

2021 Annual Groundwater Monitoring and Corrective Action Report

for the

Federal Coal Combustion Residuals Rule

Sebree Station
Webster County, Kentucky

Prepared for:

Big Rivers Electric Corporation
Sebree Generating Station
9000 Highway 2096
Robards, KY 42452

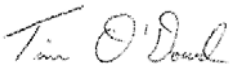
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Executive Summary

This report summarizes groundwater monitoring and corrective action activities completed between January 1 and December 31, 2021 at the Big Rivers Electric Corporation (BREC) Sebree Generating Station as required by 40 CFR 257.90(e) of the United States Environmental Protection Agency (USEPA) coal combustion residuals (CCR) Rule. The following three units at the station are subject to the CCR Rule:

- Green Station Landfill (Webster County);
- Green Station Surface Impoundment (Webster County); and
- Reid/Henderson Municipal Power and Light (HMP&L) Surface Impoundment (Henderson County)

A site figure presenting the location of the CCR units is presented as **Figure 1**. The program monitoring networks for each CCR unit, including supporting monitoring wells, are presented as **Figures 2** through **4**. No monitoring wells were installed, modified or abandoned during the reporting period.

Results of baseline groundwater monitoring performed in 2016 and 2017 indicated that the Green Landfill and Reid/HMP&L Surface Impoundment would require initiation of Assessment Monitoring under the CCR Rule, as the laboratory analytical results from these events indicated that most or all of the Appendix III constituents had statistically significant increases (SSIs) over background as noted below.

- Appendix III parameters calcium (Ca), chloride (Cl), sulfate (SO_4), and total dissolved solids (TDS) at the Green Landfill
- All Appendix III parameters at the Reid/HMP&L Surface Impoundment

On February 5, 2018, BREC posted a formal notification that the Green Landfill and Reid/HMP&L Surface Impoundment would transition from Baseline Detection to Assessment monitoring programs. At both the start and end of the 2021 annual reporting period, the Green Landfill and Reid/HMP&L Surface Impoundment were operating under the Assessment monitoring program in 40 CFR 257.95.

Based upon the statistical evaluation of Appendix III parameters collected during the Baseline period at the Green Surface Impoundment in 2016 through 2017, BREC initiated semi-annual Detection monitoring in 2018. At both the start and end of the 2021 annual reporting period, the Green Surface Impoundment was operating under the Detection monitoring program in 40 CFR 257.94. Assessment monitoring has not been triggered for this unit.

Groundwater analytical data collected during Assessment monitoring at the Green Landfill and Reid/HMP&L Surface Impoundment indicated that Appendix IV constituents were detected in downgradient monitoring wells at SSIs over background as detailed below.

Appendix IV Constituent at an SSI	Green Landfill	Reid HMP&L Surface Impoundment
Arsenic	June 2018, July 2018, April 2019, October 2019, April 2020, September 2020, April 2021, September 2021	none
Barium	June 2018, July 2018, April 2019, October 2019, April 2020, September 2020, April 2021, September 2021	April 2018, June 2018, May 2019, October 2019, April 2020, September 2020, April 2021, September 2021
Cadmium	April 2021	none
Cobalt	September 2020	none
Chromium	none	April 2018, June 2018,

Fluoride	none	April 2018, June 2018, May 2019, October 2019, April 2020, September 2020, April 2021, September 2021
Lithium	June 2018, July 2018, April 2019, October 2019, April 2020, September 2020, April 2021, September 2021	April 2018, June 2018, May 2019, October 2019, April 2020, September 2020, April 2021, September 2021
Mercury	June 2018, July 2018, April 2019, October 2019, April 2020, September 2020, April 2021	April 2020, September 2020, April 2021, September 2021
Molybdenum	April 2021, September 2021	none
Radium 226+228	none	April 2018, June 2018, May 2019, October 2019, April 2020, September 2020, April 2021, September 2021
Selenium	April 2020, April 2021	none

Per CCR rule requirements, groundwater protection standards (GWPSs) for each Appendix IV constituent were developed and the data were tested for whether the concentrations represented statistically significant levels (SSLs) above their respective GWPSs. SSLs identified in the current annual reporting period are as follows:

Appendix IV Constituent at an SSL	Green Landfill	Reid HMP&L Surface Impoundment
Lithium	MW-3A, MW-4, MW-5, and MW-6	MW-10

On December 6, 2018, BREC posted formal notification that lithium had been detected at SSLs above the established GWPS for both the Green Landfill and the Reid HMP&L Surface Impoundment. In June 2019 BREC finalized an Assessment of Corrective Measures (ACM) for both the Green Landfill and Reid/HMP&L Surface Impoundment to identify applicable remedial technologies to address impacts in groundwater pursuant to Title 40 CFR Section 257.96. Reports summarizing the results of the Green Landfill ACM and Reid/HMP&L Surface Impoundment ACM were completed and placed in the BREC operating record on June 13, 2019. The ACM reports were posted to BREC's publicly-accessible CCR reporting website on July 11, 2019. Semi-annual progress on the Selection of Remedy process for both units was reported in December 2019 and June 2020. Semi-annual progress for the Reid/HMP&L Surface Impoundment was also reported in December 2020, June 2021, and December 2021.

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 unit was received during the meeting. On November 18, 2020 BREC finalized a Final Groundwater and Non-Groundwater Corrective Action Remedy Selection Report for Green Landfill, thereby selecting the remedy for groundwater and non-groundwater impacts at the unit in accordance with 40 CFR Part 257.97.

Construction of source control measures to address groundwater impacts at Green Landfill were initiated in November 2020. These source control measures consist 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 (RS)-07; and
3) Sediment removal from the South Sediment Basin.

Constructing 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 2022 and beyond for alignment with the corrective action objectives through performance monitoring.

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

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

- Semi-annual Assessment groundwater monitoring events were performed at Green Landfill and Reid/HMP&L Surface Impoundment in April and September 2021;
- Semi-annual Detection groundwater monitoring events were performed at Green Surface Impoundment in April and September 2021;
- No monitoring well installation, repair, or decommissioning was performed; and
- No program transitions (Detection to Assessment or vice versa) were triggered.

Anticipated activities for the next annual reporting period include:

- Completion of two semi-annual Assessment groundwater monitoring events at Green Landfill and Reid/HMP&L Surface Impoundment;
- Completion of two semi-annual Detection groundwater monitoring events at Green Surface Impoundment;
- Remedy evaluation at Green Landfill; and
- Progress towards selection of a remedy for the Reid/HMP&L Surface Impoundment, including holding a public meeting to discuss the results of the ACM.

This 2021 Annual Groundwater Monitoring and Corrective Action Report for the Big Rivers Electrical Corporation 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 CCR unit 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 CCR unit **(see Figure 2, Figure 3** and **Figure 4)**;

(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. **No monitoring wells were installed or decommissioned in 2021**;

(3) In addition to all 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 well, the dates the samples were collected, and whether the sample was required by the Detection Monitoring or Assessment Monitoring programs **(referenced in 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 a statistically significant increase (SSI) over background levels) **(presented in 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 assessment of corrective measures [ACMs]) **(no other information was developed or reported in 2021 as noted in Section 2)**.

1. Introduction

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

This report summarizes activities performed in 2021 related to the CCR Rule groundwater monitoring program at the following CCR units:

- Green Station Landfill (Webster County);
- Green Station Surface Impoundment (Webster County); and
- Reid/Henderson Municipal Power and Light (HMP&L) Surface Impoundment (Henderson County)

The following sections present a site background summary, a discussion of field activities performed, a summary of laboratory results, statistical evaluation findings, and conclusions regarding groundwater conditions in the aquifer system subject to monitoring under the CCR Rule.

As stated in the previous 2016-2020 Annual Groundwater Monitoring and Corrective Action Reports, statistical results of the Baseline groundwater data indicate that the Green Landfill and Reid/HMP&L Surface Impoundment would require initiation of Assessment Monitoring under the CCR Rule, as the laboratory analytical results from these events indicated that most or all of the Appendix III constituents had statistically significant increases (SSIs) over background as noted below.

- Appendix III parameters calcium, chloride, sulfate, and total dissolved solids (TDS) at the Green Landfill
- All Appendix III parameters at the Reid/HMP&L Surface Impoundment

On February 5, 2018, BREC posted a formal notification that the Green Landfill and Reid/HMP&L Surface Impoundment would enter Assessment Monitoring Programs, fulfilling the requirement of 40 Code of Federal Regulations (CFR) Section 257.107(h)(4).

Based upon the statistical evaluation of Appendix III parameters collected during the baseline period at the Green Surface Impoundment, BREC initiated semi-annual Detection Monitoring in 2018.

1.1 Site Description

BREC owns and operates Sebree Station, which is a coal-fired power generating facility located on the Green River northeast of Sebree, Kentucky. Sebree Station is composed of Green Station and Reid/Henderson Municipal Power & Light (HMP&L) Station. The Sebree 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 and 2 began commercial operation in 1979 and 1981, respectively.

Three disposal units at Sebree Station are regulated under the CCR Rule: Green Landfill, Green Surface Impoundment, and the Reid/HMP&L Surface Impoundment. Each unit is discussed in more detail below.

1.1.1 Green Landfill

The Green Landfill is located directly south of Sebree Station, situated south of the Green Station CCR Surface Impoundment. The Green Landfill is a Kentucky permitted landfill (Permit No. SW11700007) that

receives 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. The current Green Landfill footprint is approximately 170 acres.

As stated in the published CCR monitoring well network certification for this unit (Associated Engineering Inc., June 2016), 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 (KGS) 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 wells were abandoned in accordance with applicable regulations by BREC in 1997 and 1998. The last existing oil well was decommissioned in 2019.

1.1.2 Green Surface Impoundment

The Green Surface Impoundment is located directly south of the Sebree Station and situated north of the Green Landfill. The Green Surface Impoundment has been in place for more than 40 years and is used for the placement of CCR material. The immediate watershed that drains to the CCR unit, and in which the CCR unit is located, is unnamed and 54.13 acres in size. The unnamed watershed discharges from the CCR surface impoundment outflow structure and is routed and monitored under a Kentucky Pollution Discharge Elimination System (KPDES) permit, to the Green River.

As stated in the CCR monitoring well network certification for this unit (Associated Engineering Inc., June 2016), the Green Surface Impoundment is a combined incised/dike earthen embankment structure. It is diked on the west, south and east sides, while the north side is incised. The south dike has 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 draining eastward to Green River.

1.1.3 Reid/HMP&L Surface Impoundment

The Reid/HMP&L Surface Impoundment is located directly northwest and adjacent of the Sebree Station. The Reid/HMP&L Surface Impoundment has been in place for more than 40 years and was formerly used for the placement of CCR material. The immediate watershed that drains to the CCR unit, and in which the CCR unit is located, is unnamed and 19.4 acres (disposal area) in size. The unnamed watershed discharges from the CCR impoundment outflow structure and is routed, under a KPDES permit, to the Green River.

As stated in the CCR monitoring well network certification for this unit (Associated Engineering Inc., June 2016), the Reid/HMP&L Surface Impoundment is a combined incised/dike earthen embankment structure. It is diked on the west, south and east sides, while the north side is incised. The south dike has the greatest height, reaching approximately 20 feet.

1.2 Green Landfill Program Monitoring Well Systems

1.2.1 Green Landfill Operating Permit 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 wells are located along the perimeter of the permitted footprint for the Green Landfill and meet the CCR Rule requirements that downgradient monitoring wells must be located at the waste boundary of the (active) CCR unit, or as close as practical.

Under the requirements stated in the operating permit, 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 site. MW-1 is located northwest of the

landfill and is considered upgradient. 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 well installation are summarized on **Table 1**. The locations of the groundwater monitoring wells are shown on **Figure 2**. Each well has a dedicated bladder pump and tubing system installed for sampling purposes.

As stated in the CCR monitoring well network certification, the stratigraphic interval considered as the most prominent water transmitting zone within and adjacent to the Green Landfill is material identified as the Upper Sandstone Member (Sebree sandstone) of the Carbondale Formation. The United States Geological Survey (USGS) Geologic Map of the Robards Quadrangle 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.” For purposes of compliance with the CCR Rule groundwater monitoring requirements; this sequence, and in particular the member sandstone intervals, is considered to be the uppermost aquifer underlying the Green Landfill.

Details about the monitoring network are presented in the *Monitoring Well Completion Report, Special Waste Landfill Facility, R.D. Green Station, Webster County, Kentucky* (FMSM Engineers, July 1997). **No changes were made to the Program Monitoring Well System in 2021**.

1.2.2 Green Landfill Characterization Monitoring Wells

To address the requirements of 40 CFR Section 257.95(g)(1), one (1) Characterization monitoring well (MW-104) was installed in February 2019 to characterize groundwater at the location indicated on **Figure 2**. As-built specifics of each well installation are summarized on **Table 1**.

The Characterization monitoring well, located at a downgradient position east of the Unit, was 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.

1.3 Green Surface Impoundment Program Monitoring Well Systems

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 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 CCR unit justified the placement of the minimum of one upgradient and three (3) downgradient monitoring wells. A upgradient monitoring well (MW-11) was installed adjacent to, and northwest of the impoundment. 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 Green Surface Impoundment. As-built specifics of each well installation are summarized on **Table 2**. The locations of the groundwater monitoring wells are shown on **Figure 3**. Each well has a dedicated bladder pump system and tubing installed for sampling purposes.

The stratigraphic interval considered as the most prominent water transmitting zone within and adjacent to the Green Surface Impoundment is material identified as the Upper Sandstone Member (Sebree sandstone) of the Carbondale Formation. The USGS Geologic Map of the Robards Quadrangle 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.” For purposes of compliance with the CCR Rule groundwater monitoring requirements; this sequence, and in particular the member sandstone intervals, is considered to be the uppermost aquifer underlying the Green Surface Impoundment.

Details about the 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 Sebree Station. **No changes were made to the Program Monitoring Well System in 2021**.

Due to the lack of SSLs for the unit, no Characterization monitoring wells are required for the Green Surface Impoundment.

1.4 Reid/HMP&L Surface Impoundment Program Monitoring Well Systems

1.4.1 Reid/HMP&L Surface Impoundment Operating Permit Monitoring Wells

As stated in the CCR monitoring well network certification, prior to implementation of the CCR Rule, five temporary piezometers (P-13/P-13A, P-14 and P-15/P-15A) were installed adjacent to and (respectively) northwest, southeast and southwest of the Reid/HMP&L Surface Impoundment to determine general direction of groundwater movement. Measured static water levels, from the highest to lowest elevation were observed in P-13/13A (highest), P-14 and P-15/P-15A (lowest) resulting in a calculated hydraulic gradient or apparent direction of groundwater movement generally from east-northeast to west-southwest. This groundwater gradient characterization allowed precise placement of monitoring wells for the CCR unit, thereby justifying the placement of the minimum of one upgradient and three (3) downgradient monitoring wells. The upgradient monitoring well (MW-7) was installed adjacent to, and east-northeast of the impoundment. The downgradient monitoring wells (MW-8, MW-9 and MW-10) were installed adjacent to, and respectively; west, southwest and south-southwest of the impoundment. As-built specifics of each well installation are summarized on **Table 3.** The locations of the groundwater monitoring wells are shown on **Figure 4**. Each well has a dedicated bladder pump system and tubing installed for sampling purposes.

