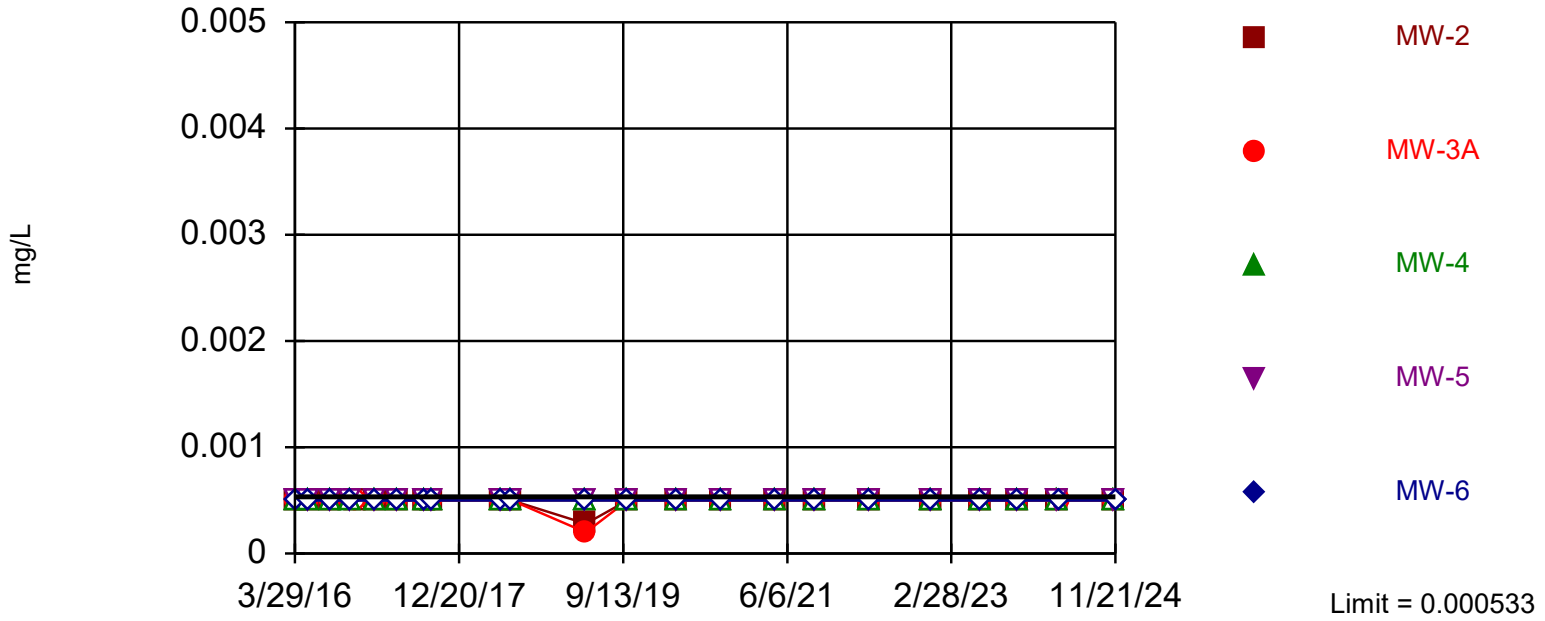
Hollow symbols indicate censored values.

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 22 background values. 95.45% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Beryllium Analysis Run 1/28/2025 8:17 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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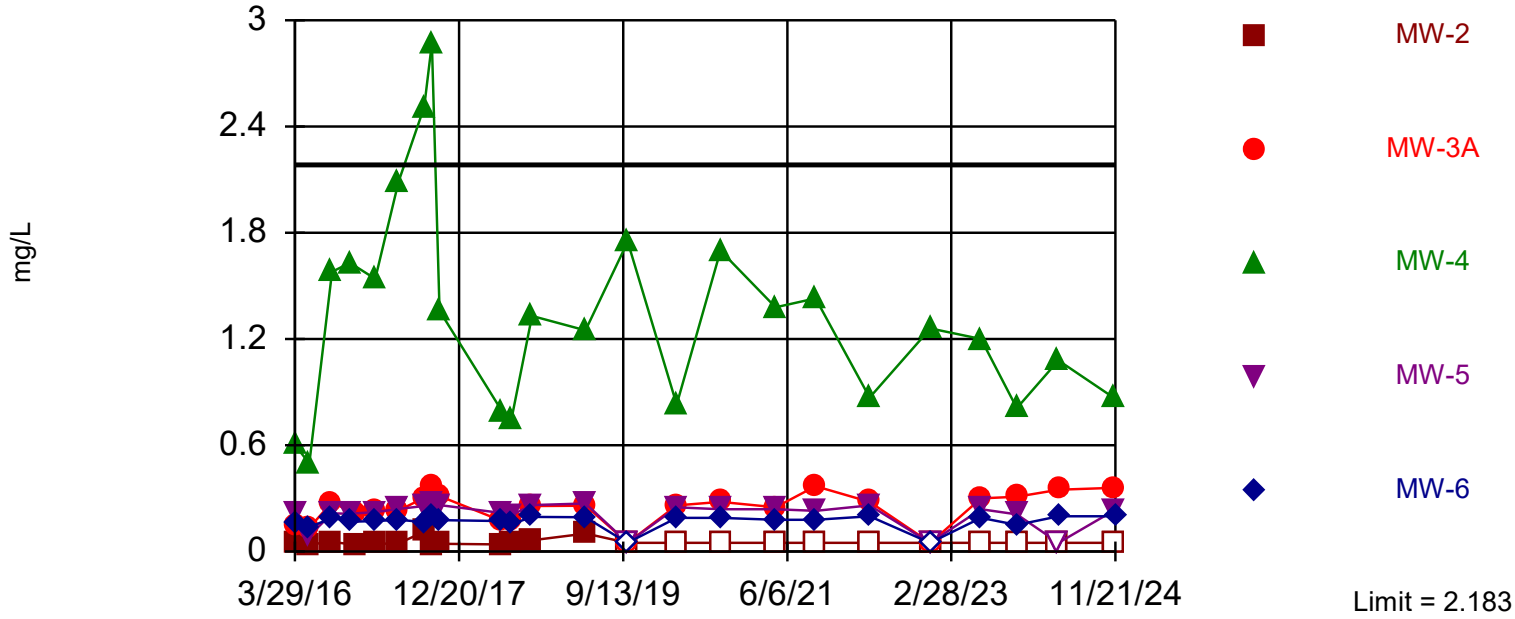
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1.74, Std. Dev.=0.1736, n=24. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.919, critical = 0.916. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. At least one background value was a statistical outlier but was below the user-set cutoff of 3 times the median. No background outliers were found.

Constituent: Boron Analysis Run 1/28/2025 8:17 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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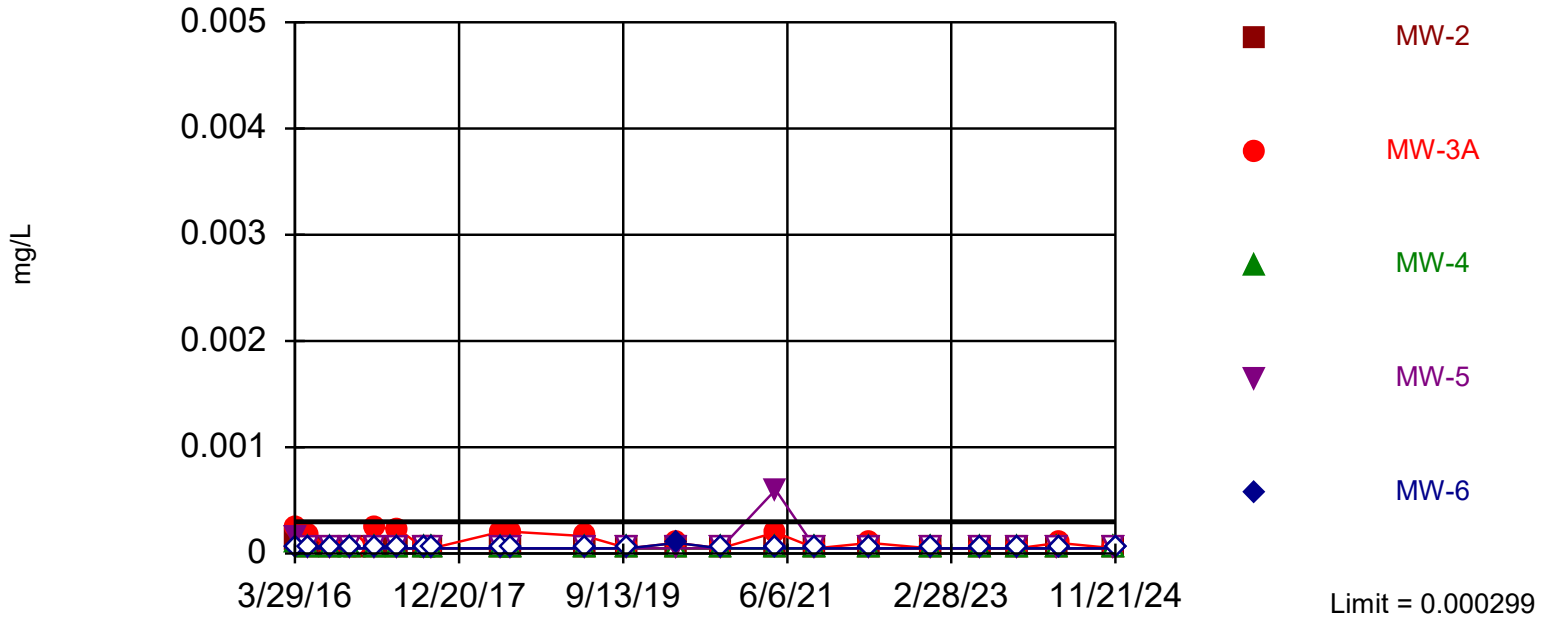
Hollow symbols indicate censored values.

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 22 background values. 90.91% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Cadmium Analysis Run 1/28/2025 8:17 AM

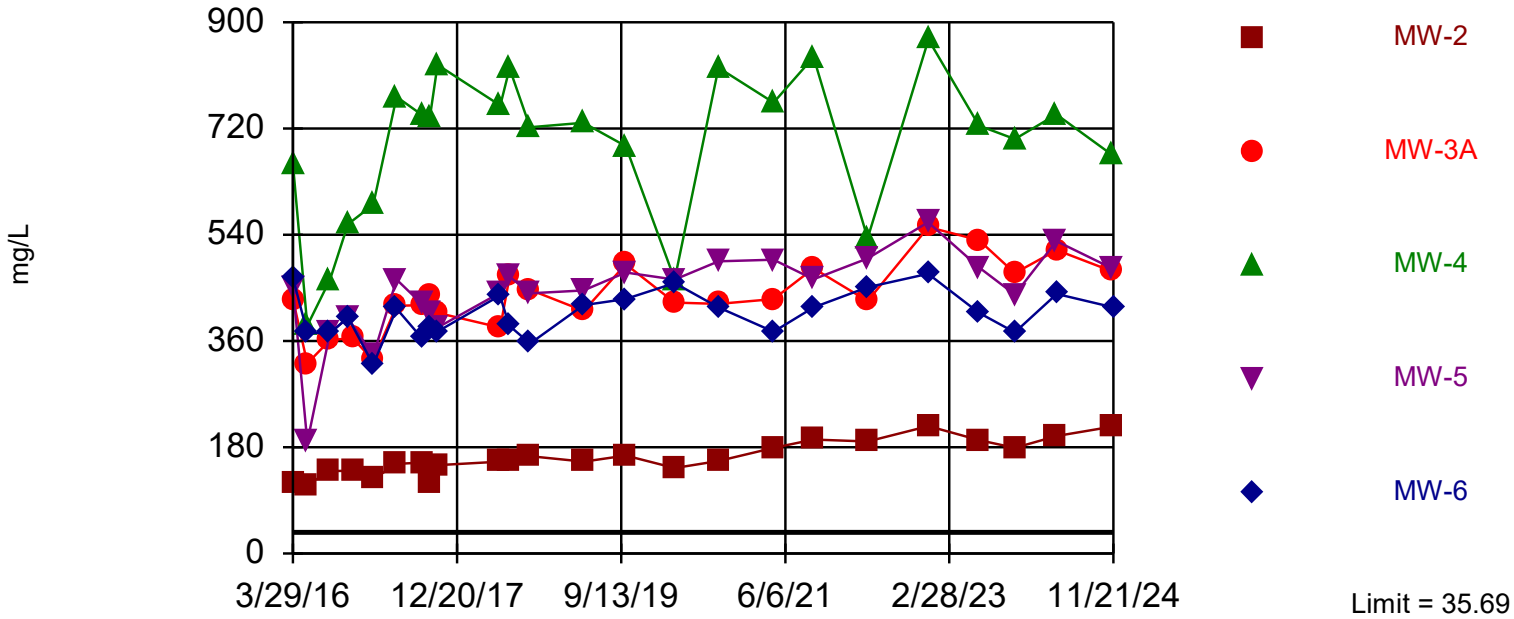
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=28.77, Std. Dev.=2.712, n=24. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9403, critical = 0.916. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. At least one background value was a statistical outlier but was below the user-set cutoff of 3 times the median. No background outliers were found.

Constituent: Calcium Analysis Run 1/28/2025 8:17 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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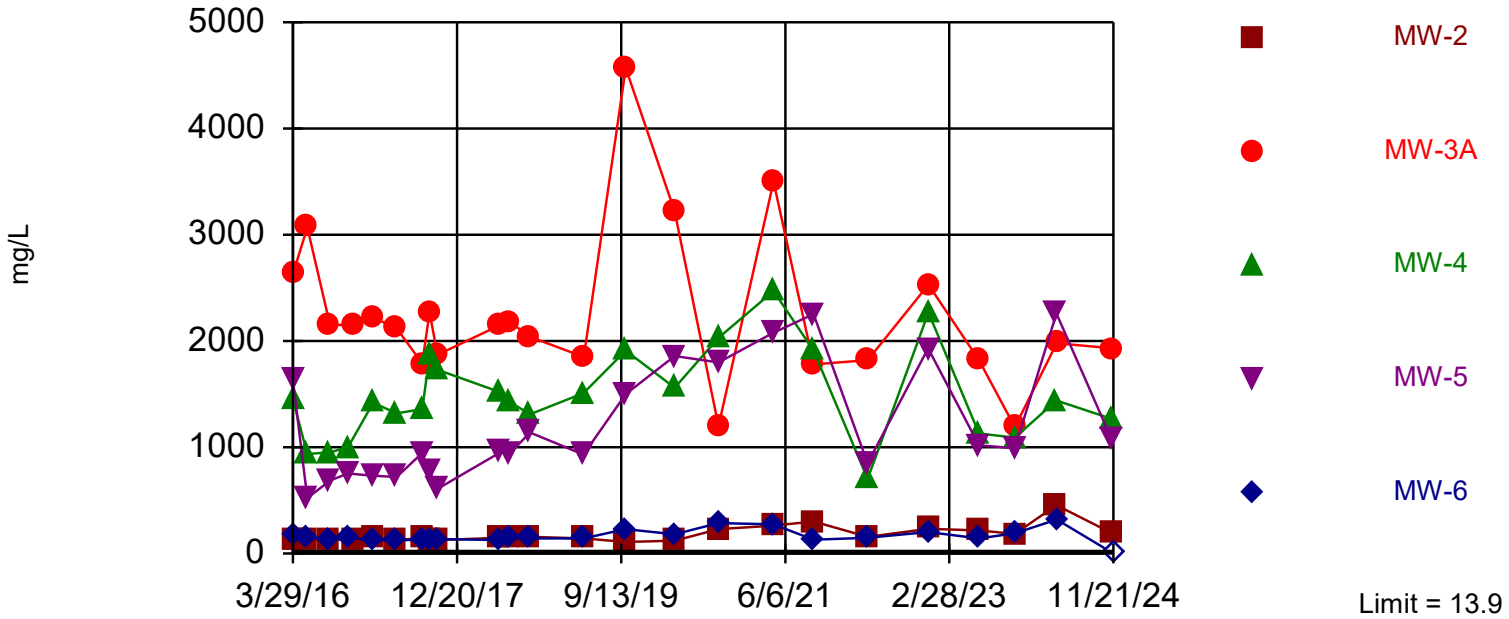
Hollow symbols indicate censored values.

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 24 background values. Report alpha = 0.1724. Individual comparison alpha = 0.03714. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Chloride Analysis Run 1/28/2025 8:17 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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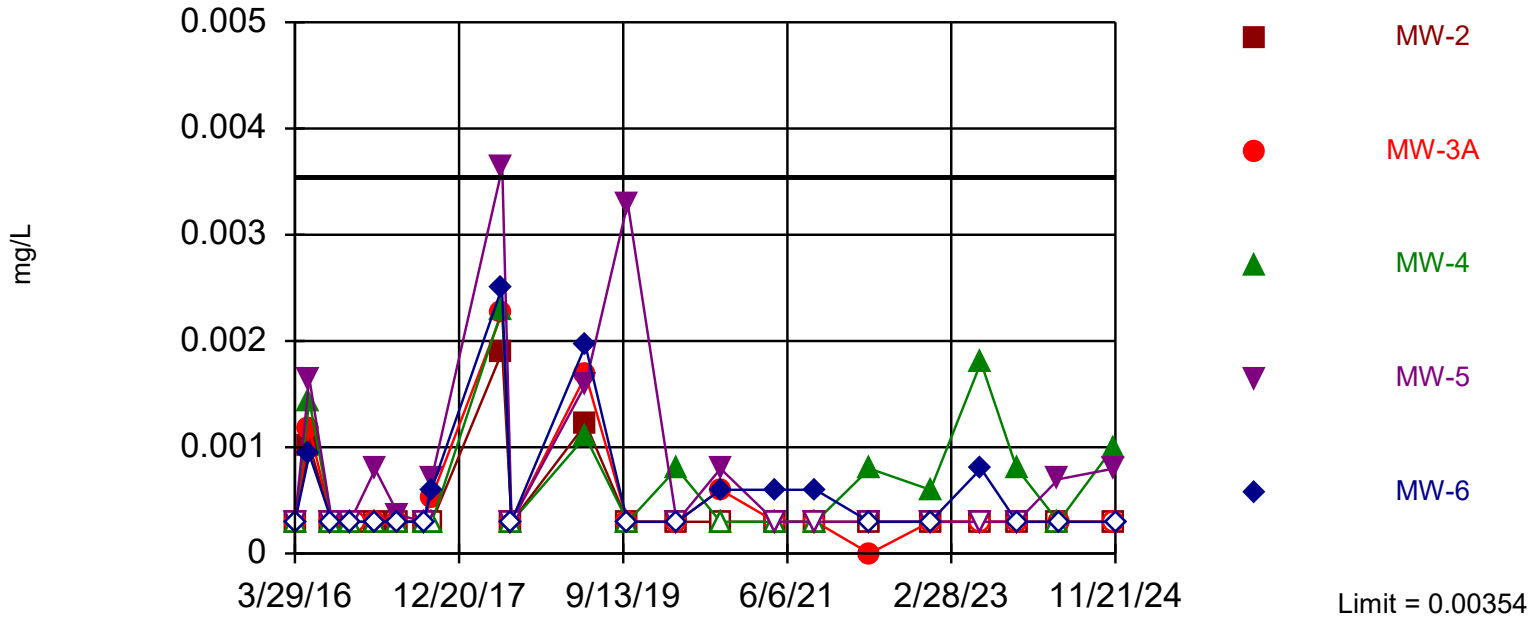
Hollow symbols indicate censored values.

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 22 background values. 77.27% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Chromium Analysis Run 1/28/2025 8:18 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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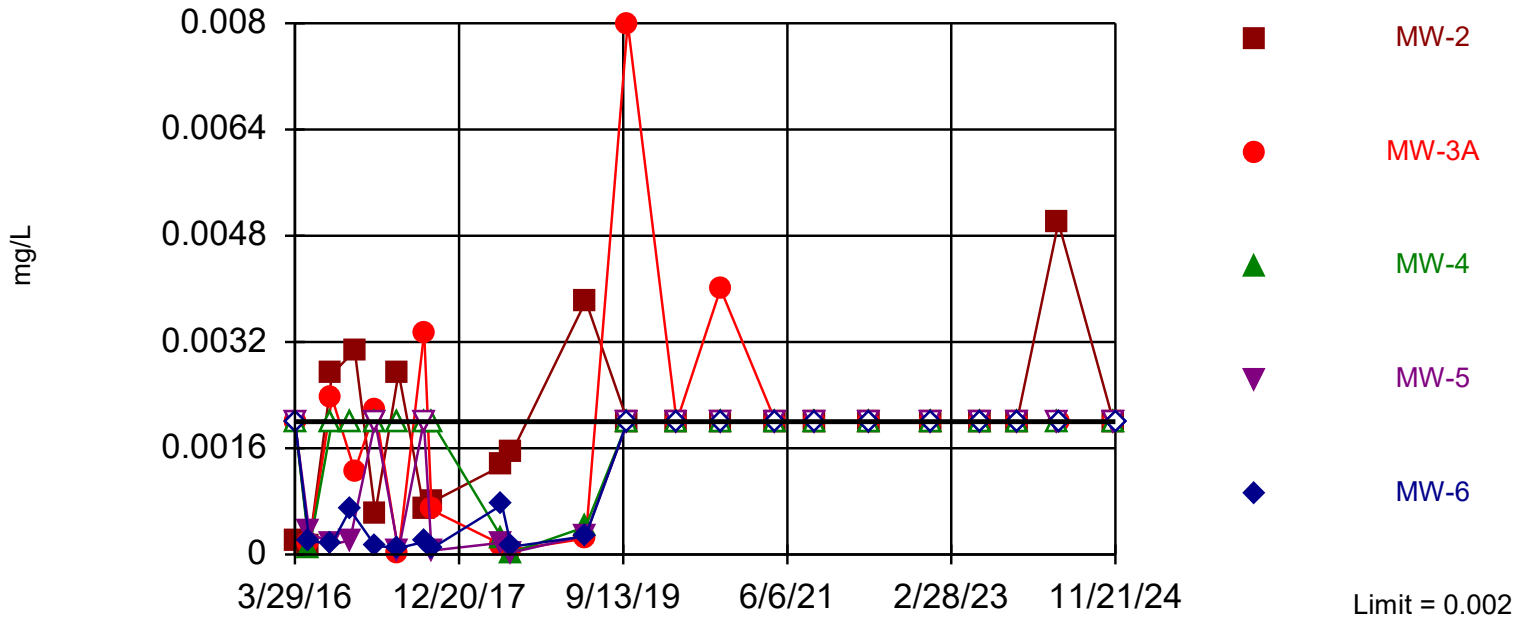
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 22 background values. 50% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Cobalt Analysis Run 1/28/2025 8:18 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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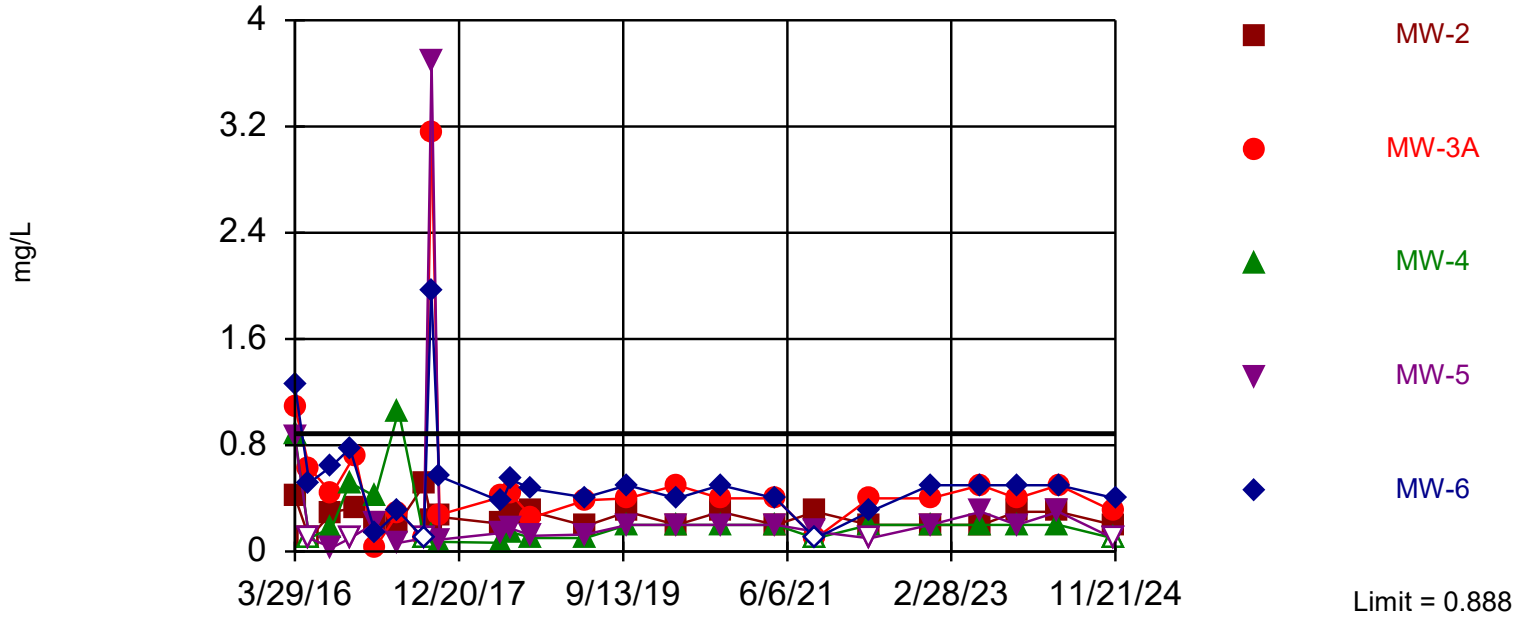
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 24 background values. Report alpha = 0.1724. Individual comparison alpha = 0.03714. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Fluoride Analysis Run 1/28/2025 8:18 AM

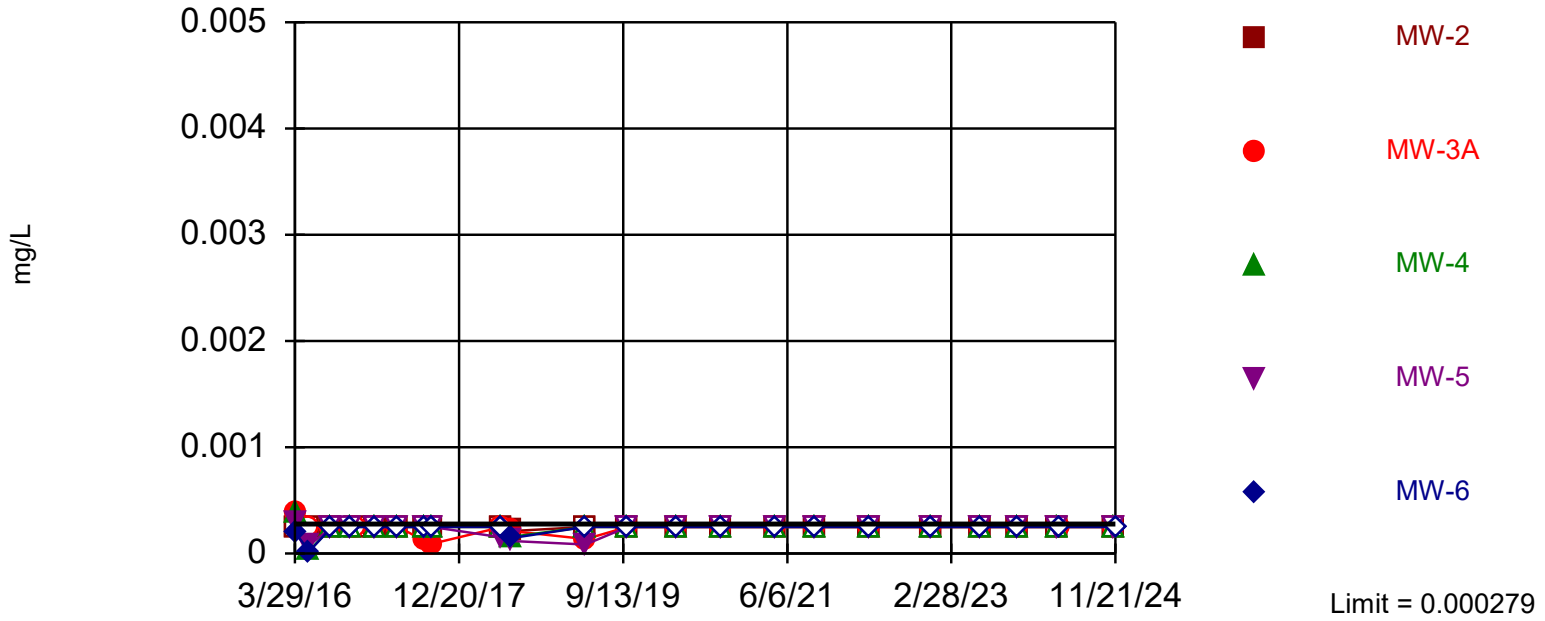
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 22 background values. 72.73% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Lead Analysis Run 1/28/2025 8:18 AM

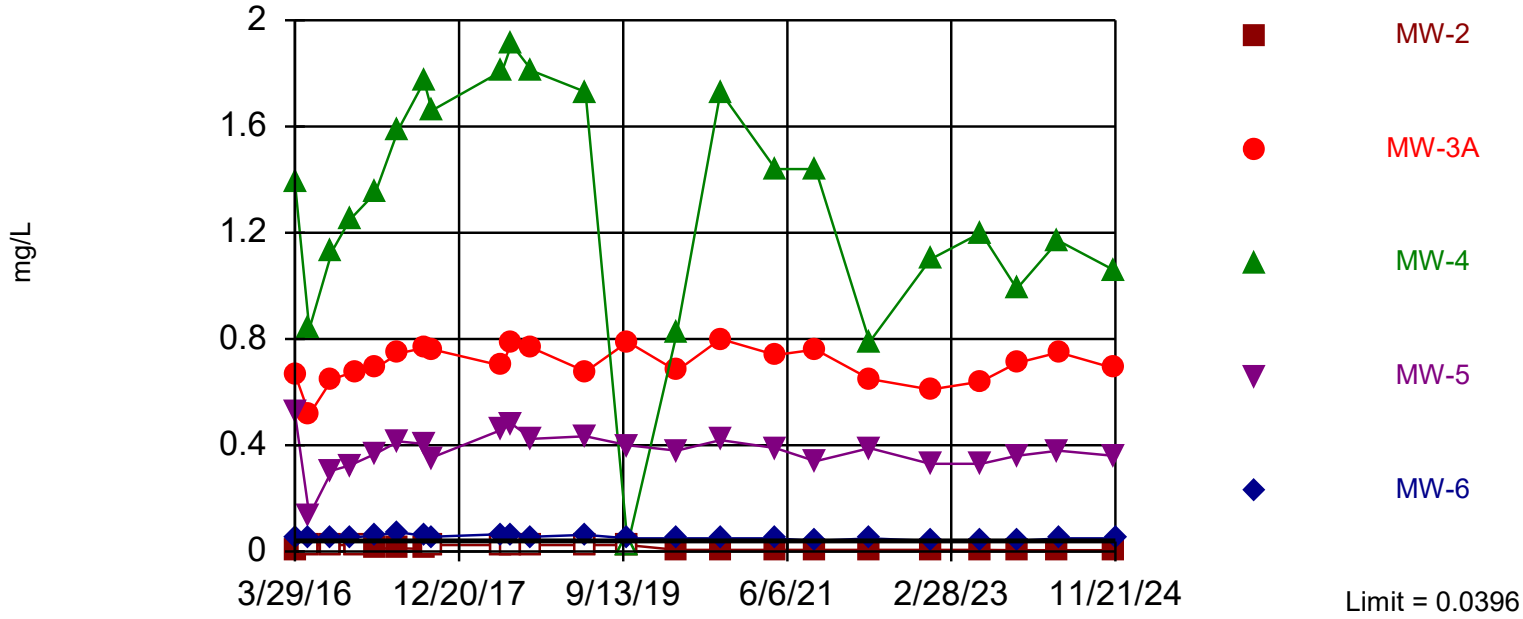
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 23 background values. 8.696% NDs. Report alpha = 0.1786. Individual comparison alpha = 0.03858. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Lithium Analysis Run 1/28/2025 8:18 AM

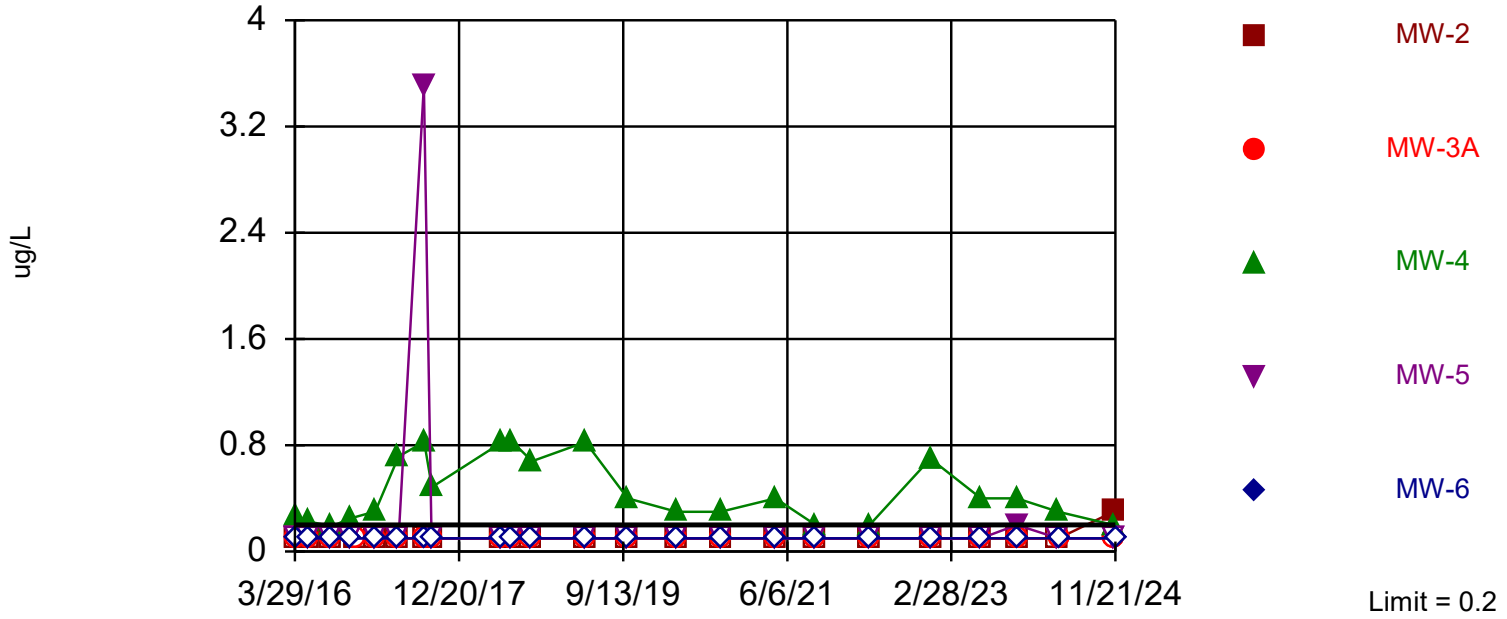
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 95.65% NDs. Report alpha = 0.1786. Individual comparison alpha = 0.03858. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Mercury Analysis Run 1/28/2025 8:18 AM

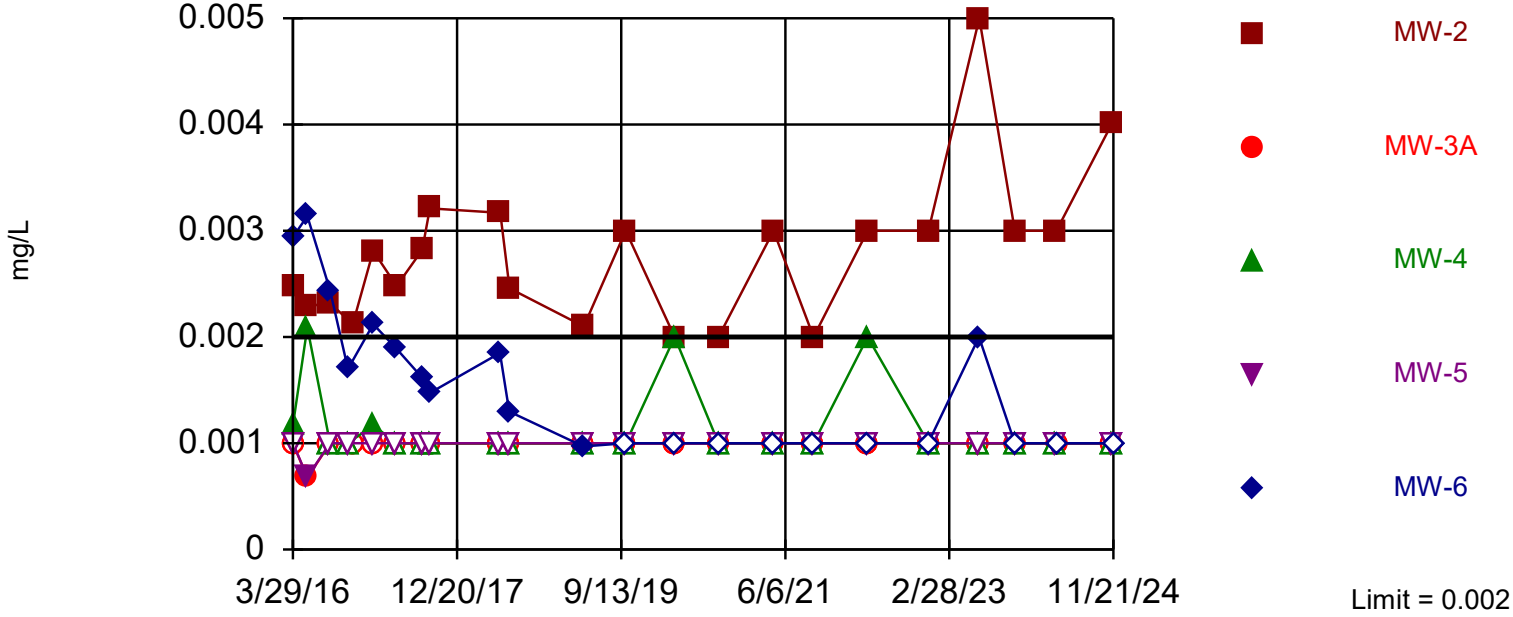
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 22 background values. 54.55% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Molybdenum Analysis Run 1/28/2025 8:18 AM

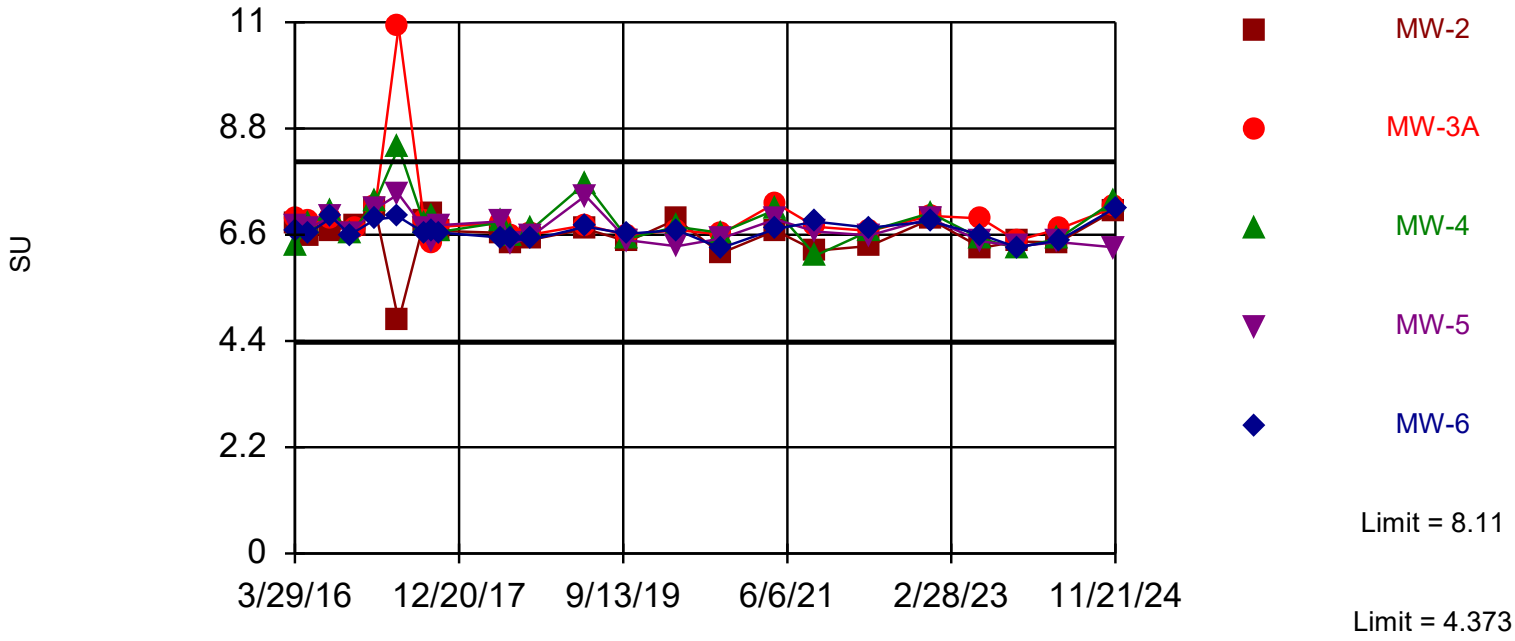
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary (based on x^6 transformation): Mean=145785, Std. Dev.=48439, n=24. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9277, critical = 0.916. Report alpha = 0.04901. Individual comparison alpha = 0.005. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: pH [Field] Analysis Run 1/28/2025 8:18 AM

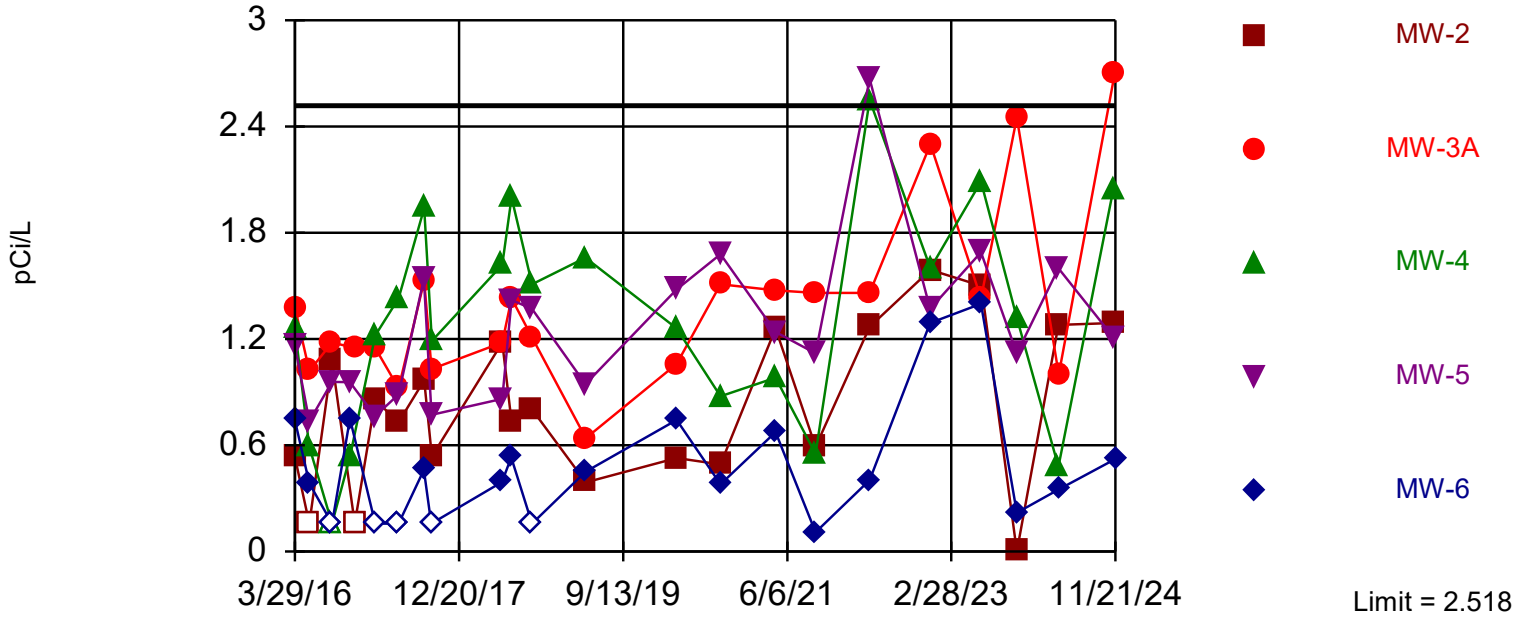
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-3A

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=0.9762, Std. Dev.=0.236, n=21. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9194, critical = 0.908. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. One background outlier was removed: 0.176 (11/7/2023).