The stratigraphic interval considered as the most prominent water transmitting zone within and adjacent to the Sebree Generating Station is material identified as the interbedded sandstone and shale of the Shelburn Formation (also referred to as the Lisman Formation). The USGS Geologic Map of the Robards Quadrangle describes this sequence as “Sandstone, shale, limestone, coal and underclay”. For purposes of compliance with the USEPA Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule groundwater monitoring requirements; this sequence, and in particular the member sandstone intervals, is considered to be the uppermost aquifer underlying the Reid/HMP&L Surface Impoundment.

Details about the 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 Sebree Station. **No changes were made to the Program Monitoring Well System in 2021**.

1.4.2 Reid/HMP&L Surface Impoundment Characterization Monitoring Wells

To address the requirements of 40 CFR Section 257.95(g)(1), one Characterization monitoring well (MW-110) was installed in February 2019 to characterize groundwater at locations indicated on **Figure 4**. As-built specifics of this well installation are summarized on **Table 3**.

The Characterization monitoring well, located at a downgradient position southwest of the Unit, was used to assist in the characterization of the existence, quality, quantity, areal extent, and depth of groundwater degradation, and the rate and direction of migration of CCR contaminants in the groundwater.

2. 2021 Activities Summary

The following subsections describe the activities that were performed in 2021 for the three CCR units noted above related to each of their corresponding CCR Groundwater Monitoring Networks.

2.1 Groundwater Sampling

During 2021, the following monitoring events were performed at Sebree Station:

- Green Landfill: Two Assessment groundwater monitoring events and two Characterization groundwater monitoring events;
- Green Surface Impoundment: Two Detection groundwater monitoring events; and
- Reid/HMP&L: Two Assessment groundwater monitoring events and two Characterization groundwater monitoring events.

The following tables summarize the dates of each sampling event and the wells included in the events for each CCR unit.

Green Landfill			
Event Type	Sampling Event	Dates	Wells Sampled
Assessment	First-Half 2021	April 22, 2021	Background (Upgradient) MW-1 Downgradient MW-2, MW-3A, MW-4. MW-5, MW-6
Characterization	1	May 26, 2021	Characterization (Downgradient) MW-104
Assessment	Second-Half 2021	September 23, 2021	Background (Upgradient) MW-1 Downgradient MW-2, MW-3A, MW-4. MW-5, MW-6
Characterization	2	September 23, 2021	Characterization (Downgradient) MW-104

Green Surface Impoundment			
Event Type	Sampling Event	Dates	Wells Sampled
Detection	First-Half 2020	April 23, 2021	Background (Upgradient) MW-11 Downgradient MW-12, MW-13, MW-14
Detection	Second-Half 2020	September 24, 2021	Background (Upgradient) MW-11 Downgradient MW-12, MW-13, MW-14

Reid/HMP&L Surface Impoundment			
Event Type	Sampling Event	Dates	Wells Sampled
Assessment	First-Half 2020	April 21, 2021	Background (Upgradient) MW-7 Downgradient MW-8, MW-9, MW-10
Characterization	1	May 26, 2021	Characterization (Downgradient) MW-110
Assessment	Second-Half 2020	September 29, 2021	Background (Upgradient) MW-7 Downgradient MW-8, MW-9, MW-10
Characterization	2	October 1, 2021	Characterization (Downgradient) MW-110

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

Groundwater sampling activities were performed by BREC personnel with all collected samples submitted to Pace Analytical Laboratory (Pace) in Madisonville, Kentucky, for analyses. Groundwater samples collected at the Green Landfill and Reid/HMP&L Surface Impoundment during Assessment and Characterization Monitoring events were analyzed for Appendix III and Appendix IV parameters, in accordance with 40 CFR Section 257.95(d)(1). Groundwater samples collected at the Green Surface Impoundment for the Detection Monitoring Event were analyzed for Appendix III parameters only, in accordance with 40 CFR Section 257.94(a).

No filtration of samples was conducted in either the field or laboratory procedures. Laboratory analyses were performed in accordance with approved USEPA methods.

2.2 Remedy Selection and Implementation

2.2.1 Green Landfill Remedy Implementation

On November 18, 2020 BREC finalized a Final Groundwater and Non-Groundwater Corrective Action Remedy Selection Report (GNGCARSR) for Green Landfill, thereby selecting the remedy for groundwater and non-groundwater impacts at the unit in accordance with 40 CFR Part 257.97. In alignment with the scoring completed as part of the corrective measure evaluation within the GNGCARSR, BREC has selected Alternative #5 (closure in place, other source control, institutional controls, and groundwater monitoring) as the remedy to address groundwater and non-groundwater impacts at Green Landfill.

In September and October 2019, BREC initiated design and construction of two containment systems intended as an interim corrective measure (ICMs) to reduce and prevent non-groundwater releases at the Unit from reaching the Green River. The containment systems are identified as the Deep Seep Collection Trench (also known as the Eastern Collection Trench) and the Northwest Seep Collection Trench. BREC began construction of the Deep Seep Collection Trench on October 7, 2019. The installation of four partially overlapping trenches and corresponding individual sumps was completed on November 11, 2019. BREC began construction of the Northwest Seep Collection Trench on September 3, 2019. The construction of the Northwest Seep Collection Trench was completed on January 22, 2020. Currently, no additional corrective measures are planned for these specific non-groundwater releases, as the ICMs implemented at the Unit in 2019 and 2020 are considered the final remedy for non-groundwater releases.

Construction of source control measures to address groundwater impacts at Green Landfill were initiated in November 2020. These source control measures consist 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 (RS)-07; and
3) Sediment removal from the South Sediment Basin.

Constructing 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 2022 and beyond for alignment with the corrective action objectives through performance monitoring.

2.2.2 Reid/HMP&L Surface Impoundment Remedy Implementation

Remedy Selection is being evaluated for the Reid HMP&L Surface Impoundment. As such, implementation of a remedy has not begun. BREC anticipates that Alternative #2a (Closure-in-place, institutional controls, and groundwater monitoring) will be selected as the preferred remedy and is working to establish a comprehensive list of data collection needs to proceed forward with remedy evaluation and selection in 2022.

3. Data Evaluation

3.1 Groundwater Flows

Water level data collected from each unit during the 2021 monitoring events are summarized on **Table 4** (Green Landfill), **Table 5** (Green Surface Impoundment), and **Table 6** (Reid/HMP&L Surface Impoundment). These data were used to construct piezometric surface maps to illustrate groundwater flow conditions for the uppermost aquifer. These data and figures are representative of general conditions at the units and support the following analysis.

GREEN LANDFILL

Overall groundwater flow beneath the footprint of the Green Landfill is to the east and southeast towards the Green River and Groves Creek (see **Figure 5**).

GREEN SURFACE IMPOUNDMENT

Overall groundwater flow beneath the footprint of the Green Surface Impoundment is to the east-southeast towards the Green River, which is located east of the impoundment (see **Figure 6**).

REID/HMP&L SURFACE IMPOUNDMENT

Overall groundwater flow beneath the footprint of the Reid/HMP&L Surface Impoundment is to the southwest towards an unnamed tributary to Groves Creek located west-southwest of the impoundment (see **Figure 7**).

3.2 Sampling Results

During 2021, the following monitoring events were performed at Sebree Station:

- Green Landfill: Two (2) Assessment groundwater monitoring events and two (2) Characterization groundwater monitoring events;
- Green Surface Impoundment: Two (2) Detection groundwater monitoring events; and
- Reid/HMP&L: Two (2) Assessment groundwater monitoring events and two (2) Characterization groundwater monitoring events.

Results from the Assessment and Characterization monitoring events are summarized on the tables included in **Appendix A, Appendix B, and Appendix C** for each unit. Complete analytical laboratory reports are included in **Appendix D, Appendix E, and Appendix F** for each unit.

3.3 Statistical Evaluation

As part of previous Assessment monitoring performed at the Green Landfill and Reid/HMP&L Surface Impoundment, background and downgradient wells for each unit were sampled for Appendix IV constituents in 2018 through 2021. In accordance with 40 CFR Section 257.95, GWPS were established for detected Appendix IV constituents. Previous Assessment Monitoring results indicated the presence of an SSL above the GWPS in the following monitoring wells:

- Green Landfill: lithium in monitoring wells MW-3A, MW-4, MW-5, and MW-6; and
- Reid/HMP&L: lithium in monitoring well MW-10.

The Green Surface Impoundment was not subject to Assessment monitoring and therefore no SSL determination was required.

In accordance with 40 CFR Section 257.93(f), 40 CFR Section 257.93(h), and 40 CFR Section 257.95(d)(2), AECOM conducted a statistical evaluation of the 2021 Assessment groundwater data as part of developing this summary report to determine any SSIs over baseline concentrations for the Appendix III and Appendix IV parameters and any SSLs over established GWPS for detected Appendix IV parameters. Summaries of the 2021 statistical evaluation conducted on the Appendix III and assessment Appendix IV parameters are provided as **Appendix G**, **Appendix H**, and **Appendix I** for each unit. The results of each unit-specific evaluation are discussed below.

Statistical methods were chosen in accordance with 40 CFR Section 257.93(f), while the rationale behind why each method was selected is outlined in the Statistical Methods Certification Document prepared for each unit dated June 28, 2016.

3.3.1 Green Landfill Statistical Evaluation

The Green Landfill Assessment monitoring data were evaluated using an inter-well approach that statistically compared constituent concentrations at downgradient compliance monitoring wells to those present at a background monitoring well. For the Green landfill, monitoring well MW-1 is designated as the background well because it is located upgradient, whereas monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 are designated as compliance wells because they are located downgradient.

The statistical analysis results indicate that Appendix III constituents had SSIs over background in 2021 as follows (see **Appendix G**; **Table G2 and G3**):

- MW-2: calcium, chloride, sulfate, pH lower prediction limit (LPL), and TDS;
- MW-3A: calcium, chloride, sulfate, and TDS;
- MW-4: calcium, chloride, sulfate, and TDS;
- MW-5: calcium, chloride, sulfate, and TDS; and
- MW-6: calcium, chloride, sulfate, and TDS.

Boron and fluoride did not have any verified SSIs over background. Based on these results, Assessment monitoring is required to continue at the unit on a semi-annual basis.

The statistical analysis results also indicate that the following Appendix IV constituents had SSIs over background in 2021 (see **Appendix G**; **Table G2 and G3**):

- MW-2: arsenic, barium and molybdenum;
- MW-3A: lithium;
- MW-4: lithium, mercury, and selenium;
- MW-5: cadmium and lithium; and
- MW-6: lithium.

These constituents were further evaluated to determine whether they are present at SSLs over the GWPS by calculating the lower confidence limit (LCL) at 95% confidence for each well and constituent using all of the Baseline, Detection, and Assessment monitoring results collected to date. For a constituent to be present at an SSL over the GWPS, its LCL must be greater than the GWPS. **Attachment G**, **Tables G4 and G5** provide a summary of the LCLs and GWPS for arsenic, barium, lithium, mercury, molybdenum, and selenium for the monitoring wells identified above for the spring and fall semi-annual events, respectively. The results indicate that **lithium at monitoring wells MW-3A, MW-4, MW-5 and MW-6 (grey highlights) is present at SSLs above the GWPS**. The LCLs for the remaining wells and constituents are equal to or less than the GWPS and thus are not considered SSLs. A summary of the statistical evaluation conducted on the Appendix III and Assessment Appendix IV parameters for the Green Landfill is provided as **Appendix G**.

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

3.3.2 Green Surface Impoundment Statistical Evaluation

The Appendix III Detection Monitoring data collected at the Green 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 Surface Impoundment, monitoring well MW-11 is designated as the background well because it is located upgradient, whereas monitoring wells MW-12, MW-13, and MW-14 are designated as compliance wells because they are located downgradient.

The statistical analysis results indicate that none of the Appendix III constituents (boron, calcium, chloride, fluoride, pH, sulfate or total dissolved solids [TDS]) have verified SSIs over their background upper prediction limit [UPL (see **Table H2**)]. In addition, pH does not have a verified SSI below its LPL. Based on these results, Assessment monitoring is not currently required at the Green Surface Impoundment.

A summary of the statistical evaluations conducted on the Detection Appendix III parameters for the Green Surface Impoundment is provided as **Appendix H**.

3.3.3 Reid/HMP&L Surface Impoundment Statistical Evaluation

The Reid/HMP&L Surface Impoundment Assessment Monitoring data were evaluated using an inter-well approach that statistically compared constituent concentrations at downgradient compliance monitoring wells to those present at a background monitoring well. For the Reid/HMP&L Surface Impoundment, monitoring well MW-7 is designated as the background well because it is located upgradient of the impoundment, whereas monitoring wells MW-8, MW-9, and MW-10 are designated as compliance wells because they are located downgradient of the impoundment.

The statistical analysis results indicate that Appendix III constituents had SSIs over background in 2021 (see **Appendix I**; **Table I2 and I3**):

- MW-8: boron, calcium, chloride, pH (LPL), sulfate, and TDS;
- MW-9: calcium, chloride, pH (LPL), and TDS; and
- MW-10: boron, chloride, fluoride, pH (UPL), sulfate, and TDS.

Based on these results, Assessment monitoring is required to continue at the Unit on a semi-annual basis.

The statistical analysis results also indicate that the following Appendix IV constituents had SSIs over background in 2021 (see **Appendix I**; **Table I2 and I3**):

- MW-8: lithium and radium-226+228;
- MW-9: barium, lithium, and radium-226+228; and
- MW-10: barium, fluoride, lithium and mercury.

These constituents were further evaluated to determine whether they are present at SSLs over the GWPS by calculating the LCL at 95% confidence for each well and constituent using all of the Baseline, Detection, and Assessment monitoring results collected to date. For a constituent to be present at an SSL over the GWPS, its LCL must be greater than the GWPS. **Attachment I**, **Table I4 and I5** provides a summary of the LCLs and GWPS for barium, fluoride, lithium, mercury, and radium for the monitoring wells identified above for the spring and fall semi-annual events, respectively. The results indicate that **lithium at monitoring wells MW-10 (gray highlight) is the only Appendix IV constituent present at SSLs above the GWPS**. The LCLs for the remaining wells and constituents are equal to or less than the GWPS and thus are not considered SSLs. A summary of the statistical evaluation conducted on the

Appendix III and Assessment Appendix IV parameters for the Reid/HMP&L surface Impoundment is provided as **Appendix I**.

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

3.4 Conclusions

Based upon the statistical evaluation of Appendix III and Appendix IV parameters collected during Assessment Monitoring at the Green Landfill and Reid/HMP&L Surface Impoundment in 2021, BREC is required to continue Assessment Monitoring in 2022.

Based upon the statistical evaluation of Appendix III parameters collected during the Detection Monitoring period at the Green Surface Impoundment in 2021, BREC is required to continue semi-annual Detection Monitoring in 2022.

4. 2022 Planned Activities

The following subsection summarizes the upcoming actions planned for 2022.

4.1 Groundwater Monitoring

Continued Semi-Annual Assessment monitoring of all operating permit monitoring wells for the Green Landfill and the Reid/HMP&L Surface Impoundment is planned for 2022.

Other planned activities for 2022 include two semi-annual Detection Monitoring sampling events and subsequent statistical evaluations for the Green Surface Impoundment.

4.2 Remedy Selection at Reid/HMP&L Surface Impoundment

Although a formal schedule has not been finalized, BREC anticipates holding a public meeting to discuss the results of the ACM for the Reid HMP&L Surface Impoundment in 2022. Within 90 days of the public meeting, a remedy will be selected for the unit.

5. References

AECOM, 2018. Annual Groundwater Monitoring and Corrective Action Report, 2016-2017; Green Station CCR Landfill, Webster County, Kentucky.

AECOM, June 2019. Assessment of Corrective Measures Under the CCR Rule, Green Station CCR Landfill, Webster County, Kentucky.

AECOM, June 2019. Assessment of Corrective Measures Under the CCR Rule, CCR Surface Impoundment; Reid/HMP&L Station, Webster County, Kentucky.

AECOM, 2020. 2019 Annual Groundwater Monitoring and Corrective Action Report, Sebree Generating Station, Henderson and Webster Counties Kentucky.

AECOM, 2021. 2020 Annual Groundwater Monitoring and Corrective Action Report, Sebree Generating Station, Henderson and Webster Counties Kentucky.

Associated Engineers, Inc., June 28, 2016. CCR Impoundment Groundwater Monitoring System and Statistical Methods Assessment and Certification, Green Station CCR Surface Impoundment.

Associated Engineers, Inc., June 28, 2016. CCR Landfill Groundwater Monitoring System and Statistical Methods Assessment and Certification, Green Station CCR Landfill.

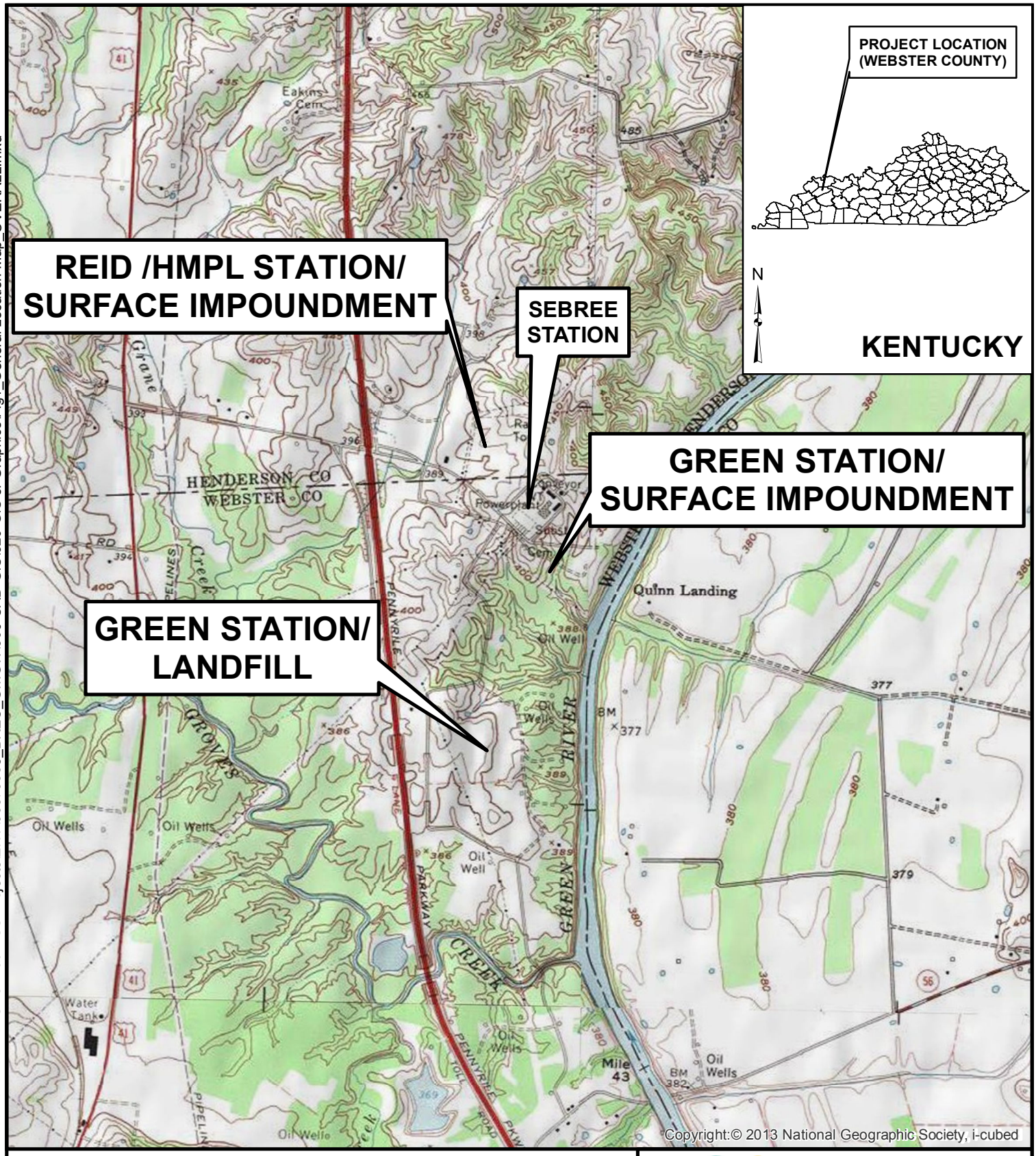
Associated Engineers, Inc., June 28, 2016. CCR Impoundment Groundwater Monitoring System and Statistical Methods Assessment and Certification, Reid/HMPL Station CCR Surface Impoundment.

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

FMSM Engineers, July 1997. Monitoring Well Completion Report, Special Waste Landfill Facility, R.D. Green Station, Webster County, Kentucky.

United States Environmental Protection Agency, 2015. 40 CFR Parts 257.90 to 257.98, Coal Combustion Residuals Rule.

Figures



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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

0 2,000 4,000 Feet

N

Big Rivers ELECTRIC CORPORATION

Sebree Station
Webster County, Kentucky

FIGURE 1
GENERAL LOCATION MAP

DATE: 1/8/2019	SCALE: 1IN = 2,000 FEET
CREATED BY: ALW	
JOB NO. 60579938	

Document Path: G:\Cincinnati\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60579938_BREC_GrnGW\920-GIS or Graphics\Fig2_REC_Green.mxd

MW-1
MW-2
MW-3A
MW-104
MW-6
MW-5
MW-4
Green River
Groves Creek

bing
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Legend

- Property Line
- KAR Permit Area
- CCR Fill Area
- Downgradient CCR Monitoring Well
- Upgradient CCR Monitoring Well
- Characterization Well

0 400 800
Feet

N

Big Rivers ELECTRIC CORPORATION

Green Landfill
Webster County, Kentucky

FIGURE 2
WELL LOCATION MAP

DATE: 12/9/2019	SCALE: 1IN = 300 FEET
CREATED BY: ALW	
JOB NO. 60602364	



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Legend

- (Impoundment) Unit Boundary
- Property Line
- Downgradient CCR Monitoring Well
- Upgradient CCR Monitoring Well

0 200 400

Feet

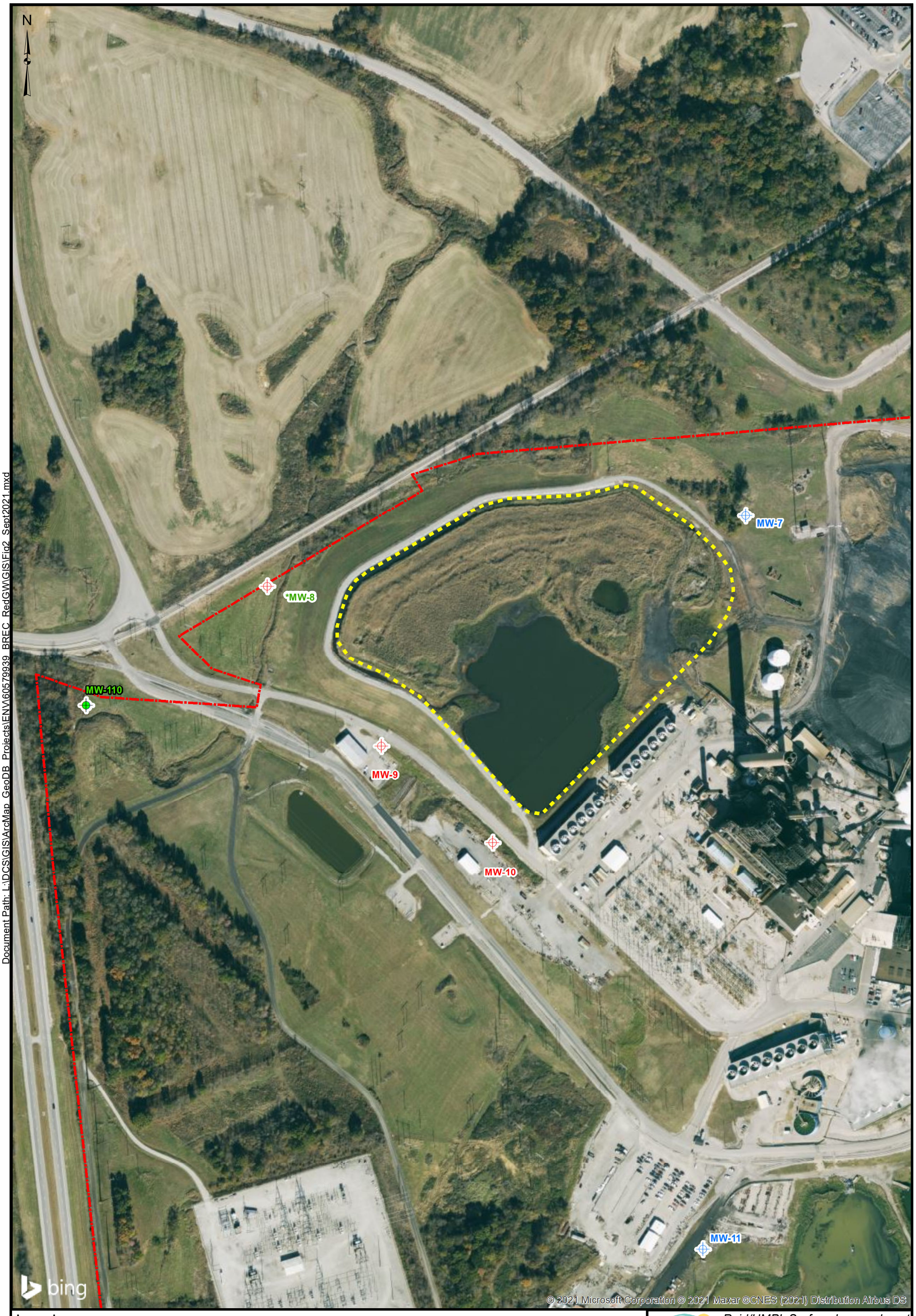
N

Big Rivers ELECTRIC CORPORATION

Green Suface Impoundment
Webster County, Kentucky

FIGURE 3
CCR GROUNDWATER
MONITORING SYSTEM

DATE: 1/11/2019	SCALE: 1IN = 200 FEET
CREATED BY: ALW	
JOB NO. 60579938	



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Legend

- Downgradient Monitoring Well
- Upgradient Monitoring Well
- Characterization Well
- Unit Boundary
- Property Line

0 300 600

Feet

Big Rivers Electric Corporation

Reid/HMPL Surface Impoundment
Webster County, Kentucky

FIGURE 4
MONITORING WELL
LOCATION MAP

DATE: 11/30/2021	SCALE: 1IN = 200 FEET
CREATED BY: TCC	
JOB NO. 60656816	



Legend

- Property Line
- KAR Permit Area
- CCR Fill Area
- Downgradient CCR Monitoring Well
- Upgradient CCR Monitoring Well
- Water Table Contour (Dashed where Inferred from Available Monitoring Data)
- Groundwater Flow Direction
- 364.93 Groundwater Elevation (Feet, MSL) Measured September 23, 2021

Dennis P. Connair — Registered Professional Geologist — PG 0197

0 400 800
Feet

Big Rivers Electric Corporation

Green Station Landfill
Webster County, Kentucky

FIGURE 5
POTENTIOMETRIC SURFACE MAP
September 23, 2021

DATE: 11/2/2021	SCALE: 1IN = 400 FEET
CREATED BY: TCC	
JOB NO. 60656313	

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Legend

- (Impoundment) Unit Boundary
- Property Line
- Downgradient CCR Monitoring Well
- Upgradient CCR Monitoring Well
- Water Table Contour (Dashed Where Inferred)
- Groundwater Flow Direction

391.42 Groundwater Elevation (Feet, MSL)
Measured September 24, 2021

Green River Elevation based on USGS Lock 2 in Calhoun, KY Data Gage at 13:00 on 9/24/21

0 200 400
Feet

N

Big Rivers

Green Suface Impoundment
Webster County, Kentucky

FIGURE 6
CCR GROUNDWATER
MONITORING SYSTEM

DATE: 12/30/2021	SCALE: 1IN = 200 FEET
CREATED BY: KDB	
JOB NO. 60657800	

N

390

400

410

420

MW-7
424.73

*MW-8
388.32

*MW-110
382.66

MW-9
387.67

MW-10
391.60

MW-11

bing

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Legend

- Proposed Assessment Well
- Downgradient Monitoring Well
- Upgradient Monitoring Well
- Unit Boundary
- Property Line
- Bedrock Valley
- 5 ft Water Table Contour (Inferred from Available Monitoring Data)
- 10 ft Water Table Contour (Inferred from Available Monitoring Data)
- Groundwater Flow Direction
- 391.60 Groundwater Elevation (Feet, MSL) Measured September 29, 2021