Constituent: Radium 226 + 228 Analysis Run 1/28/2025 8:18 AM

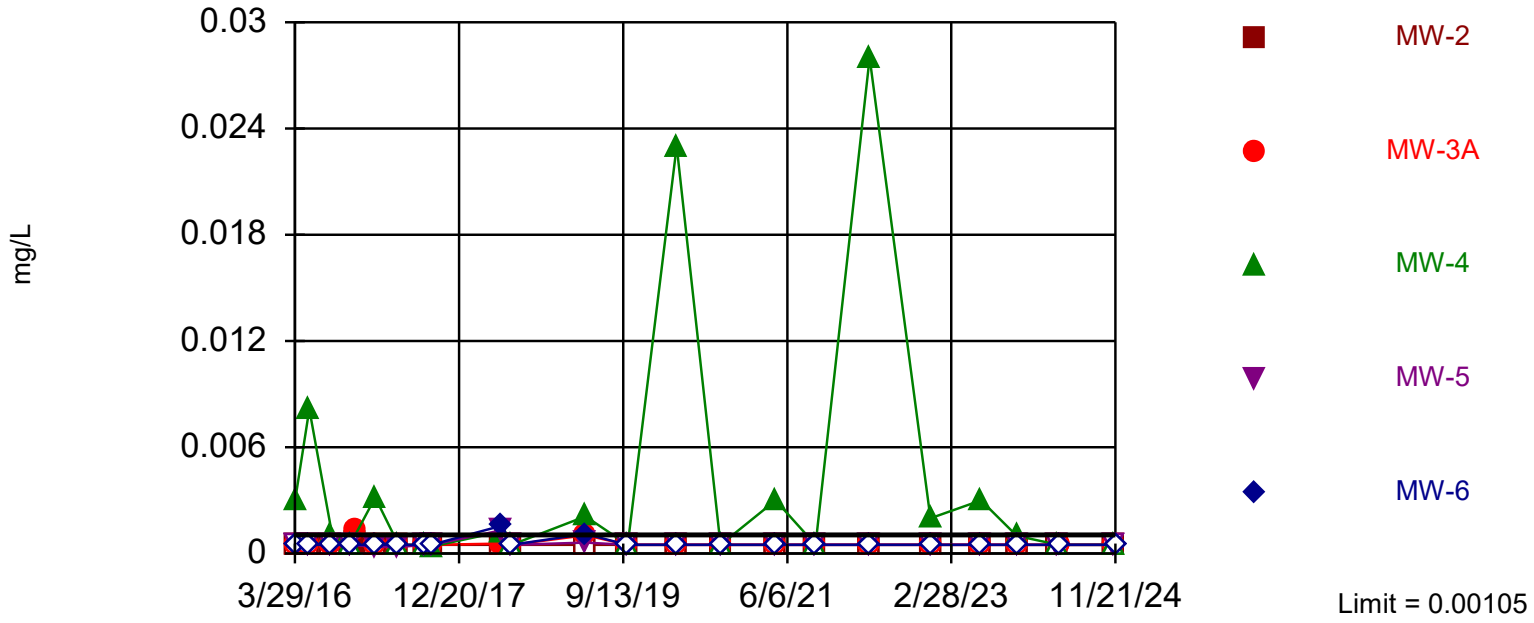
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 22 background values. 90.91% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Selenium Analysis Run 1/28/2025 8:18 AM

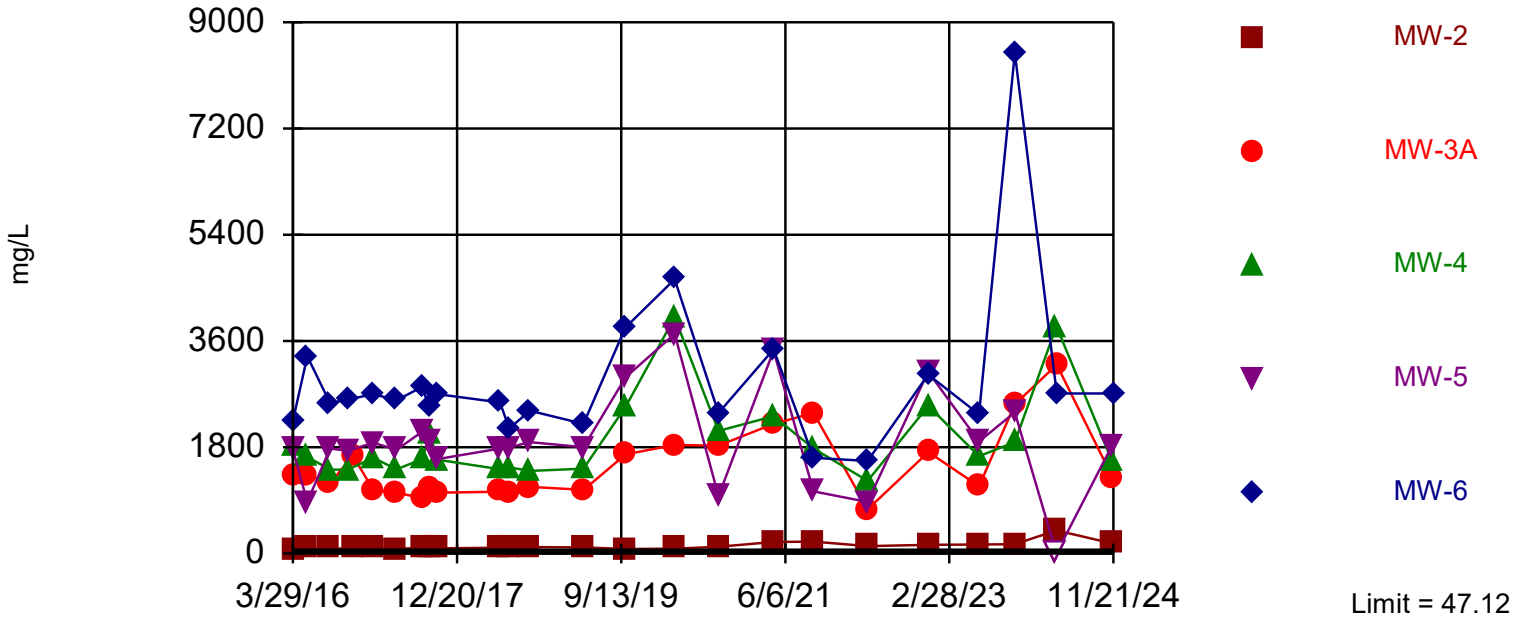
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=5.255, Std. Dev.=0.6308, n=24. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9195, critical = 0.916. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Sulfate Analysis Run 1/28/2025 8:18 AM

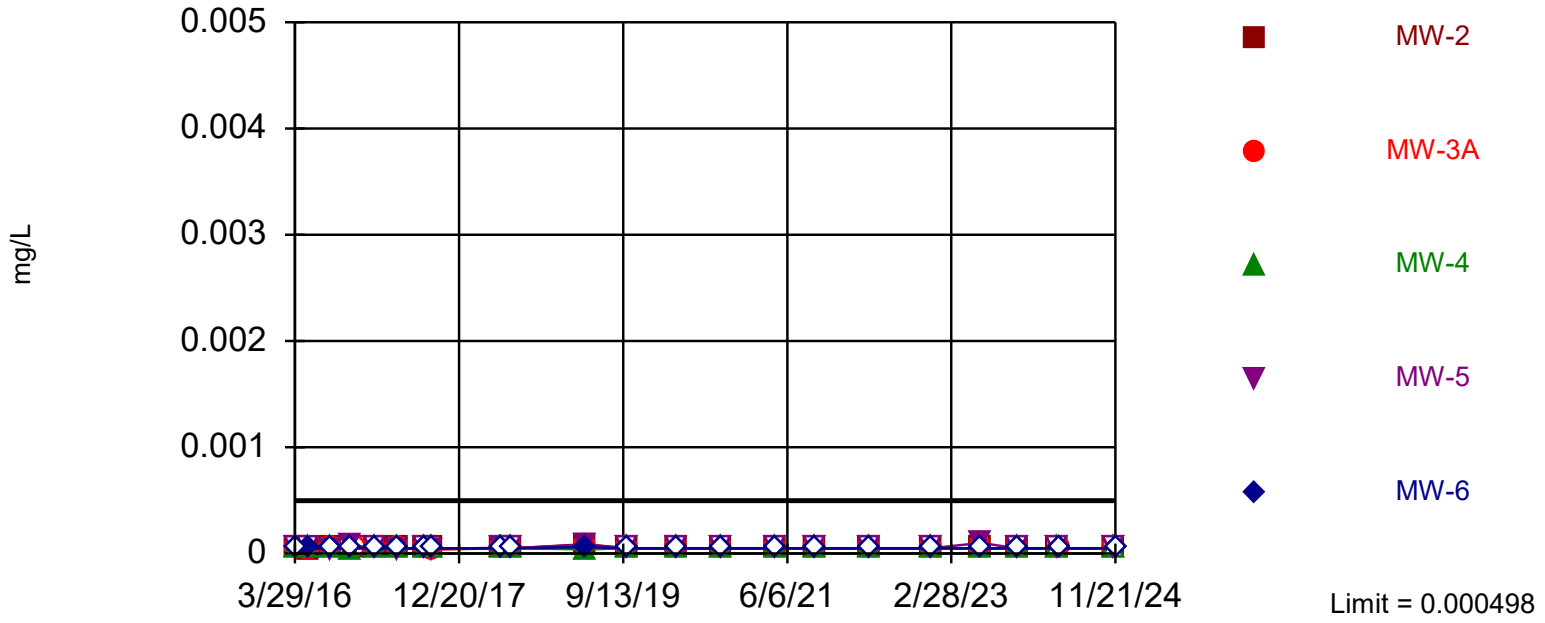
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

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 22 background values. 63.64% NDs. Report alpha = 0.1852. Individual comparison alpha = 0.04013. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Thallium Analysis Run 1/28/2025 8:18 AM

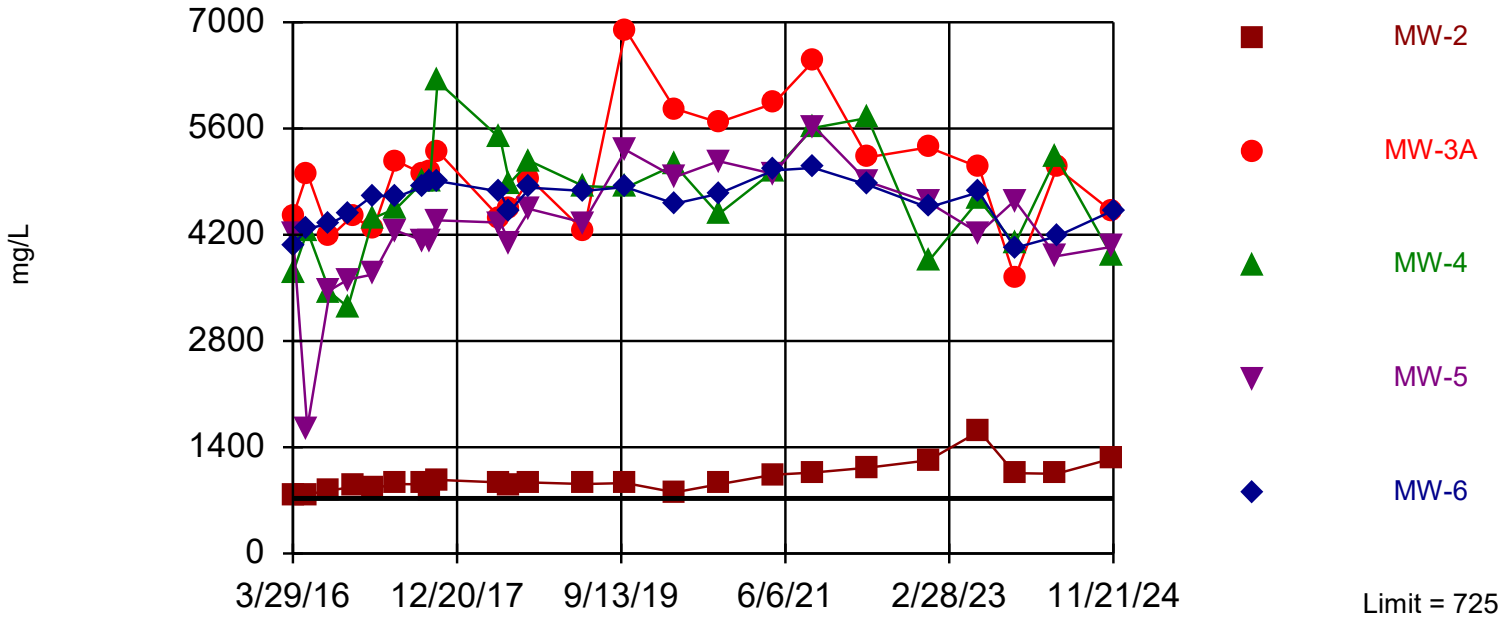
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary (based on square transformation): Mean=341658, Std. Dev.=72098, n=24. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9236, critical = 0.916. Report alpha = 0.04901. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Total Dissolved Solids Analysis Run 1/28/2025 8:18 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Confidence Interval

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 1/28/2025, 8:30 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-1 (bg)	0.001	0.000774	0.006	No	22	63.64	No	0.05	NP (NDs)
Antimony (mg/L)	MW-2	0.001	0.000278	0.006	No	22	59.09	No	0.05	NP (NDs)
Antimony (mg/L)	MW-3A	0.001	0.000546	0.006	No	22	63.64	No	0.05	NP (NDs)
Antimony (mg/L)	MW-4	0.001	0.000531	0.006	No	22	68.18	No	0.05	NP (NDs)
Antimony (mg/L)	MW-5	0.001	0.000834	0.006	No	22	68.18	No	0.05	NP (NDs)
Antimony (mg/L)	MW-6	0.01	0.000815	0.006	No	22	68.18	No	0.05	NP (NDs)
Arsenic (mg/L)	MW-1 (bg)	0.001064	0.0006279	0.01	No	23	8.696	sqrt(x)	0.05	Param.
Arsenic (mg/L)	**MW-2**	**0.02542**	**0.0155**	**0.01**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Arsenic (mg/L)	MW-3A	0.000343	0.0002	0.01	No	23	52.17	No	0.05	NP (NDs)
Arsenic (mg/L)	MW-4	0.000318	0.0002	0.01	No	23	56.52	No	0.05	NP (NDs)
Arsenic (mg/L)	MW-5	0.000356	0.0002	0.01	No	23	52.17	No	0.05	NP (NDs)
Arsenic (mg/L)	MW-6	0.002	0.000722	0.01	No	23	52.17	No	0.05	NP (NDs)
Barium (mg/L)	MW-1 (bg)	0.08413	0.07891	2	No	23	0	No	0.05	Param.
Barium (mg/L)	MW-2	0.3314	0.2911	2	No	23	0	x^2	0.05	Param.
Barium (mg/L)	MW-3A	0.04522	0.04228	2	No	23	0	No	0.05	Param.
Barium (mg/L)	MW-4	0.02792	0.02386	2	No	23	0	No	0.05	Param.
Barium (mg/L)	MW-5	0.015	0.0135	2	No	23	0	No	0.05	NP (normality)
Barium (mg/L)	MW-6	0.012	0.01032	2	No	23	0	No	0.05	Param.
Beryllium (mg/L)	MW-1 (bg)	0.0005	0.0005	0.004	No	22	95.45	No	0.05	NP (NDs)
Beryllium (mg/L)	MW-2	0.0005	0.0005	0.004	No	22	95.45	No	0.05	NP (NDs)
Beryllium (mg/L)	MW-3A	0.0005	0.0005	0.004	No	22	95.45	No	0.05	NP (NDs)
Beryllium (mg/L)	MW-4	0.0005	0.0005	0.004	No	22	100	No	0.05	NP (NDs)
Beryllium (mg/L)	MW-5	0.0005	0.0005	0.004	No	22	100	No	0.05	NP (NDs)
Beryllium (mg/L)	MW-6	0.0005	0.0005	0.004	No	22	100	No	0.05	NP (NDs)
Cadmium (mg/L)	MW-1 (bg)	0.0001	0.00005	0.005	No	22	90.91	No	0.05	NP (NDs)
Cadmium (mg/L)	MW-2	0.00005	0.00005	0.005	No	22	95.45	No	0.05	NP (NDs)
Cadmium (mg/L)	MW-3A	0.000172	0.00005	0.005	No	22	50	No	0.05	NP (normality)
Cadmium (mg/L)	MW-4	0.00005	0.00005	0.005	No	22	95.45	No	0.05	NP (NDs)
Cadmium (mg/L)	MW-5	0.000154	0.00005	0.005	No	22	90.91	No	0.05	NP (NDs)
Cadmium (mg/L)	MW-6	0.0005	0.0005	0.005	No	22	95.45	No	0.05	NP (NDs)
Chromium (mg/L)	MW-1 (bg)	0.000382	0.0003	0.1	No	22	77.27	No	0.05	NP (NDs)
Chromium (mg/L)	MW-2	0.00102	0.0003	0.1	No	22	86.36	No	0.05	NP (NDs)
Chromium (mg/L)	MW-3A	0.000529	0.0003	0.1	No	22	72.73	No	0.05	NP (NDs)
Chromium (mg/L)	MW-4	0.0008	0.0003	0.1	No	22	59.09	No	0.05	NP (NDs)
Chromium (mg/L)	MW-5	0.000793	0.0003	0.1	No	22	54.55	No	0.05	NP (NDs)
Chromium (mg/L)	MW-6	0.003	0.00196	0.1	No	22	63.64	No	0.05	NP (NDs)
Cobalt (mg/L)	MW-1 (bg)	0.002	0.000793	0.006	No	22	50	No	0.05	NP (normality)
Cobalt (mg/L)	MW-2	0.004633	0.002793	0.006	No	22	45.45	No	0.05	Param.
Cobalt (mg/L)	MW-3A	0.00218	0.00126	0.006	No	22	45.45	No	0.05	NP (normality)
Cobalt (mg/L)	MW-4	0.002	0.000415	0.006	No	22	81.82	No	0.05	NP (NDs)
Cobalt (mg/L)	MW-5	0.002	0.000288	0.006	No	22	63.64	No	0.05	NP (NDs)
Cobalt (mg/L)	MW-6	0.02	0.0002	0.006	No	22	54.55	No	0.05	NP (NDs)
Fluoride (mg/L)	MW-1 (bg)	0.581	0.501	4	No	24	0	No	0.05	NP (normality)
Fluoride (mg/L)	MW-2	0.2836	0.2272	4	No	24	4.167	sqrt(x)	0.05	Param.
Fluoride (mg/L)	MW-3A	0.436	0.387	4	No	24	8.333	No	0.05	NP (normality)
Fluoride (mg/L)	MW-4	0.416	0.185	4	No	24	16.67	No	0.05	NP (normality)
Fluoride (mg/L)	MW-5	0.2	0.119	4	No	24	20.83	No	0.05	NP (normality)
Fluoride (mg/L)	MW-6	0.517	0.4	4	No	24	8.333	No	0.05	NP (normality)
Lead (mg/L)	MW-1 (bg)	0.00025	0.000215	0.015	No	22	72.73	No	0.05	NP (NDs)
Lead (mg/L)	MW-2	0.00025	0.00025	0.015	No	22	95.45	No	0.05	NP (NDs)

Confidence Interval

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 1/28/2025, 8:30 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lead (mg/L)	MW-3A	0.00025	0.000211	0.015	No	22	77.27	No	0.05	NP (NDs)
Lead (mg/L)	MW-4	0.00025	0.00025	0.015	No	22	86.36	No	0.05	NP (NDs)
Lead (mg/L)	MW-5	0.00025	0.000151	0.015	No	22	77.27	No	0.05	NP (NDs)
Lead (mg/L)	MW-6	0.00025	0.0002	0.015	No	22	86.36	No	0.05	NP (NDs)
Lithium (mg/L)	MW-1 (bg)	0.0314	0.0298	0.04	No	23	8.696	No	0.05	NP (normality)
Lithium (mg/L)	MW-2	0.0122	0.006	0.04	No	23	39.13	No	0.05	NP (normality)
Lithium (mg/L)	**MW-3A**	**0.7298**	**0.6812**	**0.04**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-4**	**1.463**	**1.146**	**0.04**	**Yes**	**23**	**4.348**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-5**	**0.4052**	**0.3519**	**0.04**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-6**	**0.05556**	**0.04956**	**0.04**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Mercury (ug/L)	MW-1 (bg)	0.1	0.1	2	No	23	95.65	No	0.05	NP (NDs)
Mercury (ug/L)	MW-2	0.1	0.1	2	No	23	95.65	No	0.05	NP (NDs)
Mercury (ug/L)	MW-3A	0.1	0.1	2	No	23	100	No	0.05	NP (NDs)
Mercury (ug/L)	MW-4	0.4696	0.322	2	No	23	0	ln(x)	0.05	Param.
Mercury (ug/L)	MW-5	0.1	0.1	2	No	23	91.3	No	0.05	NP (NDs)
Mercury (ug/L)	MW-6	0.1	0.1	2	No	23	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-1 (bg)	0.0013	0.001	0.1	No	22	54.55	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-2	0.002995	0.002508	0.1	No	22	0	sqrt(x)	0.05	Param.
Molybdenum (mg/L)	MW-3A	0.001	0.001	0.1	No	22	95.45	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-4	0.00117	0.001	0.1	No	22	77.27	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-5	0.001	0.001	0.1	No	22	95.45	No	0.05	NP (NDs)
Molybdenum (mg/L)	MW-6	0.00185	0.001	0.1	No	22	45.45	No	0.05	NP (normality)
Radium 226 + 228 (pCi/L)	MW-1 (bg)	1.162	0.774	5	No	22	0	No	0.05	Param.
Radium 226 + 228 (pCi/L)	MW-2	0.9822	0.6566	5	No	22	9.091	No	0.05	Param.
Radium 226 + 228 (pCi/L)	MW-3A	1.532	1.192	5	No	22	0	sqrt(x)	0.05	Param.
Radium 226 + 228 (pCi/L)	MW-4	1.54	1.095	5	No	22	4.545	No	0.05	Param.
Radium 226 + 228 (pCi/L)	MW-5	1.373	1.077	5	No	22	0	sqrt(x)	0.05	Param.
Radium 226 + 228 (pCi/L)	MW-6	0.532	0.22	5	No	22	22.73	No	0.05	NP (Cohens/xfrm)
Selenium (mg/L)	MW-1 (bg)	0.000652	0.0005	0.05	No	22	90.91	No	0.05	NP (NDs)
Selenium (mg/L)	MW-2	0.0005	0.0005	0.05	No	22	90.91	No	0.05	NP (NDs)
Selenium (mg/L)	MW-3A	0.000501	0.0005	0.05	No	22	81.82	No	0.05	NP (NDs)
Selenium (mg/L)	MW-4	0.00294	0.0005	0.05	No	22	40.91	No	0.05	NP (normality)
Selenium (mg/L)	MW-5	0.0005	0.0005	0.05	No	22	81.82	No	0.05	NP (NDs)
Selenium (mg/L)	MW-6	0.0011	0.0005	0.05	No	22	90.91	No	0.05	NP (NDs)
Thallium (mg/L)	MW-1 (bg)	0.000083	0.00005	0.002	No	22	63.64	No	0.05	NP (NDs)
Thallium (mg/L)	MW-2	0.00005	0.00005	0.002	No	22	90.91	No	0.05	NP (NDs)
Thallium (mg/L)	MW-3A	0.00005	0.00005	0.002	No	22	86.36	No	0.05	NP (NDs)
Thallium (mg/L)	MW-4	0.00005	0.000045	0.002	No	22	90.91	No	0.05	NP (NDs)
Thallium (mg/L)	MW-5	0.000055	0.00005	0.002	No	22	68.18	No	0.05	NP (NDs)
Thallium (mg/L)	MW-6	0.00005	0.00005	0.002	No	22	90.91	No	0.05	NP (NDs)

Confidence Interval

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data Printed 1/28/2025, 8:30 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	**MW-2**	**0.02542**	**0.0155**	**0.01**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-3A**	**0.7298**	**0.6812**	**0.04**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-4**	**1.463**	**1.146**	**0.04**	**Yes**	**23**	**4.348**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-5**	**0.4052**	**0.3519**	**0.04**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-6**	**0.05556**	**0.04956**	**0.04**	**Yes**	**23**	**0**	**No**	**0.05**	**Param.**

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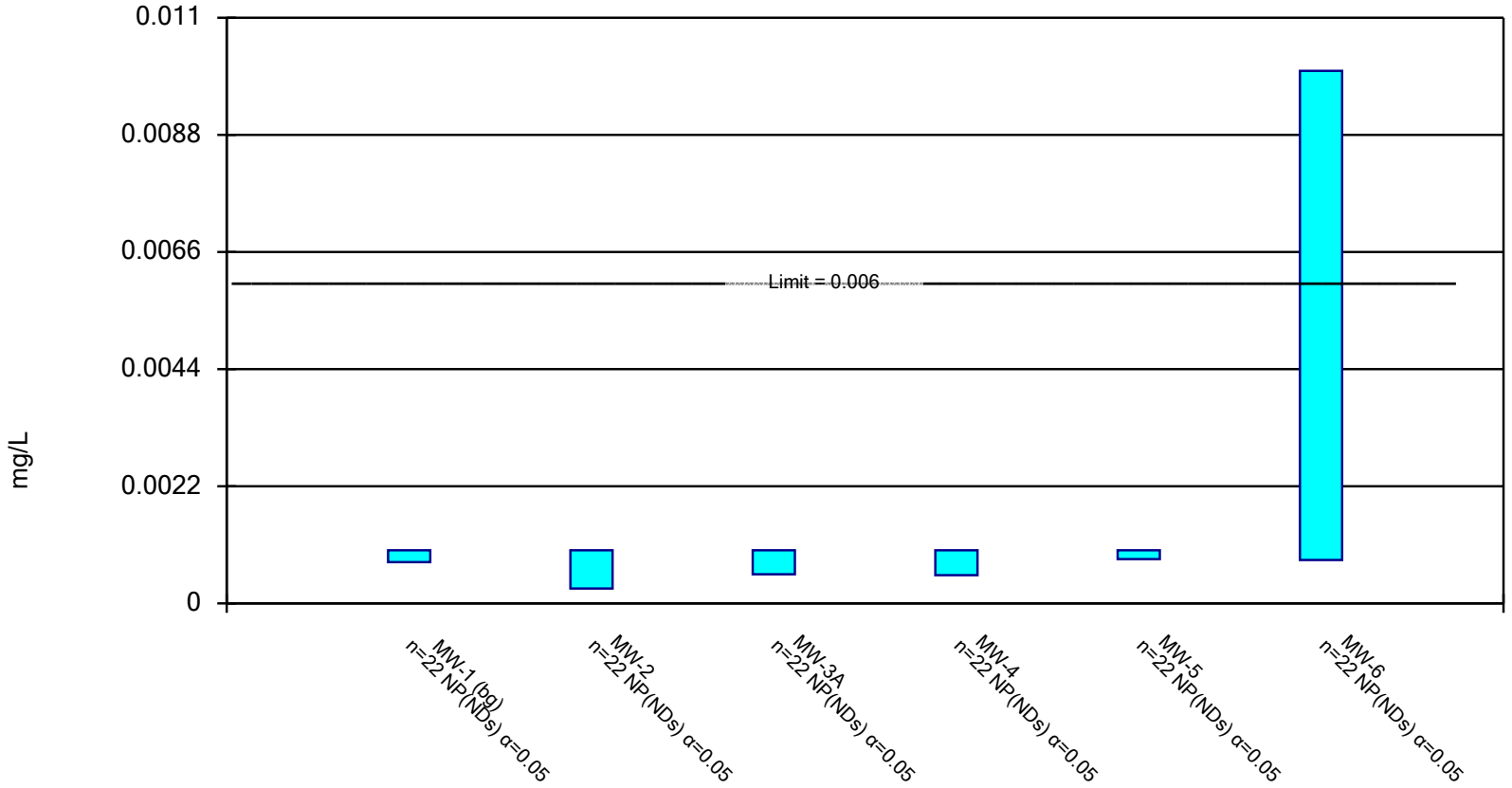
Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Antimony Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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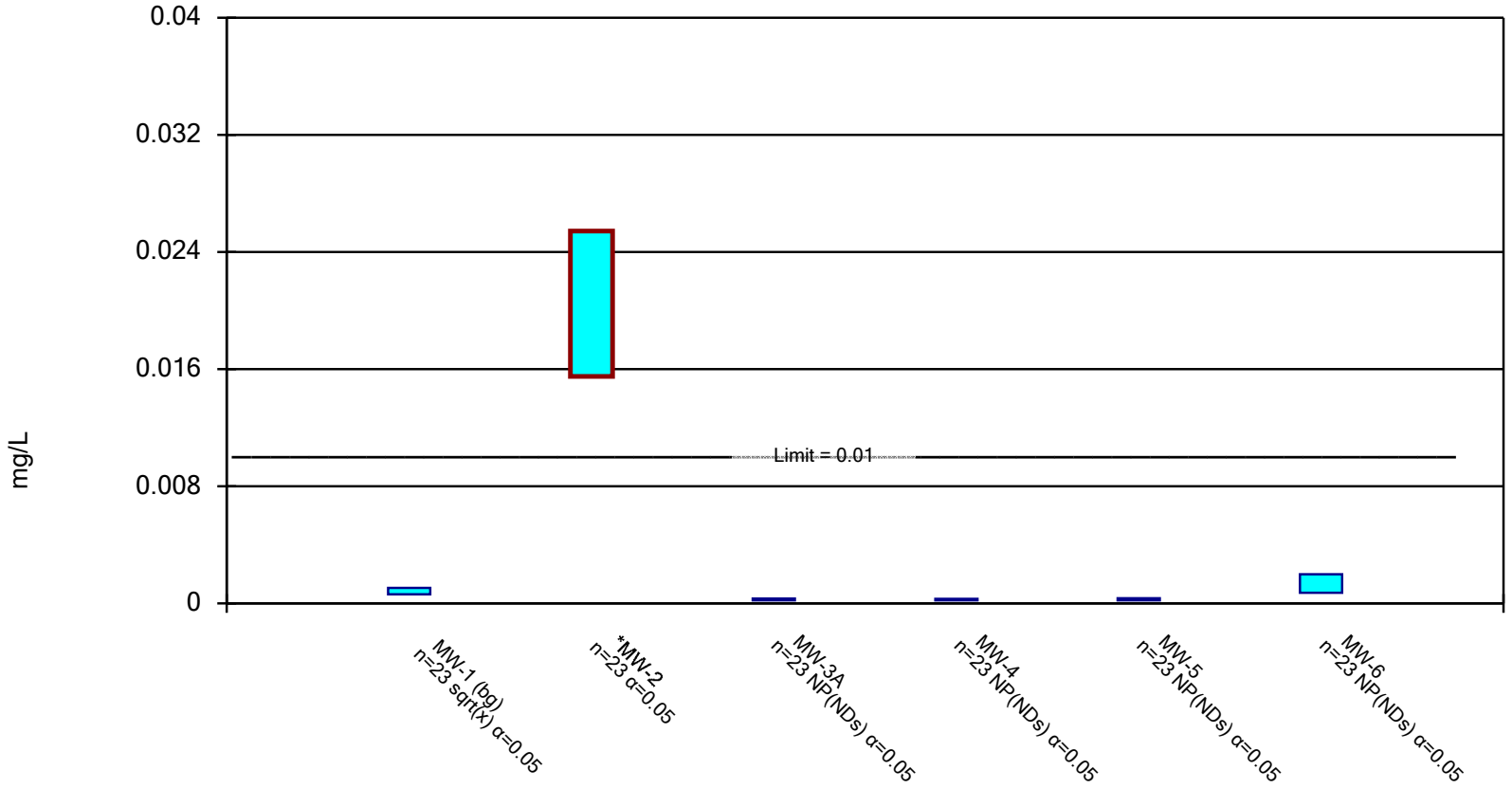
Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Normality Test: Shapiro Wilk, alpha based on n.

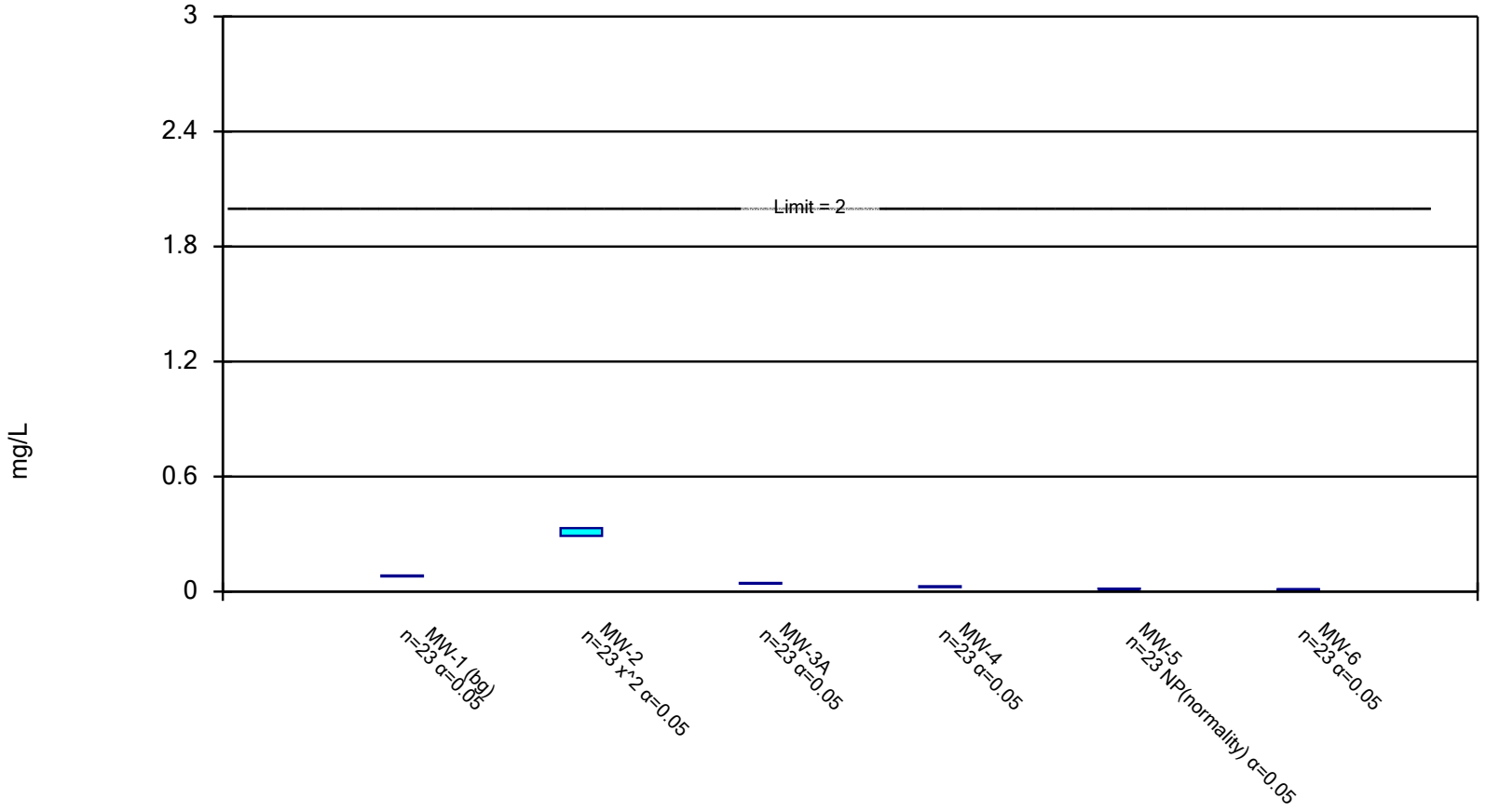


Constituent: Arsenic Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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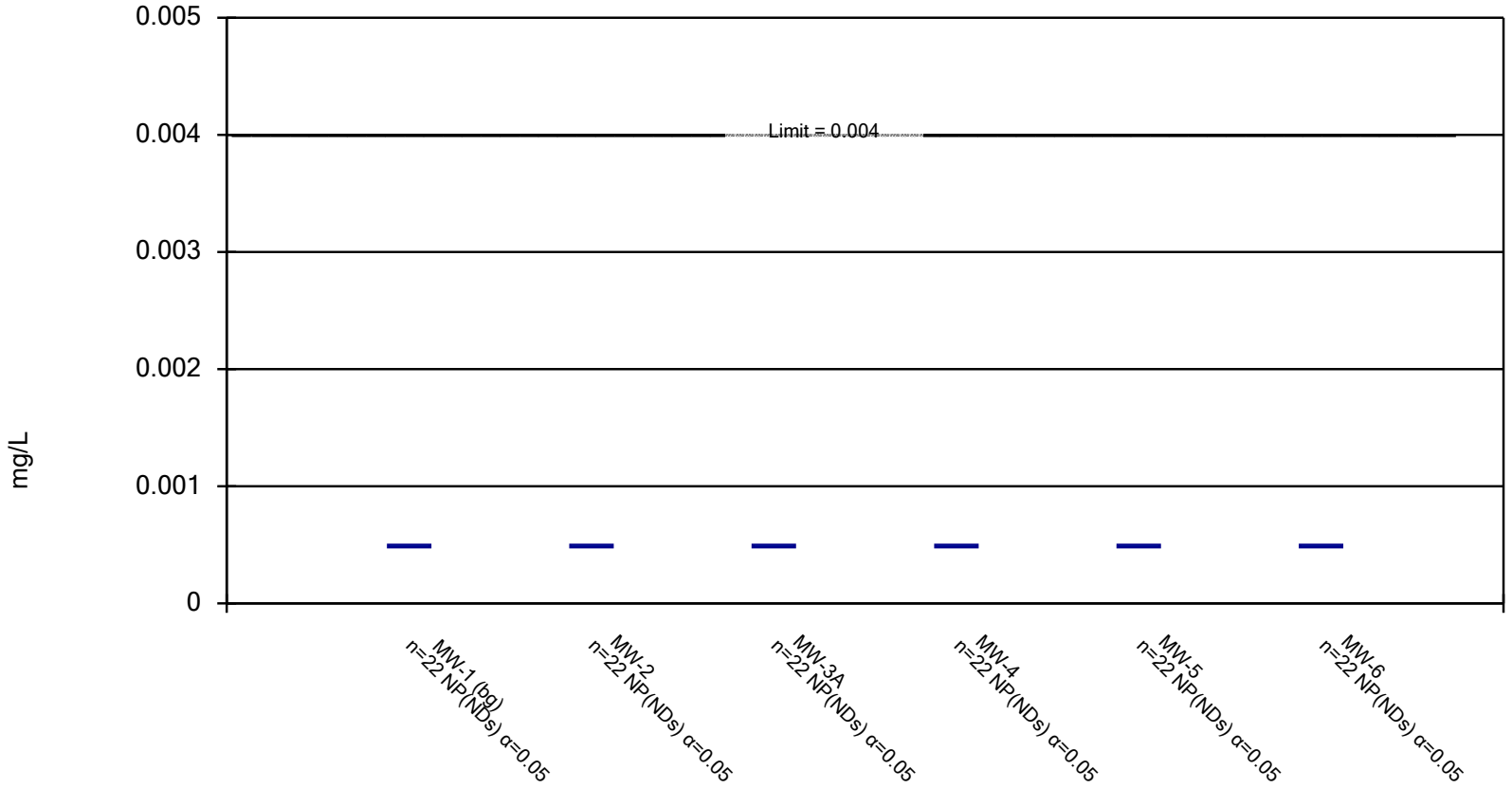
Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



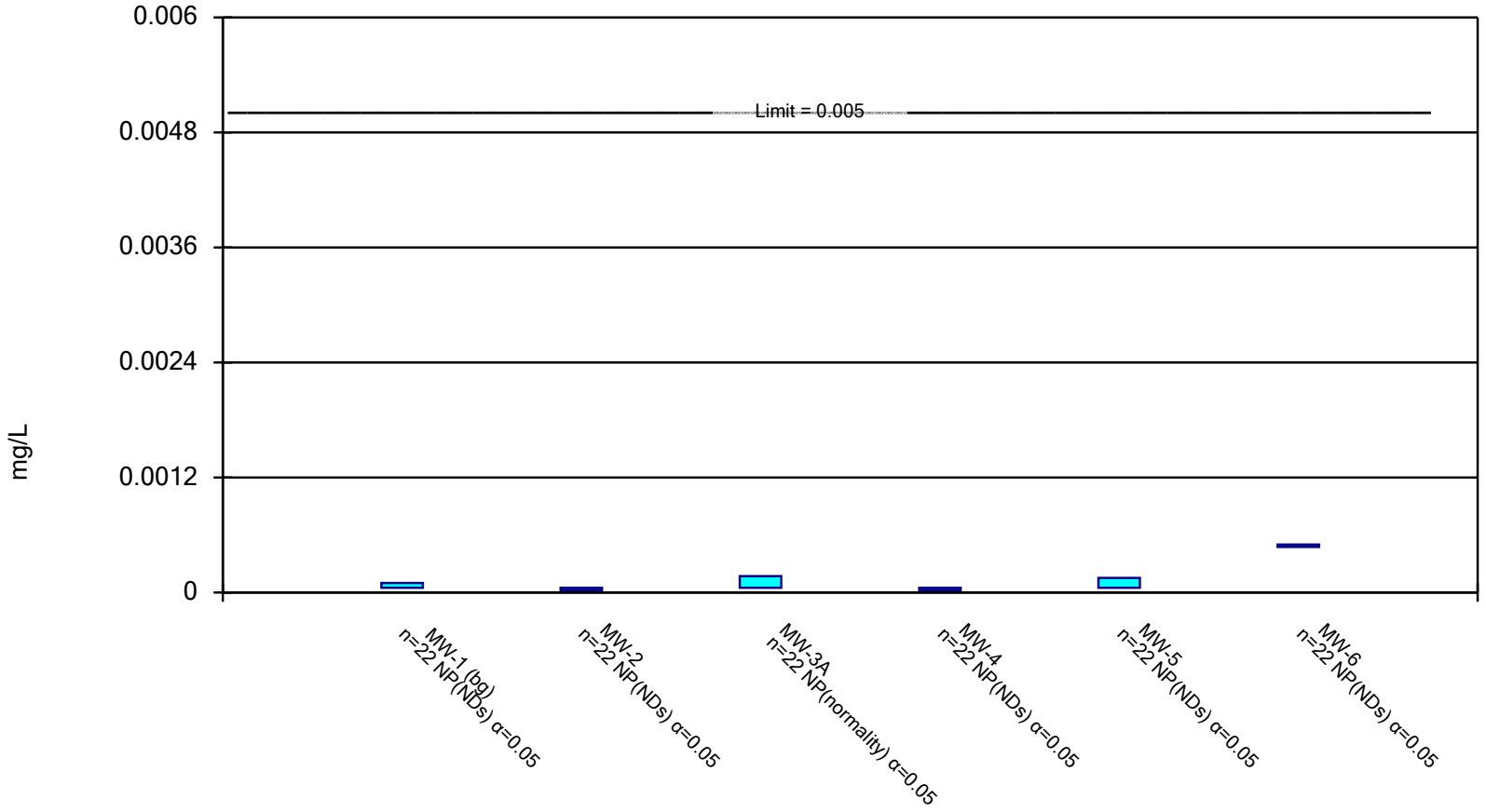
Constituent: Beryllium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



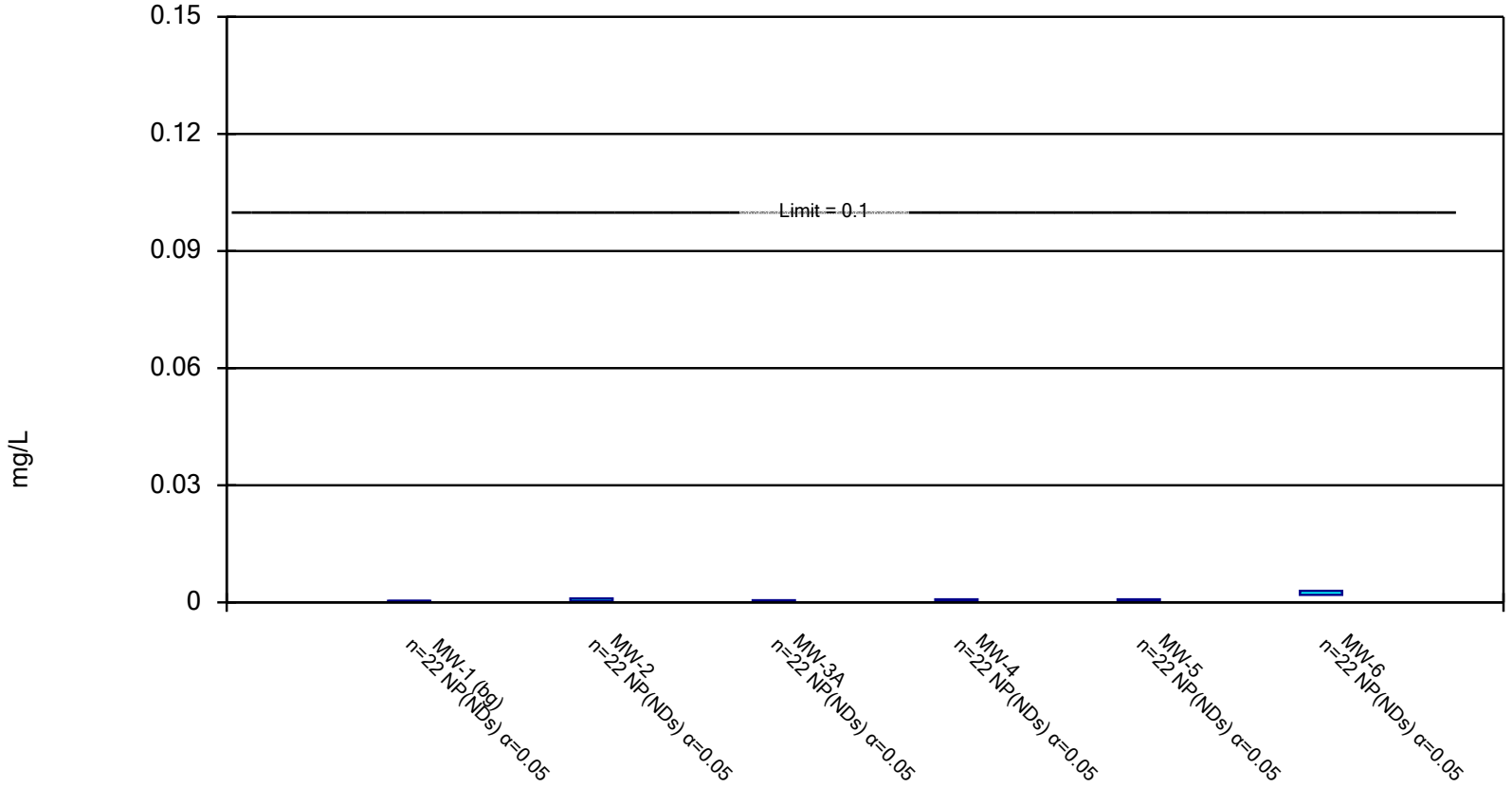
Constituent: Cadmium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



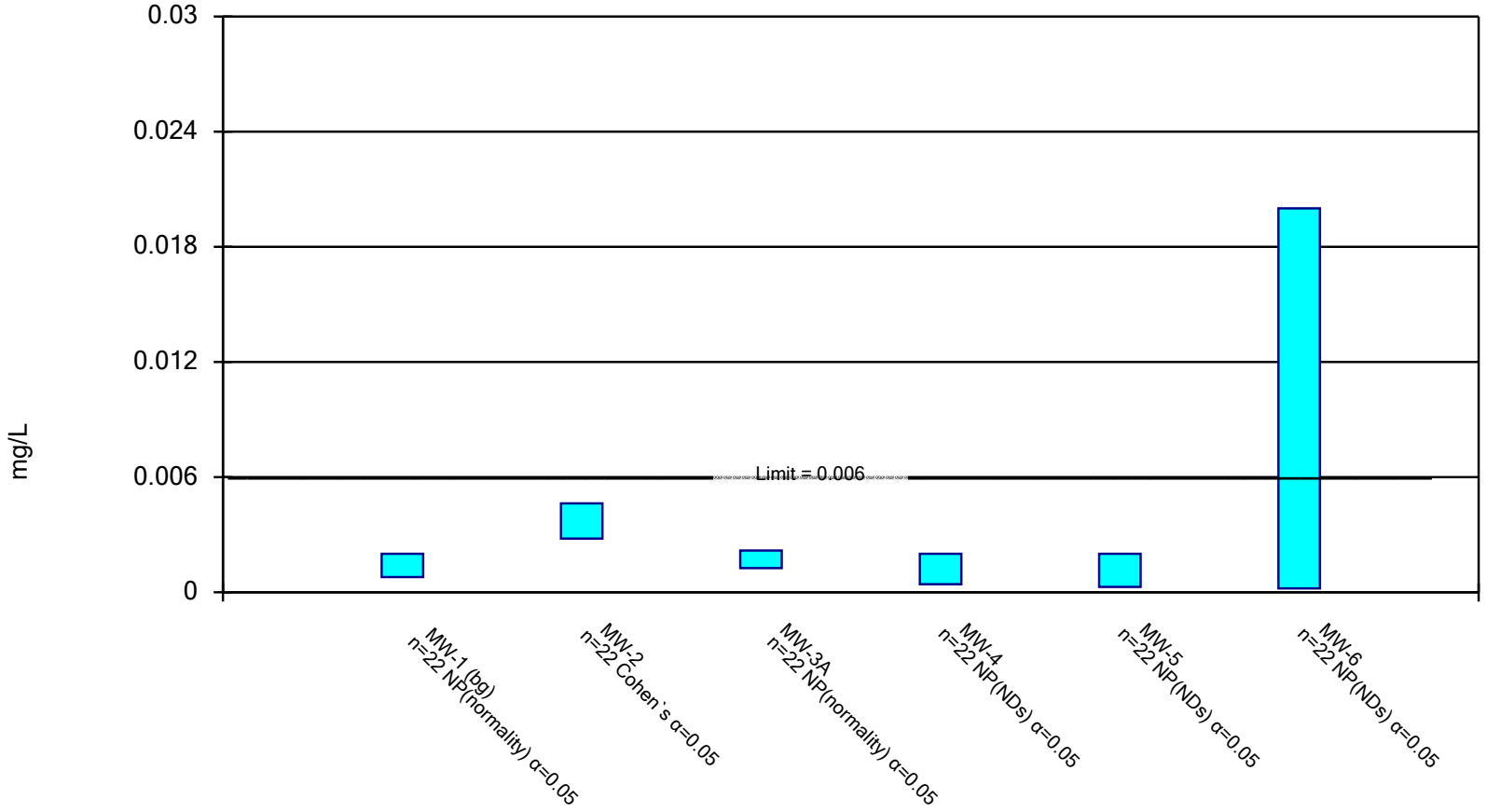
Constituent: Chromium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



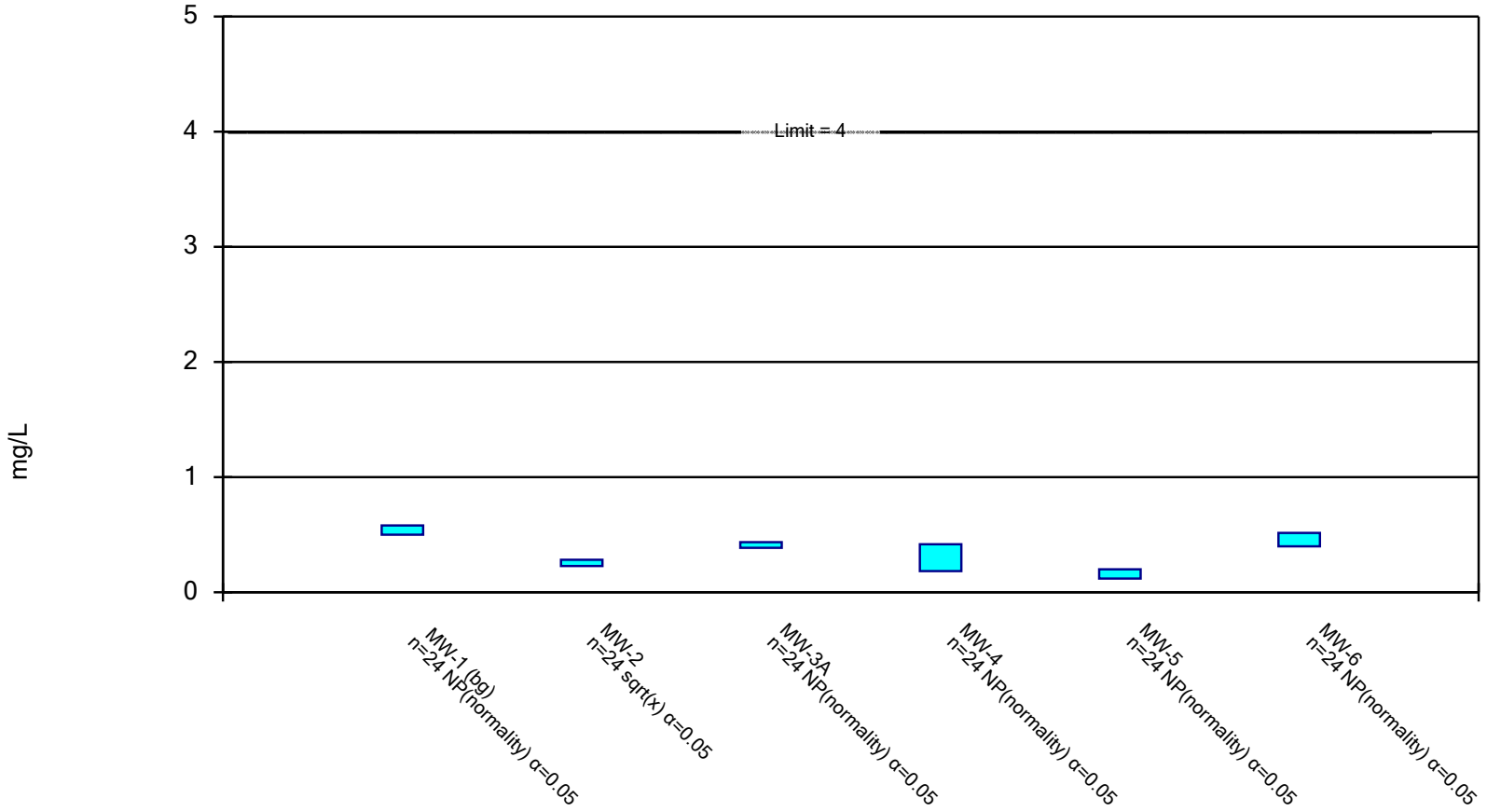
Constituent: Cobalt Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



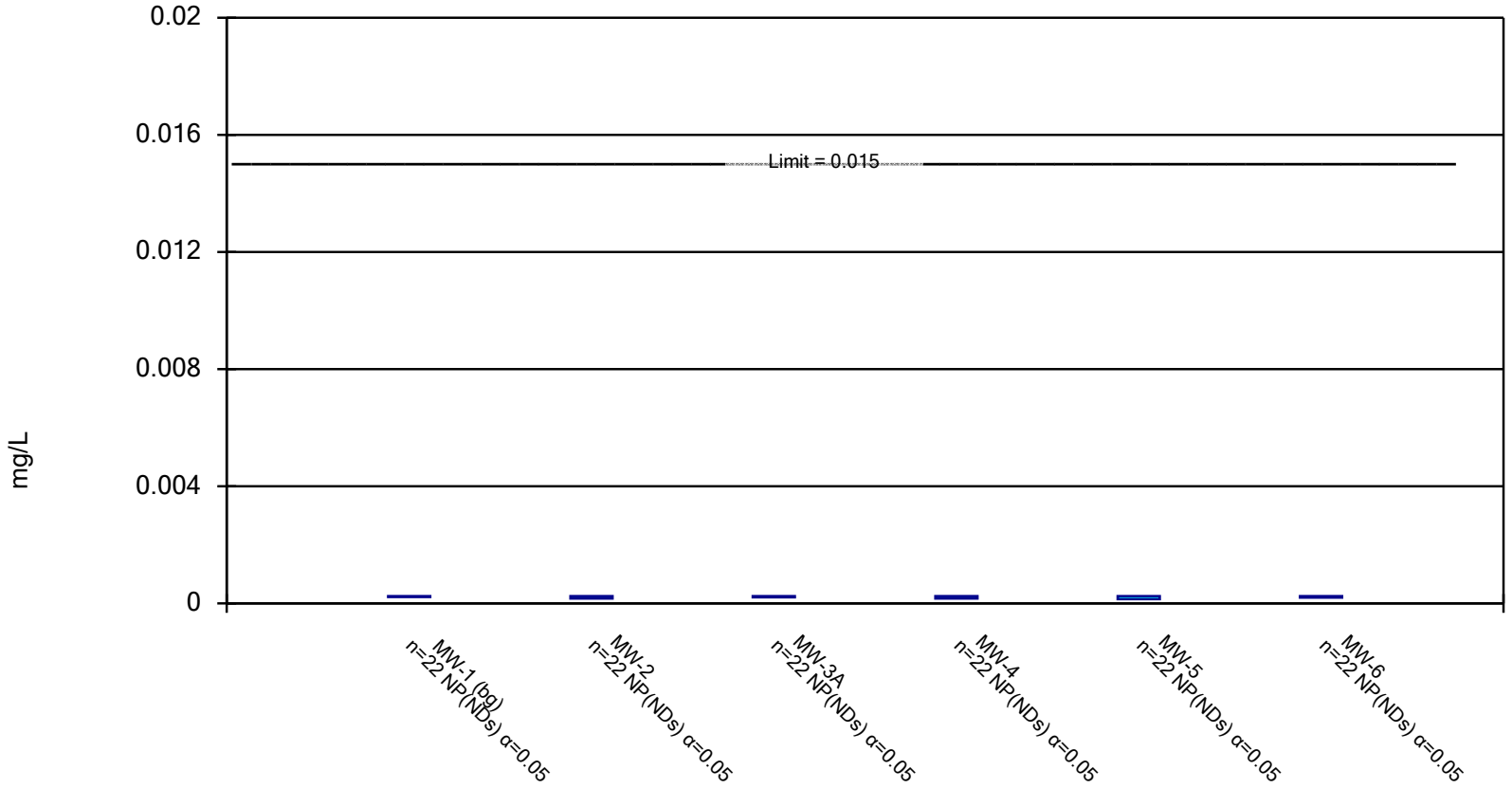
Constituent: Fluoride Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



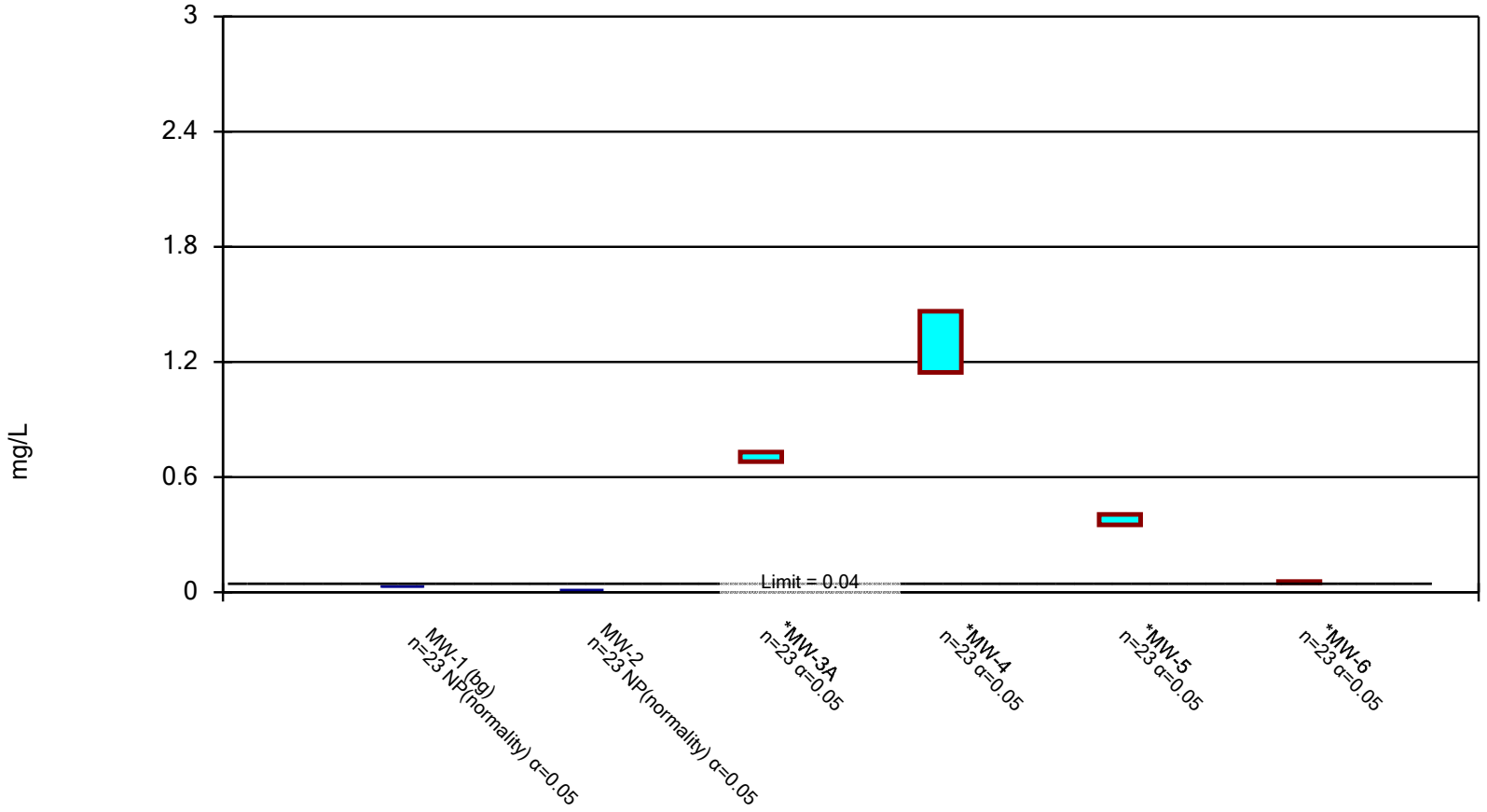
Constituent: Lead Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Normality Test: Shapiro Wilk, alpha based on n.



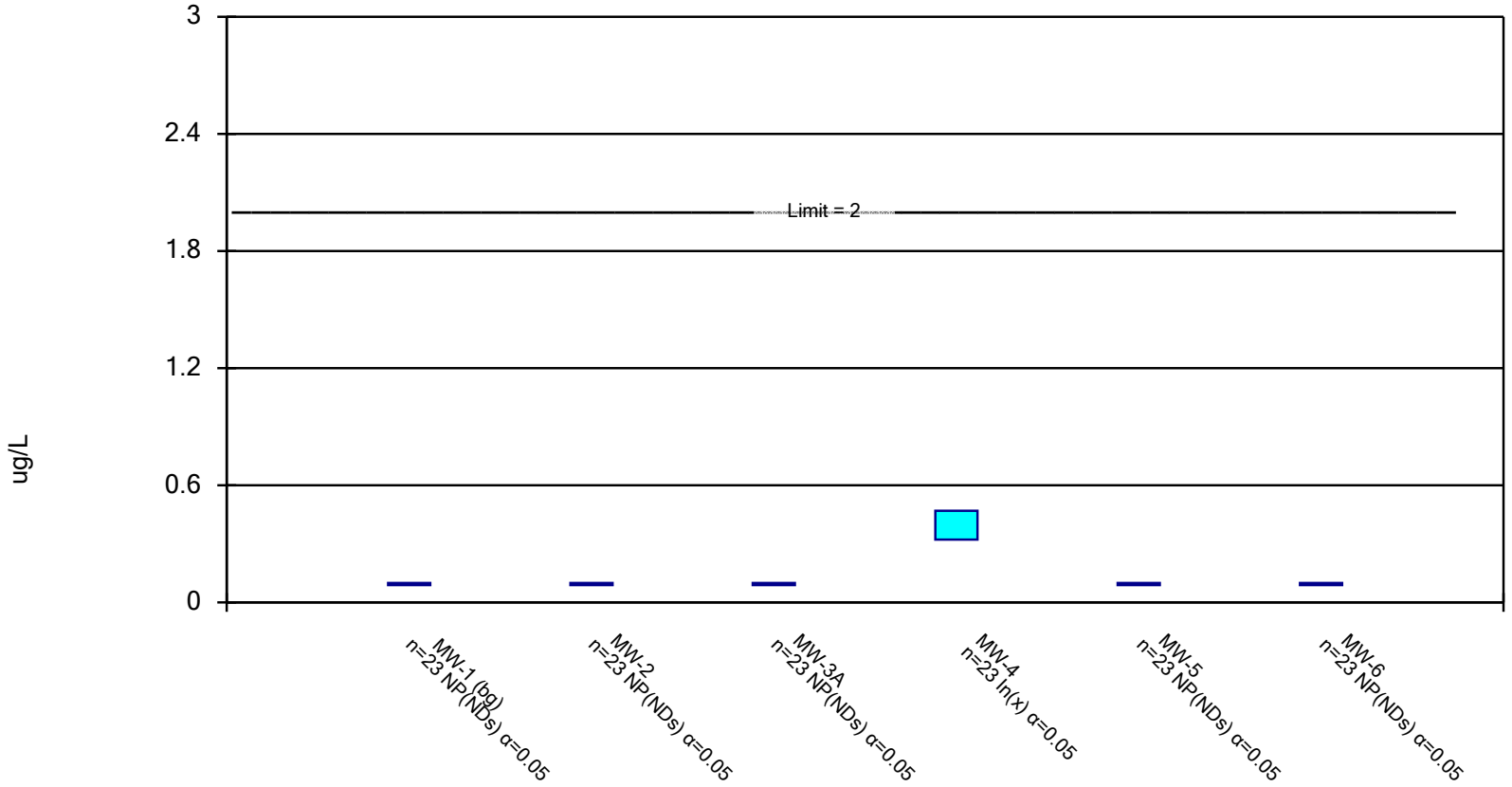
Constituent: Lithium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



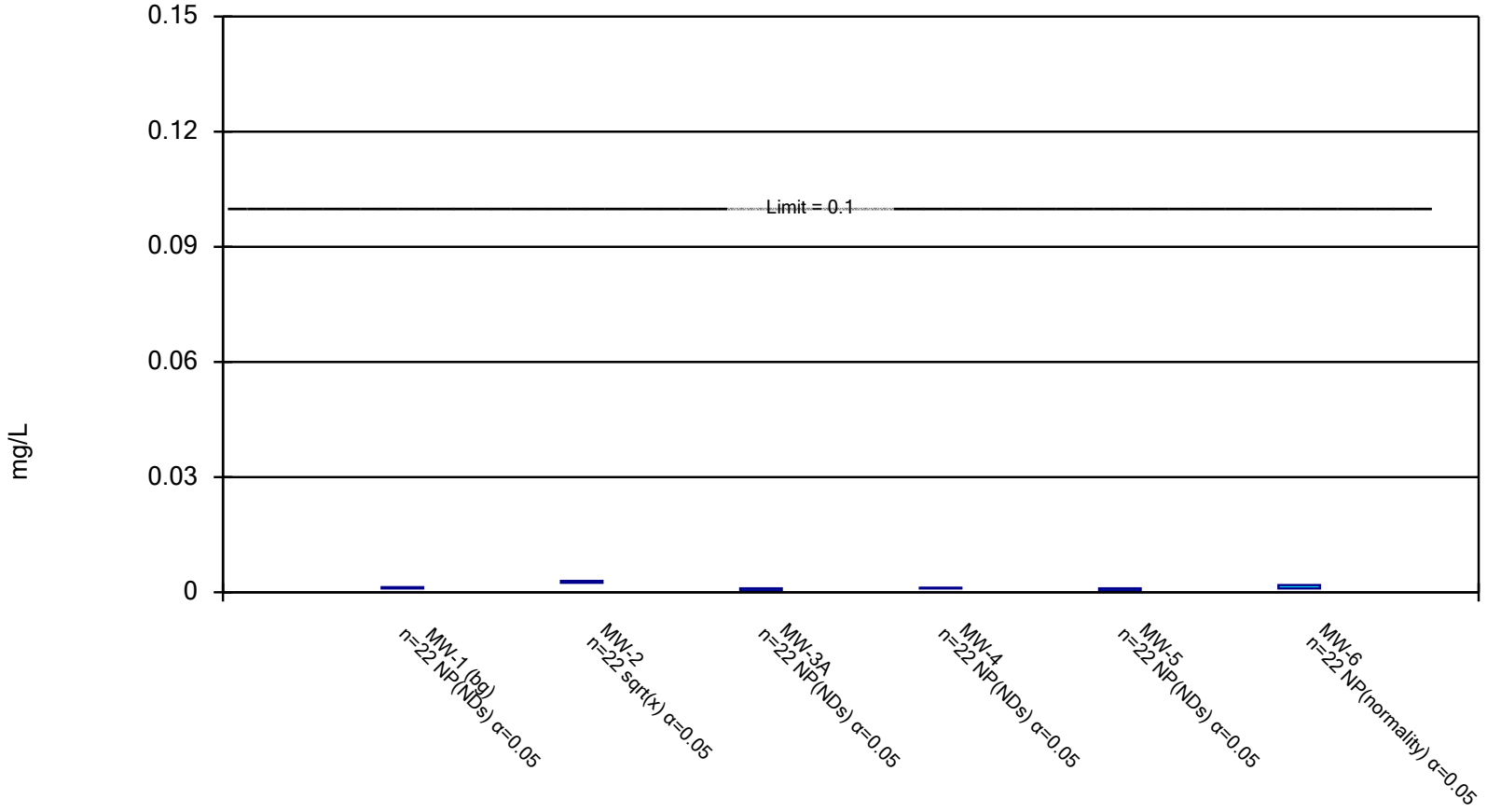
Constituent: Mercury Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



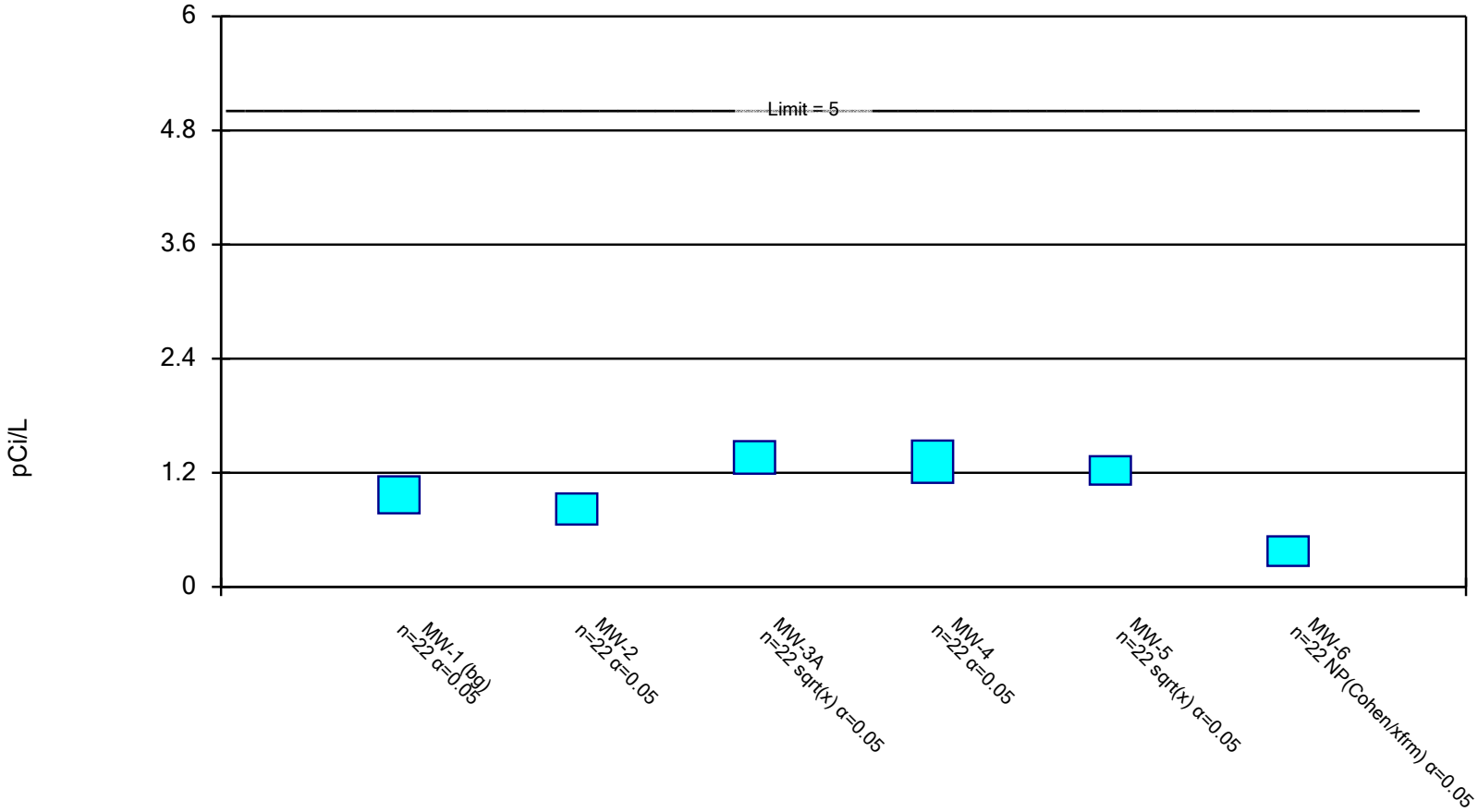
Constituent: Molybdenum Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



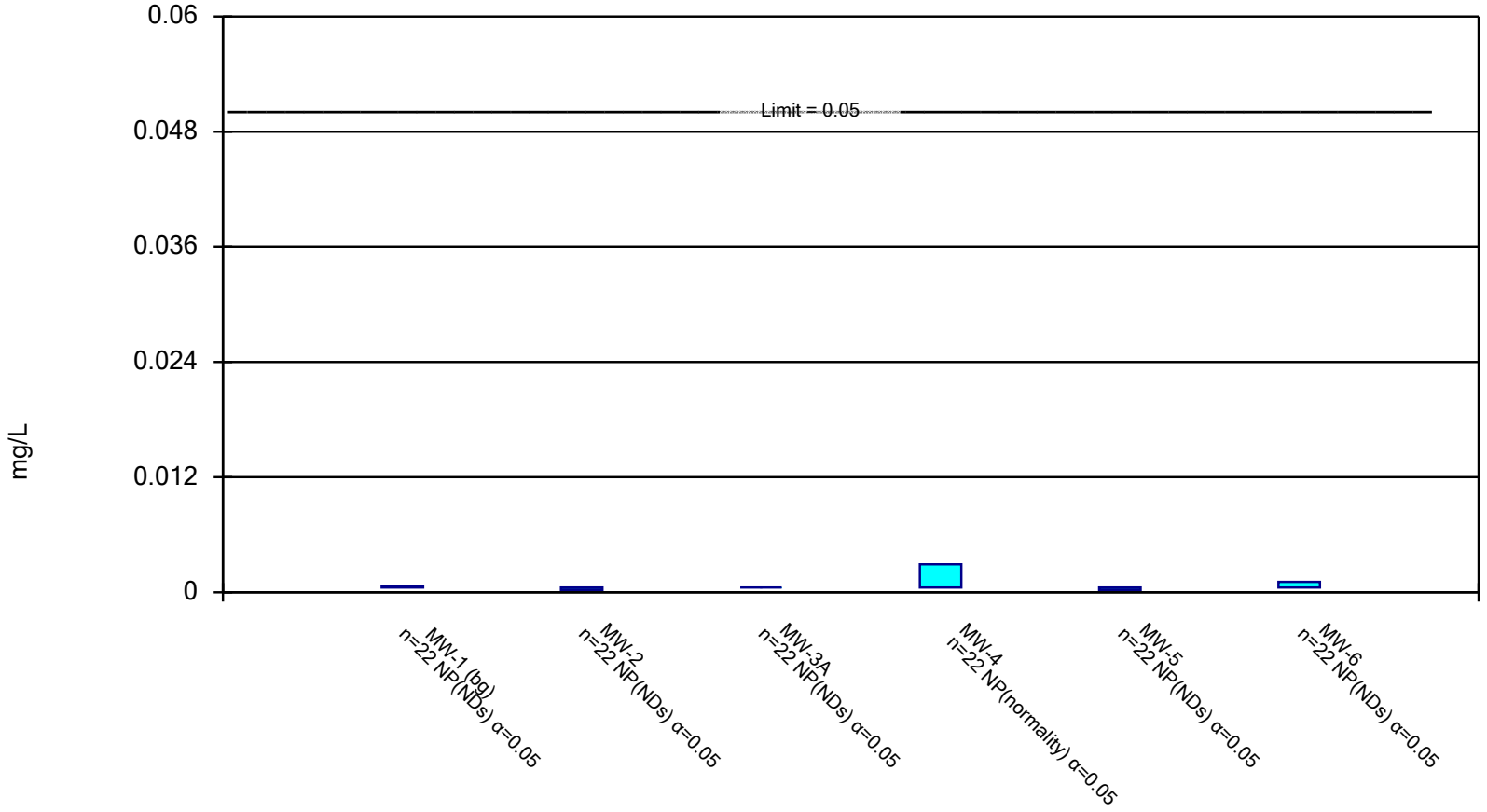
Constituent: Radium 226 + 228 Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Selenium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

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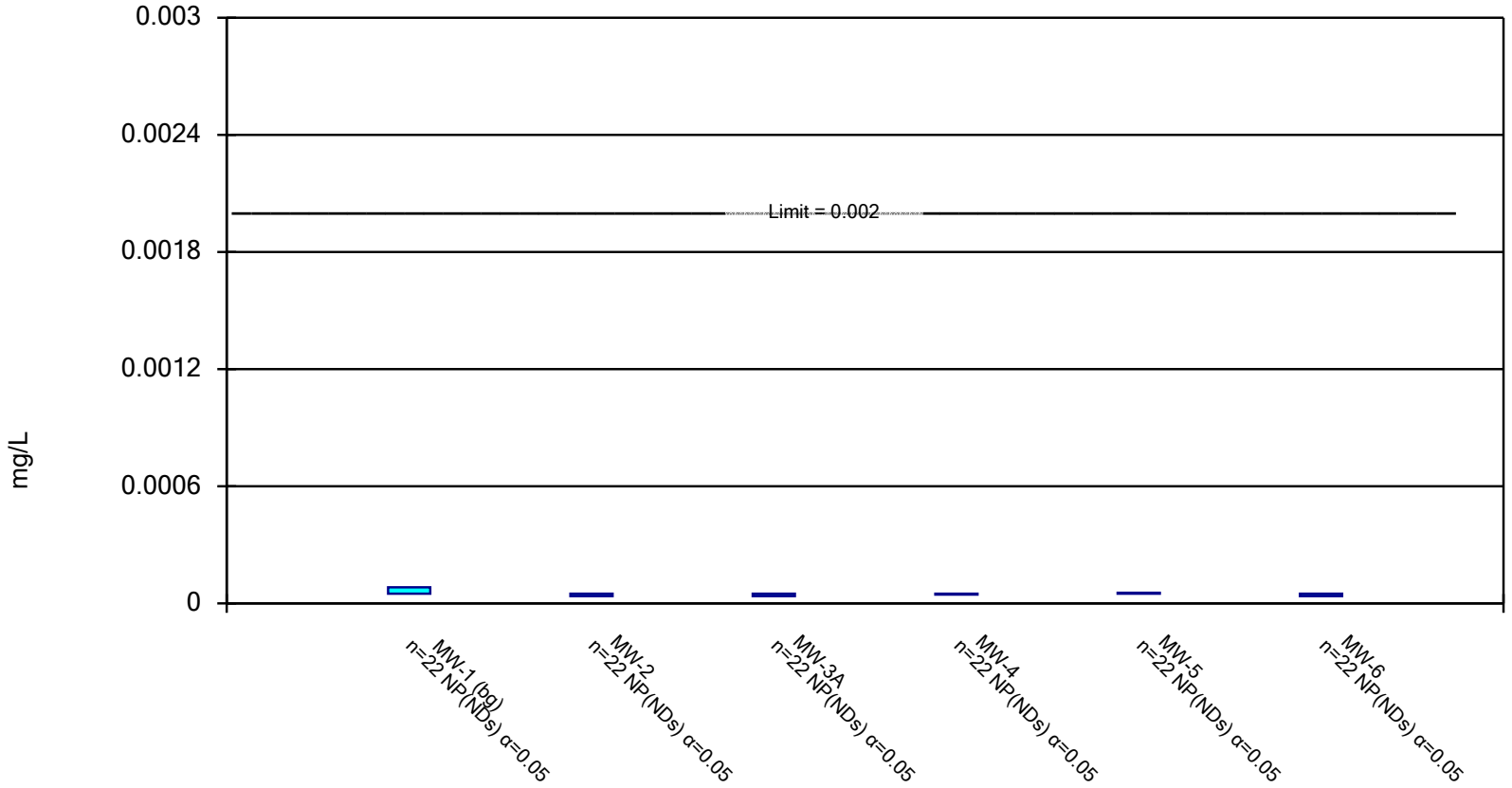
Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 1/28/2025 8:28 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green LF All Data

Appendix K – Green Former Surface Impoundment Groundwater Statistical Evaluations

June 16, 2024

Mr. Mark Bertram
Big Rivers Electric Corporation
8000 Highway 2096
Robards, KY 42452

Re: Statistical Evaluation of April 2024 Detection Monitoring Groundwater Data
Sebree Generating Station Green Surface Impoundment in Robards, Kentucky
Agency Interest ID #: 4196

Dear Mr. Bertram:

This letter presents the results of the statistical evaluation of analytical data from the April 2024 detection monitoring event at the Sebree Generating Station's Green Surface Impoundment in Webster County, Robarbs, Kentucky in accordance with the requirements of U.S. Environmental Protection Agency's *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (40 Code of Federal Regulations [CFR] Part 257, Subpart D)*. No historical statistically significant increases (SSIs) are on record for this coal combustion residuals (CCR) Unit under the detection monitoring program, and therefore, the establishment of calculated groundwater protection standards were not required as a part of the statistical evaluation completed for previous sampling events. The statistical evaluation presented herein for the April 2024 sampling event was performed in accordance with the *Groundwater Monitoring System and Statistical Methods* document prepared by Associated Engineers, Inc. and dated June 28, 2016.

In April 2024, the Green Surface Impoundment groundwater monitoring well network was sampled for Appendix III parameters per the detection monitoring program requirements of 40 CFR §257.94(a). Interwell prediction limit statistical analyses were performed for these well/constituent pairs and are discussed subsequently. This letter presents the results of the statistical evaluation of the April 2024 detection monitoring event for inclusion in the Sebree Generating Station Operating Record.

Statistical Evaluation of Sebree Green Surface Impoundment Compliance Monitoring Well Network Evaluation

An interwell prediction limit statistical evaluation was performed to compare the concentrations of the Appendix III parameters observed in April 2024 compliance (downgradient) monitoring wells MW-12, MW-13, and MW-14 to calculated prediction limits (i.e., background limits) that were established using data collected from April of 2016 through April of 2024 from upgradient monitoring well MW-11. Certain Appendix III parameters were detected in April 2024 at concentrations at or above the laboratory method detection limit. A comparison of the April 2024 data to the updated background limits is presented on **Table 1** and a summary of the statistical

evaluation is included in **Attachment 1**. The following well/constituent pair for downgradient compliance monitoring wells exhibited an SSI above its calculated background limit:

Appendix III Parameters:

- Fluoride (MW-13)

This SSI for fluoride in MW-13 is not consistent with previous events, as this is the first SSI on record for this CCR Unit under the detection monitoring program. Although this SSI is considered an initial SSI, an outlier test was performed and determined this initial SSI to be a statistical outlier. The result of the outlier test is included in **Attachment 1**. The outlier will be further evaluated during the next semiannual event to confirm that the sample was a statistical outlier and/or anomalous result.

Additionally, this SSI was further evaluated to determine whether it was present at statistically significant level (SSL) over the calculated background by calculating the lower confidence limit (LCL) at 95% confidence for each well and constituent using all the baseline and detections collected to date from each monitoring well for fluoride. For a constituent to be present at an SSL over the background, its LCL must be greater than the background. No SSLs were identified for any of the downgradient compliance wells. **Attachment 1** provides a summary of the calculated LCLs in comparison with the background. When looking at MW-13, a comparison of both the LCL (0.244 milligrams per liter [mg/L]) and upper confidence limit (UCL; 0.3 mg/L) calculated for fluoride indicated that both the LCL and UCL were below the background (0.891 mg/L).

The initial SSI that was determined to be an statistical outlier will be further evaluated during the next semiannual sampling event under the detection monitoring program. The next semiannual monitoring event is scheduled for October/November 2024.

Sincerely,

Burns & McDonnell Engineering Company, Inc.

Chris Hoglund, PG
Project Manager

Attachments:

Table 1 – April 2024 Groundwater Analytical Summary

Attachment 1 – Sanitas™ Statistical Outputs

cc: Hunter Mizell, BREC Sebree Station

TABLE

Table 1
Green Surface Impoundment - April 2024 Analytical Summary
Sebree Generating Station

APPENDIX III CONSTITUENTS	1st Half 2024 Calculated Background[1]	Units	MW-11	MW-12	MW-13	MW-14
			4/15/2024	4/15/2024	4/15/2024	4/15/2024
			Upgradient Well	Downgradient Compliance Wells		
			Detection Monitoring			
Boron	0.9718	mg/L	0.43	0.32	0.10 U	0.14
Calcium	402.8	mg/L	78.9	101	113	195
Chloride	3849	mg/L	864 J-	13.4	35.3	113
Fluoride	0.891	mg/L	0.3 J+	0.4	**1.0**	0.4
pH (Field Measurement)	6.384 - 7.535	SU	6.96	7.09	6.63	6.76
Sulfate	2023	mg/L	276 J+	0.5 U	126	192
Total Dissolved Solids	5130	mg/L	2200	646	736	884

Notes:

[1]Background values calculated from upgradient MW-11 data from April 2016 through April 2024 using interwell prediction limits (see Attachment 1).

Bold - Analyte detected above calculated background concentration, however the result was statistically determined to be an outlier (see Attachment 1)

J- = Qualified as estimated biased low
J+ = Qualified as estimated biased high
mg/L = milligrams per liter
SU = standard units
U = nondetect

ATTACHMENT 1 – SANITAS™ STATISTICAL OUTPUTS

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data Printed 5/24/2024, 12:01 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-12	0.9718	n/a	4/15/2024	0.32	No	22	13.64	x^3	0.01	Param Inter
Boron (mg/L)	MW-13	0.9718	n/a	4/15/2024	0.05ND	No	22	13.64	x^3	0.01	Param Inter
Boron (mg/L)	MW-14	0.9718	n/a	4/15/2024	0.14	No	22	13.64	x^3	0.01	Param Inter
Calcium (mg/L)	MW-12	402.8	n/a	4/15/2024	101	No	22	0	x^3	0.01	Param Inter
Calcium (mg/L)	MW-13	402.8	n/a	4/15/2024	113	No	22	0	x^3	0.01	Param Inter
Calcium (mg/L)	MW-14	402.8	n/a	4/15/2024	195	No	22	0	x^3	0.01	Param Inter
Chloride (mg/L)	MW-12	3849	n/a	4/15/2024	13.4	No	22	0	No	0.01	Param Inter
Chloride (mg/L)	MW-13	3849	n/a	4/15/2024	35.3	No	22	0	No	0.01	Param Inter
Chloride (mg/L)	MW-14	3849	n/a	4/15/2024	113	No	22	0	No	0.01	Param Inter
Fluoride (mg/L)	MW-12	0.891	n/a	4/15/2024	0.4	No	22	9.091	n/a	0.04172	NP Inter (normality)
Fluoride (mg/L)	**MW-13**	**0.891**	**n/a**	**4/15/2024**	**1**	**Yes**	**22**	**9.091**	**n/a**	**0.04172**	**NP Inter (normality)**
Fluoride (mg/L)	MW-14	0.891	n/a	4/15/2024	0.4	No	22	9.091	n/a	0.04172	NP Inter (normality)
pH [Field] (SU)	MW-12	7.535	6.384	4/15/2024	7.09	No	22	0	No	0.005	Param Inter
pH [Field] (SU)	MW-13	7.535	6.384	4/15/2024	6.63	No	22	0	No	0.005	Param Inter
pH [Field] (SU)	MW-14	7.535	6.384	4/15/2024	6.76	No	22	0	No	0.005	Param Inter
Sulfate (mg/L)	MW-12	2023	n/a	4/15/2024	0.25ND	No	21	0	No	0.01	Param Inter
Sulfate (mg/L)	MW-13	2023	n/a	4/15/2024	126	No	21	0	No	0.01	Param Inter
Sulfate (mg/L)	MW-14	2023	n/a	4/15/2024	192	No	21	0	No	0.01	Param Inter
Total Dissolved Solids (mg/L)	MW-12	5130	n/a	4/15/2024	646	No	22	0	n/a	0.04172	NP Inter (normality)
Total Dissolved Solids (mg/L)	MW-13	5130	n/a	4/15/2024	736	No	22	0	n/a	0.04172	NP Inter (normality)
Total Dissolved Solids (mg/L)	MW-14	5130	n/a	4/15/2024	884	No	22	0	n/a	0.04172	NP Inter (normality)

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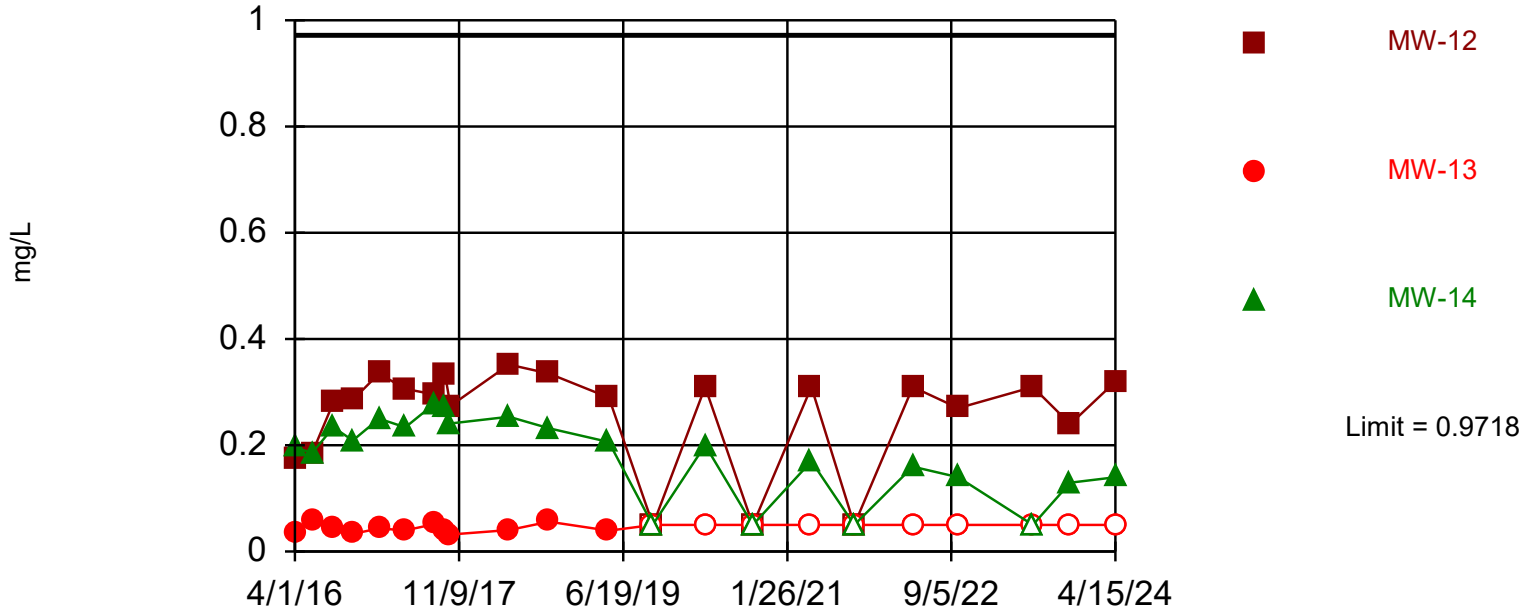
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=0.3512, Std. Dev.=0.2201, n=22, 13.64% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9557, critical = 0.911. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Boron Analysis Run 5/24/2024 12:00 PM

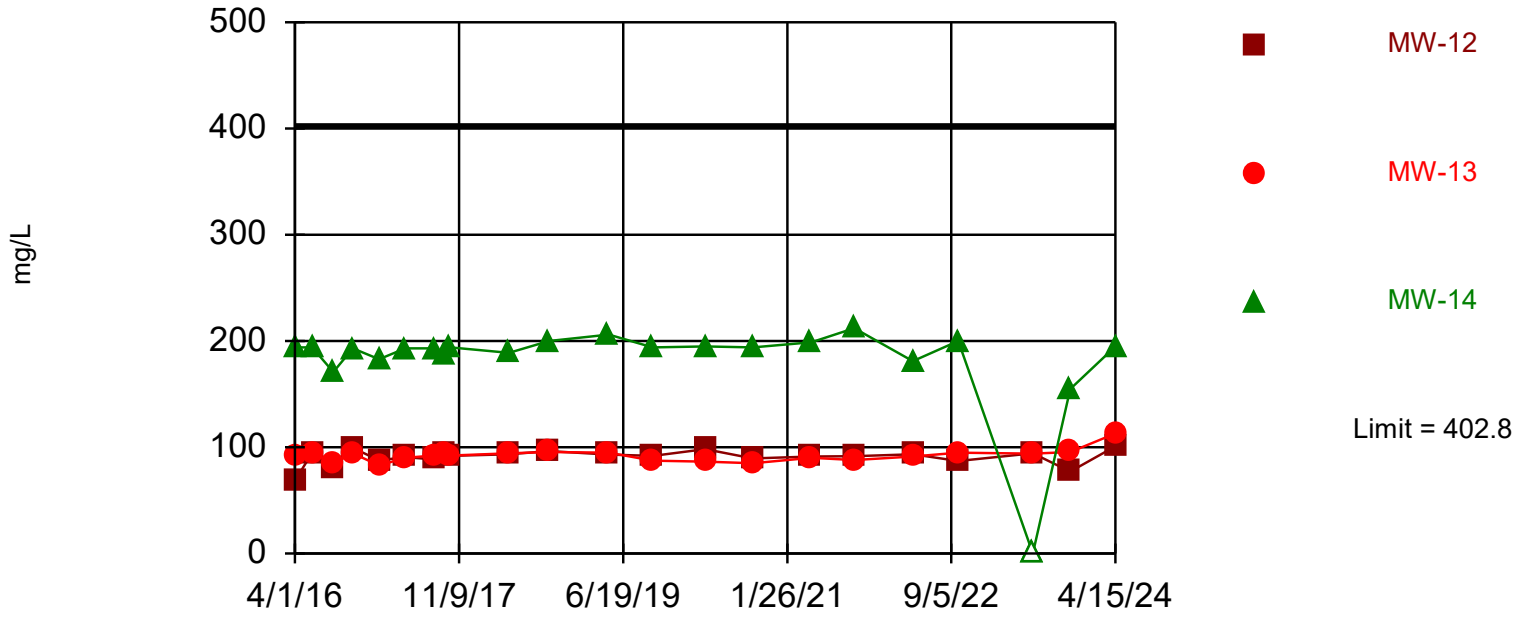
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=3.0e7, Std. Dev.=1.4e7, n=22. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9393, critical = 0.911. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Calcium Analysis Run 5/24/2024 12:00 PM

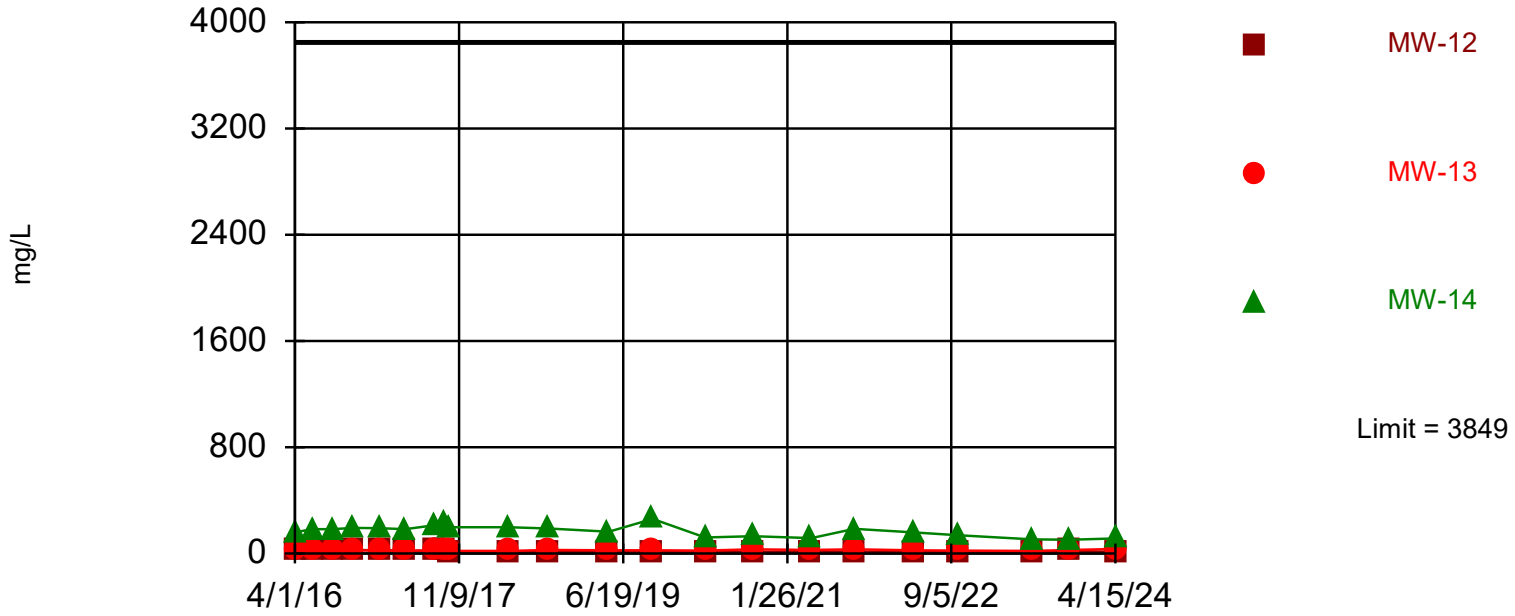
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=2118, Std. Dev.=672.6, n=22. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9201, critical = 0.911. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Chloride Analysis Run 5/24/2024 12:00 PM

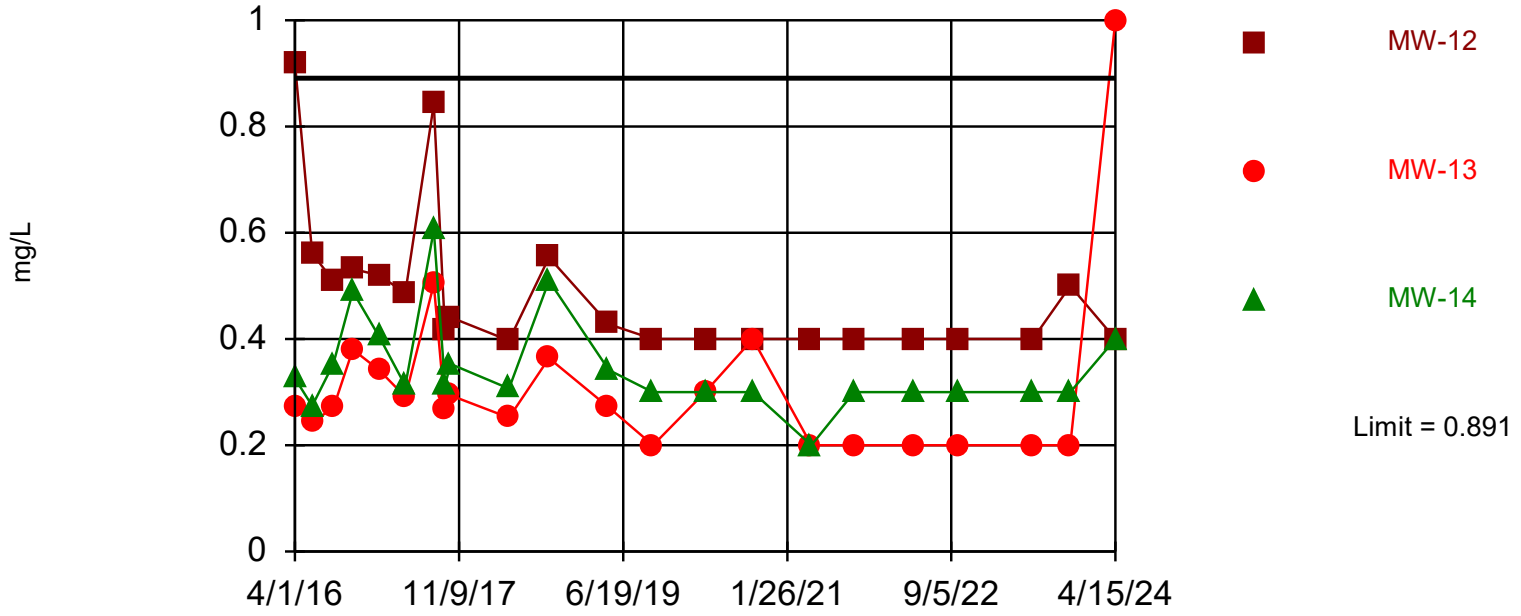
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Exceeds Limit: MW-13

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 22 background values. 9.091% NDs. Report alpha = 0.12. Individual comparison alpha = 0.04172. 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: Fluoride Analysis Run 5/24/2024 12:00 PM

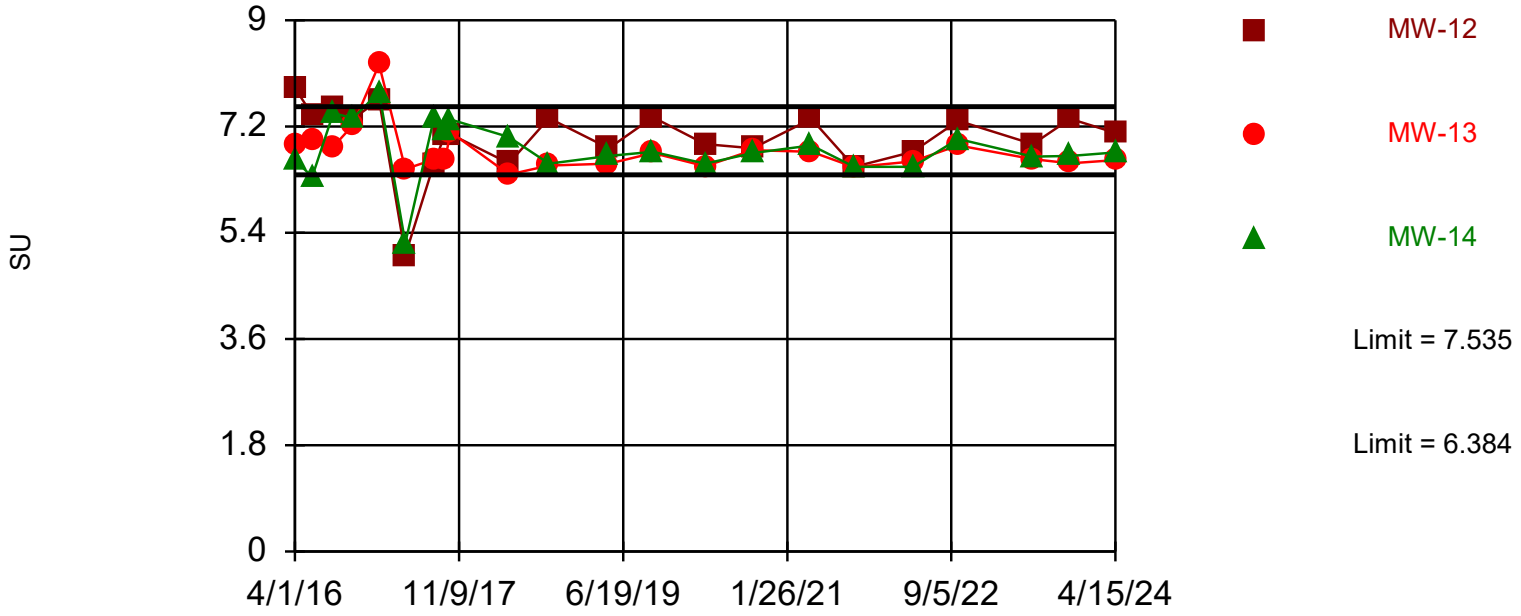
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.16 Software licensed to Burns & McDonnell. EPA

Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.96, Std. Dev.=0.1987, n=22. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9549, critical = 0.911. Report alpha = 0.0297. Individual comparison alpha = 0.005. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: pH [Field] Analysis Run 5/24/2024 12:00 PM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

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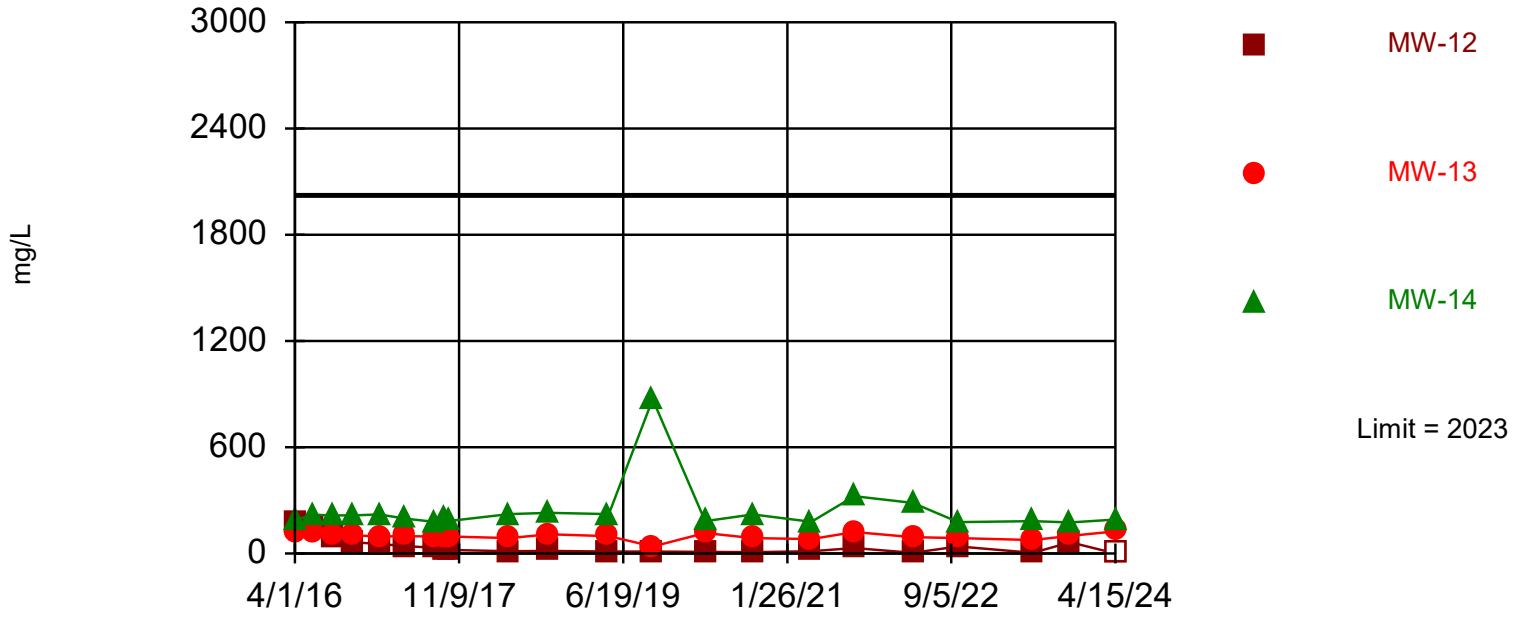
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1184, Std. Dev.=324.3, n=21. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9644, critical = 0.908. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. One background outlier was removed: 276 (4/15/2024).