*** Monitoring wells with artesian conditions are shown on this map with green labels**

MW-110 data was collected on 10-1-2021

0 300 600
Feet

Big Rivers Electric Corporation

Reid/HMPL Surface Impoundment
Webster County, Kentucky

FIGURE 7
GROUNDWATER SURFACE MAP
SEPTEMBER 2021

DATE: 11/30/2021	SCALE: 1IN = 200 FEET
CREATED BY: TCC	
JOB NO. 60656816	

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		Screened Interval		Bottom of Boring
		Lat	Long	TOIC (feet, NAD27)	GS (feet, NAD27)	(feet, TOIC)	(ID / Material)	(feet, GS, NAD27)		(feet, GS, NAD27)		(feet, GS)
Program Monitoring Wells								Top	Bottom	Top	Bottom	
MW-1 (8002-9625)	U / B	37.3817	-87.3030	423.23	420.2	45.5	4 inch / PVC	389.9	377.7	387.7	377.7	45
MW-2 (8002-9630)	D	37.3815	-87.3005	392.37	389.9	50.3	4 inch / PVC	354.1	342.1	352.1	342.1	49
MW-3A (8003-6430)	D	37.3806	-87.3005	386.48	380.7	41.3	4 inch / PVC	357.2	344.5	355.2	345.2	36.2
MW-4 (8002-9628)	D	37.3744	-87.3004	391.33	388.8	33.1	4 inch / PVC	370.2	358.2	368.2	358.2	33
MW-5 (8002-9627)	D	37.3741	-87.3010	390.18	387.7	27.5	4 inch / PVC	374.7	362.7	372.7	362.7	26
MW-6 (8002-9626)	D	37.3745	-87.3027	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	37.6305	-87.5010	395.13	392.47	60.84	2 inch / PVC	347.47	332.47	342.47	332.47	60

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

PVC = Polyvinyl chloride
ID = Internal Diameter
TOIC = Top of internal casing
GS = Ground Surface
U / B = Upgradient / Background
D = Downgradient
C = Characterization

TABLE 2

SUMMARY OF MONITORING WELL CONSTRUCTION, GREEN SURFACE IMPOUNDMENT
CCR GROUNDWATER MONITORING PROGRAM

BIG RIVERS ELECTRIC CORPORATION - SEBREE STATION
GREEN STATION 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, NAD27)	GS (feet, NAD27)	(feet, TOIC)	(ID / Material)	(feet, GS, NAD27)		(feet, GS, NAD27)		(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

*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, NAD27 datum
PVC = Polyvinyl chloride
ID = Internal Diameter
TOIC = Top of internal casing
GS = Ground Surface
U / B = Upgradient / Background

TABLE 3

SUMMARY OF MONITORING WELL CONSTRUCTION, REID/HMPL SURFACE IMPOUNDMENT
CCR GROUNDWATER MONITORING PROGRAM

BIG RIVERS ELECTRIC CORPORATION - SEBREE STATION
REID/HMPL STATION 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, NAD27)	GS (feet, NAD27)	(feet, TOIC)	(ID / Material)	(feet, GS, NAD27)		(feet, GS, NAD27)		(feet, GS)
								Top	Bottom	Top	Bottom	
Program Monitoring Wells												
MW-7 (8006-3934)	U / B	37.64931	-87.50306	444.43	441.80	75.5	2 inch / PVC	375.90	368.40	373.90	368.90	73.4
MW-8 (8006-3935)	D	37.64886	-87.50860	394.29	385.84	60.7	2 inch / PVC	340.64	331.64	338.64	333.64	54.2
MW-9 (8006-3936)	D	37.64730	-87.50717	395.40	392.85	47.6	2 inch / PVC	359.85	336.55	357.85	347.85	56.3
MW-10 (8006-3937)	D	37.64637	-87.50586	422.27	419.98	81.8	2 inch / PVC	352.48	339.98	350.48	340.48	80.0
Characterization Well												
MW-110 (8007-1138)	D / C	37.6477	-87.5105	388.7	382.14	65.56	2 inch / PVC	334.64	323.14	333.14	323.14	59.0

* Reference elevation of monitoring wells MW-7 through MW-10 surveyed by Associated Engineers, Inc., Madisonville, Kentucky, January 2015. Reference elevation of monitoring well MW-110 surveyed by Associated Engineers Inc., March 19, 2019. Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, NAD27 datum

PVC = Polyvinyl chloride
ID = Internal Diameter
TOIC = Top of internal casing
GS = Ground Surface
U / B = Upgradient / Background
D = Downgradient
C = Characterization

TABLE 4

GROUNDWATER ELEVATIONS, GREEN LANDFILL - 2021

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		MW-104	
Reference Elevation	**Upgradient/Background**		**Downgradient**		**Downgradient**		**Downgradient**		**Downgradient**		**Downgradient**		**Downgradient**	
TOIC*(ft, NAD27)	**423.23**		**392.37**		**386.48**		**391.33**		**390.18**		**388.17**		**395.13**	
Date Measured	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**	**Depth to Water (ft) (feet)**	**GW Elevation (feet)**
4/22/2021	18.72	404.51	17.91	374.46	15.53	370.95	24.01	367.32	14.98	375.2	19.47	368.7	21.64	373.49
9/23/2021	20.96	402.27	22.53	369.84	19.55	366.93	26.40	364.93	16.32	373.86	21.51	366.66	25.20	369.93

*Reference elevation of monitoring wells surveyed by Fuller, Mossbarger, Scott and May, Civil Engineers, Inc., Lexington, Kentucky, December 1996, December 199
Survey coordinates were based on the Kentucky State Plane, Kentucky Southern Zone, NAD27 datum
TOIC = Top of internal casing
GW = Groundwater
GS = Ground Surface
NM = Not Measured

TABLE 5

GROUNDWATER ELEVATIONS, GREEN SURFACE IMPOUNDMENT - 2021
GREEN STATION 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, NAD27)	Upgradient/Background 401.32		Downgradient 395.54		Downgradient 394.60		Downgradient 390.71	
Date Measured	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)
4/23/2021	9.81	391.51	23.77	371.77	19.11	375.49	23.46	367.25
9/24/2021	9.98	391.34	27.60	367.94	20.79	373.81	25.75	364.96

*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, NAD27 datum
TOIC = Top of internal casing
GW = Groundwater
GS = Ground Surface
NM = Not Measured

TABLE 6

GROUNDWATER ELEVATIONS, REID/HMPL SURFACE IMPOUNDMENT - 2021
REID/HMP&L STATION SURFACE IMPOUNDMENT

BIG RIVERS ELECTRIC CORPORATION
SEBREE STATION
WEBSTER COUNTY, KENTUCKY

	GROUNDWATER MONITORING WELL PROGRAM									
	MW-7		MW-8		MW-9		MW-10		MW-110	
Reference Elevation TOIC*(ft, NAD27)	Upgradient/Background 444.43		Downgradient 394.29		Downgradient 395.40		Downgradient 422.27		Downgradient 388.70	
Date Measured	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)	Depth to Water (ft) (feet)	GW Elevation (feet)
4/21/2021	16.27	428.16	3.63	390.66	5.79	389.61	31.72	390.55	3.81[a]	384.89
9/29/2021	19.70	424.73	5.97	388.32	7.73	387.67	30.67	391.6	6.04[b]	382.66

*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, NAD27 datum
TOIC = Top of internal casing
GW = Groundwater
GS = Ground Surface
NM = Not Measured
[a] = Measured on 4/22/2021
[b] = Measured on 10/1/2021

Appendix A
Green Landfill Analytical Summary Tables

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
MW-1

APPENDIX III CONSTITUENTS	GWPS	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		9/30/2019		4/6/2020		9/22/2020		4/22/2021		9/23/2021	
		Baseline Events																		Assessment		Re-Sampling		Assessment											
Boron		1.67		1.49		2.25		1.70		1.71	J	1.68		1.85	B	1.79		1.92				1.41		1.94	B	1.73	B	1.68	D2 M4	1.69	D1, M3	1.66	D2, M4	1.45	D1, M4	1.68	D1, M1, M4
Calcium		29.1		31.8	B	33.0		30.9		20.8		28.1		27.1		29.9	B	26.4				26.5		28.5	B	32.1		29.1	D2	27.7	D1, M3	26.4	D2	31.6	D1, M1	26.4	D1, M1
Chloride		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			6.34	B	6.17	B	6.41	B F1	7.5		6.5		6.6		6.4		6.2	
Fluoride		ND	J	ND	JB	ND	J	ND	JB	ND	J F1	ND	JB	ND	J F1	ND	J	ND	J F1			ND	J	ND	JB	0.521	J	0.6		0.5		0.6		0.5		0.6	
Sulfate		25.2		22.8	JB	22.9		20.7	B	28.4		24.0	B	25.3	B	23.4		24.9	JB			23.5		22.5	B	35.1	B F1	19		21		24		42	D	33	D
pH (Field Measurement)		7.39		7.24		7.57		7.19		7.63		7.54		7.45		7.48		7.63				7.08		8.43		7.87		7.79	H3	7.22		6.88		6.90		7.28	
Total Dissolved Solids		598		588		585		585		605		630		614		627		636				585		616		568	B	444	H1	488		388		582		584	
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	ND	M1 V1 U	<0.005		<0.005		<0.005	U	<0.005	M2, U
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	0.0005	V1 J	0.0019		<0.0010		0.0005	J	<0.0010	M1, M2, U
Barium	2 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	0.091	D2	0.087		0.077		0.081		0.078	M2
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		0.000533	J	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	M2, U
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		0.000299	J	ND	VI U	<0.0010		<0.0010		0.0001	J	<0.0010	M2, U
Chromium	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J			ND	JB	ND		NA		0.00354	B	ND	U	0.0011	J	<0.0020		<0.0020	U	<0.0020	M2, U
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	ND	U	<0.004		<0.004		<0.004	U	<0.004	M2, U
Fluoride	4 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	0.6		0.5		0.6		0.5		0.6	
Lead	0.015 mg/L	ND	J	ND	J	ND	J	ND		ND		ND		ND		ND	J			ND		ND	J	NA		0.000279	J	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	M2, U
Lithium	0.040 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	ND	D2 M3 U	0.03		<0.20	M1	0.03		0.03	M1, M2
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		ND		ND		ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	M1, M2, U
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	ND	U	<0.01		<0.01		<0.01	U	<0.01	M1, M2, U
Radium 226	5 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		0.782		0.808		0.564		0.412		1.53	
Radium 228																												0.733									
Selenium	0.05 mg/L	ND		ND		ND		ND		ND		ND		ND	J	ND				ND		ND		NA		0.00105	J	ND	U	<0.003		<0.003		<0.003	U	<0.003	M2, U
Thallium	0.002 mg/L	ND		ND	J	ND		ND	J	ND		ND		ND	J	ND				ND		ND		NA		0.000498	J	0.0001	V1 J	0.0001	J	0.0001	J	<0.0020	U	<0.0020	M1, M2, U

*All results listed in milligrams per liter (mg/L) unless otherwise noted
GWPS = Groundwater Protection Standard
NA = Not Analyzed
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H1 = Sample analysis performed pasts holding time
H3 = Sample received and analyzed past holding time
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

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
MW-2

APPENDIX III CONSTITUENTS	GWPS	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		4/23/2019		10/1/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021	
		Baseline Events																		Assessment		Re-Sampling		Assessment											
Boron		ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	0.113	JB	ND	JB	ND	J			ND	J	0.0630	JB	0.101	JB	ND	D2 U	<0.10		<0.10		<0.10	U	<0.10	U
Calcium		119		116	B	140		140	B	126		152		154		121		150				155		165	B	156		166	D1	145	D1	157	D1	179	D1	193	D1
Chloride		126	B	125	B	129	B	133		142	B	129	B	145	B	136	B	129	B			154	B	159	B	144		108	D	120	D	231	D	264	D	301	D
Fluoride		ND	J	ND		ND	J	ND	JB F1	ND	J	ND	JB	ND	JB	ND	JB F1	ND	J			ND	J	ND	JB	0.193	J	0.3		0.2		0.3		0.2		0.3	
Sulfate		80.0		84.5	J	85.5	J	90.1		89.8		83.2		92.0	JB	90.8		88.6	JB			107		108	B	105		79.0	D	85	D	117	D	199	D	205	D
pH (Field Measurement)		6.81		6.59		6.7		6.78		7.12		7.04		6.77		6.69		6.86		6.64		6.40		7.02		7.15		7.39	H3	6.92		6.22		6.69		6.27	
Total Dissolved Solids		764		780		830		880		862		918		913		818		970				884		937		918	B	930	H1	806		914		1040		1070	
APPENDIX IV CONSTITUENTS																																					
Antimony	0.006 mg/L	ND		ND	J	ND	JB	ND	JB	ND		ND	JB	ND	B	ND	JB			ND	JB	ND	J	NA		0.0000670	JB	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U
Arsenic	0.01 mg/L	0.00703	J	0.00633		0.0110		0.0159		0.0462		0.00755		0.0381		0.00527				0.0327	B	0.0119		0.0211	B	0.00738	B	0.0129	D2	0.0033		0.0095		0.0259		0.025	
Barium	2 mg/L	ND	J	ND	J	0.280		0.319		0.347		0.332		0.308		ND	J			0.369		0.323		0.367		0.362		0.380	D2	0.238		0.336		0.363		0.329	
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		0.000281	J	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U
Cadmium	0.005 mg/L	ND	J	ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	V1 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Chromium	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND	JB	ND		NA		0.00122	JB	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U
Cobalt	0.006 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J			ND	JB	ND	J	NA		0.00382	J	ND	D2 U	<0.004		<0.004		<0.004	U	<0.004	U
Fluoride	4 mg/L	ND	J	ND		ND	J	ND	JB F1	ND	J	ND	JB	ND	JB	ND	JB F1			ND	J	ND	J	ND	JB	0.193	J	0.3		0.2		0.3		0.2		0.3	
Lead	0.015 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND	J	NA		ND		ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U
Lithium	0.040 mg/L	ND	J	ND		ND		ND		ND	J	ND	J	ND	JB	ND				ND		ND		ND		ND		ND	D2 VI U	0.007	J	0.006	V1, J	0.006	J	0.006	J
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		ND		ND		ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U
Molybdenum	0.1 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	JB			ND	J	ND	J	NA		0.00210	J	0.003	J	0.002	J	0.002	J	0.003	J	0.002	J
Radium 226	5 pCi/L	0.533		ND		0.46		ND		0.856		0.73		0.968		0.537				1.18		0.733		0.803		0.391		0.136		0.529		0.493		1.26		0.591	
Radium 228																												0.834									
Selenium	0.05 mg/L	ND		ND		ND		ND	JB	ND		ND		ND	JB	ND				ND		ND		NA		ND		ND	U	<0.003		<0.003		<0.003	U	<0.003	U
Thallium	0.002 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND		ND		NA		0.0000800	J	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U