Constituent: Sulfate Analysis Run 5/24/2024 12:00 PM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

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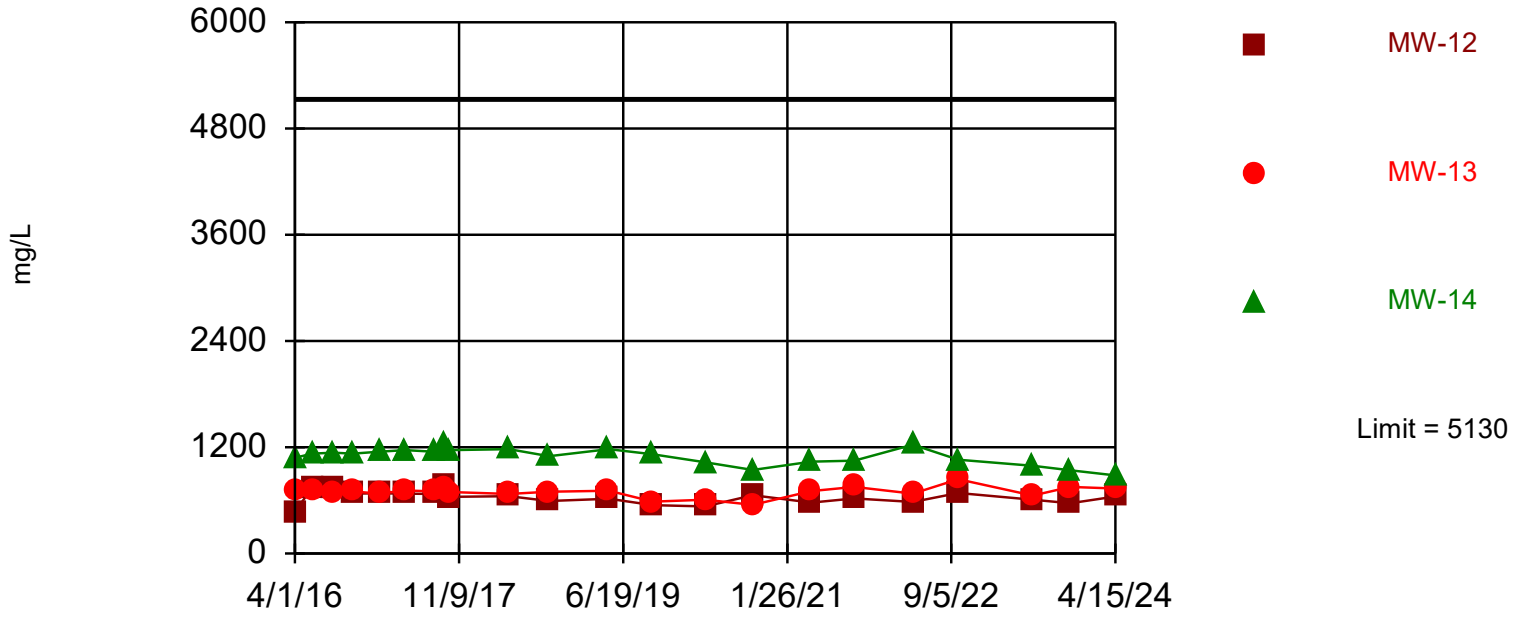
Within Limit

Prediction Limit

Interwell Non-parametric



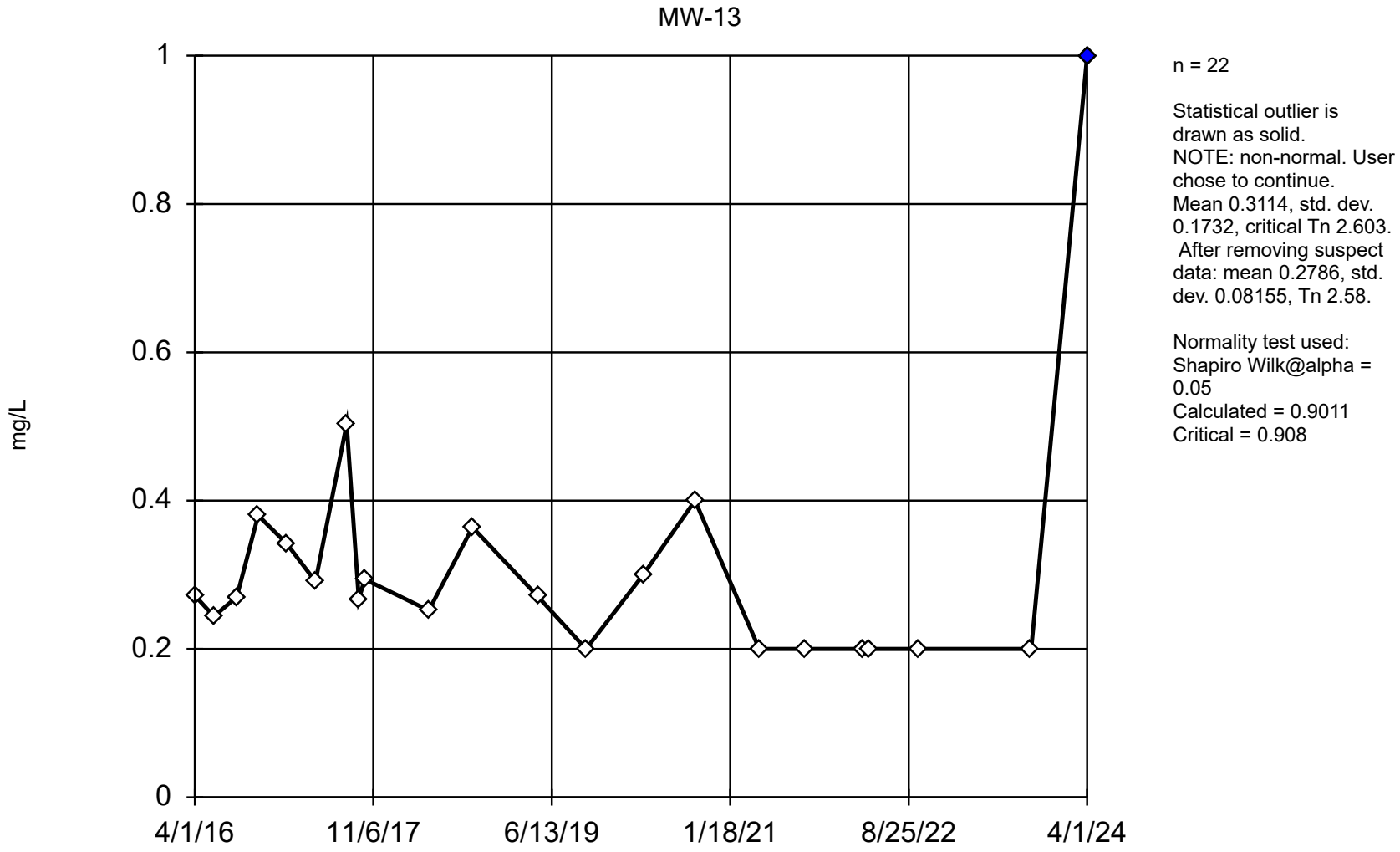
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 22 background values. Report alpha = 0.12. Individual comparison alpha = 0.04172. Most recent point for each compliance 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: Total Dissolved Solids Analysis Run 5/24/2024 12:00 PM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.10 Software licensed to Burns & McDonnell. EPA

EPA 1989 Outlier Screening



n = 22

Statistical outlier is drawn as solid.
NOTE: non-normal. User chose to continue.
Mean 0.3114, std. dev. 0.1732, critical Tn 2.603.
After removing suspect data: mean 0.2786, std. dev. 0.08155, Tn 2.58.

Normality test used:
Shapiro Wilk@alpha = 0.05
Calculated = 0.9011
Critical = 0.908

Constituent: Fluoride Analysis Run 7/12/2024 10:23 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Confidence Interval

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data Printed 6/11/2024, 9:13 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	MW-11 (bg)	0.227	0.193	0.891	No	22	9.091	No	0.05	NP (normality)
Fluoride (mg/L)	MW-12	0.51	0.4	0.891	No	22	0	No	0.05	NP (normality)
Fluoride (mg/L)	MW-13	0.3	0.244	0.891	No	22	0	No	0.05	NP (normality)
Fluoride (mg/L)	MW-14	0.353	0.3	0.891	No	22	0	No	0.05	NP (normality)

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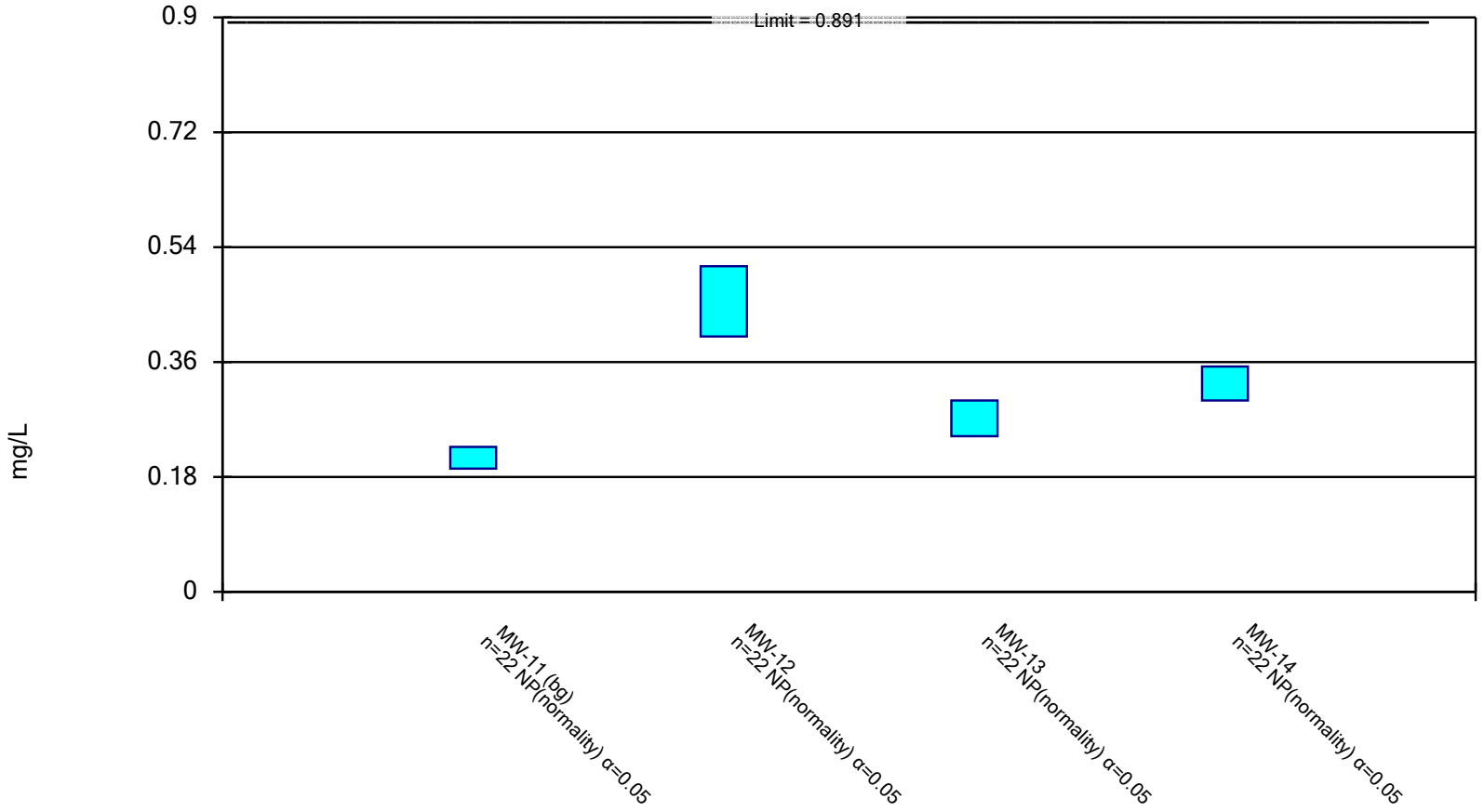
Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Fluoride Analysis Run 6/11/2024 9:12 AM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

January 22, 2025

Mr. Mark Bertram
Big Rivers Electric Corporation
8000 Highway 2096
Robards, KY 42452

Re: Statistical Evaluation of November 2024 Detection Monitoring Groundwater Data
Sebree Generating Station Green Former Surface Impoundment in Robards, Kentucky
Agency Interest ID #: 4196

Dear Mr. Bertram:

This letter presents the results of the statistical evaluation of analytical data from the November 2024 detection monitoring event at the Sebree Generating Station's Green Former Surface Impoundment in Webster County, Robarbs, Kentucky in accordance with the requirements of U.S. Environmental Protection Agency's *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (40 Code of Federal Regulations [CFR] Part 257, Subpart D)*. No historical statistically significant increases (SSIs) are on record for this CCR Unit under the detection monitoring program, and therefore, the establishment of calculated groundwater protection standards were not required as a part of the statistical evaluation completed for previous sampling events. The statistical evaluation presented herein for the November 2024 sampling event was performed in accordance with the *Groundwater Monitoring System and Statistical Methods* document prepared by Associated Engineers, Inc. and dated June 28, 2016.

In November 2024, the Green Former Surface Impoundment groundwater monitoring well network was sampled for Appendix III parameters per the requirements of 40 CFR §257.94(a). Due to pH calibration issues with the multi-purpose field meter used when collecting samples at MW-13, pH samples were collected and re-measured on December 17, 2024 with both a field and laboratory pH measurement obtained. This re-sampled field pH result for MW-13 was used for the statistical discussions presented herein.

Interwell prediction limit statistical analyses were performed for these well/constituent pairs and are discussed subsequently. This letter presents the results of the statistical evaluation of the November 2024 detection monitoring event for inclusion in the Sebree Generating Station Operating Record.

Statistical Evaluation of Sebree Green Former Surface Impoundment Compliance Monitoring Well Network Evaluation

Interwell prediction limits were utilized to compare the concentrations of the Appendix III parameters observed in November 2024. The concentrations observed in compliance (downgradient) monitoring wells MW-12, MW-13, and MW-14 were statistically evaluated with calculated prediction limits (i.e., background limits) that were established using data collected from April of 2016 through December of 2024 from upgradient monitoring well MW-11. A comparison of the November 2024 data to the updated background limits is presented in Table 1. None of the constituents in the downgradient compliance monitoring wells exhibited an SSI above its corresponding calculated background limit.

An SSI for fluoride in MW-13 was observed in the previous statistical evaluations (April 2024), which was not consistent with prior events. This was the first SSI on record for this CCR Unit under the detection monitoring program. This April 2024 fluoride SSI for MW-13 was considered an initial SSI, with the November 2024 sampling event serving as verification sampling. Because this SSI was not verified in this November 2024 event, it should be considered an anomalous result. No further actions were necessary for this previous fluoride SSI.

No well/constituent pairs were above the calculated background. The CCR unit will continue detection monitoring per the requirements of 40 CFR §257.94 for the first half of 2025 sampling event.

Sincerely,

Burns & McDonnell Engineering Company, Inc.

Chris Hoglund, PG
Project Manager

Attachments:

Table 1 – November 2024 Groundwater Analytical Summary

Attachment 1 – Sanitas™ Statistical Outputs

cc: Hunter Mizell, BREC Sebree Station

TABLE

Table 1
November 2024 Analytical Summary
Green Former CCR Surface Impoundment
Sebree Generating Station

APPENDIX III CONSTITUENTS	2024 Calculated Background[1]	Units	MW-11	MW-12	MW-13	MW-14
			11/12/2024	11/12/2024	11/12/2024 & 12/17/2024[2]	11/12/2024
			Upgradient Well	Downgradient Compliance Wells		
			Detection Monitoring			
Boron	1.043	mg/L	0.39	0.31	0.10 U	0.16
Calcium	404.9	mg/L	113	93	115	177
Chloride	3878	mg/L	851	11.1	36.2	125
Fluoride	0.891	mg/L	0.2	0.3	0.2	0.3
pH (Field Measurement)	6.319 - 7.561	SU	6.51	6.57	6.71	6.33
Sulfate	2023	mg/L	318	0.6 J	120	192
Total Dissolved Solids	5130	mg/L	2220	648	748	1040

Notes:
[1]Background values calculated from upgradient MW-11 data from April 2016 through December 2024.
[2]pH was remeasured/sampled (both field and laboratory) at MW-13 on 12/17/2024.
J = Estimated
mg/L = miligrams per Liter
SU = Standard Units
U = Nondetect

ATTACHMENT 1 - SANITAS™ STATISTICAL OUTPUTS

Prediction Limit

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data Printed 1/7/2025, 1:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-12	1.043	n/a	11/12/2024	0.31	No	23	13.04	x^2	0.01	Param Inter
Boron (mg/L)	MW-13	1.043	n/a	11/12/2024	0.05ND	No	23	13.04	x^2	0.01	Param Inter
Boron (mg/L)	MW-14	1.043	n/a	11/12/2024	0.16	No	23	13.04	x^2	0.01	Param Inter
Calcium (mg/L)	MW-12	404.9	n/a	11/12/2024	93	No	23	0	x^3	0.01	Param Inter
Calcium (mg/L)	MW-13	404.9	n/a	11/12/2024	115	No	23	0	x^3	0.01	Param Inter
Calcium (mg/L)	MW-14	404.9	n/a	11/12/2024	177	No	23	0	x^3	0.01	Param Inter
Chloride (mg/L)	MW-12	3878	n/a	11/12/2024	11.1	No	23	0	No	0.01	Param Inter
Chloride (mg/L)	MW-13	3878	n/a	11/12/2024	36.2	No	23	0	No	0.01	Param Inter
Chloride (mg/L)	MW-14	3878	n/a	11/12/2024	125	No	23	0	No	0.01	Param Inter
Fluoride (mg/L)	MW-12	0.891	n/a	11/12/2024	0.3	No	23	8.696	n/a	0.04004	NP Inter (normality)
Fluoride (mg/L)	MW-13	0.891	n/a	11/12/2024	0.2	No	23	8.696	n/a	0.04004	NP Inter (normality)
Fluoride (mg/L)	MW-14	0.891	n/a	11/12/2024	0.3	No	23	8.696	n/a	0.04004	NP Inter (normality)
pH [Field] (SU)	MW-12	7.561	6.319	11/12/2024	6.57	No	23	0	No	0.005	Param Inter
pH [Field] (SU)	MW-13	7.561	6.319	12/17/2024	6.71	No	23	0	No	0.005	Param Inter
pH [Field] (SU)	MW-14	7.561	6.319	11/12/2024	6.33	No	23	0	No	0.005	Param Inter
Sulfate (mg/L)	MW-12	2023	n/a	11/12/2024	0.6J	No	21	0	No	0.01	Param Inter
Sulfate (mg/L)	MW-13	2023	n/a	11/12/2024	120	No	21	0	No	0.01	Param Inter
Sulfate (mg/L)	MW-14	2023	n/a	11/12/2024	192	No	21	0	No	0.01	Param Inter
Total Dissolved Solids (mg/L)	MW-12	5130	n/a	11/12/2024	648	No	23	0	n/a	0.04004	NP Inter (normality)
Total Dissolved Solids (mg/L)	MW-13	5130	n/a	11/12/2024	748	No	23	0	n/a	0.04004	NP Inter (normality)
Total Dissolved Solids (mg/L)	MW-14	5130	n/a	11/12/2024	1040	No	23	0	n/a	0.04004	NP Inter (normality)

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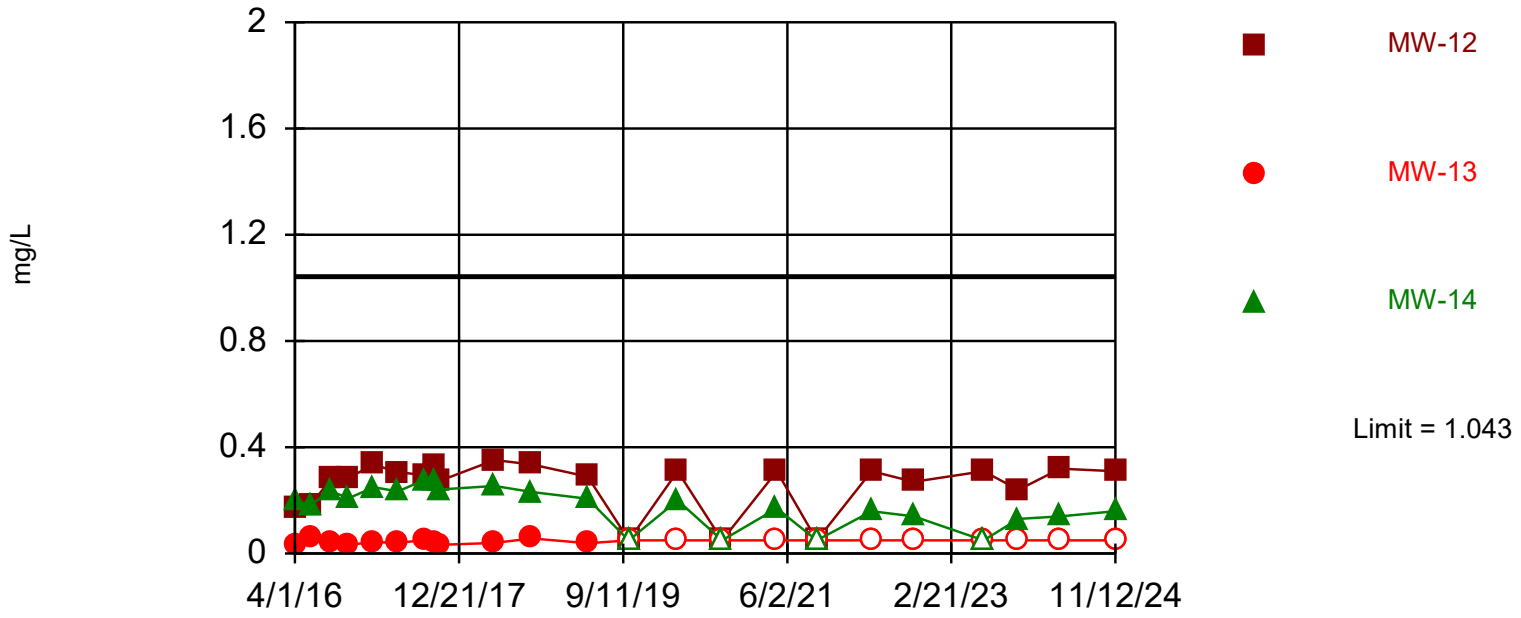
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on square transformation): Mean=0.449, Std. Dev.=0.2489, n=23, 13.04% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9208, critical = 0.914. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be identified.

Constituent: Boron Analysis Run 1/7/2025 1:30 PM

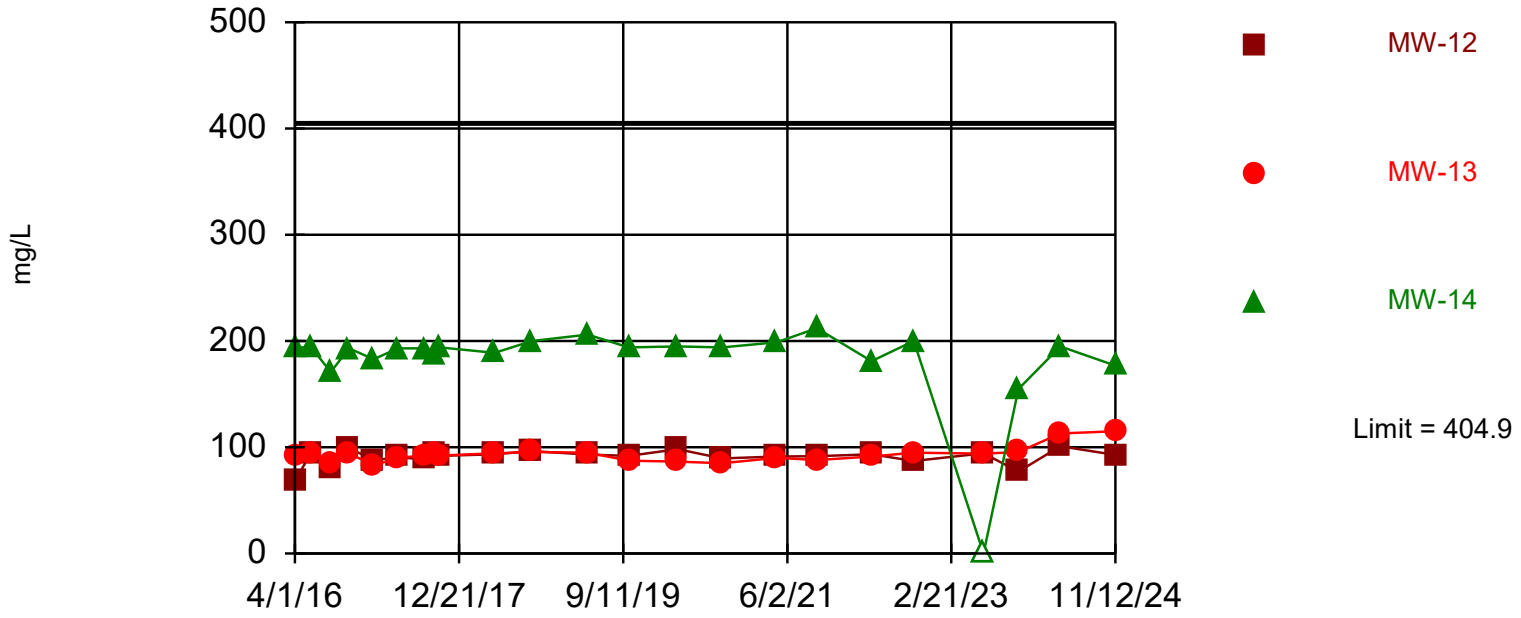
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=2.9e7, Std. Dev.=1.5e7, n=23. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9287, critical = 0.914. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Calcium Analysis Run 1/7/2025 1:30 PM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

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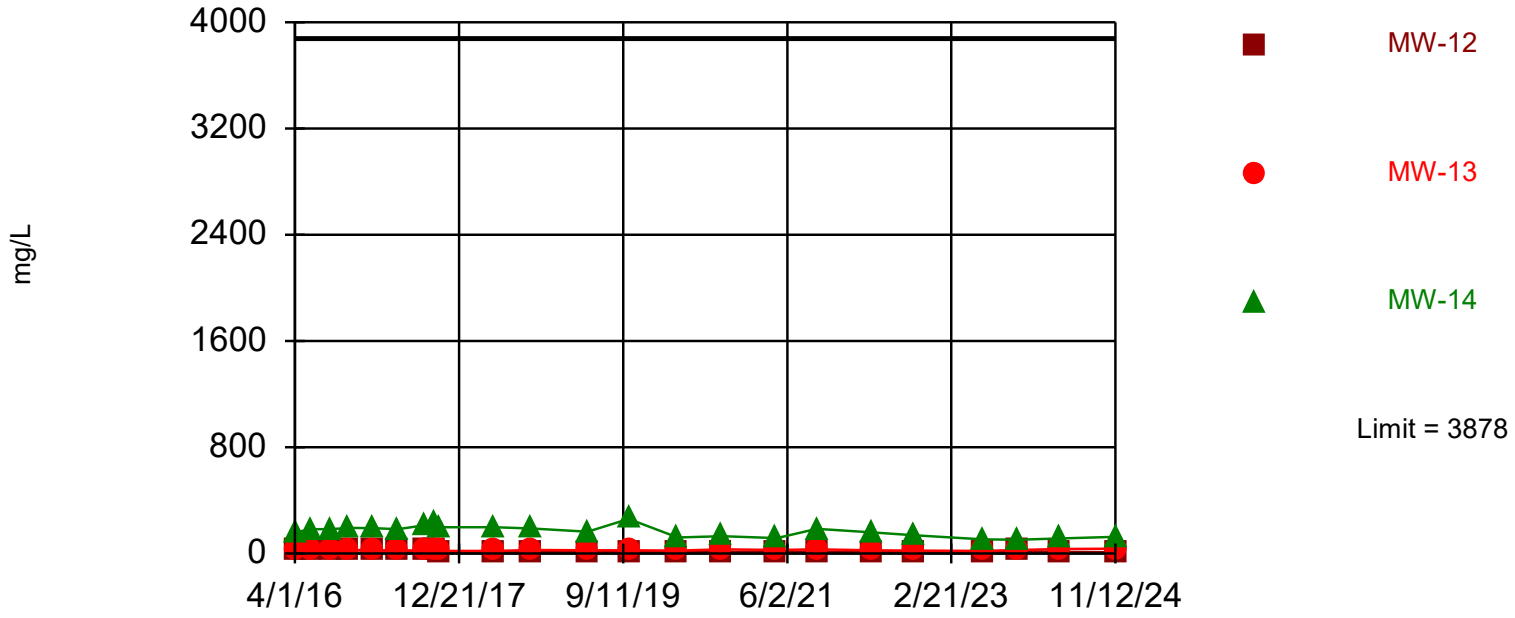
Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=2063, Std. Dev.=708.2, n=23. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.929, critical = 0.914. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: Chloride Analysis Run 1/7/2025 1:30 PM

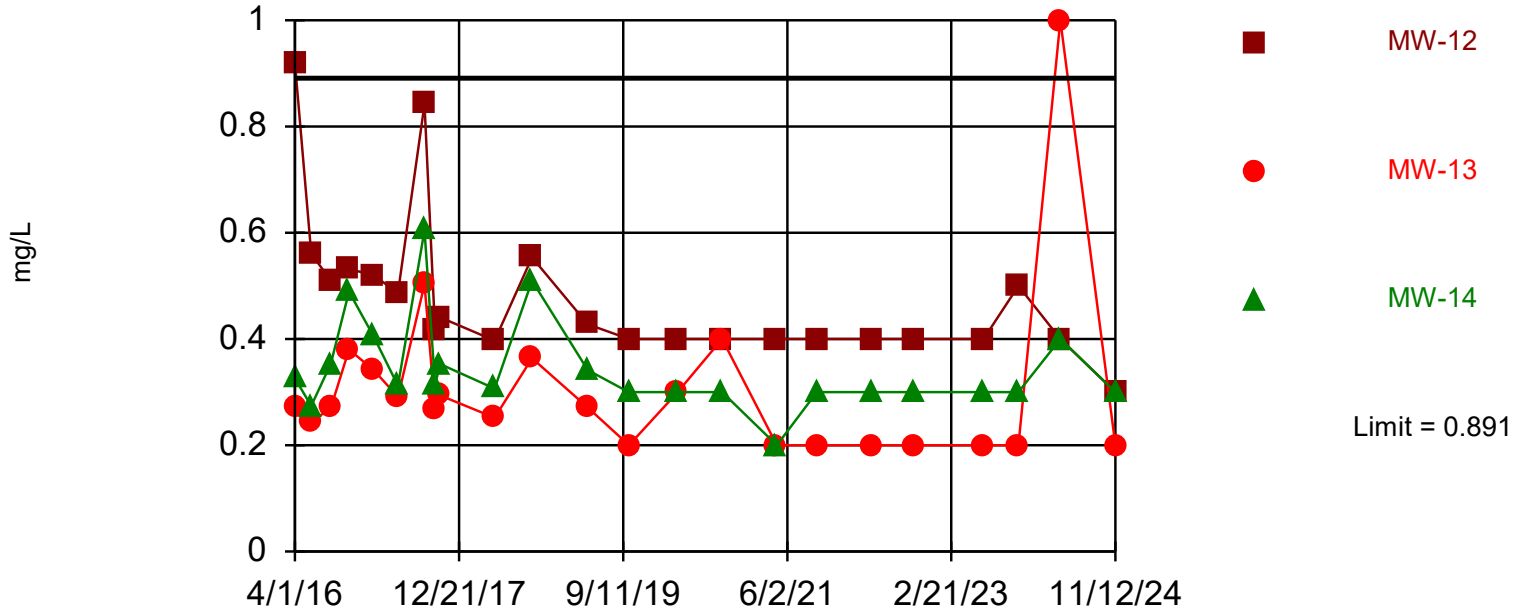
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 23 background values. 8.696% NDs. Report alpha = 0.1154. Individual comparison alpha = 0.04004. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Seasonality was not detected with 95% confidence.

Constituent: Fluoride Analysis Run 1/7/2025 1:30 PM

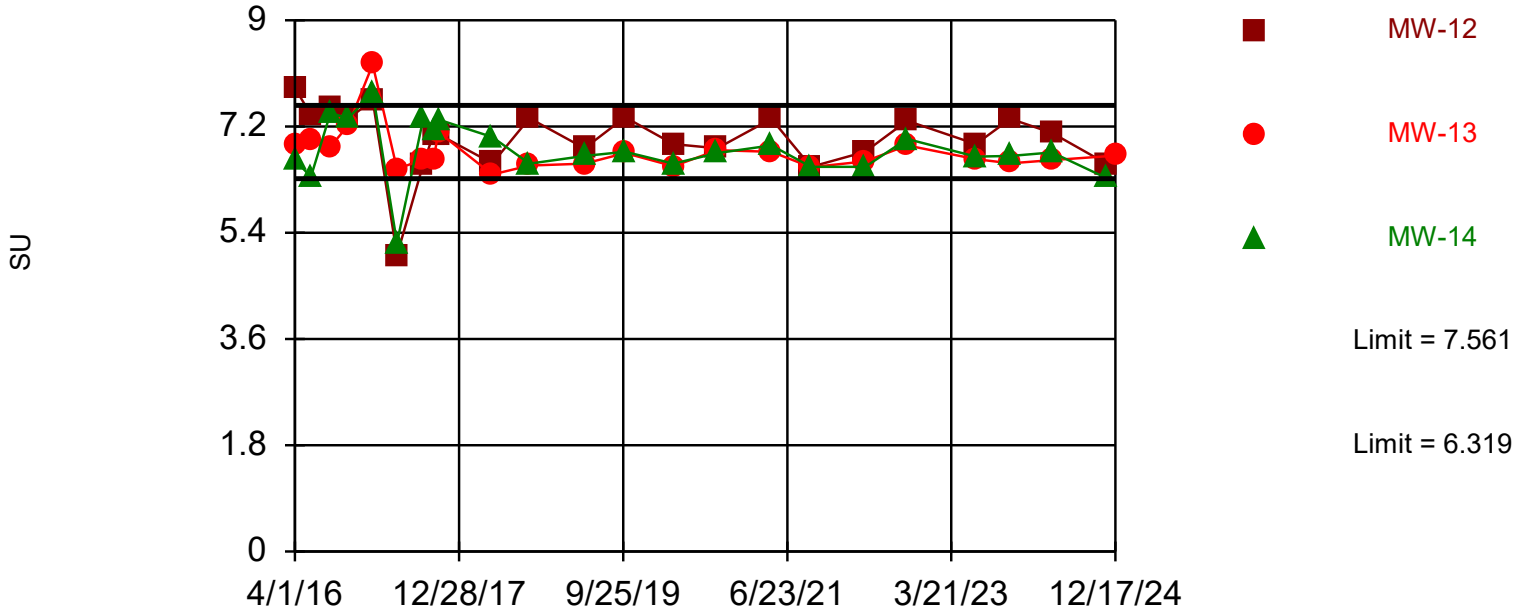
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.94, Std. Dev.=0.2156, n=23. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9597, critical = 0.914. Report alpha = 0.0297. Individual comparison alpha = 0.005. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

Constituent: pH [Field] Analysis Run 1/7/2025 1:30 PM

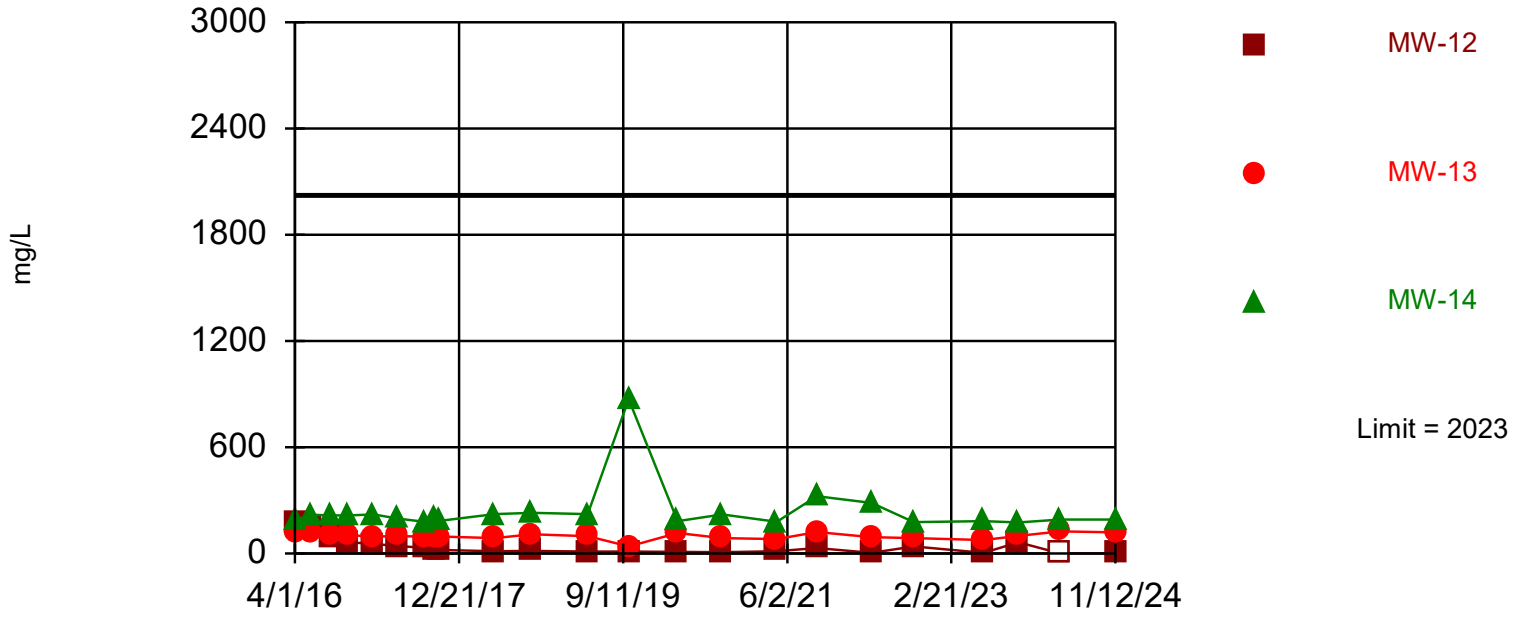
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1184, Std. Dev.=324.3, n=21. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9644, critical = 0.908. Report alpha = 0.0297. Individual comparison alpha = 0.01. Most recent point for each compliance well compared to limit. EPA 1989 outlier screening was performed on the background data. Two background outliers were removed: 276 (4/15/2024); 318 (11/12/2024).

Constituent: Sulfate Analysis Run 1/7/2025 1:30 PM

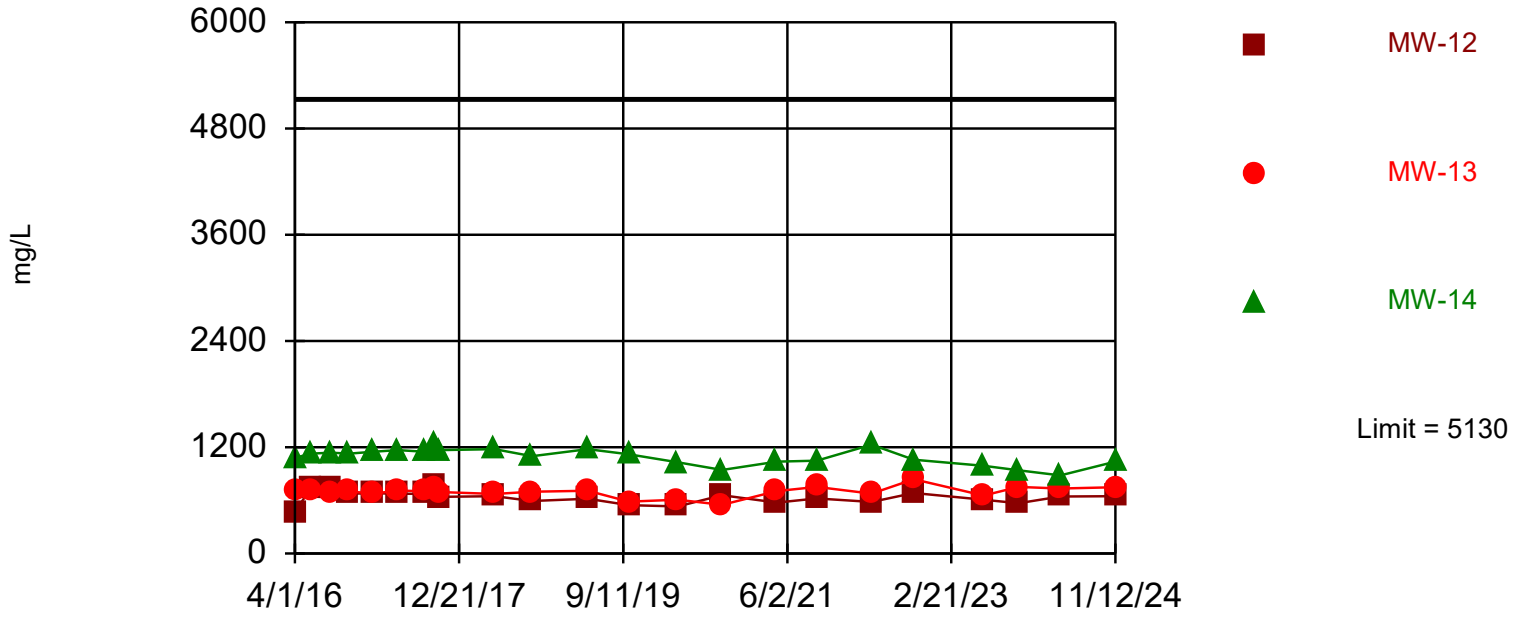
Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

Sanitas™ v.10.0.24 Software licensed to Burns & McDonnell. EPA

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 23 background values. Report alpha = 0.1154. Individual comparison alpha = 0.04004. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Seasonality was not detected with 95% confidence.

Constituent: Total Dissolved Solids Analysis Run 1/7/2025 1:30 PM

Big Rivers Electric Corp. Client: Burns & McDonnell Data: Green SI All Data

BURNS
McDONNELL

Big Rivers Electric Corporation

Sebree Generating Station
Reid/HMP&L CCR Surface Impoundment

2024 Annual Groundwater Monitoring and Corrective Action Report

Revision 0

January 27, 2025

Issue Purpose: Client Use

Project No.: 14055-010

KPRG
ENVIRONMENTAL CONSULTATION & REMEDIATION
KPRG and Associates, Inc.

14665 West Lisbon Road
Suite #1A
Brookfield, WI 53005
262-781-0475
www.kprginc.com

Sargent & Lundy

55 East Monroe Street
Chicago, IL 60603
312-269-2000
www.sargentlundy.com

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Appendix A – Groundwater Data Summary Tables
Appendix B – Analytical Data Packages

EXECUTIVE SUMMARY / OVERVIEW

Groundwater monitoring requirements in accordance with Sections 257.94 and 257.95 of the U.S. Environmental Protection Agency's (EPA) Coal Combustion Residuals (CCR) Rule, 40 CFR Part 257 Subpart D, have been completed for the Reid/Henderson Municipal Power & Light (Reid/HMP&L) CCR Surface Impoundment (the Unit) at the Big Rivers Electric Corporation's (BREC) Sebree Generating Station (the Station) located in Webster County, Kentucky. The CCR monitoring well network for this Unit consists of four monitoring wells (MW-7 through MW-10) as shown on Figure 1. Well MW-7 is the background monitoring well, and wells MW-8, MW-9, and MW-10 are the downgradient monitoring wells. The Unit also has an assessment groundwater monitoring network to assist in defining the nature and extent of impacts as required under 40 CFR 257.95(g)(1). The current assessment network consists of wells MW-110, MW-111, and MW-112, which are also shown on Figure 1. Well MW-110 was installed in 1st Quarter 2019, while wells MW-111 and MW-112 were installed in 1st Quarter 2022.

This overview of the 2024 groundwater monitoring period is provided in accordance with revised requirements under Section 257.90(e)(6) of the CCR Rule. Each required item is discussed separately below.

- Section 257.90(e)(6)(i) – At the start of the current monitoring period, the subject CCR unit was operating under the assessment monitoring program in accordance with Section 257.95 of the CCR Rule.

- Section 257.90(e)(6)(ii) – At the end of the current monitoring period, the subject CCR unit continues to operate under the assessment monitoring program in accordance with Section 257.95 of the CCR Rule.

- Section 257.90(e)(6)(iii) – The following statistically significant increases (SSIs) above established background for the Appendix III detection monitoring constituents were noted during this monitoring period:

  CCR Wells

  - MW-7 (upgradient) – none
  - MW-8 – calcium, chloride, fluoride, sulfate and total dissolved solids (both events); boron (November 2024)
  - MW-9 – calcium (both events); total dissolved solids (November 2024)
  - MW-10 – boron, chloride, fluoride, pH, and total dissolved solids (both events)

Expanded Nature and Extent Assessment Wells

- MW-110 – boron, calcium chloride, fluoride, sulfate, and total dissolved solids (both events)
- MW-111 – boron, chloride, and fluoride (both events); pH (November 2024); total dissolved solids (June 2024)
- MW-112 – chloride and sulfate (both events); total dissolved solids (June 2024)

The initial statistical evaluation of Appendix III constituents determined that there were SSIs in downgradient monitoring wells relative to established background prediction limits for various Appendix III parameters at various downgradient monitoring locations. The monitoring program was transitioned to assessment monitoring under Section 257.95 of the CCR Rule in February 2018. As noted further below, the impoundment closure activities have been completed and the site is currently under post-closure care. In accordance with Sections 257.104(b)(3) and 257.104(c)(3), groundwater monitoring and corrective action will continue in accordance with Sections 257.95 and 257.98, respectively, until documentation that all groundwater protection standards (GWPSs) have been met in groundwater.

- Section 257.90(e)(6)(iv) – There was one only constituent confirmed at a statistically significant level (SSL) above GWPSs for the Appendix IV assessment monitoring constituents for this Unit during this monitoring period. Specifically, this was for lithium at downgradient CCR monitoring well MW-10. This is consistent with previous monitoring periods.

  The assessment of corrective measures (ACM) in accordance with Section 257.96(a) of the CCR Rule was initiated in January 2019. A public meeting was held on May 24, 2023 to present the results of the ACM and supporting hydrogeologic studies. A Final Report on Selection of Groundwater Remedy was issued on July 25, 2023.

- Section 257.90(e)(6)(v) – As noted above, the Final Report on Selection of Groundwater Remedy was issued on July 25, 2023. The selected remedy was identified as Alternative #2b which consists of closure by removal, institutional controls, and groundwater monitoring.

- Section 257.90(e)(6)(vi) – Remedial activities pursuant to Section 257.98 of the CCR Rule were initiated on July 31, 2023 with contractor mobilization to the site. The closure work has been completed and the closure was formally certified by Sargent & Lundy on September 30, 2024. The work is summarized in Reid/HMP&L CCR Surface Impoundment Closure Report & Certification dated October 7, 2024 (see Section 4.0 below for details).

1.0 INTRODUCTION

On behalf of Big Rivers Electric Corporation (BREC), KPRG Associates, Inc. (KPRG) and Sargent & Lundy (S&L) have prepared this Annual Groundwater Monitoring and Corrective Action Report for the Reid/Henderson Municipal Power & Light (Reid/HMP&L) CCR Surface Impoundment (the Unit) at the Sebree Generating Station (the Station) located in Webster County, Kentucky.

Groundwater sampling in accordance with the 2024 semi-annual assessment monitoring requirements promulgated by Sections 257.94 and 257.95 of the U.S. Environmental Protection Agency's (EPA) Coal Combustion Residuals (CCR) Rule, 40 CFR Part 257 Subpart D, have been successfully completed for the Unit. The CCR monitoring well network consists of four monitoring wells (MW-7 through MW-10) as shown on Figure 1. Well MW-7 is the upgradient, background monitoring location. Monitoring wells MW-8, MW-9 and MW-10 are the downgradient monitoring locations. The Unit also has an assessment groundwater monitoring network to assist in defining and monitoring the nature and extent of groundwater impacts as required under 40 CFR 257.95(g)(1). The current assessment network consists of wells MW-110, MW-111, and MW-112, which are also shown on Figure 1. Well MW-110 was installed in 1st Quarter 2019, while wells MW-111 and MW-112 were installed in 1st Quarter 2022.

This annual report covers the work performed relative to CCR groundwater monitoring during the calendar year 2024. It does not necessarily duplicate all information or activities reported in previous annual submittals. It is prepared in accordance with 40 CFR 257.90(e)(1) through (6) and summarizes the sampling procedures used, provides an evaluation of groundwater flow conditions, summarizes the analytical data generated, presents the statistical evaluations and assessment monitoring completed, identifies the other key compliance actions completed during the year, and provides the current status of the site compliance activities along with recommendations.

2.0 FIELD PROCEDURES AND GROUNDWATER FLOW EVALUATION

2.1 FIELD PROCEDURES

As previously noted, the Unit's groundwater monitoring program consists of the CCR groundwater monitoring network around the Reid/HMP&L CCR Surface Impoundment (wells MW-7 through MW-10) and the assessment monitoring network (wells MW-110, MW-111 and MW-112), all as shown on Figure 1. Characterization well MW-110 was installed by AECOM in February 2019. It is noted that well MW-110 was installed without proper Kentucky Division of Waste Management (KDWM) approval. However, as discussed in the Supplemental Site Investigation Report dated September 1, 2022, the well was installed using recognized industry practices by a Kentucky licensed well driller. The groundwater sampling data from this well is believed to be representative of existing water quality and is only being used for screening proposes.

In February 2022, KPRG installed two additional characterization monitoring wells, MW-111 and MW-112, for the purposes of assisting with defining the extent of potential lithium impacts to the southwest and south-southeast of well MW-10 (KPRG and S&L, 2022). The wells were installed using rotary sonic drilling and constructed in accordance with the "Monitoring Well Drilling/Construction Specification" submitted to the Kentucky Energy and Environment Cabinet, Department of Environmental Protection, Division of Waste Management (DWM) on February 11, 2022, and verbally approved by the DWM on February 15, 2022, with formal written approval received on February 17, 2022. No new monitoring wells were installed in 2024.

As part of sampling procedures, the integrity of all monitoring wells was inspected and water levels were obtained using an electronic water level meter (see summary of water level discussion below). All wells were found in good condition with locked protector casings and intact concrete surface seals.

All groundwater samples were collected using the low-flow sampling technique from dedicated pumps. The samples were not filtered prior to analysis to provide for total metals concentrations as opposed to dissolved metals concentrations.

2.2 GROUNDWATER FLOW EVALUATION

Water level data measurements were obtained from each well during each round of semi-annual groundwater monitoring which occurred in June and November of 2024. A complete round of water levels was collected prior to initiating sampling, and the water level data for 2024 are summarized in Table 1.

Table 1. Reid/HMP&L CCR Surface Impoundment – 2024 Groundwater Elevation Data

Monitoring Well	Top of Casing Elevation (ft, amsl)	Groundwater Elevation (ft, amsl) June 2024	Groundwater Elevation (ft, amsl) November 2024
MW-7	440.93	411.19	409.69
MW-8	394.29	387.66	388.03
MW-9	395.40	387.40	387.49
MW-10	422.27	387.69	387.57
MW-110	388.70	383.59	384.28
MW-111	403.57	387.50	387.65
MW-112	427.77	390.27	389.64

The water levels were used to generate groundwater flow maps for the two sampling events, which are provided as Figures 2 and 3. A review of the maps indicates groundwater flow is consistently to the southwest towards an unnamed tributary to Groves Creek located west-southwest of the impoundment. In

accordance with general groundwater sampling requirements under 40 CFR 257.93(c), Table 2 provides a summary of the natural flow and an estimated rate of groundwater flow for each sampling event. The flow rate was calculated using the following equation:

$V_s = \frac{K dh}{n_e dl}$, where:

V_s is seepage velocity (distance/time)

K is hydraulic conductivity (distance/time)

dh/dl is hydraulic gradient (unitless)

n_e is effective porosity (unitless)

The hydraulic conductivity geometric mean of 3.1 x 10^{-5} cm/sec (1.02 x 10^{-6} ft/sec) used in Table 2 was obtained from the slug test results completed on wells MW-10, MW-110, MW-111, and MW-112. The horizontal hydraulic gradient was obtained from the respective groundwater flow maps provided on Figures 2 and 3. An estimated effective porosity of the aquifer materials of 0.10 was used (Freeze and Cherry, 1979).

Table 2. Reid/HMP&L CCR Surface Impoundment – Groundwater Seepage Velocity Estimates

Date	Groundwater Flow Direction	K_{avg} (ft/sec)	Average Hydraulic Gradient	Porosity (unitless)	Estimated Seepage Velocity (ft/day)
June 2024	Southwesterly	1.02E-6	0.017	0.1	0.014
November 2024	Southwesterly	1.02E-6	0.012	0.1	0.011

3.0 ANALYTICAL DATA AND MONITORING STATUS

3.1 SAMPLING SUMMARY

The groundwater sampling summary from 2024 is provided in Table 3, in accordance with 40 CFR 257.90(e)(3). The table includes the event type dates of sampling and wells included in the sampling.

Table 3. Reid/HMP&L CCR Surface Impoundment – Summary of Groundwater Sampling Events

Event Type	Sampling Event	Dates	Wells Sampled
Assessment	Semi-Annual	June 24, 2024	MW-7 (upgradient), MW-8, MW-9, and MW-10
Characterization	Semi-Annual	June 24, 2024	MW-110, MW-111, and MW-112
Assessment	Semi-Annual	November 25-26, 2024	MW-7 (upgradient), MW-8, MW-9, and MW-10
Characterization	Semi-Annual	November 25, 2024	MW-110, MW-111, MW-112

3.2 DATA SUMMARY

As discussed in Section 1.0, this site is in post-closure care as of September 30, 2024 with continued groundwater monitoring in accordance with Section 257.95. The analytical data for each well from the assessment monitoring groundwater sampling for Appendix III and IV parameters are provided in Appendix A (Tables A-1 through A-7) along with calculated prediction limits and applicable Groundwater Protection Standards (GWPSs) under the CCR Rule for Appendix IV constituents. All tables include the sample dates and whether the specific well is considered upgradient or downgradient relative to groundwater flow and the Unit. The analytical data packages from these sampling events are provided in Appendix B. It is noted that updated background calculations for statistical purposes were completed by AECOM as part of the 2021 Annual Groundwater and Corrective Action Report and are considered to still be representative for statistical comparison purposes. The statistical background for the Appendix III and IV groundwater quality data at the Reid Surface Impoundment were evaluated by AECOM in 2021 using an interwell approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at a background monitoring well. Monitoring well MW-7 is the designated background and monitoring wells MW-8, MW-9, and MW-10 are designated as compliance wells because they are located downgradient of the impoundment.

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) and the Groundwater Monitoring System and Statistical Methods Certification. Prediction limits (i.e., parametric or nonparametric) with 1 of 2 retesting were developed for each constituent based on the frequency of non-detect values and whether the background data for that constituent exhibited a normal, lognormal, or nonparametric distribution. For the statistical analysis, non- detect values were represented as one-half the detection limit. No outliers were identified in the background data. The background datasets were used to develop an upper prediction limit (UPL) for the Appendix III and IV background data at 95 percent confidence. Data from the downgradient

monitoring wells for the same time period were compared to the UPL to identify statistically significant increases (SSIs) over background. Mann-Kendall trend analysis was used to identify statistically significant increasing trends for constituents with SSIs. Appendix IV GWPSs were established as the higher of either the established federal maximum contaminant level (MCL) or the background 95% UPL for the specific compound. Recalculation of background values is not appropriate at this time because the Unit is under a semi-annual assessment sampling program. It has been 3 years since the recalculation of background statistics. Unified Guidance recommends for semi-annual sampling programs, the *minimum* timeframe prior to recalculating background is 2 to 3 years. A review of the data generated since 2021 for background well MW-7 indicates relatively stable conditions with detections falling between historical data ranges. Based on this observation and the three-year new data minimum just being met, it is believed that the existing GWPS concentrations are still representative for the site.

Relative to the results of the expanded assessment monitoring program for the purposes of defining the extent of groundwater impacts, groundwater sampling was performed at the Unit in June and November 2024. The sampling included all existing CCR network and assessment network monitoring wells. The groundwater samples were analyzed for the full list of CCR Rule Appendix III and Appendix IV parameters. The data are included in the tables provided in Appendix A along with all previous data for the wells. Detections above established prediction limits suggesting a statistically significant increase (SSI) in downgradient wells for both Appendix III and Appendix IV parameters are as follows:

Appendix III Parameters

CCR Wells

- MW-7 (upgradient) – none
- MW-8 – calcium, chloride, fluoride, sulfate and total dissolved solids (both events); boron (November 2024)
- MW-9 – calcium (both events); total dissolved solids (November 2024)
- MW-10 – boron, chloride, fluoride, pH, and total dissolved solids (both events)

Expanded Nature and Extent Assessment Wells

- MW-110 – boron, calcium chloride, fluoride, sulfate, and total dissolved solids (both events)
- MW-111 – boron, chloride, and fluoride (both events); pH (November 2024); total dissolved solids (June 2024)
- MW-112 – chloride and sulfate (both events); total dissolved solids (June 2024)

Appendix IV Parameters

CCR Wells

- MW-7 – combined radium 226/228 (November 2024)
- MW-8 – fluoride and lithium (both events); combined radium 226/228 (November 2024)
- MW-9 – barium (both events); combined radium 226/228 (November 2024)
- MW-10 – barium, fluoride, lithium and mercury (both events)

Expanded Nature and Extent Assessment Wells

- MW-110 – chromium, fluoride, lead and lithium (both events); combined radium 226/228 (November 2024)
- MW-111 – barium and fluoride (both events); combined radium 226/228 (June 2024)
- MW-112 – barium (both events); combined radium 226/228 (November 2024)

Relative to statistically significant level (SSL) detections above established GWPSs, the data indicate results consistent with historical sampling with lithium being the only parameter that was detected above an established GWPS. None of the other noted SSIs for Appendix IV parameters were above the established GWPSs for those parameters. The new lithium data collected during the 2024 sampling events are summarized below in Table 4. Only lithium at well location MW-10 exceeds the established GWPS of 0.04 mg/l.

Table 4. Reid/HMP&L CCR Surface Impoundment – 2024 Lithium Analytical Results

Monitoring Well	Parameter	
	Lithium GWPS 0.04 mg/L	
	June 2024	November 2024
MW-7	0.008J	0.008J
MW-8	0.03	0.040
MW-9	0.006J	0.0067
MW-10	**0.60**	**0.58**
MW-110	0.01J	0.02

MW-111	0.008J	0.008J
MW-112	0.007J	0.007J

J – Estimated value; M2 – Matrix spike recovery low, method control sample recovery acceptable.

The areal distribution of lithium impacts is provided on Figure 4, which includes all assessment lithium data generated to date. This illustrates that the extent of impacts above the GWPS for lithium has been defined, and the impacts appear to be limited to the general vicinity of well MW-10. This areal distribution suggests that impacts to groundwater likely originated as seepage from beneath the southern portion of the surface impoundment, possibly due to the added driving head associated with the ponded water that was present in this portion of the unit for an extended period of time prior to completion of impoundment closure. It is noted that numerical groundwater modeling performed in support of groundwater remedy engineering evaluations corroborates this hypothesis.

3.3 CURRENT MONITORING STATUS

The site is currently in post-closure care and continues to be in semi-annual assessment groundwater monitoring in accordance with Section 257.104(b)(3). No further delineation of lithium impacts is proposed at this time.

4.0 CORRECTIVE ACTION STATUS

Closure by removal with institutional controls and groundwater monitoring was the selected remedy for the Reid/HMP&L CCR Surface Impoundment. Closure of the impoundment was managed by BREC and HMP&L, and the earthwork contractor was Charah Solutions, LLC (Charah) of Louisville, Kentucky. Charah began mobilizing to the site on July 31, 2023, and promptly installed temporary erosion and sediment control facilities, clearing and grubbing the site, demolishing the former ash sluice piping and pipe support structures, removing and decontaminating riprap from the side slopes, and setting up the dewatering and water treatment systems for the project. Charah began dewatering the Reid/HMP&L CCR Surface Impoundment on August 25, 2023. All water removed from the Reid/HMP&L CCR Surface Impoundment during closure via Charah's dewatering and water treatment systems was discharged through the surface impoundment's former outlet structure (regulated Outfall 004) in accordance with the effluent limitations for Outfalls 001 and 004 in the Station's Kentucky Pollutant Discharge Elimination System (KPDES) permit.

After some initial bulk dewatering and conditioning within the impoundment area, Charah began removing CCR and CCR-laden soils from the Reid/HMP&L CCR Surface Impoundment on September 14, 2023. All CCR and CCR-laden soils excavated from the impoundment were first dewatered in designated condition areas within the impoundment. After the material was sufficiently dewatered, all excavated CCR and CCR-laden soils were hauled to the Green Station CCR Landfill for final disposal. Excavation of the impoundment continued down to the native subsoils beneath the pond until all of the CCR and CCR-laden soils were

removed. To ensure all such material was removed from the impoundment, an additional six inches (minimum) of native subsoils were excavated and removed from the impoundment.

By September 11, 2024, all CCR and CCR-laden soils had been removed from the impoundment. In total, approximately 900,000 cubic yards of CCR, CCR-laden soils, and native subsoils were removed to complete closure of the Reid/HMP&L CCR Surface Impoundment. On September 11, 2024, a representative from the Kentucky Division of Waste Management (KDWM) visually inspected the site to verify all CCR constituents had been removed; the KDWM representative found the area to be substantially clean and did not observe any CCR. The closure work was formally certified complete by S&L on September 30, 2024.

The Reid/HMP&L CCR Surface Impoundment is currently in post-closure care. In accordance with Section 257.104(c)(3), institutional controls and groundwater monitoring will continue at the site in accordance with Section 257.98 until all GWPSs have been met in groundwater.

5.0 SUMMARY / CONCLUSIONS AND RECOMMENDATIONS

The site is currently in post-closure care and continues to be in semi-annual assessment groundwater monitoring in accordance with Section 257.104(b)(3) and Section 257.95. The monitoring requirements in accordance with the CCR Rule are being successfully met. Only monitoring well MW-10 has shown a concentration of one Appendix IV parameter above the established GWPSs. Specifically, lithium was detected at this location in both 2024 sampling events above its GWPS of 0.4 mg/l. One part of the selected groundwater remedy, closure of the Reid/HMP&L CCR Surface Impoundment by removal of ash, has been completed with formal closure certification by Sargent & Lundy on September 30, 2024 at which time the site transitioned to post-closure care. Institutional controls and continued groundwater monitoring will continue at the site until all GWPSs have been met in groundwater. See Section 4.0 for additional details.

At this time, it is recommended to continue with semi-annual monitoring in accordance with 40 CFR 257.104(b)3) and 257.95. The next sampling event should be scheduled for the June 2025 timeframe.

6.0 REFERENCES

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AECOM, 2019a. 2018 Annual Groundwater Monitoring and Corrective Action Report, Sebree Generating Station, Webster County, Kentucky, January 2019.

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S&L and KPRG, 2022. Supplemental Site Characterization Report. Sebree Generating Station, Reid/HMP&L CCR Surface Impoundment. Rev. 0. September 2022.

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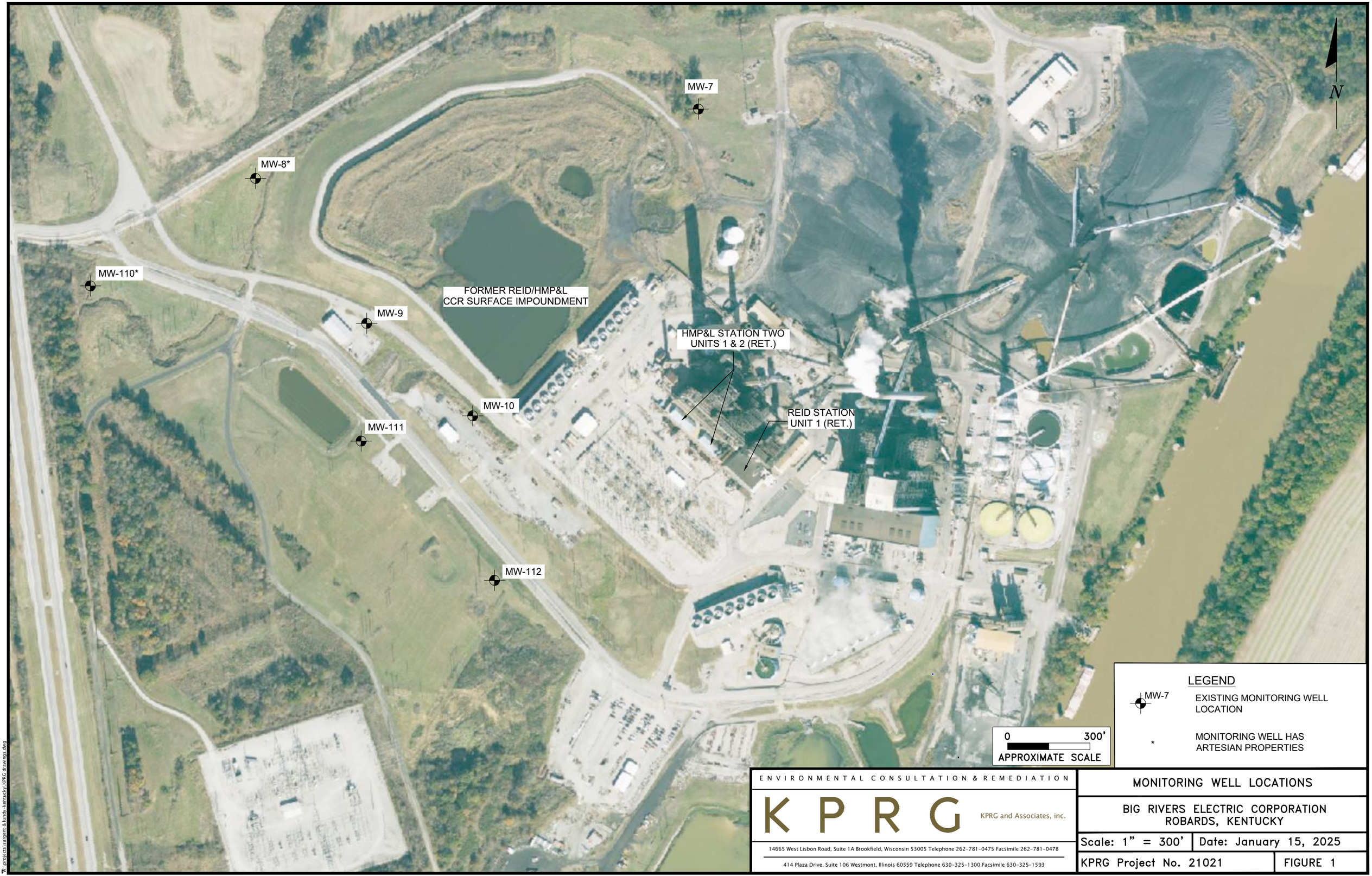
FIGURES



ENVIRONMENTAL CONSULTATION & REMEDIATION

K P R G

KPRG and Associates, inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

MONITORING WELL LOCATIONS

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 300'	Date: January 15, 2025
KPRG Project No. 21021	FIGURE 1

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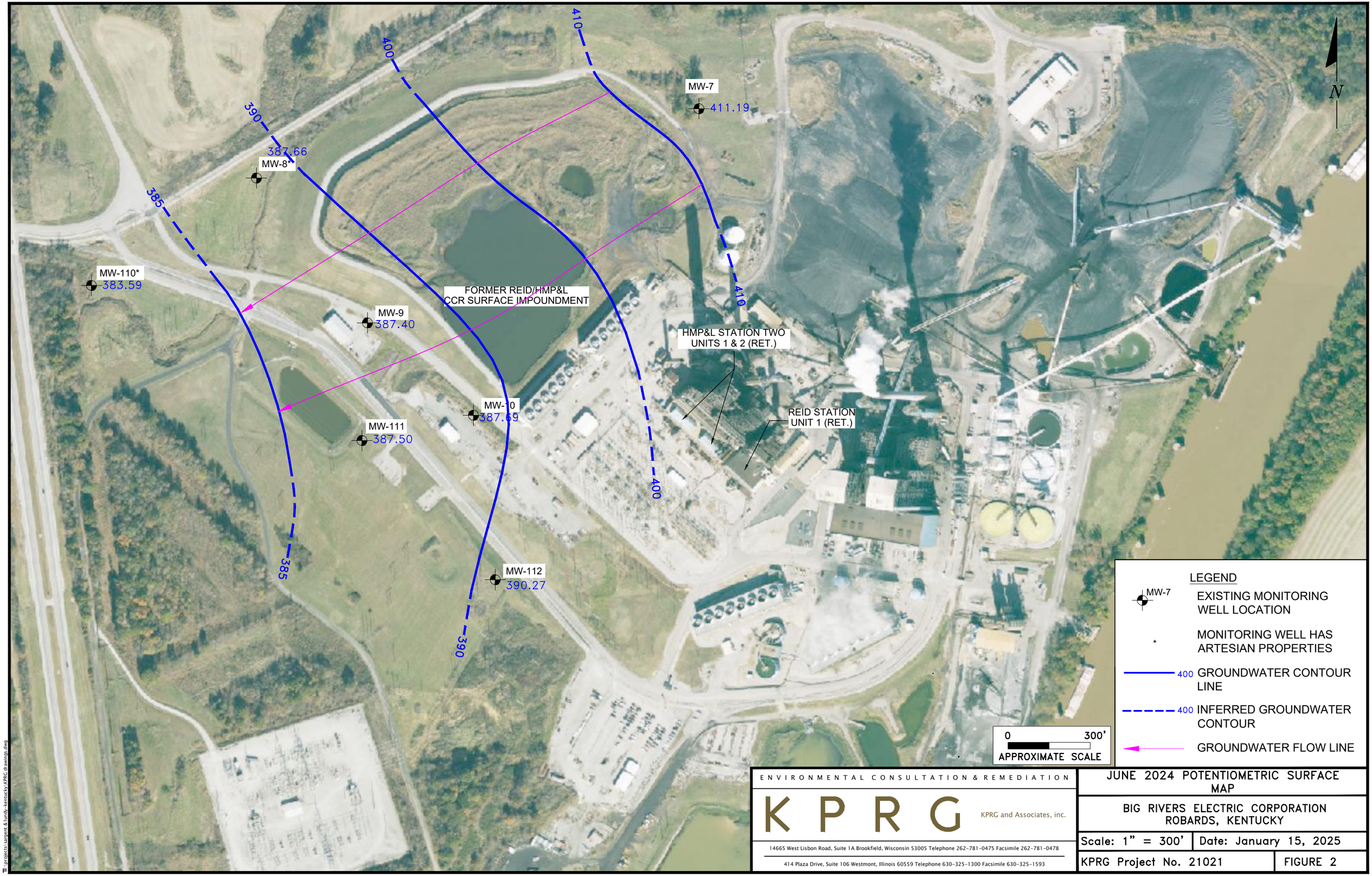

LEGEND

- MW-7 — EXISTING MONITORING WELL LOCATION
- * — MONITORING WELL HAS ARTESIAN PROPERTIES
- 400 — GROUNDWATER CONTOUR LINE
- 400 — INFERRED GROUNDWATER CONTOUR
- GROUNDWATER FLOW LINE

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K P R G

KPRG and Associates, inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

JUNE 2024 POTENTIOMETRIC SURFACE MAP

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 300' | Date: January 15, 2025

KPRG Project No. 21021 | FIGURE 2

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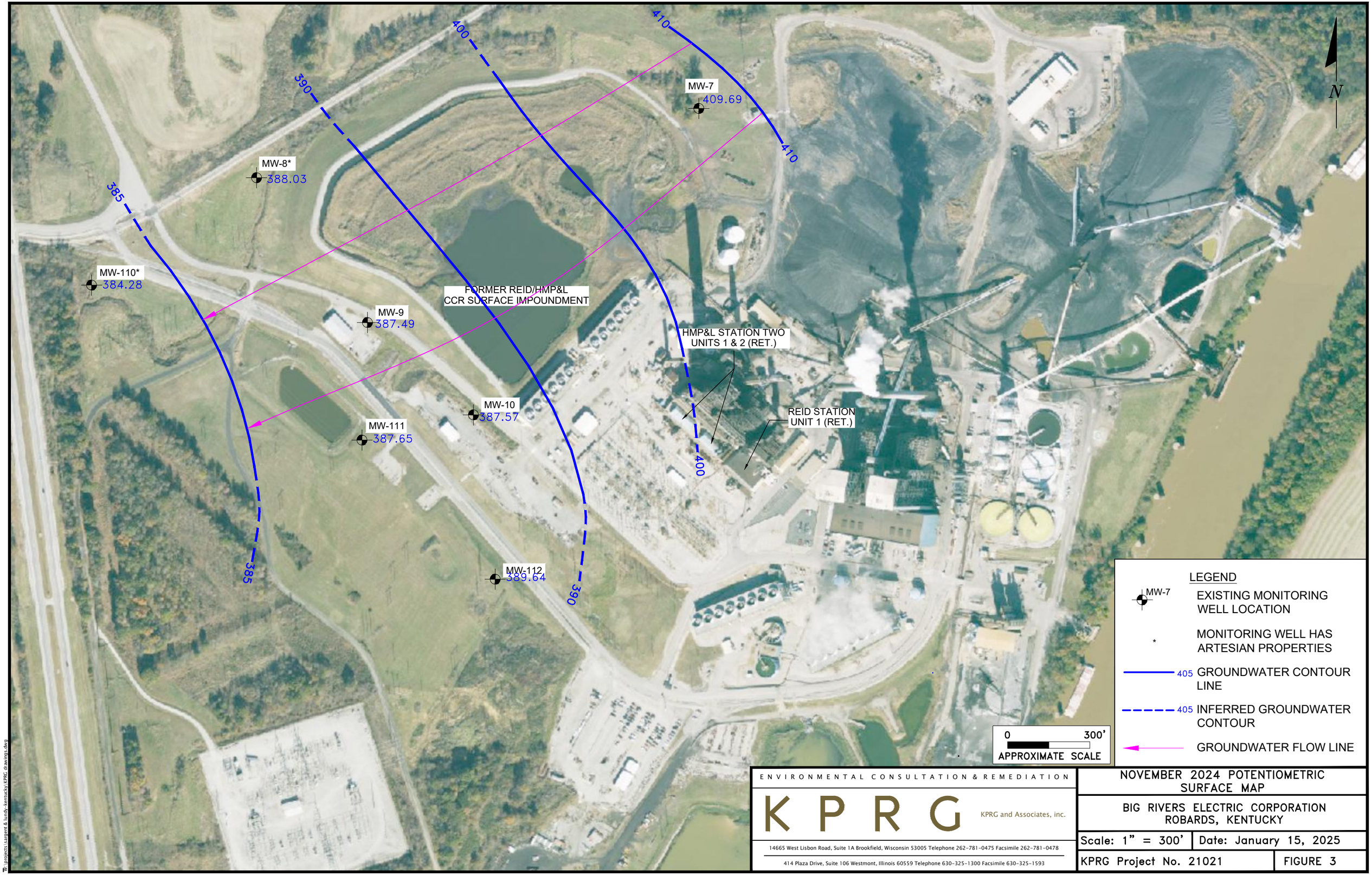

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K P R G

KPRG and Associates, inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

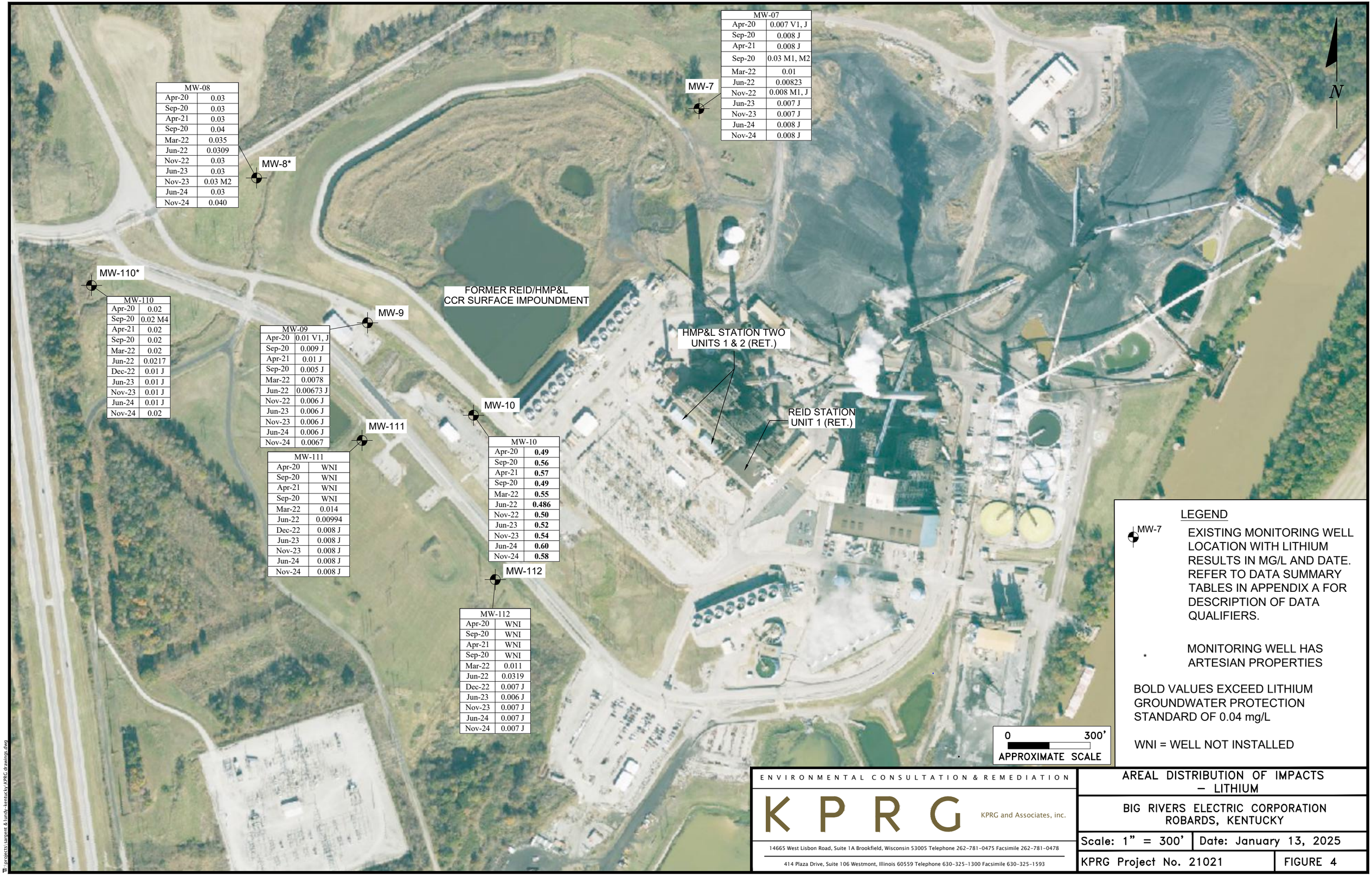
414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

NOVEMBER 2024 POTENTIOMETRIC SURFACE MAP

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 300' | Date: January 15, 2025

KPRG Project No. 21021 | FIGURE 3



ENVIRONMENTAL CONSULTATION & REMEDIATION
KPRG
KPRG and Associates, inc.
14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478
414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

AREAL DISTRIBUTION OF IMPACTS – LITHIUM

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1” = 300’ | Date: January 13, 2025

KPRG Project No. 21021 | FIGURE 4

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APPENDIX A

Groundwater Quality Data Summary Tables

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-1. MW-7 (up-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE 3/30/2016	5/31/2016	8/23/2016	10/18/2016	1/31/2017	5/11/2017	8/23/2017	9/22/2017	10/11/2017	4/6/2018	6/29/2018	9/26/2018	5/2/2019	10/16/2019
							Baseline Events					Assessment	Re-Sample		Assessment	
Boron	0.3676	NA	0.246	0.245 J	0.271 J	0.250 J	0.33 J	0.295 J	0.286 JB	0.268 J	0.320 J		0.249 J	0.299 J	0.309 JB	ND D2, M4, U
Calcium	48.11	NA	41.1	42.1 B	42.3	47.6	41.5 B	41.1	45.1	40.6	41.8 B		46.6	41.6 B	46.1	44.4 D2
Chloride	6.95	NA	2.48 JB	2.52 J	2.93 JB F1	3.26 B F1	4.02 B	5.73 B	4.99 F1 B	5.28 F1 B	3.65 B		6.88 B F1	5.38 B	4.94	4.7
Fluoride	0.3622	4	ND J	ND J	ND J F1	ND J F1	ND JB	ND J	ND J F1	ND J F1	ND J		ND J	ND J	0.255 J	0.3
Sulfate	26.59	NA	12.8	13.2	15.9	18.8	23.6 B	25.7	22.3 B	16.6 B	14.2 F1		23.4	18.7 B	16.8 B	19
pH (Field Measurement)	8.034-6.483	NA	7.39	7.47	7.6	7.16	7.74	7.26	7.23	7.36	7.36	7.01	7.17	6.94	7.46	7.07
Total Dissolved Solids	310.7	NA	233	243	243	250	253	291	290	267	278		295	263	271	228
APPENDIX IV CONSTITUENTS																
Antimony	0.0008951	0.006	ND	ND JB	ND JB	ND J	ND	ND	ND JB	ND JB	NA	ND JB	ND JB	NA	0.0000760 JB	ND U
Arsenic	0.003938	0.01	ND	ND J	ND J	ND J	ND J	ND J	ND J	ND J	NA	ND JB	ND JB	NA	0.00116 J	0.0014
Barium	0.0908	2	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J	NA	ND J	ND J	ND J	0.0824 J	0.062
Beryllium	0.0005	0.004	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND U
Cadmium	0.000076	0.005	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND U
Chromium	0.00171	0.1	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND JB	ND JB	NA	0.00136 J	ND U
Cobalt	0.00239	0.006	ND J	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	NA	ND J	ND J	NA	0.000158 J	ND U
Fluoride	0.3622	4	ND J	ND J	ND J F1	ND J F1	ND JB	ND J	ND J F1	ND J F1	NA	ND J	ND J	ND J	0.255 J	0.3
Lead	0.00064	0.015	ND J	ND JB	ND	ND J	ND	ND	ND	ND	NA	ND	ND	NA	0.0000730 J	ND U
Lithium	0.00994	0.04	ND J	ND	ND	ND	ND J	ND	ND	ND	NA	ND	ND	ND	ND	0.008 J
Mercury	0.000135	0.002	ND	ND	ND	ND	ND	ND	0.000135	ND	NA	ND	NA	NA	ND	ND U
Molybdenum	0.01745	0.1	0.0109	0.0185	0.0136	0.0118	0.0127	ND J	ND J	ND J	NA	ND J	ND J	ND J	0.00442 J	0.01
Radium 226	1.844 pCi/L	5 pCi/L	0.865	0.685	0.473	ND	0.921	0.662	0.795	0.642	NA	0.650	1.15	0.730	0.698	0.652
Radium 228																-0.208
Selenium	0.00066	0.05	ND	ND	ND	ND J	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND U
Thallium	0.000058	0.002	ND	ND J	ND J	ND	ND	ND	ND	ND	NA	ND	NA	NA	ND	ND U

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE 4/16/2020	9/24/2020	4/21/2021	9/29/2021	3/16/2022	6/07/2022	11/30/2022	6/29/2023	11/21/2023	6/24/2024	11/25/2024
								Assessment					
Boron	0.3676	NA	0.34 M4	0.33 M2, M4	0.34	1.77 D1, M2	0.36	0.329	0.35 M1	0.33	0.35	0.33	0.33
Calcium	48.11	NA	45.7 D2, M2	41.8 D2, M1, M2	43.4 D1	27 D1, M2	46.2	40.5	43.1 D1,M!,M2	44.1 D1	39.4 D1	41.8	40.6
Chloride	6.95	NA	4.1	3.3	4.9	6.5	4.7	3.16	2.8	2.6	3.0	3.0	2.9
Fluoride	0.3622	4	0.3	0.3	0.3	0.5	0.29	0.26	0.3	0.2	0.3	0.3	0.3
Sulfate	26.59	NA	15	12	15	34 D	19	12.6	11	10	11	11	11
pH (Field Measurement)	8.034-6.483	NA	6.86	6.56	7.75	7.80	7.67	7.18	7.51	7.69 H3	7.18	7.08	7.91
Total Dissolved Solids	310.7	NA	148	114	280	610	263	234	262	186	238	238	224
APPENDIX IV CONSTITUENTS													
Antimony	0.0008951	0.006	<0.005	<0.005 M2	<0.005 U	<0.005 M2, U	<0.00051	ND	ND M3, U	<0.002 U	<0.002 U	<0.002 L1,V1,U	<0.002 U
Arsenic	0.003938	0.01	0.0025	0.0015 M2	0.0026	<0.0010 M2, U	0.0022	0.00197 J	0.0037 M1	0.002	0.003	0.0024	0.0034
Barium	0.0908	2	0.087	0.075 M3	0.082	0.074 M2	0.074	0.0736	0.079 M1	0.076	0.076	0.077	0.084
Beryllium	0.0005	0.004	<0.0020 V1	<0.0020	<0.0020 U	<0.0020 M2, U	<0.00027	ND	ND M1, U	<0.0010 U	<0.0010 U	<0.0010 V1,U	<0.0010 U
Cadmium	0.000076	0.005	<0.0010	<0.0010 M2	<0.0010 U	<0.0010 M2, U	<0.00022	ND	ND M1, U	<0.0001 U	<0.0001 U	<0.0001 V1,U	<0.0001 U
Chromium	0.00171	0.1	<0.0020	<0.0020 M2	0.0007 J	<0.0020 M2, U	0.0019 J	ND	ND M1, U	<0.0006 U	<0.0006 U	<0.0006 U	<0.0006 U
Cobalt	0.00239	0.006	<0.004	<0.004 M2	<0.004 U	<0.004 M2, U	0.0005	0.000311 J	ND M1, U	<0.004 U	<0.004 U	<0.004 U	<0.004 U
Fluoride	0.3622	4	0.3	0.3	0.3	0.5	0.292	0.26	0.3	0.2	0.3	0.3	0.3
Lead	0.00064	0.015	<0.002	<0.002 M2	<0.002 U	<0.002 U	0.00047 J	ND	ND M1, U	<0.0005 U	0.0005 J	0.0005 V1,U	0.0005 U
Lithium	0.00994	0.04	0.007 V1, J	0.008 J	0.008 J	0.03 M1, M2	0.0101	0.00823	0.008 M1, J	0.007 J	0.007 J	0.008 J, V1	0.008 J
Mercury	0.000135	0.002	<0.0005	<0.0005 M2	<0.0005 U	<0.0005 M2, U	0.00025	ND	ND M1,M2, U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Molybdenum	0.01745	0.1	0.006 J	0.006 M2, J	0.005 J	<0.01 M2, U	0.0096	0.0122	0.01 M1	0.007 J	0.009 J	0.009 J	0.007 J
Radium 226	1.844 pCi/L	5 pCi/L	1.83	0.968	0.703	0.912	0.531	0.610 U	1.130	1.81	0.562	0.677	1.950
Radium 228													
Selenium	0.00066	0.05	<0.003	<0.003 M2	<0.003 U	<0.003 U	<0.00074	ND	ND M1, U	<0.001 U	<0.001 U	<0.001 U	<0.001 V1,U
Thallium	0.000058	0.002	<0.0020	<0.0020 M2	<0.0020	<0.0020 M2, U	<0.00047	0.000299 J	ND M1, U	0.0001 J	<0.0001 U	<0.0001 U	<0.0001 U

*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

ND = Not Detected at or above Method Detection Limit

B = Compound was found in the blank and sample.

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

D2 = Sample required dilution due to matrix interference

F1 = MS and/or MSD Recovery is outside acceptance limits.

H3 - Sample received and analyzed past holding time.