*All results listed in milligrams per liter (mg/L) unless otherwise noted
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NA = Not Analyzed
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H1 = Sample analysis performed pasts holding time
H3 = Sample received and analyzed past holding time
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

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
MW-3A

APPENDIX III CONSTITUENTS	GWPS	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		10/1/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021	
		Baseline Events																		Assessment		Re-Sampling		Assessment											
Boron		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				0.177	J	0.257	JB	0.259	JB	ND	D2 U	0.26		0.28		0.25		0.37	
Calcium		431		322	B	362		365	B	327		420		421		438	B	408				469		447	B	411		490	D1	425	D1	423	D1	438	D1	483	D1
Chloride		2630	HB	3070		2150	B	2150	B	2220	B	2120	B	1790	B	2270	B	1870	B			2180	B	2040	B	1850		4570	D	3220	D	1200	D	3460	D	1780	D
Fluoride		ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND		3.16		ND	J			ND	J	ND	JB	0.387	J	0.4		0.5		0.4		0.4		<0.20	U
Sulfate		1330		1330		1190		1660		1080		1030	B	942		1130		1030	B			1010		1130	B	1080		1680	D	1840	D	1830	D	2110	D	2380	D
pH (Field Measurement)		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		7.33	H3	6.86		6.61		7.26		6.77	
Total Dissolved Solids		4440		5010		4170		4450		4270		5170		5010		5020		5300				4540		4940		4250	B	6900	H1	5860		5680		5940		6490	
APPENDIX IV CONSTITUENTS																																					
Antimony	0.006 mg/L	ND		ND	J	ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB			ND	JB	ND		NA		0.000102	JB	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U
Arsenic	0.01 mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB			ND	JB	ND	J	ND	JB	0.000575	JB	ND	D2 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	ND	J	0.0474	J	0.051	D2 U	0.042		0.043		0.042		0.045	
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		0.000199	J	ND	D2 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U
Cadmium	0.005 mg/L	ND	J	ND	J	ND		ND		ND	J	ND	J	ND		ND				ND	J	ND	J	NA		0.000164	J	ND	V1 U	0.0001	J	<0.0010		0.0002	J	<0.0010	U
Chromium	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J			ND	JB	ND		NA		0.00168	JB	ND	D2 U	<0.0020		0.0006	J	<0.0020	U	<0.0020	U
Cobalt	0.006 mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	JB	ND	J	NA		0.000243	J	0.008		<0.004		0.004		<0.004	U	<0.004	U
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND		3.16				ND	J	ND	J	ND	JB	0.387	J	0.4		0.5		0.4		0.4		<0.20	U
Lead	0.015 mg/L	ND	J	ND		ND		ND		ND		ND		ND	J	ND	J			ND		ND	J	NA		0.000137	J	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U
Lithium	0.040 mg/L	0.669		0.516		0.648		0.677		0.689		0.746		0.767		0.762				0.699		0.790		0.766		0.678		0.79	D1	0.68		0.80	D2	0.75		0.76	
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		ND		ND		ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U
Molybdenum	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	D2 U	<0.01		<0.01		<0.01	U	<0.01	U
Radium 226	5 pCi/L	1.38		0.386		0.472		1.15		1.15		0.923		1.53		1.03				1.18		1.43		1.21		0.641		0.139		1.06		1.51		1.25		1.46	
Radium 228																												0.734									
Selenium	0.05 mg/L	ND		ND		ND	J	ND	JB	ND		ND		ND		ND				ND	J	ND		NA		0.00103	J	ND	D2 U	<0.003		<0.003		<0.003	U	<0.003	U
Thallium	0.002 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J			ND		ND		NA		0.000860	J	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U

*All results listed in milligrams per liter (mg/L) unless otherwise noted
GWPS = Groundwater Protection Standard
NA = Not Analyzed
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H1 = Sample analysis performed pasts holding time
H3 = Sample received and analyzed past holding time
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

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
MW-4

APPENDIX III CONSTITUENTS	GWPS	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		10/1/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021	
		Baseline Events																		Assessment		Re-Sampling		Assessment											
Boron		0.602		0.498	J	1.58		1.7		1.54	B	2.09		2.51	B	2.87	B	1.36				0.751	J	1.33	B	1.25	B	1.75	D2	0.83		1.70	D2	1.38	D1	1.43	D1
Calcium		660		386	B	464		558		591		774		743		739		828				822		722	B	730		690	D1	464	D1	823	D1	764	D1	841	D1
Chloride		1450	B	939	B	952	B	1000	B	1420	B	1320	B	1360	B	1880	B	1730	B			1430	B	1310	B	1510		1910	D	1560	D	2030	D	2470	D	1910	D
Fluoride		ND	J	ND		ND	J	ND	JB	ND	J	1.06	B	ND		ND	JB	ND	J			ND	J	ND	JB	0.102	J	0.2		0.2		0.2		0.2		<0.20	U
Sulfate		1830		1640		1420		1420	B	1620		1430	B	1600	B	2020		1590	B			1460		1400	B	1440		2490	D	4000	D	2080	D	2330	D	1780	D
pH (Field Measurement)		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		7.36	H3	6.70		6.64		7.12		6.52	
Total Dissolved Solids		3700		4250		3440		3250		4420		4550		4890		4700	H	6220				4880		5170		4840	B	4820	H1	5120		4470		5040		5610	
APPENDIX IV CONSTITUENTS																																					
Antimony	0.006 mg/L	ND		ND	J	ND	JB	ND		ND		ND	JB	ND	JB	ND	JB			ND	JB	ND		NA		0.0000360	JB	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U
Arsenic	0.01 mg/L	ND		ND	J	ND	J	ND		ND	J	ND	J	ND	J	ND	JB			ND	JB	ND	J	ND	JB	0.000445	JB	ND	D2 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J	ND	J	ND	JB			ND	J	ND	J	ND	J	0.0308	JB	0.029	D2 J	0.022		0.031		0.029		0.030	
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	D2 U	<0.0020		<0.0040	D2	<0.0020	U	<0.0020	U
Cadmium	0.005 mg/L	ND	J	ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	V1 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Chromium	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND	JB	ND		NA		0.00110	JB	ND	D2 U	0.0008	J	<0.0020		<0.0020	U	<0.0020	U
Cobalt	0.006 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND	JB	ND	J	NA		0.000415	J	ND	U	<0.004		<0.004		<0.004	U	<0.004	
Fluoride	4 mg/L	ND		ND		ND	J	ND	JB	ND	J	ND	B	ND		ND	JB			ND	J	ND	J	ND	JB	0.102	J	0.2		0.2		0.2		0.2		<0.20	U
Lead	0.015 mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND				ND		ND	J	NA		ND		ND	V1 U	<0.002		<0.002		<0.0020	U	<0.002	U
Lithium	0.040 mg/L	1.39		0.838		1.13		1.25		1.35		1.59		1.77		1.66				1.81		1.91		1.81		1.73		ND	D2 V1 U	0.82		1.73	D2	1.44		1.44	D2
Mercury	0.002 mg/L	0.00027		0.000224		ND	J	0.000248		0.000302		0.000717		0.000825		0.000485				0.000824		0.000832		0.000680		0.000825		0.0004	V1 J	0.0003	J	0.0003	J	0.0004	J	0.0002	J
Molybdenum	0.1 mg/L	ND	J	ND	J	ND		ND		ND	J	ND		ND		ND				ND		ND		NA		ND		ND	D2 U	0.002	J	<0.01		<0.01	U	<0.01	U
Radium 226	5 pCi/L	1.26		0.592		ND		0.536		1.22		1.43		1.94		1.19				1.62		2.00		1.51		1.66		0.451		1.26		0.877		0.982		0.551	
Radium 228																												0.804									
Selenium	0.05 mg/L	ND	J	ND	J	ND	J	ND		ND	J	ND		ND		ND	J			ND	J	ND		NA		0.00211	J	ND	U	0.023		<0.003		0.003		<0.003	U
Thallium	0.002 mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND				ND		ND		NA		0.0000410	J	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U

*All results listed in milligrams per liter (mg/L) unless otherwise noted
GWPS = Groundwater Protection Standard
NA = Not Analyzed
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H1 = Sample analysis performed pasts holding time
H3 = Sample received and analyzed past holding time
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

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
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APPENDIX III CONSTITUENTS	GWPS	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		9/30/2019		4/7/2020		9/22/2020		4/22/2021		9/23/2021	
		Baseline Events																		Assessment		Re-Sampling		Assessment											
Boron		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				0.207	J	0.263	JB	0.271	JB	ND	D2 U	0.25		0.24		0.24		0.23	
Calcium		452		189	B	374		399		335		464		423		407	B	383				469		441	B	446		476	D1	464	D1	495	D1	498	D1	453	D1
Chloride		1630	B	521		688	B	755	B	734	B	722	B	945	B	779	B	608	B			941	B	1140	B	931		1500	D	1860	D	1800	D	2080	D	2250	D
Fluoride		ND	J	ND		ND	J	ND		ND	J	ND	JB	ND		3.69		ND	J			ND	J	ND	JB	0.128	J	0.2		0.2		0.2		<0.2	U
Sulfate		1760	HB	876		1780		1740	B	1880		1760	B	2060	B	1920		1600	B			1800		1890	B	1800		2990	D	3720	D	973	D	3440	D	1000	D
pH (Field Measurement)		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		7.41	H3	6.77		6.52		6.92		6.67	
Total Dissolved Solids		4210		1660		3470		3610		3680		4250		4130		4120		4390				4100		4540		4360	B	5320	H1	4960		5170		5000		5630	
APPENDIX IV CONSTITUENTS																																					
Antimony	0.006 mg/L	ND		ND	J	ND	JB	ND		ND		ND	JB	ND	JB	ND	JB			ND	JB	ND		NA		0.0000700	JB	ND	V1 U	<0.005		<0.005		<0.005	U	<0.005	U
Arsenic	0.01 mg/L	ND		ND	J	ND	JB	ND	J	ND	J	ND	J	ND	J	ND	JB			ND	JB	ND	J	ND	JB	0.000424	JB	ND	D2 U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	ND	J	0.0167	J	0.016	D2 J	0.014		0.014		0.014		0.013	
Beryllium	0.004 mg/L	ND		ND		ND	J	ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	D2 U	<0.0020		<0.0040	D2	<0.0020	U	<0.0020	U
Cadmium	0.005 mg/L	ND	J	ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	V1 U	<0.0010		<0.0010		0.0006	J	<0.0010	U
Chromium	0.1 mg/L	ND		ND	J	ND		ND		ND	J	ND	J	ND	J	ND	J			0.00363	B	ND		NA		0.00159	JB	0.0033		<0.0020		0.0008	J	<0.0020	U	<0.0020	U
Cobalt	0.006 mg/L	ND		ND	J	ND	J	ND	J	ND		ND	J	ND		ND	J			ND	JB	ND	J	NA		0.000288	J	ND	U	<0.004		<0.004		<0.004	U	<0.004	U
Fluoride	4 mg/L	ND	J	ND		ND	J	ND		ND	J	ND		ND		3.69				ND	J	ND	J	ND	JB	0.128	J	0.2		0.2		0.2		<0.2	U		
Lead	0.015 mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND				ND	J	ND	J	NA		0.0000860	J	ND	V1 U	<0.002		<0.002		<0.002	U	<0.002	U
Lithium	0.040 mg/L	0.521		0.136		0.305		0.325		0.368		0.415		0.405		0.353				0.459		0.481		0.425		0.434		0.40	D1	0.38		0.42	D2	0.39		0.35	
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		0.00351		ND				ND		ND		ND		ND		ND	V1 U	<0.0005		<0.0005		<0.0005	U	<0.0005	U
Molybdenum	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND		ND		NA		ND		ND	D2 U	<0.01		<0.01		<0.01	U	<0.01	U
Radium 226	5 pCi/L	1.16		0.736		0.959		0.957		0.765		0.888		1.54		0.773				0.862		1.42		1.37		0.945		0.368		1.48		1.68		1.24		1.02	
Radium 228																												0.730									
Selenium	0.05 mg/L	ND		ND		ND		ND		ND	J	ND	J	ND		ND				ND	J	ND		NA		0.000624	J	ND	U	<0.003		<0.003		<0.003	U	<0.003	U
Thallium	0.002 mg/L	ND		ND		ND	J	ND	J	ND		ND	J	ND		ND	J			ND	J	ND		NA		0.0000890	J	ND	V1 U	<0.0020		<0.0020		<0.0020	U	<0.0020	U

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GWPS = Groundwater Protection Standard
NA = Not Analyzed
ND = Not Detected at or above Method Detection Limit
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
H1 = Sample analysis performed pasts holding time
H3 = Sample received and analyzed past holding time
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