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.

pCi/L = picoCuries per Liter

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 spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-2. MW-8 (down-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE																					
			3/30/2016		5/31/2016		8/23/2016		10/18/2016		1/31/2017		5/11/2017		8/23/2017		9/22/2017		10/11/2017		5/2/2018		4/6/2018		6/29/2018		9/26/2018		5/2/2019		10/17/2019	
			Baseline Events																				Assessment		Re-Sample				Assessment			
Boron	0.3676	NA	1.46		1.07		1.3		1.00		1.74		1.60	B	1.37	B	1.32		1.54		0.309	JB			1.32		1.46		1.41	B	1.49	D2
Calcium	48.11	NA	283		242	B	228		194		235	B	251		253		228		235	B	46.1				253		254	B	272		267	D1
Chloride	6.95	NA	48.7		38.2	J	41.4	B	66.4	JB	42.1	B	43.6	B	47.1	B	58.5	JB	38.6	B	4.94				42.0	B	46.3	B	57.2		49.5	
Fluoride	0.3622	4	ND	J	ND	J F1	ND	J	ND	J	ND	JB	ND	J	ND	J	ND	J	ND	J	0.255	J			ND	J	ND	J	0.370	J	0.4	
Sulfate	26.59	NA	1100	HB	1140		1120		1080		1220	B	1180	B	1110		1440	B	1040		16.8	B			1050		1180	B	1220	B	1240	D
pH (Field Measurement)	8.034-6.483	NA	7.13		7.14		7.37		7.06		7.50		7.10		7.11		7.10		7.15		7.46		6.97		7.09		6.93		7..25		7.04	
Total Dissolved Solids	310.7	NA	1930		1980		1960		2030		2010		1990		2090		2030		2100		271				2060		1990		2090		2200	
APPENDIX IV CONSTITUENTS																																
Antimony	0.0008951	0.006	ND		ND	JB	ND	JB	ND	J	ND		ND	JB	ND	JB	ND	JB	NA		0.0000760	B	ND	JB	ND	JB	NA		0.000205	JB	ND	U
Arsenic	0.003938	0.01	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND		ND	J	NA		0.00116	J	ND	JB	ND	JB	NA		0.000438	J	ND	U
Barium	0.0908	2	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	NA		0.0824	J	ND	J	ND	J	ND	J	0.0188	J	0.016	
Beryllium	0.0005	0.004	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		NA		ND		ND	U
Cadmium	0.000076	0.005	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		NA		ND		ND	U
Chromium	0.00171	0.1	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		0.00136	J	ND	JB	ND	JB	NA		0.00320		ND	U
Cobalt	0.00239	0.006	ND		ND	J	ND	J	ND	J	ND		ND	J	ND		ND		NA		0.000158	J	ND	J	ND	J	NA		0.000141	J	ND	U
Fluoride	0.3622	4	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J	ND	J	NA		0.255	J	ND	J	ND	J	ND	J	0.370	J	0.4	
Lead	0.00064	0.015	ND		ND		ND		ND	J	ND		ND		ND		ND		NA		0.0000730	J	ND		ND		NA		0.000104	J	ND	U
Lithium	0.00994	0.04	0.0314	J	0.035	J	0.0314	J	0.0324	J	0.0408	J	0.0377	J	0.0367	J	0.0375	J	NA		ND		0.0347	J	0.0368	J	0.0375	J	0.0370	J	0.03	
Mercury	0.000135	0.002	ND		ND		ND		ND		ND		ND		ND	JB	ND		NA		ND		ND		NA		NA		ND		ND	U
Molybdenum	0.01745	0.1	0.0138	J	0.0186		0.0157		0.0147		0.0173		0.0158		0.0175		0.0139		NA		0.00442	J	0.0147		0.0140		0.0149		0.0146		0.01	
Radium 226	1.844 pCi/L	5 pCi/L	1.98		1.32		1.36		1.36		1.92		1.12		1.48		1.4		NA		0.698		1.29		1.6		1.46		1.43		0.914	
Radium 228																															1.59	
Selenium	0.00066	0.05	ND		ND		ND		ND	J	ND		ND		ND		ND	J	NA		ND		ND		NA		NA		0.000634	J	ND	U
Thallium	0.000058	0.002	ND		ND	J	ND		ND		ND		ND		ND		ND		NA		ND		ND		NA		NA		0.0000470	J	ND	U

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE																			
			4/16/2020		9/24/2020		4/21/2021		9/29/2021		3/15/2022		6/7/2022		11/30/2022		6/29/2023		11/20/2023		6/24/2024		11/26/2024	
			Assessment																					
Boron	0.3676	NA	1.56	D1	1.41	D2	1.42	D1, M4	1.5	D1	1.6		1.52		1.53		1.60	D1	1.49	D1, M1, M2	0.15	D1	1.44	
Calcium	48.11	NA	292	D1	257	D1	281	D1, M2	267	D1	260		257		281		276	D1	251	D1, M1, M3	297	D1	261	D1
Chloride	6.95	NA	47.3		49.2		45.8	D	61.4	D	49		49.3		42.3		48.2		46.5	M2	51.0		53.2	
Fluoride	0.3622	4	0.4		0.4		0.3		0.4		0.42		0.386		ND	U	0.4		0.4	M2	0.4		0.4	
Sulfate	26.59	NA	1130	D	1400	D	1090	D	2320	D	1230		1240		1,330	D	1450	D	1600	D, M1	1120	D1	1220	D
pH (Field Measurement)	8.034-6.483	NA	6.78		6.58		6.64		6.12		7.21		6.72		7.88		7.56	H3	7.08		7.00		7.42	
Total Dissolved Solids	310.7	NA	1930		1940		2000		2090		2030		2010	B	2,140		2030		1780		1750		1410	
APPENDIX IV CONSTITUENTS																								
Antimony	0.0008951	0.006	<0.005		<0.005		<0.005	U	<0.005	U	<0.00051		ND		ND	U	<0.002	U	<0.002	U	<0.002	U,L1,V1	<0.002	U
Arsenic	0.003938	0.01	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.00028		ND		ND	U	<0.0004	U	<0.0004	U	<0.0004	U	<0.0004	U
Barium	0.0908	2	0.017		0.016		0.018		0.02		0.016		0.0165		0.0417		0.015		0.016		0.017		0.019	
Beryllium	0.0005	0.004	<0.0020	V1	<0.0020		<0.0020	U	<0.0020	U	<0.00027		ND		ND	U	<0.0010	U	<0.0010	M2, U	<0.0010	V1, U	<0.0010	U
Cadmium	0.000076	0.005	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.00022		ND		ND	U	<0.0001	U	<0.0001	U	<0.0001	V1, U	<0.0001	U
Chromium	0.00171	0.1	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.0015		ND		ND	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Cobalt	0.00239	0.006	<0.004		<0.004		<0.004	U	<0.004	U	<0.00026		ND		ND	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U
Fluoride	0.3622	4	0.4		0.4		0.3		0.4		0.42		0.386		ND	U	0.4		0.4	M2	0.4		0.4	
Lead	0.00064	0.015	<0.002		<0.002		<0.002	U	<0.0020	U	<0.00017		ND		ND	U	<0.0005	U	<0.0005	U	<0.0005	U,V1	<0.0005	U
Lithium	0.00994	0.04	0.03		0.03		0.03		0.04		0.035		0.0309		0.03		0.03		0.03	M2	0.03		0.04	
Mercury	0.000135	0.002	<0.0005		<0.0005		<0.0005	U	<0.0005	U	0.00019	J H	ND		0.0002	J	<0.0002	U	<0.0002	M1, Y2, U	<0.0002	U	<0.0002	U
Molybdenum	0.01745	0.1	0.01		0.01		0.01		0.01		0.013		0.0131		0.01		0.01		0.01		0.01		0.01	
Radium 226	1.844 pCi/L	5 pCi/L	1.93		0.366		1.94		1.72		1.17		0.52		1.06		2.18		1.82		1.53		2.22	
Radium 228																								
Selenium	0.00066	0.05	<0.003		<0.003		<0.003	U	<0.003	U	<0.00074		ND		ND	U	<0.001	U	<0.001	U	<0.001	U	<0.001	V1,U
Thallium	0.000058	0.002	<0.0020		<0.0020		<0.0029	U	<0.0020	U	<0.00047		ND		ND	U	<0.0001	U	<0.0001	U	<0.0001	U,V1	<0.0001	U

*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

ND = Not Detected at or above Method Detection Limit

B = Compound was found in the blank and sample.

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

D2 = Sample required dilution due to matrix interference

F1 = MS and/or MSD Recovery is outside acceptance limits.

H3 - Sample received and analyzed past holding time.

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.

pCi/L = picoCuries per Liter

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 spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-3. MW-9 (down-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	3/30/2016	5/31/2016	8/23/2016	10/18/2016	1/31/2017	5/11/2017	8/23/2017	9/22/2017	10/11/2017	5/2/2018	4/6/2018	6/29/2018	9/26/2018	5/2/2019	10/17/2019
			Baseline Events										Assessment	Re-Sample		Assessment	
Boron	0.3676	NA	0.316	0.264 J	0.333 J	0.257 J	0.431 J	0.362 JB	0.101 JB	0.0844 J	0.0816 J	0.309 JB		0.239 J	0.0857 J	0.307 JB	ND D2, U
Calcium	48.11	NA	64.1	71.2 B	71.5	72.3	75.0 B	72.9	60.8	57.6	57.0 B	46.1		68.6	60.3 B	68.6	66.8 D2
Chloride	6.95	NA	26.5 B	30.9	36.6 B	32.6 B	42.4 B	38.0 B	6.40 B	7.14 B	5.83 B	4.94		31.2 B	6.93 B	21.8	17.6
Fluoride	0.3622	4	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	ND J	ND J	0.255 J		ND J	ND J	0.223 J	0.2
Sulfate	26.59	NA	9.51	17.6	27.7	39.6	57.2 B	30.4	ND J	ND JB	ND J	16.8 B		ND J	0.481 JB	0.223 JB	ND U
pH (Field Measurement)	8.034-6.483	NA	7.32	7.27	7.55	7.13	7.64	7.31	7.04	7.04	7.04	7.46	7.13	7.00	6.69		7.22
Total Dissolved Solids	310.7	NA	363	389	403	409	465	435	303	308	316	271		399	293		392
APPENDIX IV CONSTITUENTS																	
Antimony	0.0008951	0.006	ND	ND JB	ND JB	ND J	ND	ND JB	ND JB	ND JB	NA	0.0000760 B	ND JB	ND JB	NA	0.000192 JB	ND U
Arsenic	0.003938	0.01	ND	ND J	ND J	ND J	ND J	ND J	ND J	ND	NA	0.00116 J	ND JB	ND JB	NA	0.000563 J	ND U
Barium	0.0908	2	1.1	1.03	0.889	0.635	0.827	0.833	0.253	0.227	NA	0.0824 J	0.967	0.777	0.288	1.03	0.763
Beryllium	0.0005	0.004	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U
Cadmium	0.000076	0.005	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U
Chromium	0.00171	0.1	ND	ND	ND	ND	ND	ND	ND	ND	NA	0.00136 J	ND JB	ND JB	NA	0.00316	ND U
Cobalt	0.00239	0.006	ND	ND J	ND J	ND J	ND	ND	ND	ND	NA	0.000158 J	ND JB	ND J	NA	0.0000550 J	ND U
Fluoride	0.3622	4	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	ND J	NA	0.255 J	ND JB	ND J	ND J	0.223 J	0.2
Lead	0.00064	0.015	ND	ND JB	ND	ND J	ND	ND	ND	ND	NA	0.0000730 J	ND	NA	NA	0.0000760 J	ND U
Lithium	0.00994	0.04	0.0120 J	0.0105 J	0.0102 J	0.0119 J	0.0179 J	0.0136 J	ND	ND	NA	ND	0.0108 JB	0.0112 J	ND	0.0141 J	0.009 J
Mercury	0.000135	0.002	ND	ND	ND	ND	ND	ND	ND JB	ND J	NA	ND	ND	NA	NA	ND	ND U
Molybdenum	0.01745	0.1	ND	ND	ND	ND	ND	ND	ND	ND	NA	0.00442 J	ND	ND	ND	ND	ND U
Radium 226	1.844 pCi/L	5 pCi/L	2.87	2.84	2.91	1.38	2.11	2.53	1.28	1.26	NA	0.698	2.04	1.93	1.23	2.32	1.09
Radium 228																	1.23
Selenium	0.00066	0.05	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U
Thallium	0.000058	0.002	ND	ND J	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	4/16/2020	9/24/2020	4/21/2021	9/29/2021	3/15/2022	Date 6/07/2022	11/30/2022	6/29/2023	11/21/2023	6/24/2024	11/26/2024
								Assessment					
Boron	0.3676	NA	0.32	0.22	0.23	<0.10 U	0.084 J	0.078 J	ND U	<0.10 U	<0.10 V1, U	<0.10 L1, U	<0.10 U
Calcium	48.11	NA	71.2 D2	65.3 D2	66.9 D1	59.4 D1	61	62.4	60.5	62.3 D1	59.4 D1	63.1 D1	61.0 D1
Chloride	6.95	NA	22.8	19.9	22.5	7.2	6.7	6.6	6.7	6.1	6.5	6.6	6.9
Fluoride	0.3622	4	0.3	0.3	0.2	0.2	0.20	0.192	0.2	0.2	0.2	0.2	0.2
Sulfate	26.59	NA	<1	<1	<1 U	<1 U	<0.35	ND	0.6 J	0.5 J	<0.5 U	0.5 J	<0.5 U
pH (Field Measurement)	8.034-6.483	NA	7.04	6.67	7.12	6.23	7.05	6.53	7.74	7.45 H3	6.93	6.81	7.16
Total Dissolved Solids	310.7	NA	320	308	422	264	298	291 H	306	338	314	302	336
APPENDIX IV CONSTITUENTS													
Antimony	0.0008951	0.006	<0.005	<0.005	<0.005 U	<0.005 U	<0.00051	ND	ND U	<0.002 U	<0.002 U	<0.002 L1,V1,U	<0.002 U
Arsenic	0.003938	0.01	<0.0010	<0.0010	<0.0010 U	<0.0010 U	<0.00028	ND	ND U	<0.0004 U	<0.0004 U	<0.0004 U	<0.0004 U
Barium	0.0908	2	1.06 D1	0.730	0.782	0.248	0.26	0.258	0.253	0.245	0.251	0.259	0.251
Beryllium	0.0005	0.004	<0.0020 V1	<0.0020	<0.0020 U	<0.0020 U	<0.00027	ND	ND U	<0.0010 U	<0.0010 U	<0.0010 V1,U	<0.0010 U
Cadmium	0.000076	0.005	<0.0010	<0.0010	<0.0010 U	<0.0010 U	<0.00022	ND	ND U	<0.0001 U	<0.0001 U	<0.0001 V1,U	<0.0001 U
Chromium	0.00171	0.1	<0.0020	<0.0020	<0.0020 U	<0.0020 U	<0.0015	ND	0.0048	<0.0006 U	<0.0006 U	<0.0006 U	<0.0006 U
Cobalt	0.00239	0.006	<0.004	<0.004	<0.004 U	<0.004 U	<0.00026	ND	ND U	<0.004 U	<0.004 U	<0.004 U	<0.004 U
Fluoride	0.3622	4	0.3	0.3	0.2	0.2	0.20	0.192	0.2	0.2	0.2	0.2	0.2
Lead	0.00064	0.015	<0.002	<0.002	<0.002 U	<0.002 U	<0.00017	ND	ND U	<0.0005 U	<0.0005 U	<0.0005 V1,U	<0.0005 U
Lithium	0.00994	0.04	0.01 V1, J	0.009 J	0.01 J	0.005 J	0.0078	0.00673 J	0.006 J	0.006 J	0.006 J	0.006 V1,J	0.007 J
Mercury	0.000135	0.002	<0.0005	<0.0005	<0.0005 U	<0.0005 U	0.00022 H	ND	0.0002 J	<0.0002 Y2, U	<0.0002 U	<0.0002 U	<0.0002 U
Molybdenum	0.01745	0.1	<0.01	<0.01	<0.01 U	<0.01 U	<0.00061	ND	ND U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Radium 226	1.844 pCi/L	5 pCi/L	2.90	3.44	3.99	1.13	1.35	1.75	1.78	1.71	1.20	1.27	2.37
Radium 228													
Selenium	0.00066	0.05	<0.003	<0.003	<0.003 U	<0.003 U	<0.00074	ND	ND U	<0.001 U	<0.001 U	<0.001 U	<0.001 V1,U
Thallium	0.000058	0.002	<0.0020	<0.0020	<0.0020 U	<0.0020 U	<0.00047	0.000372 J	ND U	0.0001 J	<0.0001 U	<0.0001 V1,U	<0.0001 U

*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

ND = Not Detected at or above Method Detection Limit

B = Compound was found in the blank and sample.

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

D2 = Sample required dilution due to matrix interference

F1 = MS and/or MSD Recovery is outside acceptance limits.

H3 - Sample received and analyzed past holding time.

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.

pCi/L = picoCuries per Liter

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 spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-4. MW-10 (down-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE																	
			3/30/2016	5/31/2016	8/23/2016	10/18/2016	2/9/2017	5/11/2017	8/23/2017	9/22/2017	10/11/2017	5/2/2018	4/6/2018	6/29/2018	9/26/2018	5/2/2019	10/17/2019
			Baseline Events										Assessment	Re-Sample		Assessment	
Boron	0.3676	NA	0.416	0.336 J	0.460 J	0.489 J	0.540 JB	0.679 JB	0.560 JB	0.543 J	0.637 J	0.309 JB		0.419 J	0.464 J	0.498 JB	ND D2,U
Calcium	48.11	NA	16.5	21.3 B	23	36	14.3 B	13.1	33.7	21.4	11.9 B	46.1		9.94	10.5 B	19.5	9.76 D2
Chloride	6.95	NA	31.5 B	26.9	28.9 B	31.6 B	29.4 JB	29.1 B	32.3 B	29.7 B	25.8 B	4.94		26.7 B	27.9 B	26.6	25.7
Fluoride	0.3622	4	ND J	ND J	ND J	ND J	ND	ND J	ND J	ND J	ND J	0.255 J		ND J	ND J	0.570 J	0.6
Sulfate	26.59	NA	208 HB	135	144	152	145	168	177 B	226 B	147	16.8 B		129	138 B	114 B	80 D
pH (Field Measurement)	8.034-6.483	NA	9.72	8.95	8.1	7.53	7.08	9.84	8.14	8.14	9.19	7.46	9.37	9.15	8.98	9.15	9.24
Total Dissolved Solids	310.7	NA	644	532	558	602	679	763	758	763	728	271		721	673	642	568
APPENDIX IV CONSTITUENTS																	
Antimony	0.0008951	0.006	ND	ND JB	ND JB	ND J	ND	ND JB	ND JB	ND JB	NA	0.0000760 B	ND JB	ND JB	NA	0.0000580 JB	ND U
Arsenic	0.003938	0.01	ND J	ND J	ND J	ND J	ND JB	ND J	ND JB	ND J	NA	0.00116 J	ND JB	ND JB	NA	0.00254 J	0.0022
Barium	0.0908	2	ND J	ND J	ND J	ND J	ND JB	ND J	ND JB	ND J	NA	0.0824 J	ND J	ND J	ND J	0.100 J	0.077
Beryllium	0.0005	0.004	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U
Cadmium	0.000076	0.005	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U
Chromium	0.00171	0.1	ND J	ND J	ND J	ND	ND J	ND J	ND JB	ND	NA	0.00136 J	ND JB	ND JB	NA	0.00299 J	0.0006 J
Cobalt	0.00239	0.006	ND	ND J	ND J	ND J	ND J	ND J	ND JB	ND J	NA	0.000158 J	ND J	ND J	NA	0.000685 J	ND U
Fluoride	0.3622	4	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J	NA	0.255 J	ND J	ND J	ND J	0.570 J	0.6
Lead	0.00064	0.015	ND	ND JB	ND	ND J	ND J	ND J	ND	ND	NA	0.0000730 J	ND J	ND	NA	0.000671 J	ND U
Lithium	0.00994	0.04	**0.339**	**0.199**	**0.219**	**0.0736**	**0.481**	**0.607**	**0.204**	**0.345**	NA	ND	**0.694**	**0.630**	**0.570**	**0.574**	**0.51**
Mercury	0.000135	0.002	ND	ND	ND	ND	ND	ND	ND JB	ND	NA	ND	ND	NA	NA	ND	0.0002 J
Molybdenum	0.01745	0.1	0.0170 J	0.0171	0.0141	ND J	0.0119	ND J	ND J	ND J	NA	0.00442 J	ND J	ND J	ND J	0.00797 J	0.007 J
Radium 226	1.844 pCi/L	5 pCi/L	0.612	ND	0.715	ND	0.422	0.287	0.619	0.391	NA	0.698	0.512	0.683	0.704	0.205 U	0.458
Radium 228																	0.379
Selenium	0.00066	0.05	ND	ND	ND	ND J	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U
Thallium	0.000058	0.002	ND	ND J	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND U

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE										
			4/16/2020	9/24/2020	4/21/2021	9/29/2021	3/15/2022	6/7/2022	11/30/2022	6/29/2023	11/21/2023	6/24/2024	11/26/2024
			Assessment										
Boron	0.3676	NA	0.54	0.51	0.54	0.54	0.55	0.534	0.53	0.52	0.56	0.52	0.51
Calcium	48.11	NA	12.5 D2	8.80 D2	7.95 D1	8.25	15	11.5	8.56	8.67	9.16	8.85	10.6 D1
Chloride	6.95	NA	21.5	21.4	21.4	20.7	18	16.7	17.8	16.2	17.2	15.5	15.8
Fluoride	0.3622	4	0.5	0.5	0.5	0.5	0.62	0.54	0.6	0.5	0.5	0.5	0.5
Sulfate	26.59	NA	58 D	62 D	52 D	61 D	41	32.3	30	25	24	19	18
pH (Field Measurement)	8.034-6.483	NA	8.87	8.74	9.88	8.26	9.34	8.68	9.82	8.95 H3	9.12	9.07	9.95
Total Dissolved Solids	310.7	NA	466	436	530	514	480	439 H	530	428	408	448	416
APPENDIX IV CONSTITUENTS													
Antimony	0.0008951	0.006	<0.005	<0.005	<0.005 U	<0.005 U	<0.00051	ND	ND U	<0.002 U	<0.002 U	<0.002 L1,V1,U	<0.002 U
Arsenic	0.003938	0.01	0.0019	0.0019	0.0018	0.0017	0.0019	0.0015 J	0.0016	0.0015	0.0016	0.0014	0.0012
Barium	0.0908	2	0.093	0.084	0.089	0.096	0.13	0.126	0.129	0.14	0.165	0.163	0.200
Beryllium	0.0005	0.004	<0.0020 V1	<0.0020	<0.0020 U	<0.0020 U	<0.00027	ND	ND U	<0.0010 U	<0.0010 U	<0.0010 V1,U	<0.0010 U
Cadmium	0.000076	0.005	<0.0010	<0.0010	<0.0010 U	<0.0010 U	<0.00022	ND	ND U	<0.0001 U	<0.0001 U	<0.0001 V1,U	<0.0001 U
Chromium	0.00171	0.1	<0.0020	0.0006 J	0.0007 J	0.0006 J	0.0016 J	ND	ND U	<0.0006 U	0.0006 J	0.0007 J	<0.0006 U
Cobalt	0.00239	0.006	<0.004	<0.004	<0.004 U	<0.004 U	0.00068	0.000419 J	ND U	<0.004 U	<0.004 U	<0.004 U	<0.004 U
Fluoride	0.3622	4	0.5	0.5	0.5	0.5	0.62	0.54	0.6	0.5	0.5	0.5	0.5
Lead	0.00064	0.015	<0.002	<0.002	<0.002 U	<0.002 U	0.00027 J	ND	ND U	<0.0005 U	<0.0005 U	<0.0005 V1,U	<0.0005 U
Lithium	0.00994	0.04	**0.49**	**0.56**	**0.57**	**0.49**	**0.55**	**0.486**	**0.5**	**0.52**	**0.54**	**0.60**	**0.58**
Mercury	0.000135	0.002	0.0002 J	0.0002 J	0.0003 J	0.0002 J	0.00019 J H	ND	0.0003 J	<0.0002 U	0.0002 J	0.0002 J	0.0002 J
Molybdenum	0.01745	0.1	0.006 J	0.007 J	0.007 J	0.007 J	0.0065	0.00545	0.006 J	0.005 J	0.005 J	0.005 J	0.004 J
Radium 226	1.844 pCi/L	5 pCi/L	1.24	0.594	0.769	0.692	0.826	0.895	0.856	1.910	0.210	0.669	0.865
Radium 228													
Selenium	0.00066	0.05	<0.003	<0.003	<0.003 U	<0.003 U	<0.00074	ND	ND U	<0.001 U	<0.001 U	<0.001 U	<0.001 V1,U
Thallium	0.000058	0.002	<0.0020	<0.0020	<0.0020 U	<0.0020 U	<0.00047	0.000667 J	ND U	<0.0001 U	<0.0001 U	<0.0001 V1,U	<0.0001 U

*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

ND = Not Detected at or above Method Detection Limit

B = Compound was found in the blank and sample.

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

D2 = Sample required dilution due to matrix interference

F1 = MS and/or MSD Recovery is outside acceptance limits.

H3 - Sample received and analyzed past holding time.

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.

pCi/L = picoCuries per Liter

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 spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-5. MW-110 (down-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE																			
			3/29/2019		4/10/2019		10/24/2019		4/17/2020		10/1/2020		5/26/2021		10/1/2021		3/15/2022		6/7/2022		12/2/2022	
			Characterization																			
Boron	0.3676	NA	0.484	JB	0.496	JB	ND	D2, U	0.54	M4	0.53	D2, M1, M4	0.54		0.52		0.60		0.537		0.53	
Calcium	48.11	NA	176	B	178		204	D1	181	D1, M2	162	D1, M2	163	D1	155	D1	150		143		151	D1
Chloride	6.95	NA	26.0		30.4	B	30.0		22.1		19.9		21.8		21.1		20		19.6		2.1	
Fluoride	0.3622	4	0.279	J	0.255	JB	0.3		0.3		0.3		0.3		0.3		0.36		0.326		0.3	
Sulfate	26.59	NA	563		596	B		D M1	460	D	411	D	428	D	853	D	440		450		539	D
pH (Field Measurement)	8.034-6.483	NA	7.25		7.50		6.84		7.17		7.56		7.75		6.69		7.19		6.87		7.28	
Total Dissolved Solids	310.7	NA	1170		1200		1270		1150		1060		1140		1090		930		934	B	1,020	
APPENDIX IV CONSTITUENTS																						
Antimony	0.0008951	0.006	0.000240	JB	0.000204	JB	ND	U	<0.005		<0.005	M4	<0.005	U	<0.005	U	<0.00051		ND		ND	U
Arsenic	0.003938	0.01	0.00534		0.00238	J	ND	U	0.0012		0.0004	J	<0.0010	U	<0.0010	U	0.0011		0.00198	J	ND	U
Barium	0.0908	2	0.118	J	0.107	JB	0.065		0.065		0.056	M1	0.055		0.049		0.059		0.0696		0.049	
Beryllium	0.0005	0.004	0.000716	J	0.000314	J	ND	U	<0.0020	M2	<0.0020	M4	<0.0020	U	<0.0020	U	<0.00027		ND		ND	U
Cadmium	0.000076	0.005	ND		ND		ND	U	<0.0010		<0.0010		<0.0010	U	<0.0010	U	<0.00022		ND		ND	U
Chromium	0.00171	0.1	0.0180	B	0.0115		0.0010	J	0.0047		0.0016	J	0.0009	J	<0.0020	U	0.0035		0.00729		ND	U
Cobalt	0.00239	0.006	0.00911	B	0.00384	J	ND	U	<0.004		<0.004	M4	<0.004	U	<0.004	U	0.0017		0.00359		ND	U
Fluoride	0.3622	4	0.279	J	0.255	JB	0.3		0.3		0.3		0.3		0.3		0.36		0.326		0.3	
Lead	0.00064	0.015	0.00661		0.00399	J	ND	U	0.002		0.0008	J	<0.002	U	<0.002	U	0.0017		0.00328		ND	U
Lithium	0.00994	0.04	0.0299	J	0.0303	J	0.02		0.02		0.02	M4	0.02		0.02		0.0203		0.0217		0.01	J
Mercury	0.000135	0.002	ND		ND	^	ND	U	0.0002	J	<0.0005	M1, M4	<0.0005	U	<0.0005	U	<0.00013	H	ND		ND	U
Molybdenum	0.01745	0.1	0.00153	J	0.00120	J	ND	U	<0.01		<0.01	M4	<0.01	U	<0.01	U	<0.00061		0.00123		ND	U
Radium 226	1.844 pCi/L	5 pCi/L	1.84		1.93		0.195		1.37		0.941		0.636		0.652		1.580		-0.901	U	1.09	
Radium 228							0.727															
Selenium	0.00066	0.05	ND		ND		ND	U	<0.003		<0.003	M4	<0.003	U	<0.003	U	<0.00074		ND		ND	U
Thallium	0.000058	0.002	0.000112	J	0.0000640	J	ND	U	<0.0020		<0.0020		<0.0020	U	<0.0020	U	<0.00047		0.000569	J	ND	U

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE																			
			6/30/2023		11/20/2023		6/24/2024		11/25/2024													
			Characterization																			
Boron	0.3676	NA	0.51	M2	0.56	M2	0.53		0.53													
Calcium	48.11	NA	152	D1, M3	105	D1, M3	98.9	D1	92.3	D1												
Chloride	6.95	NA	17.7		17.6	M2	18.4		18.2													
Fluoride	0.3622	4	0.3		0.3		0.4		0.4													
Sulfate	26.59	NA	493	D	401	D, M1	241		210													
pH (Field Measurement)	8.034-6.483	NA	7.68	H3	7.15		7.05		7.69													
Total Dissolved Solids	310.7	NA	1070		824		670		572													
APPENDIX IV CONSTITUENTS																						
Antimony	0.0008951	0.006	<0.002	U	<0.002	U	<0.002	L1,V1,U	<0.002	U												
Arsenic	0.003938	0.01	<0.0004	U	0.0006	J	0.0006	J	0.0017													
Barium	0.0908	2	0.046		0.046		0.047		0.055													
Beryllium	0.0005	0.004	<0.0010	U	<0.0010	U	<0.0010	V1,U	<0.0010	U												
Cadmium	0.000076	0.005	<0.0001	U	<0.0001	U	<0.0001	V1,U	<0.0001	U												
Chromium	0.00171	0.1	<0.0006	U	0.0028		0.0022		0.0067													
Cobalt	0.00239	0.006	<0.004	U	<0.004	U	<0.004	U	<0.004	U												
Fluoride	0.3622	4	0.3		0.3		0.4		0.4													
Lead	0.00064	0.015	<0.0005	U	0.001	J	0.001	V1,J	0.003													
Lithium	0.00994	0.04	0.01	J	0.01	J	0.01	V1,J	0.02													
Mercury	0.000135	0.002	<0.0002	U	<0.0002	M1, Y2, U	<0.0002	U	<0.0002	U												
Molybdenum	0.01745	0.1	<0.002	U	<0.002	U	<0.002	U	<0.002	U												
Radium 226	1.844 pCi/L	5 pCi/L	1.25		0.811		0.742		2.46													
Radium 228																						
Selenium	0.00066	0.05	<0.001	U	<0.001	U	<0.001	U	<0.001	V1,U												
Thallium	0.000058	0.002	0.0002	J	<0.0001	U	<0.0001	V1,U	<0.0001	U												

*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

ND = Not Detected at or above Method Detection Limit

B = Compound was found in the blank and sample.

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

D2 = Sample required dilution due to matrix interference

F1 = MS and/or MSD Recovery is outside acceptance limits.

H3 - Sample received and analyzed past holding time.

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.

pCi/L = picoCuries per Liter

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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 spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-6. MW-111 (down-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE 3/16/2022		6/07/2022		12/02/2022		6/30/2023		11/20/2023		6/24/2024		11/25/2024	
			Characterization													
Boron	0.3676	NA	0.54		0.521		0.5		0.48		0.57		0.54	M2	0.53	
Calcium	48.11	NA	19		16.5		16	D1	20.4	D1	16.6	D1	17.9	D1	18.4	D1
Chloride	6.95	NA	18		19.8		16.7		19.4		18.2		17.9		16.8	
Fluoride	0.3622	4	0.55		0.561		0.5		0.4		0.4	M1	0.4		0.4	
Sulfate	26.59	NA	6.7		2.86		0.9	J	5		2		0.7	J	<0.5	U
pH (Field Measurement)	8.034-6.483	NA	8.00		7.56		8.17		8.18	H3	7.94		7.84		8.45	
Total Dissolved Solids	310.7	NA	310		305	H	326		358		292		320		280	
APPENDIX IV CONSTITUENTS																
Antimony	0.0008951	0.006	0.0018	J	ND		ND	U	<0.002	U	<0.002	U	<0.002	L1,M1,V1,U	<0.002	U
Arsenic	0.003938	0.01	0.0014		0.00106	J	0.0008	J	0.0007	J	0.0011		0.0004	J	<0.0010	U
Barium	0.0908	2	0.89		0.798		0.848		0.89		1.03	D1	1.07	D1,M3	1.13	D1
Beryllium	0.0005	0.004	<0.00027		ND		ND	U	<0.0010	U	<0.0010	U	<0.0010	V1,U	<0.0010	U
Cadmium	0.000076	0.005	<0.00022		ND		ND	U	<0.0001	U	<0.0001	U	<0.0001	V1,U	<0.0001	U
Chromium	0.00171	0.1	<0.0015		ND		ND	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Cobalt	0.00239	0.006	0.00085		0.000236	J	ND	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U
Fluoride	0.3622	4	0.55		0.561		0.5		0.4		0.4	M1	0.4		0.4	
Lead	0.00064	0.015	0.00054	J	ND		ND	U	<0.0005	U	<0.0005	U	<0.0005	V1,U	<0.0005	U
Lithium	0.00994	0.04	0.014		0.00994		0.008	J	0.008	J	0.008	J	0.008	V1,J	0.008	J
Mercury	0.000135	0.002	0.00031		ND		0.0002	J	<0.0002	U	<0.0002	U	<0.0002	U	<0.0002	U
Molybdenum	0.01745	0.1	0.0044	J	0.00527		0.003	J	0.003	J	0.002	J	<0.002	U	0.002	J
Radium 226 / Radium 228	1.844 pCi/L	5 pCi/L	0.67	U	0.48		1.64		1.48		1.71		3.45		1.18	
Selenium	0.00066	0.05	<0.00074		ND		ND	U	<0.001	U	<0.001	U	<0.010	D2,U	<0.001	V1,U
Thallium	0.000058	0.002	<0.00047		ND		ND	U	0.0001	J	<0.0001	U	<0.0001	V1,U	<0.0001	U

*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

ND = Not Detected at or above Method Detection Limit

B = Compound was found in the blank and sample.

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

D2 = Sample required dilution due to matrix interference

F1 = MS and/or MSD Recovery is outside acceptance limits.

H3 - Sample received and analyzed past holding time.

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.

pCi/L = picoCuries per Liter

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 spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

REID/HMPL CCR SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY

Table A-7. MW-112 (down-gradient)

APPENDIX III CONSTITUENTS	Pred. Limit	GWPS	DATE 3/17/2022 Characterization		6/07/2022 Characterization		7/26/2022 Resample		12/02/2022 Characterization		6/30/2023 Characterization		11/20/2023 Characterization		6/24/2024 Characterization		11/25/2024 Characterization	
Boron	0.3676	NA	0.39		0.331		NA		0.36		0.33		0.37		0.35		0.36	
Calcium	48.11	NA	29		30.7		NA		28.2	D1	30.2	D1	27.6	D1	30.6	D1	30.8	D1,M3
Chloride	6.95	NA	8.4		9.5		NA		9.1		10.9		10.9		13.3		13.2	
Fluoride	0.3622	4	0.31		0.287		NA		0.3	M1	0.3		0.3	M1	0.3		0.3	
Sulfate	26.59	NA	12.4		14.7		NA		12	M1	24		24		30		33	
pH (Field Measurement)	8.034-6.483	NA	7.76		7.40		NA		7.80		7.98	H3	7.50		7.34		8.02	
Total Dissolved Solids	310.7	NA	288		275		NA		330		306		278		332		308	
APPENDIX IV CONSTITUENTS																		
Antimony	0.0008951	0.006	0.00058	J	ND		NA		ND	U	<0.002	U	<0.002	U	<0.002	L1,V1,U	<0.002	U
Arsenic	0.003938	0.01	0.00089	J	0.00336	J	NA		0.0009	J	0.0014		0.0018		0.0014		0.0013	
Barium	0.0908	2	0.34		0.43		NA		0.316		0.319		0.331		0.352		0.329	M1, M2
Beryllium	0.0005	0.004	<0.00027		0.00203		NA		ND	U	<0.0010	U	<0.0010	U	<0.0010	V1,U	<0.0010	U
Cadmium	0.000076	0.005	<0.00022		ND		NA		ND	U	<0.0001	U	<0.0001	U	<0.0001	V1,U	<0.0001	U
Chromium	0.00171	0.1	0.0024		0.0311		NA		ND	U	<0.0006	U	0.0021		<0.0006	U	<0.0006	U
Cobalt	0.00239	0.006	0.002		0.0141		0.00297		ND	U	<0.004	U	<0.004	U	<0.004	U	<0.004	U
Fluoride	0.3622	4	0.31		0.287		NA		0.3		0.3		0.3	M1	0.3		0.3	
Lead	0.00064	0.015	0.001		0.013		NA		ND	U	<0.0005	U	0.0006	J	<0.0005	V1,U	<0.0005	U
Lithium	0.00994	0.04	0.011		0.0319		NA		0.007	J	0.006	J	0.007	J	0.007	V1,J	0.007	J
Mercury	0.000135	0.002	<0.00013		ND		NA		0.0003	J	<0.0002	U	<0.0002	U	<0.0002	U	<0.0002	U
Molybdenum	0.01745	0.1	0.0062		0.00605		NA		0.005	J	0.005	J	0.006	J	0.006	J	0.005	J
Radium 226 + Radium 228	1.844 pCi/L	5 pCi/L	0.71	U	2.56		NA		1.2		1.69		0.565		1.090		1.860	
Selenium	0.00066	0.05	<0.00074		ND		NA		ND	U	<0.001	U	<0.001	U	<0.001	U	<0.001	V1,U
Thallium	0.000058	0.002	<0.00047		0.000277	J	NA		ND	U	0.0001	J	<0.0001	U	<0.0001	V1,U	<0.0001	U

*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

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M4 = The analysis of the spike 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

V1 = CCV recovery was above method acceptance limits. This target analyte not detected in the sample

BOLD - Exceeeds GWPS

APPENDIX B

Analytical Data Packages

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

Certificate of Analysis
4060297

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 07/29/2024 16:13

Project Name:	HMPL Surface Impoundment	Workorder:	4060297

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 06/26/2024 15:40.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4060297-01	MW7/	Groundwater	06/24/2024 18:13	06/26/2024 15:40	Hunter Mizell
4060297-02	MW8/	Groundwater	06/24/2024 13:51	06/26/2024 15:40	Hunter Mizell
4060297-03	MW9/	Groundwater	06/24/2024 16:55	06/26/2024 15:40	Hunter Mizell
4060297-04	MW10/	Groundwater	06/24/2024 15:14	06/26/2024 15:40	Hunter Mizell
4060297-05	DUPLICATE/	Groundwater	06/24/2024 00:00	06/26/2024 15:40	Hunter Mizell
4060297-06	FIELD BLANK/	Water	06/24/2024 00:00	06/26/2024 15:40	Hunter Mizell

LabNumber	Measurement	Value
4060297-01	Field Conductance	464
	Field Dissolved Oxygen	4.11
	Field pH	7.08
	Field Temp (C)	16.8
	Field Turbidity	7.28
4060297-02	Field Conductance	2404
	Field Dissolved Oxygen	2.07
	Field pH	7.00
	Field Temp (C)	20.2
	Field Turbidity	5.70
4060297-03	Field Conductance	487
	Field Dissolved Oxygen	1.83
	Field pH	6.81
	Field Temp (C)	19.7
	Field Turbidity	24.21
4060297-04	Field Conductance	695
	Field Dissolved Oxygen	1.88
	Field pH	9.07
	Field Temp (C)	19.8
	Field Turbidity	6.99

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ANALYTICAL RESULTS

Lab Sample ID: **4060297-01**
Description: **MW7**

Sample Collection Date Time: 06/24/2024 18:13
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U, L1, V1	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Arsenic	**0.0024**		mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Barium	**0.077**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:40	MRWD
Beryllium	ND	U, V1	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Boron	**0.33**		mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:47	AKB
Cadmium	ND	U, V1	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Calcium	**41.8**	D1	mg/L	5.00	2.50	SW846 6010 B	06/28/2024 09:15	07/02/2024 21:33	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Lead	ND	U, V1	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Lithium	**0.008**	V1, J	mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Molybdenum	**0.009**	J	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:40	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:31	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.76**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**238**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.677**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**0.677**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.677**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**3.0**		mg/L	0.5	0.4	SW846 9056	06/30/2024 00:50	06/30/2024 00:50	JBP1
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	06/30/2024 00:50	06/30/2024 00:50	JBP1
Sulfate	**11**		mg/L	1	0.5	SW846 9056	06/30/2024 00:50	06/30/2024 00:50	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4060297-02**
Description: **MW8**

Sample Collection Date Time: 06/24/2024 13:51
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Barium	**0.017**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:42	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Boron	**0.15**	D1	mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:51	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Calcium	**297**	D1	mg/L	50.0	25.0	SW846 6010 B	06/28/2024 09:15	07/02/2024 21:55	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Lead	ND	V1, U	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:42	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Molybdenum	**0.01**		mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:42	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:53	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.44**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**1750**		mg/L	250	250	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.379**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**1.15**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**1.53**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**1.53**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**51.0**		mg/L	0.5	0.4	SW846 9056	06/30/2024 01:17	06/30/2024 01:17	JBP1
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	06/30/2024 01:17	06/30/2024 01:17	JBP1
Sulfate	**1120**	D	mg/L	10	5	SW846 9056	06/30/2024 01:44	06/30/2024 01:44	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4060297-03**
Description: **MW9**

Sample Collection Date Time: 06/24/2024 16:55
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Barium	**0.259**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:45	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Boron	ND	L1, U	mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/02/2024 21:59	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Calcium	**63.1**	D1	mg/L	5.00	2.50	SW846 6010 B	06/28/2024 09:15	07/02/2024 22:02	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Lead	ND	V1, U	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Lithium	**0.006**	V1, J	mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:45	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:57	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.32**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**302**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.521**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.744**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**1.27**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**1.27**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**6.6**		mg/L	0.5	0.4	SW846 9056	06/30/2024 02:12	06/30/2024 02:12	JBP1
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	06/30/2024 02:12	06/30/2024 02:12	JBP1
Sulfate	**0.5**	J	mg/L	1	0.5	SW846 9056	06/30/2024 02:12	06/30/2024 02:12	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4060297-04**
Description: **MW10**

Sample Collection Date Time: 06/24/2024 15:14
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U, L1, V1	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Arsenic	**0.0014**		mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Barium	**0.163**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:47	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Boron	**0.52**		mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:54	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Calcium	**8.85**		mg/L	0.50	0.25	SW846 6010 B	06/28/2024 09:15	07/02/2024 22:08	AKB
Chromium	**0.0007**	J	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Lead	ND	V1, U	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Lithium	**0.60**		mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:47	MRWD
Mercury	**0.0002**	J	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Molybdenum	**0.005**	J	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:47	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:01	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**9.11**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**448**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**-0.440**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.669**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**0.669**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.669**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**15.5**		mg/L	0.5	0.4	SW846 9056	06/30/2024 02:39	06/30/2024 02:39	JBP1
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	06/30/2024 02:39	06/30/2024 02:39	JBP1
Sulfate	**19**		mg/L	1	0.5	SW846 9056	06/30/2024 02:39	06/30/2024 02:39	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4060297-05**
Description: **DUPLICATE**

Sample Collection Date Time: 06/24/2024 00:00
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Arsenic	**0.0013**		mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Barium	**0.169**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:49	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Boron	**0.51**		mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:57	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Calcium	**10.0**		mg/L	0.50	0.25	SW846 6010 B	06/28/2024 09:15	07/02/2024 22:27	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Lead	**0.001**	V1, J	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Lithium	**0.54**		mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:49	MRWD
Mercury	**0.0002**	J	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Molybdenum	**0.004**	J	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:49	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:04	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**9.09**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**450**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.261**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.843**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**1.10**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**1.10**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**15.6**		mg/L	0.5	0.4	SW846 9056	06/30/2024 03:07	06/30/2024 03:07	JBP1
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	06/30/2024 03:07	06/30/2024 03:07	JBP1
Sulfate	**19**		mg/L	1	0.5	SW846 9056	06/30/2024 03:07	06/30/2024 03:07	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4060297-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 06/24/2024 00:00
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Barium	ND	L1, V1, U	mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Boron	ND	L1, U	mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/02/2024 22:37	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Calcium	ND	U	mg/L	0.50	0.25	SW846 6010 B	06/28/2024 09:15	07/02/2024 22:37	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Lead	ND	V1, U	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Lithium	ND	V1, U	mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:52	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 20:08	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**6.49**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**144**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.122**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.525**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**0.647**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.647**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	06/30/2024 04:56	06/30/2024 04:56	JBP1
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	06/30/2024 04:56	06/30/2024 04:56	JBP1
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	06/30/2024 04:56	06/30/2024 04:56	JBP1

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Notes for work order 4060297

- 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.
E	Concentration exceeds calibration range
G2	Residue yield was greater than the method required 200mg.
H3	Sample received and analyzed past holding time.
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.

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

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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 BDF2893 - EPA 200.2										
Blank (BDF2893-BLK1)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:46										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Blank (BDF2893-BLK2)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 19:13										
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
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDF2893-BLK3)										
Prepared: 6/28/2024 9:15, Analyzed: 7/3/2024 13:17										
Barium	ND	0.004	mg/L							U
Selenium	ND	0.003	mg/L							U
Blank (BDF2893-BLK5)										
Prepared: 6/28/2024 9:15, Analyzed: 7/5/2024 14:32										
Boron	ND	0.10	mg/L							U
LCS (BDF2893-BS1)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:49										
Boron	0.16	0.10	mg/L	0.125		130	85-115			L1
Calcium	6.77	0.50	mg/L	6.25		108	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDF2893 - EPA 200.2										
LCS (BDF2893-BS2)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 19:17										
Mercury	0.0029	0.0005	mg/L	0.00250		115	85-115			
Antimony	0.078	0.005	mg/L	0.0625		125	85-115			L1
Molybdenum	0.07	0.01	mg/L	0.0625		110	85-115			
Arsenic	0.0673	0.0010	mg/L	0.0625		108	85-115			
Barium	0.074	0.004	mg/L	0.0625		118	85-115			L1
Beryllium	0.0680	0.0020	mg/L	0.0625		109	85-115			
Cadmium	0.0711	0.0010	mg/L	0.0625		114	85-115			
Chromium	0.0657	0.0020	mg/L	0.0625		105	85-115			
Cobalt	0.066	0.004	mg/L	0.0625		106	85-115			
Lead	0.070	0.002	mg/L	0.0625		113	85-115			
Lithium	0.07	0.02	mg/L	0.0625		109	85-115			
Selenium	0.085	0.003	mg/L	0.0625		136	85-115			L1
Thallium	0.0712	0.0020	mg/L	0.0625		114	85-115			
LCS (BDF2893-BS3)										
Prepared: 6/28/2024 9:15, Analyzed: 7/3/2024 13:19										
Barium	0.068	0.004	mg/L	0.0625		109	85-115			
Selenium	0.064	0.003	mg/L	0.0625		103	85-115			
LCS (BDF2893-BS5)										
Prepared: 6/28/2024 9:15, Analyzed: 7/5/2024 14:35										
Boron	0.13	0.10	mg/L	0.125		105	85-115			
Matrix Spike (BDF2893-MS1) **Source: 4060296-02**										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 22:49										
Boron	ND	1.00	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	24.7	5.00	mg/L	6.25	17.9	109	80-120			D2
Matrix Spike (BDF2893-MS2) **Source: 4060296-02**										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:11										
Mercury	0.0028	0.0005	mg/L	0.00250	ND	111	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	ND	110	80-120			
Antimony	0.078	0.005	mg/L	0.0625	ND	125	80-120			M1
Arsenic	0.0639	0.0010	mg/L	0.0625	0.0004	102	80-120			
Barium	1.17	0.004	mg/L	0.0625	1.07	163	80-120			M3, E
Beryllium	0.0659	0.0020	mg/L	0.0625	ND	105	80-120			
Cadmium	0.0695	0.0010	mg/L	0.0625	ND	111	80-120			
Chromium	0.0640	0.0020	mg/L	0.0625	ND	102	80-120			
Cobalt	0.063	0.004	mg/L	0.0625	ND	101	80-120			
Lead	0.069	0.002	mg/L	0.0625	ND	110	80-120			
Lithium	0.07	0.02	mg/L	0.0625	0.008	107	80-120			
Selenium	0.059	0.003	mg/L	0.0625	ND	94.8	80-120			
Thallium	0.0692	0.0020	mg/L	0.0625	ND	111	80-120			

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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 BDF2893 - EPA 200.2										
Matrix Spike Dup (BDF2893-MSD1)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 22:53										
Boron	ND	1.00	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	24.5	5.00	mg/L	6.25	17.9	106	80-120	0.850	20	D2
Matrix Spike Dup (BDF2893-MSD2)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:15										
Molybdenum	0.07	0.01	mg/L	0.0625	ND	108	80-120	1.22	20	
Antimony	0.069	0.005	mg/L	0.0625	ND	111	80-120	12.0	20	
Mercury	0.0026	0.0005	mg/L	0.00250	ND	103	80-120	7.35	20	
Arsenic	0.0646	0.0010	mg/L	0.0625	0.0004	103	80-120	1.05	20	
Barium	1.07	0.004	mg/L	0.0625	1.07	NR	80-120	9.62	20	E
Beryllium	0.0587	0.0020	mg/L	0.0625	ND	93.9	80-120	11.5	20	
Cadmium	0.0623	0.0010	mg/L	0.0625	ND	99.7	80-120	11.0	20	
Chromium	0.0639	0.0020	mg/L	0.0625	ND	102	80-120	0.215	20	
Cobalt	0.064	0.004	mg/L	0.0625	ND	102	80-120	0.690	20	
Lead	0.062	0.002	mg/L	0.0625	ND	98.4	80-120	10.9	20	
Lithium	0.07	0.02	mg/L	0.0625	0.008	94.6	80-120	10.7	20	
Selenium	0.059	0.003	mg/L	0.0625	ND	93.6	80-120	1.28	20	
Thallium	0.0624	0.0020	mg/L	0.0625	ND	99.9	80-120	10.3	20	
Post Spike (BDF2893-PS1)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 23:05										
Boron	ND	1.00	mg/L	0.125	ND		75-125			D2, M2, U
Calcium	25.1	5.00	mg/L	6.25	17.9	115	75-125			D2
Post Spike (BDF2893-PS2)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:19										
Antimony	0.066	0.005	mg/L	0.0625	ND	105	75-125			
Mercury	0.0026	0.0005	mg/L	0.00250	ND	104	75-125			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	103	75-125			
Arsenic	0.0611	0.0010	mg/L	0.0625	0.0004	97.8	75-125			
Barium	1.08	0.004	mg/L	0.0625	1.07	22.2	75-125			M3, E
Beryllium	0.0575	0.0020	mg/L	0.0625	ND	91.9	75-125			
Cadmium	0.0606	0.0010	mg/L	0.0625	ND	96.9	75-125			
Chromium	0.0608	0.0020	mg/L	0.0625	ND	97.3	75-125			
Cobalt	0.061	0.004	mg/L	0.0625	ND	97.0	75-125			
Lead	0.060	0.002	mg/L	0.0625	ND	95.9	75-115			
Lithium	0.07	0.02	mg/L	0.0625	0.008	92.4	75-125			
Selenium	0.060	0.003	mg/L	0.0625	ND	96.6	75-125			
Thallium	0.0612	0.0020	mg/L	0.0625	ND	97.8	75-125			

Pace Analytical Services, LLC
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www.pacelabs.com

Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDF2239 - Default Prep Micro										
LCS (BDF2239-BS1)										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	5.03		Std. Units	5.00		101	98.8-101.2			
LCS (BDF2239-BS2)										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	5.06		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDF2239-DUP1) **Source: 4060297-03**										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	7.36	0.10	Std. Units		7.32			0.545	10	H3
Duplicate (BDF2239-DUP2) **Source: 4060297-04**										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	9.11	0.10	Std. Units		9.11			0.00	10	H3
Batch BDF2678 - Default Prep Wet Chem										
Blank (BDF2678-BLK1)										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDF2678-BS1)										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	90		mg/L	90.0		100	80-120			
Duplicate (BDF2678-DUP1) **Source: 4060296-01**										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	632	50	mg/L		670			5.84	10	
Duplicate (BDF2678-DUP2) **Source: 4065001-01**										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	262000	833	mg/L		262000			0.0763	10	G2

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDF3124 - Default Prep IC										
Blank (BDF3124-BLK1)										
Prepared: 6/30/2024 7:40, Analyzed: 6/30/2024 7:40										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDF3124-BS1)										
Prepared: 6/30/2024 7:13, Analyzed: 6/30/2024 7:13										
Chloride	12.2		mg/L	12.5		97.8	90-110			
Fluoride	4.9		mg/L	5.00		98.6	90-110			
Sulfate	24		mg/L	25.0		96.8	90-110			
Matrix Spike (BDF3124-MS1) **Source: 4060296-01**										
Prepared: 6/30/2024 6:18, Analyzed: 6/30/2024 6:18										
Chloride	28.6		mg/L	12.5	16.6	96.1	75-125			
Fluoride	5.3		mg/L	5.00	0.3	99.6	75-125			
Sulfate	239		mg/L	25.0	217	91.2	75-125			
Matrix Spike Dup (BDF3124-MSD1) **Source: 4060296-01**										
Prepared: 6/30/2024 6:45, Analyzed: 6/30/2024 6:45										
Fluoride	5.3		mg/L	5.00	0.3	99.9	75-125	0.263	15	
Chloride	28.5		mg/L	12.5	16.6	95.3	75-125	0.354	15	
Sulfate	239		mg/L	25.0	217	88.3	75-125	0.298	15	

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2015 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 MS Drinking Water MADV
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 4060297

Shipped By: Client

Temperature: 4.60° 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	☑

Pace Analytical Services LLC Kentucky
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Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#:
Quote#

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___

Samples Chlorinated? Yes ___ No X

*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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-01 A	~~06/24/24~~ 06/24/24	1813	Plastic 500mL pH<2 w/HNO3	1	MW7	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060297-01 B	06/24/24	1813	Plastic 1L	1	MW7	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060297-01 C	06/24/24	1813	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW7	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060297-01 D	06/24/24	1813	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-01 E	06/24/24	1813	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Thermometer Serial Number
✓230753815
240288915

Preservation Check Performed by: JDG

pH Paper Lot #: 228022

Temperature 4.6 °C

Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/24/24 Time (24 hr) 1813

pH 7.08 Cond ~~(umho)~~ mS/cm .404 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.8 or (oF) _____ Static Water Level _____ DO (mg/L) 4.11 Turb. (NTU) 7.78

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

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Pace Analytical Services LLC Kentucky
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Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-01 F	06/04/24	1613	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW7	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4060297-02 A	06/04/24	1351	Plastic 500mL pH<2 w/HNO3	1	MW8	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060297-02 B	06/04/24	1351	Plastic 1L	1	MW8	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060297-02 C	06/04/24	1351	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW8	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060297-02 D	06/04/24	1351	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

MW-4
Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/04/24 Time (24 hr) 1351

pH 7.00 Cond ~~mS/cm~~ umho/cm 2.404 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 20.2 or (oF) _____ Static Water Level _____ DO (mg/L) 2.07 Turb. (NTU) 5.70

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-02 E	06/24/24	1351	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-02 F	06/24/24	1351	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4060297-03 A	06/24/24	1655	Plastic 500mL pH<2 w/HNO3	1	MW9	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060297-03 B	06/24/24	1655	Plastic 1L	1	MW9	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060297-03 C	06/24/24	1655	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW9	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

MW-9
Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/24/24 Time (24 hr) 1655

pH 6.81 Cond ~~umho~~ mS/cm .487 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 19.7 or (oF) _____ Static Water Level _____ DO (mg/L) 1.83 Turb. (NTU) 24.21

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Ancell *required information*

Compliance Monitoring? Yes ___ No ___

Samples Chlorinated? Yes ___ No X

*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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-03 D	06/24/24	1655	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-03 E	06/24/24	1655	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-03 F	06/24/24	1655	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW9	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4060297-04 A	06/24/24	1514	Plastic 500mL pH<2 w/HNO3	1	MW10	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060297-04 B	06/24/24	1514	Plastic 1L	1	MW10	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056

Preservation Check Performed by: JDG pH Paper Lot #: _____

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	6-26-24	1540

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
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Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

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Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___

Samples Chlorinated? Yes ___ No X

*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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-04 C	06/24/24	1514	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW10	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060297-04 D	06/24/24	1514	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-04 E	06/24/24	1514	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-04 F	06/24/24	1514	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW10	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

MW-10
Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/24/24 Time (24 hr) 1514

pH 9.07 Cond (~~umho~~) mS/cm .695 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 19.8 or (oF) _____ Static Water Level _____ DO (mg/L) 1.88 Turb. (NTU) 6.99

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

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Robards, KY 42452

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Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___
Samples Chlorinated? Yes ___ No X

*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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-05 A	06/24/24		Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060297-05 B	06/24/24		Plastic 1L	1	DUPLICATE	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060297-05 C	06/24/24		Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060297-05 D	06/24/24		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-05 E	06/24/24		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 5/10/2024 8:28:17AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-05 F	06/24/24	✓	Plastic 1L pH<2 w/HNO3 (Sub)	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4060297-06 A	06/24/24	✓	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060297-06 B	06/24/24	✓	Plastic 1L	1	FIELD BLANK	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060297-06 C	06/24/24	✓	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	FIELD BLANK	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060297-06 D	06/24/24	✓	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 5/10/2024 8:28:17AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___
Samples Chlorinated? Yes ___ No X

*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 # 4060297 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060297-06 E	06/24/24		Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060297-06 F	06/24/24		Plastic 1L pH<2 w/HNO3 (Sub)	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

July 17, 2024

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

RE: Project: 4060297
Pace Project No.: 30696416

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on June 28, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4060297
Pace Project No.: 30696416

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4060297
Pace Project No.: 30696416

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30696416001	**4060297-01**	Water	06/24/24 18:23	06/28/24 10:20
30696416002	**4060297-02**	Water	06/24/24 13:51	06/28/24 10:20
30696416003	**4060297-03**	Water	06/24/24 16:55	06/28/24 10:20
30696416004	**4060297-04**	Water	06/24/24 15:14	06/28/24 10:20
30696416005	**4060297-05**	Water	06/24/24 00:00	06/28/24 10:20
30696416006	**4060297-06**	Water	06/24/24 00:00	06/28/24 10:20

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Greensburg, PA 15601
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SAMPLE ANALYTE COUNT

Project: 4060297
Pace Project No.: 30696416

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30696416001	**4060297-01**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696416002	**4060297-02**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696416003	**4060297-03**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696416004	**4060297-04**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696416005	**4060297-05**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696416006	**4060297-06**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4060297
Pace Project No.: 30696416

Sample: 4060297-01 **Lab ID: 30696416001** Collected: 06/24/24 18:23 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.000 ± 0.441 (0.893) C:NA T:91%**	pCi/L	07/16/24 14:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.677 ± 0.392 (0.707) C:73% T:83%**	pCi/L	07/16/24 12:04	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.677 ± 0.833 (1.60)**	pCi/L	07/17/24 15:40	7440-14-4	

Sample: 4060297-02 **Lab ID: 30696416002** Collected: 06/24/24 13:51 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.379 ± 0.803 (1.41) C:NA T:89%**	pCi/L	07/16/24 14:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.15 ± 0.470 (0.733) C:77% T:80%**	pCi/L	07/16/24 12:04	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.53 ± 1.27 (2.14)**	pCi/L	07/17/24 15:40	7440-14-4	

Sample: 4060297-03 **Lab ID: 30696416003** Collected: 06/24/24 16:55 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.521 ± 0.763 (1.30) C:NA T:92%**	pCi/L	07/16/24 14:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.744 ± 0.511 (1.01) C:73% T:84%**	pCi/L	07/16/24 12:04	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.27 ± 1.27 (2.31)**	pCi/L	07/17/24 15:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4060297
Pace Project No.: 30696416

Sample: 4060297-04 **Lab ID: 30696416004** Collected: 06/24/24 15:14 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.440 ± 0.666 (1.41) C:NA T:89%**	pCi/L	07/16/24 14:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.669 ± 0.463 (0.906) C:74% T:86%**	pCi/L	07/16/24 12:04	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.669 ± 1.13 (2.32)**	pCi/L	07/17/24 15:40	7440-14-4	

Sample: 4060297-05 **Lab ID: 30696416005** Collected: 06/24/24 00:00 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.261 ± 0.746 (1.35) C:NA T:89%**	pCi/L	07/16/24 14:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.843 ± 0.461 (0.843) C:77% T:85%**	pCi/L	07/16/24 12:04	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.10 ± 1.21 (2.19)**	pCi/L	07/17/24 15:40	7440-14-4	

Sample: 4060297-06 **Lab ID: 30696416006** Collected: 06/24/24 00:00 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.122 ± 0.791 (1.46) C:NA T:86%**	pCi/L	07/16/24 14:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.525 ± 0.454 (0.918) C:76% T:79%**	pCi/L	07/16/24 12:05	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.647 ± 1.25 (2.38)**	pCi/L	07/17/24 15:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4060297
Pace Project No.: 30696416

QC Batch: 679441 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: 30696416001, 30696416002, 30696416003, 30696416004, 30696416005, 30696416006

METHOD BLANK: 3308013 Matrix: Water
Associated Lab Samples: 30696416001, 30696416002, 30696416003, 30696416004, 30696416005, 30696416006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0923 ± 0.211 (0.340) C:NA T:87%	pCi/L	07/16/24 14:39	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4060297
Pace Project No.: 30696416

QC Batch: 679443 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: 30696416001, 30696416002, 30696416003, 30696416004, 30696416005, 30696416006

METHOD BLANK: 3308016 Matrix: Water
Associated Lab Samples: 30696416001, 30696416002, 30696416003, 30696416004, 30696416005, 30696416006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.397 ± 0.384 (0.783) C:74% T:73%	pCi/L	07/16/24 12:04	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4060297
Pace Project No.: 30696416

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.

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4060297
Pace Project No.: 30696416

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30696416001	**4060297-01**	EPA 903.1	679441		
30696416002	**4060297-02**	EPA 903.1	679441		
30696416003	**4060297-03**	EPA 903.1	679441		
30696416004	**4060297-04**	EPA 903.1	679441		
30696416005	**4060297-05**	EPA 903.1	679441		
30696416006	**4060297-06**	EPA 903.1	679441		
30696416001	**4060297-01**	EPA 904.0	679443		
30696416002	**4060297-02**	EPA 904.0	679443		
30696416003	**4060297-03**	EPA 904.0	679443		
30696416004	**4060297-04**	EPA 904.0	679443		
30696416005	**4060297-05**	EPA 904.0	679443		
30696416006	**4060297-06**	EPA 904.0	679443		
30696416001	**4060297-01**	Total Radium Calculation	683137		
30696416002	**4060297-02**	Total Radium Calculation	683137		
30696416003	**4060297-03**	Total Radium Calculation	683137		
30696416004	**4060297-04**	Total Radium Calculation	683137		
30696416005	**4060297-05**	Total Radium Calculation	683137		
30696416006	**4060297-06**	Total Radium Calculation	683137		

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentu

4060297

WO# : 30696416

30696416

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:

Received by Pace Greensburg
Therm ID 17 Corr Factor +0.4
Receipt Temp 5.7
Corrected Temp 5.3
Correct Preservation (Y) N

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4060297-01	**Water**	**Sampled:06/24/2024 18:23**	**Specific Method**	001
Radium 228 (sub)		12/21/2024 18:23	EPA 904.0 Radium Sum C	
Radium Total (sub)		12/21/2024 18:23	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 18:23	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4060297-02	**Water**	**Sampled:06/24/2024 13:51**	**Specific Method**	002
Radium 226 (sub)		12/21/2024 13:51	EPA 903.1	
Radium 228 (sub)		12/21/2024 13:51	EPA 904.0 Radium Sum C	
Radium Total (sub)		12/21/2024 13:51	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4060297-03	**Water**	**Sampled:06/24/2024 16:55**	**Specific Method**	003
Radium Total (sub)		12/21/2024 16:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 16:55	EPA 903.1	
Radium 228 (sub)		12/21/2024 16:55	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Released By	Date	Received By	Date
	6/27/24		6/28/24 0820
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4060297

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4060297-04	**Water**	**Sampled:06/24/2024 15:14**	**Specific Method**	004
Radium 228 (sub)		12/21/2024 15:14	EPA 904.0 Radium Sum C	
Radium Total (sub)		12/21/2024 15:14	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 15:14	EPA 903.1	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER 0

Sample ID: 4060297-05	**Water**	**Sampled:06/24/2024 00:00**	**Specific Method**	005
Radium 226 (sub)		12/21/2024 00:00	EPA 903.1	
Radium 228 (sub)		12/21/2024 00:00	EPA 904.0 Radium Sum C	
Radium Total (sub)		12/21/2024 00:00	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER 0

Sample ID: 4060297-06	**Water**	**Sampled:06/24/2024 00:00**	**Specific Method**	006
Radium Total (sub)		12/21/2024 00:00	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 00:00	EPA 903.1	
Radium 228 (sub)		12/21/2024 00:00	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER 0

WO# : 30696416

PM: TAW Due Date: 07/22/24

CLIENT: PACE_44_MVKY

Released By	Date	Received By	Date
	6/27/24	Jacob Smith - Pace	6/28/24 1020
Released By	Date	Received By	Date

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample C Greensburg

Effective Date: 01/04/2024

WO# : 30696416

PM: TAW Due Date: 07/22/24

CLIENT: PACE_44_MVKY

Client Name: Pace - Madisonville, KY

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

Tracking Number: 1Z 09F 870 01 3889 7795

Initial / Date

Examined By: EJ 6/29/24

Labeled By: EJ 6/29/24

Temped By: JS 6/28/24

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals Intact: ☐ Yes ☑ No

Thermometer Used: 17 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 3.7 °C Correction Factor: +0.4 °C Final Temp: 4.3 °C 6.5

Temp should be above freezing to 6°C 6.9

	Yes	No	NA
Comments:			
Chain of Custody Present	✓		
Chain of Custody Filled Out:	✓		
-Were client corrections present on COC		✓	
Chain of Custody Relinquished	✓		
Sampler Name & Signature on COC:		✓	
Sample Labels match COC:		—	
-Includes date/time/ID			
Matrix: WT			
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 samples field filtered:			✓
Organic Samples checked for dichlorination			✓
Filtered volume received for dissolved tests:			✓
All containers checked for preservation:	✓		
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix			
All containers meet method preservation requirements:	✓		
8260C/D: Headspace in VOA Vials (> 6mm)			✓
624.1: Headspace in VOA Vials (0mm)			✓
Radon: Headspace in RAD Vials (0mm)			✓
Trip Blank Present:			✓
Rad Samples Screened <.05 mrem/hr.	✓		

pH paper Lot# 10D2931

D.P.D. Residual Chlorine Lot #

1.
2.
3.
4.
5. No sample date on sample bottles
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.

pH<2

Initial when completed EJ Date/Time of Preservation

Lot# of added Preservative

17.
18.
19.

Trip blank custody seal present? YES or NO

Initial when completed JS Date: 6/28/24 Survey Meter SN: 25044380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Page 1 of 1

Qualtrax ID: 55680

Client _____

Site 4060297

Page _____ of _____

Profile/EZ Login Number 11851

Notes _____

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						W																						
002	↓						↓																						
003																													
004																													
005																													
006	↓						↓																						

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
BG	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
AG	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG	250mL amber glass unpreserved	GN	General

Plastic/Misc.

GCUB	1 gallon cubitainer	EZI	5g Encore
12GN	1/2 gallon cubitainer	VOAK	Kit Volatile Solid
SP5T	120mL coliform Na Thiosulfate		
BP1N	1L p		
BP1U	1L p		
BP3S	250r		
BP3N	250r		
BP3U	250r		
BP3B	250mL plastic NAOH		
BP2S	500mL plastic H2SO4		
BP2U	500mL plastic unpreserved	WP	Wipe

WO# : 30696416

PM: TAW Due Date: 07/22/24

CLIENT: PACE_44_MVKY

Qualtrax ID: 55678

Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
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Certificate of Analysis
4060296

Mark Bertram
Big Rivers Electric Corporation Reid/Green Station
9000 Highway 2096
Robards, KY 42452

Customer ID: 44-102032
Report Printed: 07/29/2024 16:23

Project Name:	HMPL Surface Impoundment Characterization Wells	Workorder:	4060296

Dear Mark Bertram

Enclosed are the analytical results for samples received by the laboratory 06/26/2024 15:40.

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4060296-01	MW-110/	Groundwater	06/24/2024 12:34	06/26/2024 15:40	Hunter Mizell
4060296-02	MW-111/	Groundwater	06/24/2024 11:40	06/26/2024 15:40	Hunter Mizell
4060296-03	MW-112/	Groundwater	06/24/2024 10:38	06/26/2024 15:40	Hunter Mizell

LabNumber	Measurement	Value
4060296-01	Field Conductance	941
	Field Dissolved Oxygen	2.48
	Field pH	7.05
	Field Temp (C)	18.1
	Field Turbidity	51.35
4060296-02	Field Dissolved Oxygen	1.75
	Field Flow (MGD)	495
	Field pH	7.84
	Field Temp (C)	16.0
	Field Turbidity	7.69
4060296-03	Field Conductance	514
	Field Dissolved Oxygen	1.97
	Field pH	7.34
	Field Temp (C)	16.2
	Field Turbidity	24.53

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Madisonville, KY 42431
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ANALYTICAL RESULTS

Lab Sample ID: **4060296-01**
Description: **MW-110**

Sample Collection Date Time: 06/24/2024 12:34
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Arsenic	**0.0006**	J	mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Barium	**0.047**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:22	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Boron	**0.53**		mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:38	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Calcium	**98.9**	D1	mg/L	5.00	2.50	SW846 6010 B	06/28/2024 09:15	07/02/2024 20:55	AKB
Chromium	**0.0022**		mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Lead	**0.001**	V1, J	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Lithium	**0.01**	V1, J	mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:22	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:21	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.58**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**670**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**-0.443**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.742**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**0.742**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.742**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**18.4**		mg/L	0.5	0.4	SW846 9056	06/29/2024 23:00	06/29/2024 23:00	JBP1
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	06/29/2024 23:00	06/29/2024 23:00	JBP1
Sulfate	**241**		mg/L	1	0.5	SW846 9056	06/29/2024 23:00	06/29/2024 23:00	JBP1

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Madisonville, KY 42431
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ANALYTICAL RESULTS

Lab Sample ID: **4060296-02**
Description: **MW-111**

Sample Collection Date Time: 06/24/2024 11:40
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, M1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Arsenic	**0.0004**	J	mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Barium	**1.07**	D1, M3	mg/L	0.040	0.010	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:24	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Boron	**0.54**	M2	mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:41	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Calcium	**17.9**	D1	mg/L	5.00	2.50	SW846 6010 B	06/28/2024 09:15	07/02/2024 21:14	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Lead	ND	V1, U	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Lithium	**0.008**	V1, J	mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD
Selenium	ND	D2, U	mg/L	0.030	0.010	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:24	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:24	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**8.18**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**320**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**2.23**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**1.22**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**3.45**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**3.45**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**17.9**		mg/L	0.5	0.4	SW846 9056	06/29/2024 23:55	06/29/2024 23:55	JBP1
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	06/29/2024 23:55	06/29/2024 23:55	JBP1
Sulfate	**0.7**	J	mg/L	1	0.5	SW846 9056	06/29/2024 23:55	06/29/2024 23:55	JBP1

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ANALYTICAL RESULTS

Lab Sample ID: **4060296-03**
Description: **MW-112**

Sample Collection Date Time: 06/24/2024 10:38
Sample Received Date Time: 06/26/2024 15:40

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	L1, V1, U	mg/L	0.005	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Arsenic	**0.0014**		mg/L	0.0010	0.0004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Barium	**0.352**		mg/L	0.004	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:26	MRWD
Beryllium	ND	V1, U	mg/L	0.0020	0.0010	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Boron	**0.35**		mg/L	0.10	0.10	SW846 6010 B	06/28/2024 09:15	07/05/2024 14:44	AKB
Cadmium	ND	V1, U	mg/L	0.0010	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Calcium	**30.6**	D1	mg/L	5.00	2.50	SW846 6010 B	06/28/2024 09:15	07/02/2024 21:24	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Lead	ND	V1, U	mg/L	0.002	0.0005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Lithium	**0.007**	V1, J	mg/L	0.02	0.005	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Molybdenum	**0.006**	J	mg/L	0.01	0.002	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	06/28/2024 09:15	07/03/2024 13:26	MRWD
Thallium	ND	V1, U	mg/L	0.0020	0.0001	SW846-6020 A	06/28/2024 09:15	07/02/2024 19:28	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.94**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	06/26/2024 09:49	06/28/2024 15:11	AED
Total Dissolved Solids	**332**		mg/L	50	50	2540 C-2015	06/27/2024 12:57	06/27/2024 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.249**	_Sub	pCi/L			EPA 903.1	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**0.839**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
Radium	**1.09**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW
See Attached Subcontract Report	**1.09**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	07/29/2024 15:50	07/29/2024 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**13.3**		mg/L	0.5	0.4	SW846 9056	06/30/2024 00:22	06/30/2024 00:22	JBP1
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	06/30/2024 00:22	06/30/2024 00:22	JBP1
Sulfate	**30**		mg/L	1	0.5	SW846 9056	06/30/2024 00:22	06/30/2024 00:22	JBP1

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

Notes for work order 4060296

- 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.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
E	Concentration exceeds calibration range
G2	Residue yield was greater than the method required 200mg.
H3	Sample received and analyzed past holding time.
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.

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

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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 BDF2893 - EPA 200.2										
Blank (BDF2893-BLK1)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:46										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
Blank (BDF2893-BLK2)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 19:13										
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
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDF2893-BLK3)										
Prepared: 6/28/2024 9:15, Analyzed: 7/3/2024 13:17										
Barium	ND	0.004	mg/L							U
Selenium	ND	0.003	mg/L							U
Blank (BDF2893-BLK5)										
Prepared: 6/28/2024 9:15, Analyzed: 7/5/2024 14:32										
Boron	ND	0.10	mg/L							U
LCS (BDF2893-BS1)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:49										
Boron	0.16	0.10	mg/L	0.125		130	85-115			L1
Calcium	6.77	0.50	mg/L	6.25		108	85-115			

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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 BDF2893 - EPA 200.2										
LCS (BDF2893-BS2)										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 19:17										
Antimony	0.078	0.005	mg/L	0.0625		125	85-115			L1
Molybdenum	0.07	0.01	mg/L	0.0625		110	85-115			
Mercury	0.0029	0.0005	mg/L	0.00250		115	85-115			
Arsenic	0.0673	0.0010	mg/L	0.0625		108	85-115			
Barium	0.074	0.004	mg/L	0.0625		118	85-115			L1
Beryllium	0.0680	0.0020	mg/L	0.0625		109	85-115			
Cadmium	0.0711	0.0010	mg/L	0.0625		114	85-115			
Chromium	0.0657	0.0020	mg/L	0.0625		105	85-115			
Cobalt	0.066	0.004	mg/L	0.0625		106	85-115			
Lead	0.070	0.002	mg/L	0.0625		113	85-115			
Lithium	0.07	0.02	mg/L	0.0625		109	85-115			
Selenium	0.085	0.003	mg/L	0.0625		136	85-115			L1
Thallium	0.0712	0.0020	mg/L	0.0625		114	85-115			
LCS (BDF2893-BS3)										
Prepared: 6/28/2024 9:15, Analyzed: 7/3/2024 13:19										
Barium	0.068	0.004	mg/L	0.0625		109	85-115			
Selenium	0.064	0.003	mg/L	0.0625		103	85-115			
LCS (BDF2893-BS5)										
Prepared: 6/28/2024 9:15, Analyzed: 7/5/2024 14:35										
Boron	0.13	0.10	mg/L	0.125		105	85-115			
Matrix Spike (BDF2893-MS1) **Source: 4060296-02**										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 22:49										
Boron	ND	1.00	mg/L	0.125	ND		80-120			D2, M2, U
Calcium	24.7	5.00	mg/L	6.25	17.9	109	80-120			D2
Matrix Spike (BDF2893-MS2) **Source: 4060296-02**										
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:11										
Molybdenum	0.07	0.01	mg/L	0.0625	ND	110	80-120			
Mercury	0.0028	0.0005	mg/L	0.00250	ND	111	80-120			
Antimony	0.078	0.005	mg/L	0.0625	ND	125	80-120			M1
Arsenic	0.0639	0.0010	mg/L	0.0625	0.0004	102	80-120			
Barium	1.17	0.004	mg/L	0.0625	1.07	163	80-120			M3, E
Beryllium	0.0659	0.0020	mg/L	0.0625	ND	105	80-120			
Cadmium	0.0695	0.0010	mg/L	0.0625	ND	111	80-120			
Chromium	0.0640	0.0020	mg/L	0.0625	ND	102	80-120			
Cobalt	0.063	0.004	mg/L	0.0625	ND	101	80-120			
Lead	0.069	0.002	mg/L	0.0625	ND	110	80-120			
Lithium	0.07	0.02	mg/L	0.0625	0.008	107	80-120			
Selenium	0.059	0.003	mg/L	0.0625	ND	94.8	80-120			
Thallium	0.0692	0.0020	mg/L	0.0625	ND	111	80-120			

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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 BDF2893 - EPA 200.2										
Matrix Spike Dup (BDF2893-MSD1)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 22:53										
Boron	ND	1.00	mg/L	0.125	ND		80-120		20	D2, M2, U
Calcium	24.5	5.00	mg/L	6.25	17.9	106	80-120	0.850	20	D2
Matrix Spike Dup (BDF2893-MSD2)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:15										
Antimony	0.069	0.005	mg/L	0.0625	ND	111	80-120	12.0	20	
Molybdenum	0.07	0.01	mg/L	0.0625	ND	108	80-120	1.22	20	
Mercury	0.0026	0.0005	mg/L	0.00250	ND	103	80-120	7.35	20	
Arsenic	0.0646	0.0010	mg/L	0.0625	0.0004	103	80-120	1.05	20	
Barium	1.07	0.004	mg/L	0.0625	1.07	NR	80-120	9.62	20	E
Beryllium	0.0587	0.0020	mg/L	0.0625	ND	93.9	80-120	11.5	20	
Cadmium	0.0623	0.0010	mg/L	0.0625	ND	99.7	80-120	11.0	20	
Chromium	0.0639	0.0020	mg/L	0.0625	ND	102	80-120	0.215	20	
Cobalt	0.064	0.004	mg/L	0.0625	ND	102	80-120	0.690	20	
Lead	0.062	0.002	mg/L	0.0625	ND	98.4	80-120	10.9	20	
Lithium	0.07	0.02	mg/L	0.0625	0.008	94.6	80-120	10.7	20	
Selenium	0.059	0.003	mg/L	0.0625	ND	93.6	80-120	1.28	20	
Thallium	0.0624	0.0020	mg/L	0.0625	ND	99.9	80-120	10.3	20	
Post Spike (BDF2893-PS1)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 23:05										
Boron	ND	1.00	mg/L	0.125	ND		75-125			D2, M2, U
Calcium	25.1	5.00	mg/L	6.25	17.9	115	75-125			D2
Post Spike (BDF2893-PS2)	**Source: 4060296-02**									
Prepared: 6/28/2024 9:15, Analyzed: 7/2/2024 20:19										
Molybdenum	0.06	0.01	mg/L	0.0625	ND	103	75-125			
Antimony	0.066	0.005	mg/L	0.0625	ND	105	75-125			
Mercury	0.0026	0.0005	mg/L	0.00250	ND	104	75-125			
Arsenic	0.0611	0.0010	mg/L	0.0625	0.0004	97.8	75-125			
Barium	1.08	0.004	mg/L	0.0625	1.07	22.2	75-125			M3, E
Beryllium	0.0575	0.0020	mg/L	0.0625	ND	91.9	75-125			
Cadmium	0.0606	0.0010	mg/L	0.0625	ND	96.9	75-125			
Chromium	0.0608	0.0020	mg/L	0.0625	ND	97.3	75-125			
Cobalt	0.061	0.004	mg/L	0.0625	ND	97.0	75-125			
Lead	0.060	0.002	mg/L	0.0625	ND	95.9	75-115			
Lithium	0.07	0.02	mg/L	0.0625	0.008	92.4	75-125			
Selenium	0.060	0.003	mg/L	0.0625	ND	96.6	75-125			
Thallium	0.0612	0.0020	mg/L	0.0625	ND	97.8	75-125			

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDF2239 - Default Prep Micro										
LCS (BDF2239-BS1)										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	5.03		Std. Units	5.00		101	98.8-101.2			
LCS (BDF2239-BS2)										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	5.06		Std. Units	5.00		101	98.8-101.2			
Duplicate (BDF2239-DUP1) **Source: 4060297-03**										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	7.36	0.10	Std. Units		7.32			0.545	10	H3
Duplicate (BDF2239-DUP2) **Source: 4060297-04**										
Prepared: 6/28/2024 9:49, Analyzed: 6/28/2024 15:11										
pH (Lab)	9.11	0.10	Std. Units		9.11			0.00	10	H3
Batch BDF2678 - Default Prep Wet Chem										
Blank (BDF2678-BLK1)										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDF2678-BS1)										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	90		mg/L	90.0		100	80-120			
Duplicate (BDF2678-DUP1) **Source: 4060296-01**										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	632	50	mg/L		670			5.84	10	
Duplicate (BDF2678-DUP2) **Source: 4065001-01**										
Prepared: 6/27/2024 12:57, Analyzed: 6/27/2024 12:57										
Total Dissolved Solids	262000	833	mg/L		262000			0.0763	10	G2

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDF3124 - Default Prep IC										
Blank (BDF3124-BLK1)										
Prepared: 6/30/2024 7:40, Analyzed: 6/30/2024 7:40										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDF3124-BS1)										
Prepared: 6/30/2024 7:13, Analyzed: 6/30/2024 7:13										
Chloride	12.2		mg/L	12.5		97.8	90-110			
Fluoride	4.9		mg/L	5.00		98.6	90-110			
Sulfate	24		mg/L	25.0		96.8	90-110			
Matrix Spike (BDF3124-MS1) **Source: 4060296-01**										
Prepared: 6/30/2024 6:18, Analyzed: 6/30/2024 6:18										
Chloride	28.6		mg/L	12.5	16.6	96.1	75-125			
Fluoride	5.3		mg/L	5.00	0.3	99.6	75-125			
Sulfate	239		mg/L	25.0	217	91.2	75-125			
Matrix Spike Dup (BDF3124-MSD1) **Source: 4060296-01**										
Prepared: 6/30/2024 6:45, Analyzed: 6/30/2024 6:45										
Fluoride	5.3		mg/L	5.00	0.3	99.9	75-125	0.263	15	
Chloride	28.5		mg/L	12.5	16.6	95.3	75-125	0.354	15	
Sulfate	239		mg/L	25.0	217	88.3	75-125	0.298	15	

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2015 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 MS Drinking Water MADV
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 4060296

Shipped By: Client

Temperature: 5.20° 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	☑

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___

Samples Chlorinated? Yes ___ No X

*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 # 4060296 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060296-01 A	06/24/24	1234	Plastic 500mL pH<2 w/HNO3	1	MW-110	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060296-01 B	06/24/24	1234	Plastic 1L	1	MW-110	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060296-01 C	06/24/24	1234	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-110	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060296-01 D	06/24/24	1234	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060296-01 E	06/24/24	1234	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Thermometer Serial Number
✓ 230753815
240288915
Temperature 5.2 °C

Preservation Check Performed by: JAG

pH Paper Lot #: 228022

Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/24/24 Time (24 hr) 1234

pH 7.05 Cond (~~umho~~) ms/cm .441 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.1 or (oF) _____ Static Water Level _____ DO (mg/L) 2.48 Turb. (NTU) 51.35

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 5/10/2024 8:28:07AM

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Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___

Samples Chlorinated? Yes ___ No X

*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 # 4060296 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060296-01 F	06/24/24	1234	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-110	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4060296-02 A	06/24/24	1140	Plastic 500mL pH<2 w/HNO3	1	MW-111	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060296-02 B	06/24/24	1140	Plastic 1L	1	MW-111	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060296-02 C	06/24/24	1140	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-111	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4060296-02 D	06/24/24	1140	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-111	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

MW-111
Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/24/24 Time (24 hr) 1140

pH 7.84 Cond ~~(umho)~~ mS/cm .495 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.0 or (oF) _____ Static Water Level _____ DO (mg/L) 1.25 Turb. (NTU) 7.69

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 5/10/2024 8:28:07AM

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

Phone: (270) 844-6000
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State: Ky

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Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___
Samples Chlorinated? Yes ___ No X

*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 # 4060296 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060296-02 E	06/24/24	1146	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-111	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060296-02 F	06/24/24	1140	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-111	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4060296-03 A	06/24/24	1038	Plastic 500mL pH<2 w/HNO3	1	MW-112	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4060296-03 B	06/24/24	1038	Plastic 1L	1	MW-112	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4060296-03 C	06/24/24	1038	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-112	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG

pH Paper Lot #: _____

MW-112
Field data collected by: Hunter Mizell Date (mm/dd/yy) 06/24/24 Time (24 hr) 1038

pH 7.34 Cond (~~umho~~) mS/cm .514 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.2 or (oF) _____ Static Water Level _____ DO (mg/L) 1.97 Turb. (NTU) 24.53

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6.26.24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 5/10/2024 8:28:07AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 06/10/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Hunter Mizell
required information

Compliance Monitoring? Yes ___ No ___
Samples Chlorinated? Yes ___ No X

*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 # 4060296 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4060296-03 D	06/24/24	1638	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-112	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060296-03 E	06/24/24	1638	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-112	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4060296-03 F	06/24/24	1638	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-112	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG pH Paper Lot #: _____

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		6-26-24	1540

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 5/10/2024 8:28:07AM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

July 17, 2024

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

RE: Project: 4060296
Pace Project No.: 30696417

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on June 28, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4060296
Pace Project No.: 30696417

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4060296
Pace Project No.: 30696417

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30696417001	**4060296-01**	Water	06/24/24 12:34	06/28/24 10:20
30696417002	**4060296-02**	Water	06/24/24 11:40	06/28/24 10:20
30696417003	**4060296-03**	Water	06/24/24 10:38	06/28/24 10:20

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 4060296
Pace Project No.: 30696417

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30696417001	**4060296-01**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696417002	**4060296-02**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30696417003	**4060296-03**	EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4060296
Pace Project No.: 30696417

Sample: 4060296-01 **Lab ID: 30696417001** Collected: 06/24/24 12:34 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.443 ± 0.736 (1.52) C:NA T:86%**	pCi/L	07/16/24 14:54	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.742 ± 0.437 (0.811) C:78% T:81%**	pCi/L	07/16/24 12:05	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.742 ± 1.17 (2.33)**	pCi/L	07/17/24 15:40	7440-14-4	

Sample: 4060296-02 **Lab ID: 30696417002** Collected: 06/24/24 11:40 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**2.23 ± 0.971 (1.18) C:NA T:90%**	pCi/L	07/16/24 14:54	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.22 ± 0.449 (0.649) C:77% T:90%**	pCi/L	07/16/24 12:05	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**3.45 ± 1.42 (1.83)**	pCi/L	07/17/24 15:40	7440-14-4	

Sample: 4060296-03 **Lab ID: 30696417003** Collected: 06/24/24 10:38 Received: 06/28/24 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.249 ± 0.790 (1.43) C:NA T:85%**	pCi/L	07/16/24 14:54	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.839 ± 0.448 (0.806) C:79% T:79%**	pCi/L	07/16/24 12:05	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.09 ± 1.24 (2.24)**	pCi/L	07/17/24 15:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4060296
Pace Project No.: 30696417

QC Batch: 679441
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30696417001, 30696417002, 30696417003

METHOD BLANK: 3308013 Matrix: Water
Associated Lab Samples: 30696417001, 30696417002, 30696417003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0923 ± 0.211 (0.340) C:NA T:87%	pCi/L	07/16/24 14:39	

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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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4060296
Pace Project No.: 30696417

QC Batch: 679443
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30696417001, 30696417002, 30696417003

METHOD BLANK: 3308016 Matrix: Water
Associated Lab Samples: 30696417001, 30696417002, 30696417003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.397 ± 0.384 (0.783) C:74% T:73%	pCi/L	07/16/24 12:04	

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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4060296
Pace Project No.: 30696417

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.

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4060296
Pace Project No.: 30696417

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30696417001	**4060296-01**	EPA 903.1	679441		
30696417002	**4060296-02**	EPA 903.1	679441		
30696417003	**4060296-03**	EPA 903.1	679441		
30696417001	**4060296-01**	EPA 904.0	679443		
30696417002	**4060296-02**	EPA 904.0	679443		
30696417003	**4060296-03**	EPA 904.0	679443		
30696417001	**4060296-01**	Total Radium Calculation	683137		
30696417002	**4060296-02**	Total Radium Calculation	683137		
30696417003	**4060296-03**	Total Radium Calculation	683137		

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SUBCONTRACT ORDER **WO# : 30696417**

Pace Analytical Services, LLC Kentucl

4060296

30696417

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:

Received by Pace Greensburg
Therm ID 17 Corr Factor +0.4
Receipt Temp 5.7
Corrected Temp 5.3
Correct Preservation (Y) / N

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4060296-01	**Water**	**Sampled:06/24/2024 12:34**	**Specific Method**	001
Radium Total (sub)		12/21/2024 12:34	EPA 904.0 Radium Sum C	
Radium 228 (sub)		12/21/2024 12:34	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 12:34	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4060296-02	**Water**	**Sampled:06/24/2024 11:40**	**Specific Method**	002
Radium Total (sub)		12/21/2024 11:40	EPA 904.0 Radium Sum C	
Radium 228 (sub)		12/21/2024 11:40	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 11:40	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Sample ID: 4060296-03	**Water**	**Sampled:06/24/2024 10:38**	**Specific Method**	003
Radium Total (sub)		12/21/2024 10:38	EPA 904.0 Radium Sum C	
Radium 228 (sub)		12/21/2024 10:38	EPA 904.0 Radium Sum C	
Radium 226 (sub)		12/21/2024 10:38	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0

Released By	Date	Received By	Date
[signature]	6/27/24	[signature] - Pace	6/28/24 1020
Released By	Date	Received By	Date

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Condition Upon Receipt-Greensburg

Effective Date: 01/04/2024

WO# : 30696417

PM: TAW Due Date: 07/22/24

CLIENT: PACE_44_MVKY

Client Name: Pace - Madisonville, KY Projec

Initial/Date

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

Tracking Number: 1Z 09F 870 01 3889 7795

Examined By: EZ 6/29/24

Labeled By: EZ 6/29/24

Temped By: JS 6/28/24

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals Intact: ☐ Yes ☑ No

Thermometer Used: 17 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 5.7 °C Correction Factor: +0.4 °C Final Temp: 6.1 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2931 D.P.D. Residual Chlorine Lot #

	Yes	No	NA	
Comments:				1.
Chain of Custody Present	✓			2.
Chain of Custody Filled Out: -Were client corrections present on COC	✓			
Chain of Custody Relinquished	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. No sample date on sample bottles
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 samples field filtered:			✓	13.
Organic Samples checked for dichlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation: exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements:				Initial when completed EZ Date/Time of Preservation
				Lot# of added Preservative
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:			✓	Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed JS Date: 6/28/24 Survey Meter SN: 25243B0

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Page 1 of 1

Qualtrax ID: 55680

Client _____

Site 4060296

Page _____ of _____

Profile/EZ Login Number 11851

Notes _____

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						W																					
002	WT						W																					
003	WT						W																					

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
BG	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
AG	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG	250mL amber glass unpreserved	GN	General

Plastic/Misc.

GCUB	1 gallon cubitainer
12GN	1/2 gallon cubitainer
SP5T	12[illegible]
BP1N	1L
BP1U	1L
BP3S	25
BP3N	25
BP3U	250mL plastic unpreserved
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit Volatile Solid
	[illegible]ab
	[illegible]ag
OL	Non-Aq Liquid
WP	Wipe

WO#: 30696417

PM: TAW Due Date: 07/22/24

CLIENT: PACE_44_MVKY

Page 28 of 28

Page 12 of 12

Qualtrax ID: 55678

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

Certificate of Analysis
4114045

Stacy Shelton
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson, KY 42419

Customer ID: 44-102032
Report Printed: 12/30/2024 13:18

Project Name:	HMPL Surface Impoundment	Workorder:	4114045

Dear Stacy Shelton

Enclosed are the analytical results for samples received by the laboratory 11/27/2024 09:03.

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 - 825 Industrial Road, Madisonville, KY 42431

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

Pace Analytical Services, LLC
P.O. Box 907
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SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
4114045-01	MW7/	Groundwater	11/25/2024 21:50	11/27/2024 9:03	Client
4114045-02	MW8/	Groundwater	11/26/2024 15:23	11/27/2024 9:03	Client
4114045-03	MW9/	Groundwater	11/26/2024 12:55	11/27/2024 9:03	Client
4114045-04	MW10/	Groundwater	11/26/2024 11:10	11/27/2024 9:03	Client
4114045-05	DUPLICATE/	Groundwater	11/25/2024 20:32	11/27/2024 9:03	Client
4114045-06	FIELD BLANK/	Water	11/26/2024 11:27	11/27/2024 9:03	Client

LabNumber	Measurement	Value
4114045-01	Field Conductance	0.445
	Field pH	7.91
	Field Temp (C)	14.89
4114045-02	Field Conductance	2.55
	Field pH	7.42
	Field Temp (C)	15.38
4114045-03	Field Conductance	0.519
	Field pH	7.16
	Field Temp (C)	16.48
4114045-04	Field Conductance	0.719
	Field pH	9.95
	Field Temp (C)	15.63

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ANALYTICAL RESULTS

Lab Sample ID: **4114045-01**
Description: **MW7**

Sample Collection Date Time: 11/25/2024 21:50
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 14:48	MRWD
Arsenic	**0.0034**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Barium	**0.084**		mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Boron	**0.33**		mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 21:43	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Calcium	**40.6**		mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 21:46	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Lithium	**0.008**	J	mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Molybdenum	**0.007**	J	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 18:55	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:48	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.93**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**224**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2.9**		mg/L	0.5	0.4	SW846 9056	12/04/2024 15:24	12/04/2024 15:24	CLS3
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	12/04/2024 15:24	12/04/2024 15:24	CLS3
Sulfate	**11**		mg/L	1	0.5	SW846 9056	12/04/2024 15:24	12/04/2024 15:24	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114045-02**
Description: **MW8**

Sample Collection Date Time: 11/26/2024 15:23
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 14:52	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Barium	**0.019**		mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Boron	**1.44**		mg/L	1.00	1.00	SW846 6010 B	11/29/2024 08:56	12/03/2024 21:52	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Calcium	**261**	D1	mg/L	50.0	25.0	SW846 6010 B	11/29/2024 08:56	12/04/2024 17:19	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Lithium	**0.04**		mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Molybdenum	**0.01**		mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 18:57	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:52	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.76**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**1410**		mg/L	250	250	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**53.2**		mg/L	0.5	0.4	SW846 9056	12/04/2024 15:52	12/04/2024 15:52	CLS3
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	12/04/2024 15:52	12/04/2024 15:52	CLS3
Sulfate	**1220**	D	mg/L	20	10	SW846 9056	12/04/2024 16:19	12/04/2024 16:19	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114045-03**
Description: **MW9**

Sample Collection Date Time: 11/26/2024 12:55
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 14:56	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Barium	**0.251**		mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 21:56	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Calcium	**61.0**	D1	mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 21:59	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Lithium	**0.007**	J	mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:00	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 14:56	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.59**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**336**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**6.9**		mg/L	0.5	0.4	SW846 9056	12/04/2024 16:47	12/04/2024 16:47	CLS3
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	12/04/2024 16:47	12/04/2024 16:47	CLS3
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	12/04/2024 16:47	12/04/2024 16:47	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114045-04**
Description: **MW10**

Sample Collection Date Time: 11/26/2024 11:10
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 15:18	MRWD
Arsenic	**0.0012**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Barium	**0.200**		mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Boron	**0.51**		mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:02	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Calcium	**10.6**	D1	mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:05	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Lithium	**0.58**		mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Mercury	**0.0002**	J	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Molybdenum	**0.004**	J	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:02	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:18	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**8.96**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**416**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**15.8**		mg/L	0.5	0.4	SW846 9056	12/04/2024 18:09	12/04/2024 18:09	CLS3
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	12/04/2024 18:09	12/04/2024 18:09	CLS3
Sulfate	**18**		mg/L	1	0.5	SW846 9056	12/04/2024 18:09	12/04/2024 18:09	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114045-05**
Description: **DUPLICATE**

Sample Collection Date Time: 11/25/2024 20:32
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 15:21	MRWD
Arsenic	**0.0018**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Barium	**0.063**		mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Boron	**0.52**		mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:21	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Calcium	**90.7**	D1	mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:24	AIS
Chromium	**0.0063**		mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Lead	**0.004**		mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Lithium	**0.02**		mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:04	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:21	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.81**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**568**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**18.3**		mg/L	0.5	0.4	SW846 9056	12/04/2024 18:36	12/04/2024 18:36	CLS3
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	12/04/2024 18:36	12/04/2024 18:36	CLS3
Sulfate	**213**		mg/L	1	0.5	SW846 9056	12/04/2024 18:36	12/04/2024 18:36	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114045-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 11/26/2024 11:27
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 15:25	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:28	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Calcium	ND	U	mg/L	0.50	0.25	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:28	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:07	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:25	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**6.75**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	ND	G1, U	mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	12/04/2024 19:31	12/04/2024 19:31	CLS3
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	12/04/2024 19:31	12/04/2024 19:31	CLS3
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	12/04/2024 19:31	12/04/2024 19:31	CLS3

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Notes for work order 4114045

- 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

D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
E	Concentration exceeds calibration range
G1	Residue yield was less than the method required 2.5mg.
H3	Sample received and analyzed past holding time.
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.
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.