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
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APPENDIX III CONSTITUENTS	GWPS	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	9/30/2019	4/6/2020	9/22/2020	4/22/2021	9/23/2021
		Baseline Events									Assessment	Re-Sampling		Assessment					
Boron		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		0.155 J	0.196 JB	0.194 JB	ND D2 U	0.19	0.19	0.18	0.18
Calcium		467	374 B	373	400	320	415	365	382 B	376		386	356 B	421	431 D1	458 D1	417 D1	376 D1	417 D1
Chloride		167 B	149 B	136 JB	150 B	125 B	129 B	128 B	123 B	138 B		147 B	142 B	142	230 D	181 D	286 D	276 D	130 D, M2
Fluoride		ND J	ND J	ND J	ND JB	ND J	ND JB	ND	ND J	ND J		ND J	ND JB	0.409 J	0.5	0.4	0.5	0.4	<0.20 M2, U
Sulfate		2250 HB	3340	2550	2610 B	2700	2600 B	2820 B	2490	2700 B		2120	2420	2200	3830 D	4650 D	2380 D, H2	3460 D	1620 D, M2
pH (Field Measurement)		6.66	6.65	6.96	6.6	6.92	6.97	6.76	6.95	6.86		6.50	7.94	6.86	7.15 H3	6.36	6.32	6.72	6.87
Total Dissolved Solids		4060	4280	4350	4470	4720	4700	4830	4890	4910		4500	4820	4780 B	4830 H1	4610	4740	5050	5080
APPENDIX IV CONSTITUENTS																			
Antimony	0.006 mg/L	ND	ND J	ND JB	ND	ND	ND JB	ND JB	ND JB		ND JB	ND	NA	0.0000920 JB	ND V1 U	<0.005	<0.005	<0.005 U	<0.005 U
Arsenic	0.01 mg/L	ND	ND J	ND J	ND J	ND J	ND J	ND J	ND JB		ND JB	ND J	ND JB	0.000722 JB	ND V1 U	<0.0010	<0.0010	<0.0010 U	<0.0010 U
Barium	2 mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J		ND J	ND J	ND J	0.0128 J	0.010 D2 J	0.011	0.011	0.014	0.009
Beryllium	0.004 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	NA	ND	ND D2 U	<0.0020	<0.0020 V1	<0.0020 U	<0.0020 U
Cadmium	0.005 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	NA	ND	ND V1 U	0.0001 J	<0.0010	<0.0010 U	<0.0010 U
Chromium	0.1 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND J		ND JB	ND	NA	0.00196 JB	ND U	<0.0020	0.0006 J	0.0006 J	0.0006 J
Cobalt	0.006 mg/L	ND	ND J	ND J	ND J	ND J	ND J	ND J	ND J		ND JB	ND J	NA	0.000276 J	ND U	<0.004	<0.004	<0.004 U	<0.004 U
Fluoride	4 mg/L	ND J	ND J	ND J	ND JB	ND J	ND JB	ND	ND J		ND J	ND J	ND JB	0.409 J	0.5	0.4	0.5	0.4	<0.20 M2, U
Lead	0.015 mg/L	ND J	ND J	ND	ND	ND	ND	ND	ND		ND	ND J	NA	ND	ND V1 U	<0.002	<0.002	<0.002 U	<0.002 U
Lithium	0.040 mg/L	0.0475 J	0.0527	0.0555	0.0524	0.0607	0.0724	0.0589	0.0554		0.0650	0.0592	0.0558	0.0633	0.05 D2 V1 J	0.05	0.05 D2, J	0.05	0.04
Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND V1 U	<0.0005	<0.0005	<0.0005 U	<0.0005 U
Molybdenum	0.1 mg/L	ND J	ND J	ND J	ND B	ND J	ND J	ND J	ND J		ND J	ND J	NA	0.000972 J	ND D2 U	<0.01	<0.01	<0.01 U	<0.01 U
Radium 226	5 pCi/L	0.741	0.386	ND	0.751	ND	ND	0.462	ND		0.392	0.532	ND U	0.450	0.548	0.744	0.380	0.674	0.109
Radium 228															0.698				
Selenium	0.05 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND J	ND	NA	0.00110 J	ND U	<0.003	<0.003	<0.003 U	<0.003 U
Thallium	0.002 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND		ND	ND	NA	0.0000610 J	ND V1 U	<0.0020	<0.0020	<0.0020 U	<0.0020 U

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pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
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
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

GREEN LANDFILL - CCR ANALYTICAL SUMMARY
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APPENDIX III CONSTITUENTS	GWPS	DATE													
		3/29/2019		4/10/2019		10/25/2019		4/17/2020		10/1/2020		5/26/2021		9/23/2021	
		Characterization													
Boron		0.1880	JB	0.2710	JB	ND	D2, U	0.21		0.23	D2	0.26	M4	0.25	
Calcium		465	B	502		505	D1	527	D1	491	D1	459	D1,M1,M2	466	D1
Chloride		1430		1430	B	1610	D	2630	D	2220	D	1650	D	1430	M2
Fluoride		ND		0.3230	JB	0.4		0.3		0.3		0.4		0.4	M2, Y2
Sulfate		2870		2880	B	2440	D	4710	D	2730	D	1970	D	1900	D, M1
pH (Field Measurement)		6.88		6.99		6.86		6.58		6.91		7.55		6.22	
Total Dissolved Solids		6990		6690		7330		6320		6270		7330		7230	
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
Arsenic	0.01 mg/L	0.0022	J	0.0021	J	0.0039		0.0013		0.0013		0.0008	J	0.0010	
Barium	2 mg/L	0.0243	J	0.0216	JB	0.030		0.018		0.018		0.016		0.017	
Beryllium	0.004 mg/L	ND		ND		ND	U	<0.0020		<0.0020	D2	<0.0020	U	<0.0020	U
Cadmium	0.005 mg/L	ND		ND		0.0004	J	<0.0010		<0.0010		0.0001	J	0.0006	J
Chromium	0.1 mg/L	0.0047	B	0.0036		0.0066		0.0020		0.0013	J	0.0012	J	<0.0020	U
Cobalt	0.006 mg/L	0.0059	B	0.0052		0.011		0.005		0.005		<0.004	U	<0.004	U
Fluoride	4 mg/L	ND		0.3230	JB	0.4		0.3		0.3		0.4		0.4	M2, Y2
Lead	0.015 mg/L	0.0011	J	0.0002	J	0.003		<0.002		<0.002		<0.002	U	<0.002	U
Lithium	0.040 mg/L	0.0281	J	0.0286	J	0.02		0.02		0.02	D2	0.02	M1	0.03	
Mercury	0.002 mg/L	ND		ND	^	ND	U	<0.0005		<0.0005		<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
Radium 226	5 pCi/L	0.7760		0.3190	U	0.126		0.655		0.422		0.385		1.36	
Radium 228						1.52									
Selenium	0.05 mg/L	ND		ND		ND	U	<0.003		<0.003	D2	<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

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H1 = Sample analysis performed pasts holding time
H3 = Sample received and analyzed past holding time
M1 = Matrix spike recovery was high; the method control sample recovery was acceptable.
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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

Appendix B
Green Surface Impoundment Analytical Summary Tables

GREEN SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
MW-11

APPENDIX III CONSTITUENTS	GWPS	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		10/3/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021	
		Baseline Events																								Detection							
Boron	NA	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		ND	D2, M2. M4, U	0.78	M2, M4	<1.00	D2, M2	0.78	M4	<1.0	D2, U
Calcium	NA	371		378	B	243		291		276		326	B	321		299		315	B	317		312		345		318	D1, M1	316	D1. M2	335	D2,M3	343	D1, M2	347	D1, M1, M2
Chloride	NA	1070	B	1740	B	1880	B	2000	B	1880	B	1910	B	2360	B	1520	B	1940	B	1860	B	2000	B	1900		3900	D	2270	D	2620	D	3190	D	2040	D
Fluoride	4 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	0.2		0.2		0.2		0.2		0.2	
Sulfate	NA	1170		1400		1150		1150	B	1060		1010	B	1410		797	J	1050	B	1020	B	1080	B	949	B	971		1210	D	1280	D	1600	D	1980	D
pH (Field Measurement)	NA	7.23		7.24		7.29		7.22		7.20		7.04		6.89		6.88		6.86		7.18		6.70		7.11		6.86		6.78		6.98		7.11		6.57	
Total Dissolved Solids	NA	3920	H	4610		4840		4490		4930		4830		5100		4880		5080		5070		5020		4890	B	682		4650		4510		5130		5030	
APPENDIX IV CONSTIUENTS																																	
Antimony	0.006 mg/L	ND		ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	ND	JB																
Arsenic	0.01 mg/L	ND	J	ND		ND		ND	J	ND	J	ND	JB	ND	J	ND	JB																
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J																
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																	
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																	
Chromimum	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J																
Cobalt	0.006 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																
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND		ND	J	ND	J	ND		ND	JB							0.227	J	0.2		0.2		0.2		0.2		0.2	
Lead	0.015 mg/L	ND		ND	JB	ND		ND		ND		ND		ND	J	ND																	
Lithium	0.040 mg/L	0.0365	J	0.0685		0.0651		0.0544		0.0591		0.0545		0.0615		0.0596																	
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																	
Molybdenum	0.1 mg/L	0.0163		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND																	
Radium 226 / Radium 228	5 pCi/L	1.35		0.975		1.61		1.86		1.66		2.18		2.69		2.08																	
Selenium	0.05 mg/L	ND		ND	J	ND	J	ND		ND	J	ND	JB	ND		ND	J																
Thallium	0.002 mg/L	ND	J	ND		ND		ND		ND		ND	J	ND	J	ND																	

*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
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
H = Sample was prepped or analyzed beyond the specified holding time
^ = ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,DLCK or MRL standard; Instrument related QC is outside acceptance limits
F1 = MS and/or MSD Recovery is outside acceptance limits
D1 = Sample required dilution due to high concentration of target analysis
D2 = Sample required dilution due to matrix interference
D = Results reported from dilution
M1 = Matrix spike recovery was high; the method control sample recovery was ac
M2 = Matrix spike recovery was low; the method control sample recovery was acc
M4 = The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U = Target analyte was analyzed for, but was below detection limit

GREEN SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
MW-12

APPENDIX III CONSTITUENTS	GWPS	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		10/4/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021	
		Baseline Events																				Detection											
Boron	NA	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		ND	D2, U	0.31		<1.00	D2	0.31		<1.0	D2, U
Calcium	NA	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		92.0	D2	98.3	D2	89.6	D2	91.5	D1	91.8	D2
Chloride	NA	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		14.0		13.9		13.5		14.7		16.2	
Fluoride	4 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	0.4		0.4		0.4		0.4		0.4	
Sulfate	NA	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	11		9		8		14		31	D
pH (Field Measurement)	NA	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		7.07		6.90		6.83		7.33		6.52	
Total Dissolved Solids	NA	472		745		726		677		679		676		674		758		641		4890	B	649		595		618	B	546		532		658		576		622	
APPENDIX IV CONSTIUENTS																																					
Antimony	0.006 mg/L	0.00204		ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	ND	JB																				
Arsenic	0.01 mg/L	0.00596		0.00566		ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB																				
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J																				
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Chromimum	0.1 mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND	J																				
Cobalt	0.006 mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J																				
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND	J	ND	JB			0.227	J					0.428	J	0.4		0.4		0.4		0.4		0.4	
Lead	0.015 mg/L	ND	J	ND	JB	ND		ND		ND		ND		ND	J	ND	J																				
Lithium	0.040 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																				
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Molybdenum	0.1 mg/L	0.0769		0.0234		0.0141		0.0123		0.0100		ND	JB	ND	J	ND	J																				
Radium 226 Radium 228	5 pCi/L	0.842		ND		ND		0.954		0.361		0.556		0.566		ND																					
Selenium	0.05 mg/L	ND	J	ND		ND		ND		ND		ND	JB	ND		ND																					
Thallium	0.002 mg/L	ND		ND		ND		ND		ND		ND	JB	ND		ND																					

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D1 = Sample required dilution due to high concentration of target analysis
D2 = Sample required dilution due to matrix interference
D = Results reported from dilution
M1 = Matrix spike recovery was high; the method control sample recovery was ac
M2 = Matrix spike recovery was low; the method control sample recovery was acc
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.

GREEN SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
MW-13

APPENDIX III CONSTITUENTS	GWPS	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		10/4/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021	
		Baseline Events																				Detection											
Boron	NA	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	ND	D2, U	<0.10		<1.00	D2	<0.10	U	<1.0	D2, U
Calcium	NA	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		87.4	D2	86.6	D2	84.9	D2	90.1	D1	87.9	D2
Chloride	NA	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		24.6		22.8		33.3	D	26.4	D	32.3	D
Fluoride	4 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	0.2		0.3		0.4	D	0.2		0.2	
Sulfate	NA	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	41		117	D	87	D	82	D	121	D
pH (Field Measurement)	NA	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		6.75		6.53		6.80		6.77		6.51	
Total Dissolved Solids	NA	699		721		684		704		678		714		702		727		695		4890	B	673		697		711	B	586		608		552		706		754	
APPENDIX IV CONSTIUENTS																																					
Antimony	0.006 mg/L	ND		ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	ND	JB																				
Arsenic	0.01 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB																				
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J																				
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Chromimum	0.1 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND	J																				
Cobalt	0.006 mg/L	0.00378	J	0.00221	J	0.0018	J	0.00149	J	0.000720	J	0.00115	J	0.0009	J	0.000981	J																				
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND	J	ND	JB			0.227	J					0.271	J	0.2		0.3		0.4	D	0.2		0.2	
Lead	0.015 mg/L	ND	J	ND	JB	ND		ND		ND		ND		ND		ND																					
Lithium	0.040 mg/L	0.00929	J	0.0104	J	0.0123	J	0.0104	J	0.0113	J	ND		0.0111	J	ND																					
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Molybdenum	0.1 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J																				
Radium 226 Radium 228	5 pCi/L	ND		ND		ND		ND		ND		0.164		0.47		0.749																					
Selenium	0.05 mg/L	ND		ND		ND	J	ND		ND		ND		ND		ND																					
Thallium	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					

*All results listed in milligrams per liter (mg/L) unless otherwise noted by the Maximum Contaminant Level (MCL)
GWPS = Groundwater Protection Standard
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D = Results reported from dilution
M1 = Matrix spike recovery was high; the method control sample recovery was ac
M2 = Matrix spike recovery was low; the method control sample recovery was acc
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.

GREEN SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
MW-14

APPENDIX III CONSTITUENTS	GWPS	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		10/3/2019		4/8/2020		9/25/2020		4/23/2021		9/24/2021	
		Baseline Events																		Detection															
Boron	NA	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		ND	D2, U	0.20		<1.00	D2	0.17		<1.0	D2, U
Calcium	NA	194		194	B	171		193		183		193	B	193		187		194	B	189		200		345		206		194	D1	195	D1	194	D2	199	D1	212	D1
Chloride	NA	161	B	184	B	185	B	193	B	191	B	185	B	212	B	230	B	199	B	198	B	189	B	1900		165		262	D	121	D	131	D	117	D	186	D
Fluoride	4 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	0.3		0.3		0.3		0.2		0.3	
Sulfate	NA	188		219		216		215	B	221		197	B	179		198	J	185		222	B	231	B	949	B	222	B	871	D	183	D	221	D	180	D	324	D
pH (Field Measurement)	NA	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		6.77		6.57		6.75		6.88		6.52	
Total Dissolved Solids	NA	1080		1130		1140		1130		1150		1170		1150		1240		1170		1180		1100		4890	B	1180	B	1120	H2	1030		946		1040		1050	
APPENDIX IV CONSTIUENTS																																					
Antimony	0.006 mg/L	ND		ND	JB	ND	JB	ND		ND	JB	ND	JB	ND	JB	ND	JB																				
Arsenic	0.01 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB																				
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J																				
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Chromimum	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND		ND	J																				
Cobalt	0.006 mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J																				
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	JB	ND		ND	JB	ND	J	ND	JB							0.227	J	0.342	J	0.3		0.3		0.3		0.2		0.3	
Lead	0.015 mg/L	ND		ND	JB	ND		ND		ND		ND		ND		ND	J																				
Lithium	0.040 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																				
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Molybdenum	0.1 mg/L	ND	J	ND	J	ND		ND		ND		ND		ND		ND																					
Radium 226 Radium 228	5 pCi/L	1.54		1.42		1.86		1.55		1.31		2.17		2.85		1.8																					
Selenium	0.05 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					
Thallium	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND		ND																					

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D2 = Sample required dilution due to matrix interference
D = Results reported from dilution
M1 = Matrix spike recovery was high; the method control sample recovery was
M2 = Matrix spike recovery was low; the method control sample recovery was a
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.

Appendix C
Reid/HMP&L Surface Impoundment Analytical Summary Tables

REID/HMPL SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
MW-7

APPENDIX III CONSTITUENTS	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		4/16/2020		9/24/2020		4/21/2021		9/29/2021	
		Baseline Events																		Assessment		Re-Sample		Assessment											
Boron	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	0.34	M4	0.33	M2, M4	0.34		1.77	D1, M2
Calcium	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	45.7	D2, M2	41.8	D2, M1, M2	43.4	D1	27	D1, M2
Chloride	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		4.1		3.3		4.9		6.5	
Fluoride	4 mg/L	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		0.3		0.3		0.3		0.5	
Sulfate	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		15		12		15		34	D
pH (Field Measurement)	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		6.86		6.56		7.75		7.80	
Total Dissolved Solids	NA	233		243		243		250		253		291		290		267		278				295		263		271		228		148		114		280		610	
APPENDIX IV CONSTIUENTS																																					
Antimony	0.006 mg/L	ND		ND	JB	ND	JB	ND	J	ND		ND		ND	JB	ND	JB			ND	JB	ND	JB	NA		0.0000760	JB	ND	U	<0.005		<0.005	M2	<0.005	U	<0.005	M2, U
Arsenic	0.01 mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	JB	ND	JB	NA		0.00116	J	0.0014		0.0025		0.0015	M2	0.0026		<0.0010	M2, U
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			ND	J	ND	J	ND	J	0.0824	J	0.062		0.087		0.075	M3	0.082		0.074	M2
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		NA		NA		ND		ND	U	<0.0020	V1	<0.0020		<0.0020	U	<0.0020	M2, U
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		NA		NA		ND		ND	U	<0.0010		<0.0010	M2	<0.0010	U	<0.0010	M2, U
Chromium	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND	JB	ND	JB	NA		0.00136	J	ND	U	<0.0020		<0.0020	M2	0.0007	J	<0.0020	M2, U
Cobalt	0.006 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	J			ND	J	ND	J	NA		0.000158	J	ND	U	<0.004		<0.004	M2	<0.004	U	<0.004	M2, U
Fluoride	4 mg/L	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		0.3		0.3		0.3		0.5	
Lead	0.015 mg/L	ND	J	ND	JB	ND		ND	J	ND		ND		ND		ND				ND		ND		NA		0.0000730	J	ND	U	<0.002		<0.002	M2	<0.002	U	<0.002	U
Lithium	0.040 mg/L	ND	J	ND		ND		ND		ND	J	ND		ND		ND				ND		ND		ND		ND		0.008	J	0.007	V1, J	0.008	J	0.008	J	0.03	M1, M2
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		0.000135		ND				ND		NA		NA		ND		ND	U	<0.0005		<0.0005	M2	<0.0005	U	<0.0005	M2, U
Molybdenum	0.1 mg/L	0.0109		0.0185		0.0136		0.0118		0.0127		ND	J	ND	J	ND	J			ND	J	ND	J	ND	J	0.00442	J	0.01		0.006	J	0.006	M2, J	0.005	J	<0.01	M2, U
Radium 226 + Radium 228	5 pCi/L	0.865		0.685		0.473		ND		0.921		0.662		0.795		0.642				0.650		1.15		0.730		0.698		0.652 -0.208		1.83		0.968		0.703		0.912	
Selenium	0.05 mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND				ND		NA		NA		ND		ND	U	<0.003		<0.003	M2	<0.003	U	<0.003	U
Thallium	0.002 mg/L	ND		ND	J	ND	J	ND		ND		ND		ND		ND				ND		NA		NA		ND		ND	U	<0.0020		<0.0020	M2	<0.0020		<0.0020	M2, U

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GWPS = Groundwater Protection Standard
NA = Not Analyzed
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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

REID/HMPL SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
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APPENDIX III CONSTITUENTS	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	4/16/2020	9/24/2020	4/21/2021	9/29/2021
		Baseline Events										Assessment	Re-Sample	Assessment						
Boron	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	1.56 D1	1.41 D2	1.42 D1, M4	1.5 D1
Calcium	NA	283	242 B	228	194	235 B	251	253	228	235 B	46.1		253	254 B	272	267 D1	292 D1	257 D1	281 D1, M2	267 D1
Chloride	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	47.3	49.2	45.8 D	61.4 D
Fluoride	4 mg/L	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	0.4	0.4	0.3	0.4
Sulfate	NA	1100 HB	1140	1120	1080	1220 B	1180 B	1110	1440 B	1040	16.8 B		1050	1180 B	1220 B	1240 D	1130 D	1400 D	1090 D	2320 D
pH (Field Measurement)	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	6.78	6.58	6.64	6.12
Total Dissolved Solids	NA	1930	1980	1960	2030	2010	1990	2090	2030	2100	271		2060	1990	2090	2200	1930	1940	2000	2090
APPENDIX IV CONSTIUENTS																				
Antimony	0.006 mg/L	ND	ND JB	ND JB	ND J	ND	ND JB	ND JB	ND JB		0.0000760 B	ND JB	ND JB	NA	0.000205 JB	ND U	<0.005	<0.005	<0.005 U	<0.005 U
Arsenic	0.01 mg/L	ND	ND J	ND J	ND J	ND J	ND J	ND	ND J		0.00116 J	ND JB	ND JB	NA	0.000438 J	ND U	<0.0010	<0.0010	<0.0010 U	<0.0010 U
Barium	2 mg/L	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J		0.0824 J	ND J	ND J	ND J	0.0188 J	0.016	0.017	0.016	0.018	0.02
Beryllium	0.004 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	ND	ND U	<0.0020 V1	<0.0020	<0.0020 U	<0.0020 U
Cadmium	0.005 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	ND	ND U	<0.0010	<0.0010	<0.0010 U	<0.0010 U
Chromium	0.1 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND		0.00136 J	ND JB	ND JB	NA	0.00320	ND U	<0.0020	<0.0020	<0.0020 U	<0.0020 U
Cobalt	0.006 mg/L	ND	ND J	ND J	ND J	ND	ND J	ND	ND		0.000158 J	ND J	ND J	NA	0.000141 J	ND U	<0.004	<0.004	<0.004 U	<0.004 U
Fluoride	4 mg/L	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	ND J		0.255 J	ND J	ND J	ND J	0.370 J	0.4	0.4	0.4	0.3	0.4
Lead	0.015 mg/L	ND	ND	ND	ND J	ND	ND	ND	ND		0.0000730 J	ND	ND	NA	0.000104 J	ND U	<0.002	<0.002	<0.002 U	<0.0020 U
Lithium	0.040 mg/L	0.0314 J	0.035 J	0.0314 J	0.0324 J	0.0408 J	0.0377 J	0.0367 J	0.0375 J		ND	0.0347 J	0.0368 J	0.0375 J	0.0370 J	0.03	0.03	0.03	0.03	0.04
Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND JB	ND		ND	ND	NA	NA	ND	ND U	<0.0005	<0.0005	<0.0005 U	<0.0005 U
Molybdenum	0.1 mg/L	0.0138 J	0.0186	0.0157	0.0147	0.0173	0.0158	0.0175	0.0139		0.00442 J	0.0147	0.0140	0.0149	0.0146	0.01	0.01	0.01	0.01	0.01
Radium 226 / Radium 228	5 pCi/L	1.98	1.32	1.36	1.36	1.92	1.12	1.48	1.4		0.698	1.29	1.6	1.46	1.43	0.914 / 1.59	1.93	0.366	1.94	1.72
Selenium	0.05 mg/L	ND	ND	ND	ND J	ND	ND	ND	ND J		ND	ND	NA	NA	0.000634 J	ND U	<0.003	<0.003	<0.003 U	<0.003 U
Thallium	0.002 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	0.0000470 J	ND U	<0.0020	<0.0020	<0.0029 U	<0.0020 U

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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

REID/HMPL SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
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APPENDIX III CONSTITUENTS	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	4/16/2020	9/24/2020	4/21/2021	9/29/2021
		Baseline Events										Assessment	Re-Sample	Assessment						
Boron	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	0.32	0.22	0.23	<0.10 U
Calcium	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	71.2 D2	65.3 D2	66.9 D1	59.4 D1
Chloride	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	22.8	19.9	22.5	7.2
Fluoride	4 mg/L	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	0.3	0.3	0.2	0.2
Sulfate	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	<1	<1	<1 U	<1 U
pH (Field Measurement)	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	7.04	6.67	7.12	6.23
Total Dissolved Solids	NA	363	389	403	409	465	435	303	308	316	271		399	293		392	320	308	422	264
APPENDIX IV CONSTIUENTS																				
Antimony	0.006 mg/L	ND	ND JB	ND JB	ND J	ND	ND JB	ND JB	ND JB		0.0000760 B	ND JB	ND JB	NA	0.000192 JB	ND U	<0.005	<0.005	<0.005 U	<0.005 U
Arsenic	0.01 mg/L	ND	ND J	ND J	ND J	ND J	ND J	ND J	ND		0.00116 J	ND JB	ND JB	NA	0.000563 J	ND U	<0.0010	<0.0010	<0.0010 U	<0.0010 U
Barium	2 mg/L	1.1	1.03	0.889	0.635	0.827	0.833	0.253	0.227		0.0824 J	0.967	0.777	0.288	1.03	0.763	1.06 D1	0.730	0.782	0.248
Beryllium	0.004 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	ND	ND U	<0.0020 V1	<0.0020	<0.0020 U	<0.0020 U
Cadmium	0.005 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	ND	ND U	<0.0010	<0.0010	<0.0010 U	<0.0010 U
Chromium	0.1 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		0.00136 J	ND JB	ND JB	NA	0.00316	ND U	<0.0020	<0.0020	<0.0020 U	<0.0020 U
Cobalt	0.006 mg/L	ND	ND J	ND J	ND J	ND	ND	ND	ND		0.000158 J	ND JB	ND J	NA	0.0000550 J	ND U	<0.004	<0.004	<0.004 U	<0.004 U
Fluoride	4 mg/L	ND J	ND J	ND J	ND J	ND JB	ND J	ND J	ND J		0.255 J	ND JB	ND J	ND J	0.223 J	0.2	0.3	0.3	0.2	0.2
Lead	0.015 mg/L	ND	ND JB	ND	ND J	ND	ND	ND	ND		0.0000730 J	ND	ND	NA	0.0000760 J	ND U	<0.002	<0.002	<0.002 U	<0.002 U
Lithium	0.040 mg/L	0.0120 J	0.0105 J	0.0102 J	0.0119 J	0.0179 J	0.0136 J	ND	ND		ND	0.0108 JB	0.0112 J	ND	0.0141 J	0.009 J	0.01 V1, J	0.009 J	0.01 J	0.005 J
Mercury	0.002 mg/L	ND	ND	ND	ND	ND	ND	ND JB	ND J		ND	ND	NA	NA	ND	ND U	<0.0005	<0.0005	<0.0005 U	<0.0005 U
Molybdenum	0.1 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		0.00442 J	ND	ND	ND	ND	ND U	<0.01	<0.01	<0.01 U	<0.01 U
Radium 226 / Radium 228	5 pCi/L	2.87	2.84	2.91	1.38	2.11	2.53	1.28	1.26		0.698	2.04	1.93	1.23	2.32	1.09 / 1.23	2.90	3.44	3.99	1.13
Selenium	0.05 mg/L	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	ND	ND U	<0.003	<0.003	<0.003 U	<0.003 U
Thallium	0.002 mg/L	ND	ND J	ND	ND	ND	ND	ND	ND		ND	ND	NA	NA	ND	ND U	<0.0020	<0.0020	<0.0020 U	<0.0020 U

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REID/HMPL SURFACE IMPOUNDMENT - ANALYTICAL SUMMARY
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APPENDIX III CONSTITUENTS	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		4/16/2020		9/24/2020		4/21/2021		9/29/2021	
		Baseline Events																				Assessment		Re-Sample		Assessment													
Boron	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	0.54		0.51		0.54		0.54	
Calcium	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	12.5	D2	8.80	D2	7.95	D1	8.25	
Chloride	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		21.5		21.4		21.4		20.7	
Fluoride	4 mg/L	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		0.5		0.5		0.5		0.5	
Sulfate	NA	208	HB	135		144		152		145		168		177	B	226	B	147		16.8	B			129		138	B	114	B	80	D	58	D	62	D	52	D	61	D
pH (Field Measurement)	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		8.87		8.74		9.88		8.26	
Total Dissolved Solids	NA	644		532		558		602		679		763		758		763		728		271				721		673		642		568		466		436		530		514	
APPENDIX IV CONSTIUENTS																																							
Antimony	0.006 mg/L	ND		ND	JB	ND	JB	ND	J	ND		ND	JB	ND	JB	ND	JB			0.0000760	B	ND	JB	ND	JB	NA		0.0000580	JB	ND	U	<0.005		<0.005		<0.005	U	<0.005	U
Arsenic	0.01 mg/L	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND	J			0.00116	J	ND	JB	ND	JB	NA		0.00254	J	0.0022		0.0019		0.0019		0.0018		0.0017	
Barium	2 mg/L	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J	ND	JB	ND	J			0.0824	J	ND	J	ND	J	ND	J	0.100	J	0.077		0.093		0.084		0.089		0.096	
Beryllium	0.004 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		NA		ND		ND	U	<0.0020	V1	<0.0020		<0.0020	U	<0.0020	U
Cadmium	0.005 mg/L	ND		ND		ND		ND		ND		ND		ND		ND				ND		ND		NA		NA		ND		ND	U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Chromium	0.1 mg/L	ND	J	ND	J	ND	J	ND		ND	J	ND	J	ND	JB	ND				0.00136	J	ND	JB	ND	JB	NA		0.00299	J	0.0006	J	<0.0020		0.0006	J	0.0007	J	0.0006	J
Cobalt	0.006 mg/L	ND		ND	J	ND	J	ND	J	ND	J	ND	J	ND	JB	ND	J			0.000158	J	ND	J	ND	J	NA		0.000685	J	ND	U	<0.004		<0.004		<0.004	U	<0.004	U
Fluoride	4 mg/L	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J	ND	J			0.255	J	ND	J	ND	J	ND	J	0.570	J	0.6		0.5		0.5		0.5		0.5	
Lead	0.015 mg/L	ND		ND	JB	ND		ND	J	ND	J	ND	J	ND		ND				0.0000730	J	ND	J	ND		NA		0.000671	J	ND	U	<0.002		<0.002		<0.002	U	<0.002	U
Lithium	0.040 mg/L	0.339		0.199		0.219		0.0736		0.481		0.607		0.204		0.345				ND		0.694		0.630		0.570		0.574		0.51		0.49		0.56		0.57		0.49	
Mercury	0.002 mg/L	ND		ND		ND		ND		ND		ND		ND	JB	ND				ND		ND		NA		NA		ND		0.0002	J	0.0002	J	0.0002	J	0.0003	J	0.0002	J
Molybdenum	0.1 mg/L	0.0170	J	0.0171		0.0141		ND	J	0.0119		ND	J	ND	J	ND	J			0.00442	J	ND	J	ND	J	ND	J	0.00797	J	0.007	J	0.006	J	0.007	J	0.007	J	0.007	J
Radium 226	5 pCi/L	0.612		ND		0.715		ND		0.422		0.287		0.619		0.391				0.698		0.512		0.683		0.704		0.205	U	0.458		1.24		0.594		0.769		0.692	
Radium 228																														0.379									
Selenium	0.05 mg/L	ND		ND		ND		ND	J	ND		ND		ND		ND				ND		ND		NA		NA		ND		ND	U	<0.003		<0.003		<0.003	U	<0.003	U
Thallium	0.002 mg/L	ND		ND	J	ND		ND		ND		ND		ND		ND				ND		ND		NA		NA		ND		ND	U	<0.0020		<0.0020		<0.0020	U	<0.0020	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
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
D1 = Sample required dilution due to high concentration of target analyte
D2 = Sample required dilution due to matrix interference
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