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

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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 BDK2944 - EPA 200.2										
Blank (BDK2944-BLK1)										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 14:26										
Antimony	ND	0.005	mg/L							U
Molybdenum	ND	0.01	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	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDK2944-BLK2)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 18:32										
Selenium	ND	0.003	mg/L							U
Blank (BDK2944-BLK3)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 21:24										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
LCS (BDK2944-BS1)										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 14:30										
Mercury	0.0025	0.0005	mg/L	0.00250		99.2	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		99.3	85-115			
Antimony	0.063	0.005	mg/L	0.0625		100	85-115			
Arsenic	0.0627	0.0010	mg/L	0.0625		100	85-115			
Barium	0.062	0.004	mg/L	0.0625		99.0	85-115			
Beryllium	0.0613	0.0020	mg/L	0.0625		98.1	85-115			
Cadmium	0.0623	0.0010	mg/L	0.0625		99.6	85-115			
Chromium	0.0627	0.0020	mg/L	0.0625		100	85-115			
Cobalt	0.062	0.004	mg/L	0.0625		98.8	85-115			
Lead	0.060	0.002	mg/L	0.0625		96.4	85-115			
Lithium	0.06	0.02	mg/L	0.0625		96.3	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0606	0.0020	mg/L	0.0625		96.9	85-115			

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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 BDK2944 - EPA 200.2										
LCS (BDK2944-BS2)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 18:34										
Selenium	0.064	0.003	mg/L	0.0625		102	85-115			
LCS (BDK2944-BS3)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 21:27										
Boron	0.12	0.10	mg/L	0.125		98.9	85-115			
Calcium	6.36	0.50	mg/L	6.25		102	85-115			
Matrix Spike (BDK2944-MS1) **Source: 4111777-01**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:40										
Mercury	0.0024	0.0005	mg/L	0.00250	0.0002	86.7	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	98.7	80-120			
Antimony	0.062	0.005	mg/L	0.0625	ND	99.1	80-120			
Arsenic	0.0682	0.0010	mg/L	0.0625	0.0071	97.9	80-120			
Barium	0.235	0.004	mg/L	0.0625	0.213	34.7	80-120			M2
Beryllium	0.0532	0.0020	mg/L	0.0625	ND	85.1	80-120			
Cadmium	0.0588	0.0010	mg/L	0.0625	ND	94.1	80-120			
Chromium	0.0603	0.0020	mg/L	0.0625	ND	96.5	80-120			
Cobalt	0.057	0.004	mg/L	0.0625	ND	92.0	80-120			
Lead	0.055	0.002	mg/L	0.0625	0.0007	87.1	80-120			
Lithium	0.06	0.02	mg/L	0.0625	0.005	83.2	80-120			
Selenium	0.059	0.003	mg/L	0.0625	ND	95.1	80-120			
Thallium	0.0554	0.0020	mg/L	0.0625	0.0001	88.5	80-120			
Matrix Spike (BDK2944-MS2) **Source: 4114046-03**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:47										
Molybdenum	0.07	0.01	mg/L	0.0625	0.005	96.9	80-120			
Antimony	0.062	0.005	mg/L	0.0625	ND	99.3	80-120			
Mercury	0.0024	0.0005	mg/L	0.00250	ND	97.6	80-120			
Arsenic	0.0618	0.0010	mg/L	0.0625	0.0013	96.8	80-120			
Barium	0.377	0.004	mg/L	0.0625	0.329	76.2	80-120			M2
Beryllium	0.0570	0.0020	mg/L	0.0625	ND	91.1	80-120			
Cadmium	0.0593	0.0010	mg/L	0.0625	ND	94.9	80-120			
Chromium	0.0592	0.0020	mg/L	0.0625	ND	94.7	80-120			
Cobalt	0.058	0.004	mg/L	0.0625	ND	92.6	80-120			
Lead	0.056	0.002	mg/L	0.0625	ND	90.3	80-120			
Lithium	0.06	0.02	mg/L	0.0625	0.007	85.9	80-120			
Selenium	0.059	0.003	mg/L	0.0625	ND	94.3	80-120			
Thallium	0.0573	0.0020	mg/L	0.0625	ND	91.6	80-120			

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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 BDK2944 - EPA 200.2										
Matrix Spike (BDK2944-MS3)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 23:15										
Boron	0.14	0.10	mg/L	0.125	ND	115	80-120			
Calcium	267	0.50	mg/L	6.25	258	140	80-120			M3
Matrix Spike (BDK2944-MS4)	**Source: 4114046-03**									
Prepared: 11/29/2024 8:56, Analyzed: 12/4/2024 7:59										
Boron	0.46	0.10	mg/L	0.125	0.36	81.8	80-120			
Calcium	34.4	0.50	mg/L	6.25	30.8	57.5	80-120			M3
Matrix Spike Dup (BDK2944-MSD1)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:43										
Antimony	0.065	0.005	mg/L	0.0625	ND	104	80-120	5.08	20	
Mercury	0.0024	0.0005	mg/L	0.00250	0.0002	87.0	80-120	0.289	20	
Molybdenum	0.06	0.01	mg/L	0.0625	ND	101	80-120	1.95	20	
Arsenic	0.0700	0.0010	mg/L	0.0625	0.0071	101	80-120	2.58	20	
Barium	0.241	0.004	mg/L	0.0625	0.213	45.0	80-120	2.72	20	M2
Beryllium	0.0576	0.0020	mg/L	0.0625	ND	92.2	80-120	8.06	20	
Cadmium	0.0619	0.0010	mg/L	0.0625	ND	99.0	80-120	5.09	20	
Chromium	0.0618	0.0020	mg/L	0.0625	ND	98.9	80-120	2.41	20	
Cobalt	0.059	0.004	mg/L	0.0625	ND	95.1	80-120	3.35	20	
Lead	0.058	0.002	mg/L	0.0625	0.0007	91.3	80-120	4.64	20	
Lithium	0.06	0.02	mg/L	0.0625	0.005	90.2	80-120	7.34	20	
Selenium	0.061	0.003	mg/L	0.0625	ND	96.8	80-120	1.83	20	
Thallium	0.0584	0.0020	mg/L	0.0625	0.0001	93.3	80-120	5.27	20	
Matrix Spike Dup (BDK2944-MSD2)	**Source: 4114046-03**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 19:30										
Arsenic	0.0672	0.0010	mg/L	0.0625	0.0013	105	80-120	8.33	20	
Barium	0.418	0.004	mg/L	0.0625	0.329	142	80-120	10.3	20	M1
Selenium	0.061	0.003	mg/L	0.0625	ND	98.1	80-120	3.91	20	
Matrix Spike Dup (BDK2944-MSD3)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 23:19										
Boron	0.15	0.10	mg/L	0.125	ND	116	80-120	1.43	20	
Calcium	266	0.50	mg/L	6.25	258	116	80-120	0.570	20	

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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 BDK2944 - EPA 200.2										
Matrix Spike Dup (BDK2944-MSD4)	**Source: 4114046-03**									
Prepared: 11/29/2024 8:56, Analyzed: 12/4/2024 8:02										
Boron	0.49	0.10	mg/L	0.125	0.36	102	80-120	5.45	20	
Calcium	36.0	0.50	mg/L	6.25	30.8	83.7	80-120	4.65	20	
Post Spike (BDK2944-PS1)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 19:32										
Arsenic	71.4		ug/L	62.5	7.06	103	75-125			
Barium	265		ug/L	62.5	213	83.3	75-125			
Selenium	56.4		ug/L	62.5	0.052	90.1	75-125			
Post Spike (BDK2944-PS2)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 23:22										
Boron	146		ug/L	125	19.3	101	75-125			
Calcium	269000		ug/L	6250	258000	177	75-125			M3

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2894 - Default Prep Micro										
LCS (BDK2894-BS1)										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	4.97		Std. Units	5.00		99.4	98.8-101.2			
LCS (BDK2894-BS2)										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	5.01		Std. Units	5.00		100	98.8-101.2			
Duplicate (BDK2894-DUP1) **Source: 4114045-04**										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	8.95	0.10	Std. Units		8.96			0.112	10	H3
Duplicate (BDK2894-DUP2) **Source: 4114046-03**										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	8.07	0.10	Std. Units		8.06			0.124	10	H3
Batch BDK2960 - Default Prep Wet Chem										
Blank (BDK2960-BLK1)										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDK2960-BS1)										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	90		mg/L	90.0		100	80-120			
Duplicate (BDK2960-DUP1) **Source: 4111774-06**										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	4480	250	mg/L		4520			0.889	10	
Duplicate (BDK2960-DUP2) **Source: 4114716-01**										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	376	50	mg/L		366			2.70	10	

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDL0337 - Default Prep IC										
Blank (BDL0337-BLK1)										
Prepared: 12/4/2024 12:13, Analyzed: 12/4/2024 12:13										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDL0337-BS1)										
Prepared: 12/4/2024 11:45, Analyzed: 12/4/2024 11:45										
Chloride	12.4		mg/L	12.5		99.5	90-110			
Fluoride	4.9		mg/L	5.00		97.8	90-110			
Sulfate	25		mg/L	25.0		98.9	90-110			
Matrix Spike (BDL0337-MS1) **Source: 4114045-01**										
Prepared: 12/5/2024 0:36, Analyzed: 12/5/2024 0:36										
Chloride	14.9		mg/L	12.5	2.6	98.2	75-125			
Fluoride	5.3		mg/L	5.00	0.3	99.7	75-125			
Sulfate	35		mg/L	25.0	10	102	75-125			
Matrix Spike (BDL0337-MS2) **Source: 4114046-01**										
Prepared: 12/5/2024 1:31, Analyzed: 12/5/2024 1:31										
Fluoride	100		mg/L	100	0.3	99.9	75-125			D
Chloride	263		mg/L	250	16.3	98.6	75-125			D
Sulfate	718		mg/L	500	189	106	75-125			D
Matrix Spike Dup (BDL0337-MSD1) **Source: 4114045-01**										
Prepared: 12/5/2024 1:03, Analyzed: 12/5/2024 1:03										
Chloride	14.9		mg/L	12.5	2.6	97.9	75-125	0.215	15	
Fluoride	5.4		mg/L	5.00	0.3	102	75-125	1.83	15	
Sulfate	36		mg/L	25.0	10	104	75-125	1.49	15	
Matrix Spike Dup (BDL0337-MSD2) **Source: 4114046-01**										
Prepared: 12/5/2024 1:58, Analyzed: 12/5/2024 1:58										
Chloride	261		mg/L	250	16.3	98.0	75-125	0.610	15	D
Fluoride	96.9		mg/L	100	0.3	96.6	75-125	3.35	15	D
Sulfate	718		mg/L	500	189	106	75-125	0.0279	15	D

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2015 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 MS Drinking Water MADV
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 4114045

Shipped By: Client

Temperature: 3.40° 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	☑

Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment

Please Print Legibly

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

Influent: Start Date _____ Start time ~~_____~~ N/A End Date _____ End Time _____ Temp (oC) _____

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-01 A	11/25/24	2150	Plastic 500mL pH<2 w/HNO3	1	MW7	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ____				
4114045-01 B	11/25/24	2150	Plastic 1L	1	MW7	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114045-01 C	11/25/24	2150	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW7	g / c	Radium 226 (sub)
			Preservation Check: pH : ____				
4114045-01 D	11/25/24	2150	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
4114045-01 E	11/25/24	2150	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hummel Date (mm/dd/yy) 11/25/24 Time (24 hr) 2150

pH 7.91 Cond (umho/mS) 0.445 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 14.89 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-01 F	11/25/24	2150	Plastic 1L pH<2 w/HNO3 Sub	1	MW7	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4114045-02 A	11/26/24	1523	Plastic 500mL pH<2 w/HNO3	1	MW8	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4114045-02 B	11/26/24	1523	Plastic 1L	1	MW8	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114045-02 C	11/26/24	1523	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW8	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4114045-02 D	11/26/24	1523	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MC pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/26/24 Time (24 hr) 1523

pH 7.42 Cond (umho) 2.55 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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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825 Industrial Road
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Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

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Report To:
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Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-02 E	11/26/24	1523	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114045-02 F	11/26/24	1523	Plastic 1L pH<2 w/HNO3 Sub	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4114045-03 A	11/26/24	1255	Plastic 500mL pH<2 w/HNO3	1	MW9	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4114045-03 B	11/26/24	1255	Plastic 1L	1	MW9	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114045-03 C	11/26/24	1255	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW9	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MIC pH Paper Lot #: 213724

Field data collected by: Hunter Hill Date (mm/dd/yy) 11/26/24 Time (24 hr) 1255

pH 7.16 Cond (umho/~~mS~~) 0.519 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.98 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/27/24	0903

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Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-03 D	11/26/24	1255	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114045-03 E	11/26/24	1255	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114045-03 F	11/26/24	1255	Plastic 1L pH<2 w/HNO3 Sub	1 ✓	MW9	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4114045-04 A	11/26/24	1110	Plastic 500mL pH<2 w/HNO3	1	MW10	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4114045-04 B	11/26/24	1110	Plastic 1L	1	MW10	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056

Preservation Check Performed by: MK pH Paper Lot #: 23724

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/26/24 Time (24 hr) 1110

pH 9.95 Cond (umho) 0.719 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.63 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

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Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-04 C	11/26/24	1110	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW10	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4114045-04 D	11/26/24	1110	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114045-04 E	11/26/24	1110	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114045-04 F	11/26/24	1110	Plastic 1L pH<2 w/HNO3 Sub	1	MW10	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Ferrell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

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Robards, KY 42452

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Quote# _____

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Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-05 A	11/25/24	2032	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4114045-05 B	11/25/24	2032	Plastic 1L	1	DUPLICATE	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114045-05 C	11/25/24	2032	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4114045-05 D	11/25/24	2032	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114045-05 E	11/25/24	2032	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 283724

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/27/24	0903

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Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-05 F	11/25/24	2032	Plastic 1L pH<2 w/HNO3 Sub **Preservation Check: pH :** ___	1	DUPLICATE	g / c	Radium Total (sub)
4114045-06 A	11/26/24	1127	Plastic 500mL pH<2 w/HNO3 **Preservation Check: pH :** ___	1	FIELD BLANK	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
4114045-06 B	11/26/24	1127	Plastic 1L	1	FIELD BLANK	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114045-06 C	11/26/24	1127	Plastic 1L pH<2 w/HNO3 Rad 226 Sub **Preservation Check: pH :** ___	1	FIELD BLANK	g / c	Radium 226 (sub)
4114045-06 D	11/26/24	1127	Plastic 1L pH<2 w/HNO3 Rad 228 Sub **Preservation Check: pH :** ___	1	FIELD BLANK	g / c	Radium 228 (sub)

Preservation Check Performed by: MIL pH Paper Lot #: 213724

Field data collected by: Hunter Nimm Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/20/24	0903

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9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114045 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114045-06 E	11/26/24	1127	Plastic 1L pH<2 w/HNO3 Rad 228 Sub **Preservation Check: pH :** ✓	1	FIELD BLANK	g / c	Radium 228 (sub)
4114045-06 F	11/26/24	1127	Plastic 1L pH<2 w/HNO3 Sub **Preservation Check: pH :** —	1	FIELD BLANK	g / c	Radium Total (sub)

Thermometer Serial Number
230753815
240381205
Temperature 5.4 °C

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: _____ Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 23, 2024

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

RE: Project: 4114045
Pace Project No.: 30739132

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4114045
Pace Project No.: 30739132

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4114045
Pace Project No.: 30739132

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30739132001	**4114045-01 MW7**	Water	11/25/24 21:50	12/04/24 00:00
30739132002	**4114045-02 MW8**	Water	11/26/24 15:23	12/04/24 00:00
30739132003	**4114045-03 MW9**	Water	11/26/24 12:55	12/04/24 00:00
30739132004	**4114045-04 MW10**	Water	11/26/24 11:10	12/04/24 00:00
30739132005	**4114045-05 DUPLICATE**	Water	11/25/24 20:32	12/04/24 00:00
30739132006	**4114045-06 FIELD BLANK**	Water	11/26/24 11:27	12/04/24 00:00

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 4114045
Pace Project No.: 30739132

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30739132001	**4114045-01 MW7**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739132002	**4114045-02 MW8**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739132003	**4114045-03 MW9**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739132004	**4114045-04 MW10**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739132005	**4114045-05 DUPLICATE**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739132006	**4114045-06 FIELD BLANK**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4114045
Pace Project No.: 30739132

Sample: 4114045-01 MW7 **Lab ID: 30739132001** Collected: 11/25/24 21:50 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**1.03 ± 0.649 (0.896) C:NA T:91%**	pCi/L	12/23/24 13:16	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.921 ± 0.448 (0.760) C:73% T:91%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.95 ± 1.10 (1.66)**	pCi/L	12/23/24 15:24	7440-14-4	

Sample: 4114045-02 MW8 **Lab ID: 30739132002** Collected: 11/26/24 15:23 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.450 ± 0.352 (0.414) C:NA T:88%**	pCi/L	12/23/24 13:16	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.77 ± 0.582 (0.732) C:75% T:81%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**2.22 ± 0.934 (1.15)**	pCi/L	12/23/24 15:24	7440-14-4	

Sample: 4114045-03 MW9 **Lab ID: 30739132003** Collected: 11/26/24 12:55 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**1.08 ± 0.452 (0.122) C:NA T:97%**	pCi/L	12/23/24 13:16	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.29 ± 0.496 (0.733) C:73% T:93%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**2.37 ± 0.948 (0.855)**	pCi/L	12/23/24 15:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4114045
Pace Project No.: 30739132

Sample: 4114045-04 MW10 **Lab ID: 30739132004** Collected: 11/26/24 11:10 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.389 ± 0.604 (1.24) C:NA T:94%**	pCi/L	12/23/24 13:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.865 ± 0.440 (0.757) C:71% T:88%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.865 ± 1.04 (2.00)**	pCi/L	12/23/24 15:24	7440-14-4	

Sample: 4114045-05 DUPLICATE **Lab ID: 30739132005** Collected: 11/25/24 20:32 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.433 ± 0.501 (0.813) C:NA T:85%**	pCi/L	12/23/24 13:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.15 ± 0.492 (0.776) C:70% T:87%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.58 ± 0.993 (1.59)**	pCi/L	12/23/24 15:24	7440-14-4	

Sample: 4114045-06 FIELD BLANK **Lab ID: 30739132006** Collected: 11/26/24 11:27 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.141 ± 0.380 (0.817) C:NA T:95%**	pCi/L	12/23/24 13:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.216 ± 0.331 (0.715) C:76% T:88%**	pCi/L	12/20/24 14:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.216 ± 0.711 (1.53)**	pCi/L	12/23/24 15:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 4114045
Pace Project No.: 30739132

QC Batch: 713488 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: 30739132001, 30739132002, 30739132003, 30739132004, 30739132005, 30739132006

METHOD BLANK: 3475089 Matrix: Water
Associated Lab Samples: 30739132001, 30739132002, 30739132003, 30739132004, 30739132005, 30739132006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.900 ± 0.411 (0.656) C:76% T:85%	pCi/L	12/20/24 11:37	

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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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 4114045
Pace Project No.: 30739132

QC Batch: 713487 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: 30739132001, 30739132002, 30739132003, 30739132004, 30739132005, 30739132006

METHOD BLANK: 3475080 Matrix: Water
Associated Lab Samples: 30739132001, 30739132002, 30739132003, 30739132004, 30739132005, 30739132006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0372 ± 0.170 (0.400) C:NA T:92%	pCi/L	12/23/24 12:57	

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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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 4114045
Pace Project No.: 30739132

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.

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4114045
Pace Project No.: 30739132

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30739132001	**4114045-01 MW7**	EPA 903.1	713487		
30739132002	**4114045-02 MW8**	EPA 903.1	713487		
30739132003	**4114045-03 MW9**	EPA 903.1	713487		
30739132004	**4114045-04 MW10**	EPA 903.1	713487		
30739132005	**4114045-05 DUPLICATE**	EPA 903.1	713487		
30739132006	**4114045-06 FIELD BLANK**	EPA 903.1	713487		
30739132001	**4114045-01 MW7**	EPA 904.0	713488		
30739132002	**4114045-02 MW8**	EPA 904.0	713488		
30739132003	**4114045-03 MW9**	EPA 904.0	713488		
30739132004	**4114045-04 MW10**	EPA 904.0	713488		
30739132005	**4114045-05 DUPLICATE**	EPA 904.0	713488		
30739132006	**4114045-06 FIELD BLANK**	EPA 904.0	713488		
30739132001	**4114045-01 MW7**	Total Radium Calculation	717275		
30739132002	**4114045-02 MW8**	Total Radium Calculation	717275		
30739132003	**4114045-03 MW9**	Total Radium Calculation	717275		
30739132004	**4114045-04 MW10**	Total Radium Calculation	717275		
30739132005	**4114045-05 DUPLICATE**	Total Radium Calculation	717275		
30739132006	**4114045-06 FIELD BLANK**	Total Radium Calculation	717275		

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WO# : 30739132

30739132

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4114045

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: 4114045-01 Water	**Sampled: 11/25/2024 21:50**	**Specific Method**	MW7
Radium 228 (sub)	05/24/2025 21:50	EPA 904.0 Radium Sum C	
Radium Total (sub)	05/24/2025 21:50	EPA 904.0 Radium Sum C	
Radium 226 (sub)	05/24/2025 21:50	EPA 903.1	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0 ØØ1

Sample ID: 4114045-02 Water	**Sampled: 11/26/2024 15:23**	**Specific Method**	MW8
Radium 226 (sub)	05/25/2025 15:23	EPA 903.1	
Radium 228 (sub)	05/25/2025 15:23	EPA 904.0 Radium Sum C	
Radium Total (sub)	05/25/2025 15:23	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0 ØØ2

Sample ID: 4114045-03 Water	**Sampled: 11/26/2024 12:55**	**Specific Method**	MW9
Radium Total (sub)	05/25/2025 12:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)	05/25/2025 12:55	EPA 903.1	
Radium 228 (sub)	05/25/2025 12:55	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY **RUSH MULTIPLIER** 0 ØØ3

Received by Pace Greensburg
Therm ID 19 Corr Factor +/- Ø.5
Receipt Temp 2.4
Corrected Temp 1.9
Correct Preservation Y/N

Received by Pace Greensburg
Therm ID Corr Factor
Receipt Temp
Corrected Temp
Correct Preservation

Released By	Date	Received By	Date
	12-2-24		12/04/2024
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4114045

WO# : 30739132

30739132

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4114045-04	**Water**	**Sampled:11/26/2024 11:10**	**Specific Method**	MW10
Radium 228 (sub)		05/25/2025 11:10	EPA 904.0 Radium Sum C	
Radium Total (sub)		05/25/2025 11:10	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/25/2025 11:10	EPA 903.1	

SAMPLE STATE OF ORIGIN KY

RUSH MULTIPLIER 0 004

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4114045-05	**Water**	**Sampled:11/25/2024 20:32**	**Specific Method**	Duplicate
Radium 226 (sub)		05/24/2025 20:32	EPA 903.1	
Radium 228 (sub)		05/24/2025 20:32	EPA 904.0 Radium Sum C	
Radium Total (sub)		05/24/2025 20:32	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY

RUSH MULTIPLIER 0 005

Analysis		Expires	Laboratory ID	Comments
Sample ID: 4114045-06	**Water**	**Sampled:11/26/2024 11:27**	**Specific Method**	Field Blank
Radium Total (sub)		05/25/2025 11:27	EPA 904.0 Radium Sum C	
Radium 226 (sub)		05/25/2025 11:27	EPA 903.1	
Radium 228 (sub)		05/25/2025 11:27	EPA 904.0 Radium Sum C	

SAMPLE STATE OF ORIGIN KY

RUSH MULTIPLIER CJ 006

Released By	Date	Received By	Date
	12-2-24		12/04/24
Released By	Date	Received By	Date

WO#: 30739132

PM: TAW Due Date: 12/26/24
CLIENT: PACE_44_MVKY

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Greensburg

Effective Date: 01/04/2024

Client Name: Pace Analytical Services, LLC Kentucky Project #:

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

Tracking Number: 1Z 067 Y57 13 0973 4240

Initial/Date

Examined By: JML 12/4/24
Labeled By: JML 12/4/24
Temped By: JML 12/4/24

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals Intact: ☐ Yes ☑ No

Thermometer Used: 19 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 2.4 °C Correction Factor: -0.5 °C Final Temp: 1.9 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D324.1 D.P.D. Residual Chlorine Lot #

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out: -Were client corrections present on COC	✓	✓		2.
Chain of Custody Relinquished	✓	✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. year is not on the bottles
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 samples field filtered:			✓	13.
Organic Samples checked for dichlorination			✓	14:
Filtered volume received for dissolved tests:	✓			15:
All containers checked for preservation: exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix				16. pH<2
All containers meet method preservation requirements:	✓			Initial when completed: JML Date/Time of Preservation:
8260C/D: Headspace in VOA Vials (> 6mm)			✓	Lot# of added Preservative: 17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:			✓	Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed: JML Date: 12/4/24 Survey Meter SN: 2501438Ø

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Page 1 of 1

Qualtrax ID: 55680

Client

Site 4114045

Page 1 of 1

Profile/EZ Login Number 11851

Notes

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						3																						
002	WT						3																						
003	WT						3																						
004	WT						3																						
005	WT						3																						
006	WT						3																						

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	AG2U	500mL amber glass unpreserved
		WGKU	8oz wide jar unpreserved
		GN	General

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
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit Volatile Solid
I	Wipe/Swab
ZPLC	Siploc Bag

WT	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

WO#: 30739132

PM: TAW Due Date: 12/26/24

CLIENT: PACE_44_MVKY

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

Certificate of Analysis
4114046

Stacy Shelton
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson, KY 42419

Customer ID: 44-102032
Report Printed: 12/30/2024 13:21

Project Name:	HMPL Surface Impoundment Characterization Wells	Workorder:	4114046

Dear Stacy Shelton

Enclosed are the analytical results for samples received by the laboratory 11/27/2024 09:03.

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 - 825 Industrial Road, Madisonville, KY 42431

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

#460210 Madisonville, KY
#460291 Pikeville, KY
#E871136 Englewood, OH

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

Rob Whittington, Project Manager

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
4114046-01	MW-110/	Groundwater	11/25/2024 20:08	11/27/2024 9:03	Client
4114046-02	MW-111/	Groundwater	11/25/2024 18:20	11/27/2024 9:03	Client
4114046-03	MW-112/	Groundwater	11/25/2024 13:55	11/27/2024 9:03	Client

LabNumber	Measurement	Value
4114046-01	Field Conductance	0.94
	Field pH	7.69
	Field Temp (C)	15.23
4114046-02	Field Conductance	0.535
	Field pH	8.45
	Field Temp (C)	15.57
4114046-03	Field Conductance	0.566
	Field pH	8.02
	Field Temp (C)	16.08

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ANALYTICAL RESULTS

Lab Sample ID: **4114046-01**
Description: **MW-110**

Sample Collection Date Time: 11/25/2024 20:08
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 15:29	MRWD
Arsenic	**0.0017**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Barium	**0.055**		mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Boron	**0.53**		mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:34	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Calcium	**92.3**	D1	mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:37	AIS
Chromium	**0.0067**		mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Lead	**0.003**		mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Lithium	**0.02**		mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:09	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:29	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.89**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**572**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**18.2**		mg/L	0.5	0.4	SW846 9056	12/04/2024 19:59	12/04/2024 19:59	CLS3
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	12/04/2024 19:59	12/04/2024 19:59	CLS3
Sulfate	**210**		mg/L	1	0.5	SW846 9056	12/04/2024 19:59	12/04/2024 19:59	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114046-02**
Description: **MW-111**

Sample Collection Date Time: 11/25/2024 18:20
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 15:32	MRWD
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Barium	**1.13**	D1	mg/L	0.040	0.010	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:25	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Boron	**0.53**		mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:40	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Calcium	**18.4**	D1	mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:43	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Lithium	**0.008**	J	mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:11	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:32	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**8.30**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**280**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**16.8**		mg/L	0.5	0.4	SW846 9056	12/04/2024 20:54	12/04/2024 20:54	CLS3
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	12/04/2024 20:54	12/04/2024 20:54	CLS3
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	12/04/2024 20:54	12/04/2024 20:54	CLS3

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ANALYTICAL RESULTS

Lab Sample ID: **4114046-03**
Description: **MW-112**

Sample Collection Date Time: 11/25/2024 13:55
Sample Received Date Time: 11/27/2024 09:03

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	11/29/2024 08:56	12/02/2024 15:36	MRWD
Arsenic	**0.0013**		mg/L	0.0010	0.0004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Barium	**0.329**	M1, M2	mg/L	0.004	0.001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Boron	**0.36**		mg/L	0.10	0.10	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:56	AIS
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Calcium	**30.8**	D1, M3	mg/L	5.00	2.50	SW846 6010 B	11/29/2024 08:56	12/03/2024 22:59	AIS
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Lithium	**0.007**	J	mg/L	0.02	0.005	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Molybdenum	**0.005**	J	mg/L	0.01	0.002	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD
Selenium	ND	V1, U	mg/L	0.003	0.001	SW846-6020 A	11/29/2024 08:56	12/03/2024 19:27	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	11/29/2024 08:56	12/02/2024 15:36	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**8.06**	H3	Std. Units	0.10	0.10	SM 4500-H+ B-2011	12/03/2024 09:35	12/03/2024 14:34	CMB
Total Dissolved Solids	**308**		mg/L	50	50	2540 C-2015	11/27/2024 18:31	11/27/2024 18:31	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00		pCi/L			EPA 903.1	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW
See Attached Subcontract Report	0.00		pCi/L			EPA 904.0 Radium Sum Calc	12/30/2024 13:08	12/30/2024 13:10	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**13.2**		mg/L	0.5	0.4	SW846 9056	12/04/2024 21:21	12/04/2024 21:21	CLS3
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	12/04/2024 21:21	12/04/2024 21:21	CLS3
Sulfate	**33**		mg/L	1	0.5	SW846 9056	12/04/2024 21:21	12/04/2024 21:21	CLS3

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Notes for work order 4114046

- 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

D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
E	Concentration exceeds calibration range
H3	Sample received and analyzed past holding time.
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.
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.

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

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2944 - EPA 200.2										
Blank (BDK2944-BLK1)										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 14:26										
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	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
Blank (BDK2944-BLK2)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 18:32										
Selenium	ND	0.003	mg/L							U
Blank (BDK2944-BLK3)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 21:24										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.50	mg/L							U
LCS (BDK2944-BS1)										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 14:30										
Mercury	0.0025	0.0005	mg/L	0.00250		99.2	85-115			
Antimony	0.063	0.005	mg/L	0.0625		100	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		99.3	85-115			
Arsenic	0.0627	0.0010	mg/L	0.0625		100	85-115			
Barium	0.062	0.004	mg/L	0.0625		99.0	85-115			
Beryllium	0.0613	0.0020	mg/L	0.0625		98.1	85-115			
Cadmium	0.0623	0.0010	mg/L	0.0625		99.6	85-115			
Chromium	0.0627	0.0020	mg/L	0.0625		100	85-115			
Cobalt	0.062	0.004	mg/L	0.0625		98.8	85-115			
Lead	0.060	0.002	mg/L	0.0625		96.4	85-115			
Lithium	0.06	0.02	mg/L	0.0625		96.3	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0606	0.0020	mg/L	0.0625		96.9	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2944 - EPA 200.2										
LCS (BDK2944-BS2)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 18:34										
Selenium	0.064	0.003	mg/L	0.0625		102	85-115			
LCS (BDK2944-BS3)										
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 21:27										
Boron	0.12	0.10	mg/L	0.125		98.9	85-115			
Calcium	6.36	0.50	mg/L	6.25		102	85-115			
Matrix Spike (BDK2944-MS1) **Source: 4111777-01**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:40										
Antimony	0.062	0.005	mg/L	0.0625	ND	99.1	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	98.7	80-120			
Mercury	0.0024	0.0005	mg/L	0.00250	0.0002	86.7	80-120			
Arsenic	0.0682	0.0010	mg/L	0.0625	0.0071	97.9	80-120			
Barium	0.235	0.004	mg/L	0.0625	0.213	34.7	80-120			M2
Beryllium	0.0532	0.0020	mg/L	0.0625	ND	85.1	80-120			
Cadmium	0.0588	0.0010	mg/L	0.0625	ND	94.1	80-120			
Chromium	0.0603	0.0020	mg/L	0.0625	ND	96.5	80-120			
Cobalt	0.057	0.004	mg/L	0.0625	ND	92.0	80-120			
Lead	0.055	0.002	mg/L	0.0625	0.0007	87.1	80-120			
Lithium	0.06	0.02	mg/L	0.0625	0.005	83.2	80-120			
Selenium	0.059	0.003	mg/L	0.0625	ND	95.1	80-120			
Thallium	0.0554	0.0020	mg/L	0.0625	0.0001	88.5	80-120			
Matrix Spike (BDK2944-MS2) **Source: 4114046-03**										
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:47										
Antimony	0.062	0.005	mg/L	0.0625	ND	99.3	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	0.005	96.9	80-120			
Mercury	0.0024	0.0005	mg/L	0.00250	ND	97.6	80-120			
Arsenic	0.0618	0.0010	mg/L	0.0625	0.0013	96.8	80-120			
Barium	0.377	0.004	mg/L	0.0625	0.329	76.2	80-120			M2
Beryllium	0.0570	0.0020	mg/L	0.0625	ND	91.1	80-120			
Cadmium	0.0593	0.0010	mg/L	0.0625	ND	94.9	80-120			
Chromium	0.0592	0.0020	mg/L	0.0625	ND	94.7	80-120			
Cobalt	0.058	0.004	mg/L	0.0625	ND	92.6	80-120			
Lead	0.056	0.002	mg/L	0.0625	ND	90.3	80-120			
Lithium	0.06	0.02	mg/L	0.0625	0.007	85.9	80-120			
Selenium	0.059	0.003	mg/L	0.0625	ND	94.3	80-120			
Thallium	0.0573	0.0020	mg/L	0.0625	ND	91.6	80-120			

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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 BDK2944 - EPA 200.2										
Matrix Spike (BDK2944-MS3)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 23:15										
Boron	0.14	0.10	mg/L	0.125	ND	115	80-120			
Calcium	267	0.50	mg/L	6.25	258	140	80-120			M3
Matrix Spike (BDK2944-MS4)	**Source: 4114046-03**									
Prepared: 11/29/2024 8:56, Analyzed: 12/4/2024 7:59										
Boron	0.46	0.10	mg/L	0.125	0.36	81.8	80-120			
Calcium	34.4	0.50	mg/L	6.25	30.8	57.5	80-120			M3
Matrix Spike Dup (BDK2944-MSD1)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/2/2024 15:43										
Mercury	0.0024	0.0005	mg/L	0.00250	0.0002	87.0	80-120	0.289	20	
Antimony	0.065	0.005	mg/L	0.0625	ND	104	80-120	5.08	20	
Molybdenum	0.06	0.01	mg/L	0.0625	ND	101	80-120	1.95	20	
Arsenic	0.0700	0.0010	mg/L	0.0625	0.0071	101	80-120	2.58	20	
Barium	0.241	0.004	mg/L	0.0625	0.213	45.0	80-120	2.72	20	M2
Beryllium	0.0576	0.0020	mg/L	0.0625	ND	92.2	80-120	8.06	20	
Cadmium	0.0619	0.0010	mg/L	0.0625	ND	99.0	80-120	5.09	20	
Chromium	0.0618	0.0020	mg/L	0.0625	ND	98.9	80-120	2.41	20	
Cobalt	0.059	0.004	mg/L	0.0625	ND	95.1	80-120	3.35	20	
Lead	0.058	0.002	mg/L	0.0625	0.0007	91.3	80-120	4.64	20	
Lithium	0.06	0.02	mg/L	0.0625	0.005	90.2	80-120	7.34	20	
Selenium	0.061	0.003	mg/L	0.0625	ND	96.8	80-120	1.83	20	
Thallium	0.0584	0.0020	mg/L	0.0625	0.0001	93.3	80-120	5.27	20	
Matrix Spike Dup (BDK2944-MSD2)	**Source: 4114046-03**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 19:30										
Arsenic	0.0672	0.0010	mg/L	0.0625	0.0013	105	80-120	8.33	20	
Barium	0.418	0.004	mg/L	0.0625	0.329	142	80-120	10.3	20	M1
Selenium	0.061	0.003	mg/L	0.0625	ND	98.1	80-120	3.91	20	
Matrix Spike Dup (BDK2944-MSD3)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 23:19										
Boron	0.15	0.10	mg/L	0.125	ND	116	80-120	1.43	20	
Calcium	266	0.50	mg/L	6.25	258	116	80-120	0.570	20	

Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
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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 BDK2944 - EPA 200.2										
Matrix Spike Dup (BDK2944-MSD4)	**Source: 4114046-03**									
Prepared: 11/29/2024 8:56, Analyzed: 12/4/2024 8:02										
Boron	0.49	0.10	mg/L	0.125	0.36	102	80-120	5.45	20	
Calcium	36.0	0.50	mg/L	6.25	30.8	83.7	80-120	4.65	20	
Post Spike (BDK2944-PS1)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 19:32										
Arsenic	71.4		ug/L	62.5	7.06	103	75-125			
Barium	265		ug/L	62.5	213	83.3	75-125			
Selenium	56.4		ug/L	62.5	0.052	90.1	75-125			
Post Spike (BDK2944-PS2)	**Source: 4111777-01**									
Prepared: 11/29/2024 8:56, Analyzed: 12/3/2024 23:22										
Boron	146		ug/L	125	19.3	101	75-125			
Calcium	269000		ug/L	6250	258000	177	75-125			M3

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Conventional Chemistry Analyses Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDK2894 - Default Prep Micro										
LCS (BDK2894-BS1)										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	4.97		Std. Units	5.00		99.4	98.8-101.2			
LCS (BDK2894-BS2)										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	5.01		Std. Units	5.00		100	98.8-101.2			
Duplicate (BDK2894-DUP1) **Source: 4114045-04**										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	8.95	0.10	Std. Units		8.96			0.112	10	H3
Duplicate (BDK2894-DUP2) **Source: 4114046-03**										
Prepared: 12/3/2024 9:35, Analyzed: 12/3/2024 14:34										
pH (Lab)	8.07	0.10	Std. Units		8.06			0.124	10	H3
Batch BDK2960 - Default Prep Wet Chem										
Blank (BDK2960-BLK1)										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BDK2960-BS1)										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	90		mg/L	90.0		100	80-120			
Duplicate (BDK2960-DUP1) **Source: 4111774-06**										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	4480	250	mg/L		4520			0.889	10	
Duplicate (BDK2960-DUP2) **Source: 4114716-01**										
Prepared: 11/27/2024 18:31, Analyzed: 11/27/2024 18:31										
Total Dissolved Solids	376	50	mg/L		366			2.70	10	

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Ion Chromatography Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BDL0337 - Default Prep IC										
Blank (BDL0337-BLK1)										
Prepared: 12/4/2024 12:13, Analyzed: 12/4/2024 12:13										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BDL0337-BS1)										
Prepared: 12/4/2024 11:45, Analyzed: 12/4/2024 11:45										
Chloride	12.4		mg/L	12.5		99.5	90-110			
Fluoride	4.9		mg/L	5.00		97.8	90-110			
Sulfate	25		mg/L	25.0		98.9	90-110			
Matrix Spike (BDL0337-MS1) **Source: 4114045-01**										
Prepared: 12/5/2024 0:36, Analyzed: 12/5/2024 0:36										
Fluoride	5.3		mg/L	5.00	0.3	99.7	75-125			
Chloride	14.9		mg/L	12.5	2.6	98.2	75-125			
Sulfate	35		mg/L	25.0	10	102	75-125			
Matrix Spike (BDL0337-MS2) **Source: 4114046-01**										
Prepared: 12/5/2024 1:31, Analyzed: 12/5/2024 1:31										
Fluoride	100		mg/L	100	0.3	99.9	75-125			D
Chloride	263		mg/L	250	16.3	98.6	75-125			D
Sulfate	718		mg/L	500	189	106	75-125			D
Matrix Spike Dup (BDL0337-MSD1) **Source: 4114045-01**										
Prepared: 12/5/2024 1:03, Analyzed: 12/5/2024 1:03										
Chloride	14.9		mg/L	12.5	2.6	97.9	75-125	0.215	15	
Fluoride	5.4		mg/L	5.00	0.3	102	75-125	1.83	15	
Sulfate	36		mg/L	25.0	10	104	75-125	1.49	15	
Matrix Spike Dup (BDL0337-MSD2) **Source: 4114046-01**										
Prepared: 12/5/2024 1:58, Analyzed: 12/5/2024 1:58										
Chloride	261		mg/L	250	16.3	98.0	75-125	0.610	15	D
Fluoride	96.9		mg/L	100	0.3	96.6	75-125	3.35	15	D
Sulfate	718		mg/L	500	189	106	75-125	0.0279	15	D

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2015 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 MS Drinking Water MADV
SM 4500-H+ B-2011 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Pace Analytical Services, LLC
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Sample Acceptance Checklist for Work Order 4114046

Shipped By: Client

Temperature: 3.40° 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	☑

Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114046 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114046-01 A	11/25/24	2008	Plastic 500mL pH<2 w/HNO3	1	MW-110	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4114046-01 B	11/25/24	2008	Plastic 1L	1	MW-110	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114046-01 C	11/25/24	2008	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW-110	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
4114046-01 D	11/25/24	2008	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114046-01 E	11/25/24	2008	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/25/24 Time (24 hr) 2008

pH 7.69 Cond (umho) 0.961 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.23 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	11/27/24	0903

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Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment
Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114046 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114046-01 F	11/25/24	2006	Plastic 1L pH<2 w/HNO3 Sub	1	MW-110	g / c	Radium Total (sub)
			Preservation Check: pH : ___				
4114046-02 A	11/25/24	1820	Plastic 500mL pH<2 w/HNO3	1	MW-111	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ___				
4114046-02 B	11/25/24	1820	Plastic 1L	1	MW-111	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114046-02 C	11/25/24	1820	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW-111	g / c	Radium 226 (sub)
			Preservation Check: pH : ___				
4114046-02 D	11/25/24	1820	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-111	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) 11/25/24 Time (24 hr) 1820 MW-111

pH 8.45 Cond (umho) MS 0.535 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 19.57 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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Pace Analytical Services LLC Kentucky
825 Industrial Road
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X
Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114046 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114046-02 E	11/25/24	1820	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-111	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
4114046-02 F	11/25/24	1820	Plastic 1L pH<2 w/HNO3 Sub	1	MW-111	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
4114046-03 A	11/25/24	1355	Plastic 500mL pH<2 w/HNO3	1	MW-112	g / c	Arsenic Tot 6020 Barium Tot 6020 Beryllium Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Antimony Tot 6020 Lithium Tot 6020 Thallium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020 Selenium Tot 6020
			Preservation Check: pH : ✓				
4114046-03 B	11/25/24	1355	Plastic 1L	1	MW-112	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
4114046-03 C	11/25/24	1355	Plastic 1L pH<2 w/HNO3 Rad 226 Sub	1	MW-112	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Nicholl Date (mm/dd/yy) 11/25/24 Time (24 hr) 1355 MW-112

pH 8.02 Cond (umho) 0.566 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.08 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

Flow: _____ ☐MGD ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 11/19/2024

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Characterization Wells

Report To:
Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
Phone: (270) 844-6000
PWS ID#:
State: Ky

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Big Rivers Electric Corporation Reid/Green Station
Mark Bertram
9000 Highway 2096
Robards, KY 42452
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes ___ No X

Samples Chlorinated? Yes ___ No X

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

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

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

LAB USE ONLY Workorder # 4114046 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
4114046-03 D	11/25/24	1355	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-112	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
4114046-03 E	11/25/24	1355	Plastic 1L pH<2 w/HNO3 Rad 228 Sub	1	MW-112	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
4114046-03 F	11/25/24	1355	Plastic 1L pH<2 w/HNO3 Sub	1	MW-112	g / c	Radium Total (sub)
			Preservation Check: pH : ____				

Thermometer Serial Number
C 230753815
240381205
Temperature 3.4 °C

Preservation Check Performed by: MK pH Paper Lot #: 213724

Field data collected by: Hunter Mizell Date (mm/dd/yy) _____ Time (24 hr) _____

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 ☐CFS ☐g/min ☐ GPD

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		11/27/24	0903

☐ **PACE- Check here if trip charge applied to associated COC**

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 23, 2024

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

RE: Project: 4114046
Pace Project No.: 30739122

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2024. 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,

Theresa A. Wilson
theresa.wilson@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Mark Demoss, Pace Analytical Madisonville

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Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 4114046
Pace Project No.: 30739122

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
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 #: PA014572023-03
New Hampshire/TNI Certification #: 297622
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 #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 4114046
Pace Project No.: 30739122

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30739122001	**4114046-01 MW110**	Water	11/25/24 20:08	12/04/24 00:00
30739122002	**4114046-02 MW111**	Water	11/25/24 18:20	12/04/24 00:00
30739122003	**4114046-03 MW112**	Water	11/25/24 13:55	12/04/24 00:00

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 4114046
Pace Project No.: 30739122

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30739122001	**4114046-01 MW110**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739122002	**4114046-02 MW111**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30739122003	**4114046-03 MW112**	EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 4114046
Pace Project No.: 30739122

Sample: 4114046-01 MW110 **Lab ID: 30739122001** Collected: 11/25/24 20:08 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.521 ± 0.655 (1.09) C:NA T:82%**	pCi/L	12/23/24 13:16	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.94 ± 0.667 (0.887) C:67% T:81%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**2.46 ± 1.32 (1.98)**	pCi/L	12/23/24 15:24	7440-14-4	

Sample: 4114046-02 MW111 **Lab ID: 30739122002** Collected: 11/25/24 18:20 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.266 ± 0.500 (0.885) C:NA T:93%**	pCi/L	12/23/24 13:16	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.914 ± 0.411 (0.646) C:69% T:94%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.18 ± 0.911 (1.53)**	pCi/L	12/23/24 15:24	7440-14-4	

Sample: 4114046-03 MW112 **Lab ID: 30739122003** Collected: 11/25/24 13:55 Received: 12/04/24 00:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Samplers name and signature not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.722 ± 0.580 (0.873) C:NA T:91%**	pCi/L	12/23/24 13:16	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.14 ± 0.467 (0.713) C:75% T:87%**	pCi/L	12/20/24 14:50	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.86 ± 1.05 (1.59)**	pCi/L	12/23/24 15:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 4114046
Pace Project No.: 30739122

QC Batch: 713488
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30739122001, 30739122002, 30739122003

METHOD BLANK: 3475089 Matrix: Water
Associated Lab Samples: 30739122001, 30739122002, 30739122003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.900 ± 0.411 (0.656) C:76% T:85%	pCi/L	12/20/24 11:37	

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: 4114046
Pace Project No.: 30739122

QC Batch: 713487
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30739122001, 30739122002, 30739122003

METHOD BLANK: 3475080 Matrix: Water
Associated Lab Samples: 30739122001, 30739122002, 30739122003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0372 ± 0.170 (0.400) C:NA T:92%	pCi/L	12/23/24 12:57	

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: 4114046
Pace Project No.: 30739122

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 4114046
Pace Project No.: 30739122

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30739122001	**4114046-01 MW110**	EPA 903.1	713487		
30739122002	**4114046-02 MW111**	EPA 903.1	713487		
30739122003	**4114046-03 MW112**	EPA 903.1	713487		
30739122001	**4114046-01 MW110**	EPA 904.0	713488		
30739122002	**4114046-02 MW111**	EPA 904.0	713488		
30739122003	**4114046-03 MW112**	EPA 904.0	713488		
30739122001	**4114046-01 MW110**	Total Radium Calculation	717275		
30739122002	**4114046-02 MW111**	Total Radium Calculation	717275		
30739122003	**4114046-03 MW112**	Total Radium Calculation	717275		

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WO# : 30739122

30739122

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

4114046

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: 4114046-01 **Water**	**Sampled:11/25/2024 20:08**	**Specific Method**	MW110
Radium Total (sub)	05/24/2025 20:08	EPA 904.0 Radium Sum C	
Radium 228 (sub)	05/24/2025 20:08	EPA 904.0 Radium Sum C	
Radium 226 (sub)	05/24/2025 20:08	EPA 903.1	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER O 001

Sample ID: 4114046-02 **Water**	**Sampled:11/25/2024 18:20**	**Specific Method**	MW111
Radium Total (sub)	05/24/2025 18:20	EPA 904.0 Radium Sum C	
Radium 228 (sub)	05/24/2025 18:20	EPA 904.0 Radium Sum C	
Radium 226 (sub)	05/24/2025 18:20	EPA 903.1	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER O 002

Sample ID: 4114046-03 **Water**	**Sampled:11/25/2024 13:55**	**Specific Method**	MW112
Radium Total (sub)	05/24/2025 13:55	EPA 904.0 Radium Sum C	
Radium 228 (sub)	05/24/2025 13:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)	05/24/2025 13:55	EPA 903.1	

SAMPLE STATE OF ORIGIN KY RUSH MULTIPLIER O 003

Received by Pace Greensburg
Therm ID 19 Corr Factor +/- -0.5
Receipt Temp 1.6
Corrected Temp 1.1
Correct Preservation Y/N
Correct Preservation Y/N

Released By	Date	Received By	Date
	12-2-24		12/4/24
Released By	Date	Received By	Date

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Condi
Greensburg

Effective Date: 01/04/2024

WO# : 30739122

PM: TAW Due Date: 12/26/24

CLIENT: PACE_44_MVKY

Client Name: Pace Analytical Services, LLC Kentucky Project #

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

Initial/Date

Tracking Number:

Examined By: ML 12/4/24

Labeled By: ML 12/4/24

Temped By: ML 12/4/24

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals Intact: ☐ Yes ☑ No

Thermometer Used: 19 Type of Ice: (Wet) Blue None

Cooler Temperature: Observed Temp 1.0 °C Correction Factor: -0.5 °C Final Temp: 1.1 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3241 D.P.D. Residual Chlorine Lot #

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
Chain of Custody Relinquished	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC:		✓		5. times are accurate; no year on the bottles
-Includes date/time/ID				
Matrix: WT	✓			6.
Samples Arrived within Hold Time:		✓		7.
Short Hold Time Analysis (<72hr remaining):		✓		8.
Rush Turn Around Time Requested:	✓			9.
Sufficient Volume:	✓			10.
Correct Containers Used:	✓			
-Pace Containers Used	✓			11.
Containers Intact:			✓	12.
Orthophosphate field filtered:			✓	13.
Hex Cr Aqueous samples field filtered:			✓	14:
Organic Samples checked for dichlorination			✓	15:
Filtered volume received for dissolved tests:	✓			16.
All containers checked for preservation: exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix	✓			pH<2 Initial when completed: ML Date/Time of Preservation: Lot# of added Preservative:
All containers meet method preservation requirements:			✓	17.
8260C/D: Headspace in VOA Vials (> 6mm)			✓	18.
624.1: Headspace in VOA Vials (0mm)			✓	19.
Radon: Headspace in RAD Vials (0mm)			✓	Trip blank custody seal present? YES or NO
Trip Blank Present:	✓			Initial when completed: ML Date: 12/4/24 Survey Meter SN: 25014380
Rad Samples Screened <.05 mrem/hr.				

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Page 1 of 1

Qualtrax ID: 55680

DC#_Title: ENV-FRM-GBUR-0072 v04_Sample Container Count Offshore Projects
Effective Date: 04/18/2024

Client _____

Site 4114846

Page 1 of 1

Profile/EZ Login Number 11851

Notes _____

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						3																						
002	WT						3																						
003	WT						3																						

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
		AG2U	500mL amber glass unpreserved
		WGKU	8oz wide jar unpreserved
		GN	General

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
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit Volatile Solid
I	Wipe/Swab
ZPLC	Siploc Bag

WT	Water
SL	Solid
OL	Non-Aq Liquid
WP	Wipe

WO#: 30739122

PM: TAW Due Date: 12/26/24
CLIENT: PACE_44_MVKY