REID/HMPL SURFACE IMPOUNDMENT - CCR ANALYTICAL SUMMARY
MW-110

APPENDIX III CONSTITUENTS	Detection Limit	GWPS	DATE													
			3/29/2019		4/10/2019		10/24/2019		4/17/2020		10/1/2020		5/26/2021		10/1/2021	
			Characterization													
Boron	0.08		0.484	JB	0.496	JB	ND	D2, U	0.54	M4	0.53	D2, M1, M4	0.54		0.52	
Calcium	0.5		176	B	178		204	D1	181	D1, M2	162	D1, M2	163	D1	155	D1
Chloride	3		26.0		30.4	B	30.0		22.1		19.9		21.8		21.1	
Fluoride	1		0.279	J	0.255	JB	0.3		0.3		0.3		0.3		0.3	
Sulfate	5		563		596	B	568	D M1	460	D	411	D	428	D	853	D
pH (Field Measurement)	0.10		7.25		7.50		6.84		7.17		7.56		7.75		6.69	
Total Dissolved Solids	10		1170		1200		1270		1150		1060		1140		1090	
APPENDIX IV CONSTITUENTS																
Antimony	0.002	0.006 mg/L	0.000240	JB	0.000204	JB	ND	U	<0.005		<0.005	M4	<0.005	U	<0.005	U
Arsenic	0.005	0.01 mg/L	0.00534		0.00238	J	ND	U	0.0012		0.0004	J	<0.0010	U	<0.0010	U
Barium	0.2	2 mg/L	0.118	J	0.107	JB	0.065		0.065		0.056	M1	0.055		0.049	
Beryllium	0.002	0.004 mg/L	0.000716	J	0.000314	J	ND	U	<0.0020	M2	<0.0020	M4	<0.0020	U	<0.0020	U
Cadmium	0.001	0.005 mg/L	ND		ND		ND	U	<0.0010		<0.0010		<0.0010	U	<0.0010	U
Chromium	0.003	0.1 mg/L	0.0180	B	0.0115		0.0010	J	0.0047		0.0016	J	0.0009	J	<0.0020	U
Cobalt	0.005	0.006 mg/L	0.00911	B	0.00384	J	ND	U	<0.004		<0.004	M4	<0.004	U	<0.004	U
Fluoride	1	4 mg/L	0.279	J	0.255	JB	0.3		0.3		0.3		0.3		0.3	
Lead	0.005	0.015 mg/L	0.00661		0.00399	J	ND	U	0.002		0.0008	J	<0.002	U	<0.002	U
Lithium	0.05	0.040 mg/L	0.0299	J	0.0303	J	0.02		0.02		0.02	M4	0.02		0.02	
Mercury	0.0002	0.002 mg/L	ND		ND	^	ND	U	0.0002	J	<0.0005	M1, M4	<0.0005	U	<0.0005	U
Molybdenum	0.01	0.1 mg/L	0.00153	J	0.00120	J	ND	U	<0.01		<0.01	M4	<0.01	U	<0.01	U
Radium 226	1	5 pCi/L	1.84		1.93		0.195		1.37		0.941		0.636		0.652	
Radium 228							0.727									
Selenium	0.01	0.05 mg/L	ND		ND		ND	U	<0.003		<0.003	M4	<0.003	U	<0.003	U
Thallium	0.001	0.002 mg/L	0.000112	J	0.0000640	J	ND	U	<0.0020		<0.0020		<0.0020	U	<0.0020	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
pCi/L = picoCuries per Liter
J = Result is less than the Reporting Limit but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
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D1 = Sample required dilution due to high concentration of target analyte
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M1 = Matrix spike recovery was high; the method control sample recovery was acceptable
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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

Appendix D
Green Landfill Analytical Laboratory Reports

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

Certificate of Analysis
1033766

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 05/24/2021 09:02

Project Name:	Green Landfill Semiannual Groundwater	Workorder:	1033766

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 04/22/2021 15:05.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

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
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SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033766-01	MW1/	Groundwater	04/22/2021 09:30	04/22/2021 15:05	Travis Sneed
1033766-02	MW2/	Groundwater	04/22/2021 13:15	04/22/2021 15:05	Phillip Hill
1033766-03	MW3A/	Groundwater	04/22/2021 12:05	04/22/2021 15:05	Phillip Hill
1033766-04	MW4/	Groundwater	04/22/2021 12:40	04/22/2021 15:05	Travis Sneed
1033766-05	MW5/	Groundwater	04/22/2021 11:25	04/22/2021 15:05	Travis Sneed
1033766-06	MW6/	Groundwater	04/22/2021 10:30	04/22/2021 15:05	Travis Sneed
1033766-07	DUPLICATE/	Groundwater	04/22/2021 12:18	04/22/2021 15:05	Phillip Hill
1033766-08	FIELD BLANK/	Water	04/22/2021 13:35	04/22/2021 15:05	Phillip Hill

LabNumber	Measurement	Value
1033766-01	Field Conductance	4
	Field pH	6.90
	Field Temp (C)	14.33
1033766-02	Field Conductance	1330
	Field pH	6.69
	Field Temp (C)	15.97
1033766-03	Field Conductance	6200
	Field pH	7.26
	Field Temp (C)	14.97
1033766-04	Field Conductance	41
	Field pH	7.12
1033766-05	Field Conductance	20
	Field pH	6.92
	Field Temp (C)	13.58
1033766-06	Field Conductance	9
	Field pH	6.72
	Field Temp (C)	16.0
1033766-07	Field Conductance	6200
	Field pH	7.26
	Field Temp (C)	14.97

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-01**
Description: **MW1**

Sample Collection Date Time: 04/22/2021 09:30
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:11	DMH
Arsenic	**0.0005**	J	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Barium	**0.081**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Boron	**1.45**	D1, M4	mg/L	1.00	1.00	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:03	AKB
Cadmium	**0.0001**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Calcium	**31.6**	D1, M1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:03	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Iron	**0.137**		mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:00	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH
Sodium	**198**	D1, M2	mg/L	26.0	10.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:06	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:11	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U, M2	mg/L	8	8	HACH 8000	04/24/2021 11:34	04/24/2021 11:34	SLP
Specific Conductance (Lab)	**948**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:50	04/26/2021 15:50	CML
pH (Lab)	**7.59**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:13	04/26/2021 15:13	CML
Total Dissolved Solids	**582**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**1.0**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 20:02	04/28/2021 20:02	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.264**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.148**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.412**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**6.4**		mg/L	0.5	0.4	SW846 9056	04/30/2021 15:26	04/30/2021 15:26	CSC
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	04/30/2021 15:26	04/30/2021 15:26	CSC
Sulfate	**42**	D	mg/L	2	1	SW846 9056	05/03/2021 11:59	05/03/2021 11:59	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-02**
Description: **MW2**

Sample Collection Date Time: 04/22/2021 13:15
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:21	DMH
Arsenic	**0.0259**		mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Barium	**0.363**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:09	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Calcium	**179**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:16	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Iron	**11.1**	D1	mg/L	1.00	0.500	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:13	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Lithium	**0.006**	J	mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Molybdenum	**0.003**	J	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH
Sodium	**60.2**	D1	mg/L	2.60	1.00	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:13	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:21	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**10**		mg/L	8	8	HACH 8000	04/24/2021 11:34	04/24/2021 11:34	SLP
Specific Conductance (Lab)	**1680**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:51	04/26/2021 15:51	CML
pH (Lab)	**6.83**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:14	04/26/2021 15:14	CML
Total Dissolved Solids	**1040**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**1.4**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 20:23	04/28/2021 20:23	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.454**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.807**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**1.26**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**264**	D	mg/L	10.0	7.2	SW846 9056	04/30/2021 15:55	04/30/2021 15:55	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	04/30/2021 15:40	04/30/2021 15:40	CSC
Sulfate	**199**	D	mg/L	20	10	SW846 9056	04/30/2021 15:55	04/30/2021 15:55	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-03**
Description: **MW3A**

Sample Collection Date Time: 04/22/2021 12:05
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:23	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Barium	**0.042**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Boron	**0.25**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:19	AKB
Cadmium	**0.0002**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Calcium	**438**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:25	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:19	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Lithium	**0.75**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH
Sodium	**376**	D1	mg/L	26.0	10.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:25	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:23	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**79**		mg/L	8	8	HACH 8000	04/24/2021 11:34	04/24/2021 11:34	SLP
Specific Conductance (Lab)	**7720**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:52	04/26/2021 15:52	CML
pH (Lab)	**7.13**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:15	04/26/2021 15:15	CML
Total Dissolved Solids	**5940**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**0.5**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 20:44	04/28/2021 20:44	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.440**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.808**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**1.25**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**3460**	D	mg/L	100	72.0	SW846 9056	05/03/2021 12:13	05/03/2021 12:13	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/30/2021 16:09	04/30/2021 16:09	CSC
Sulfate	**2110**	D	mg/L	100	50	SW846 9056	04/30/2021 16:38	04/30/2021 16:38	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-04**
Description: **MW4**

Sample Collection Date Time: 04/22/2021 12:40
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:25	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Barium	**0.029**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Boron	**1.38**	D1	mg/L	1.00	1.00	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:41	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Calcium	**764**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:44	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:38	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Lithium	**1.44**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Mercury	**0.0004**	J	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Selenium	**0.003**		mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH
Sodium	**296**	D1	mg/L	26.0	10.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:44	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:25	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**59**		mg/L	8	8	HACH 8000	04/24/2021 11:34	04/24/2021 11:34	SLP
Specific Conductance (Lab)	**6200**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:53	04/26/2021 15:53	CML
pH (Lab)	**7.11**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:16	04/26/2021 15:16	CML
Total Dissolved Solids	**5040**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**0.6**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 21:05	04/28/2021 21:05	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.065**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.917**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.982**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2470**	D	mg/L	50.0	36.0	SW846 9056	04/30/2021 17:07	04/30/2021 17:07	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	04/30/2021 16:52	04/30/2021 16:52	CSC
Sulfate	**2330**	D	mg/L	200	100	SW846 9056	05/03/2021 12:27	05/03/2021 12:27	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-05**
Description: **MW5**

Sample Collection Date Time: 04/22/2021 11:25
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:27	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Barium	**0.014**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Boron	**0.24**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:47	AKB
Cadmium	**0.0006**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Calcium	**498**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:53	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:47	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Lithium	**0.39**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH
Sodium	**221**	D1	mg/L	26.0	10.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:53	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:27	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**49**		mg/L	8	8	HACH 8000	04/24/2021 11:35	04/24/2021 11:35	SLP
Specific Conductance (Lab)	**5710**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:54	04/26/2021 15:54	CML
pH (Lab)	**6.95**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:17	04/26/2021 15:17	CML
Total Dissolved Solids	**5000**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**0.6**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 21:26	04/28/2021 21:26	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.566**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.670**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**1.24**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2080**	D	mg/L	50.0	36.0	SW846 9056	04/30/2021 18:19	04/30/2021 18:19	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	04/30/2021 17:50	04/30/2021 17:50	CSC
Sulfate	**3440**	D	mg/L	200	100	SW846 9056	05/03/2021 12:42	05/03/2021 12:42	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-06**
Description: **MW6**

Sample Collection Date Time: 04/22/2021 10:30
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:30	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Barium	**0.014**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Boron	**0.18**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:57	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Calcium	**376**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:03	AKB
Chromium	**0.0006**	J	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 17:57	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Lithium	**0.05**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH
Sodium	**432**	D1	mg/L	26.0	10.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:03	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:30	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**11**		mg/L	8	8	HACH 8000	04/24/2021 11:35	04/24/2021 11:35	SLP
Specific Conductance (Lab)	**4860**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:55	04/26/2021 15:55	CML
pH (Lab)	**6.87**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:18	04/26/2021 15:18	CML
Total Dissolved Solids	**5050**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**2.1**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 21:47	04/28/2021 21:47	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.334**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.340**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.674**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**276**	D	mg/L	10.0	7.2	SW846 9056	04/30/2021 18:48	04/30/2021 18:48	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/30/2021 18:33	04/30/2021 18:33	CSC
Sulfate	**3460**	D	mg/L	200	100	SW846 9056	05/03/2021 12:56	05/03/2021 12:56	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-07**
Description: **DUPLICATE**

Sample Collection Date Time: 04/22/2021 12:18
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:32	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Barium	**0.042**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Boron	**0.25**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:16	AKB
Cadmium	**0.0002**	J	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Calcium	**424**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:22	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:16	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Lithium	**0.73**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH
Sodium	**361**	D1	mg/L	26.0	10.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:22	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:32	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**83**		mg/L	8	8	HACH 8000	04/24/2021 11:35	04/24/2021 11:35	SLP
Specific Conductance (Lab)	**7710**		umhos/cm	1	1	2510 B-2011	04/26/2021 15:56	04/26/2021 15:56	CML
pH (Lab)	**7.15**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:19	04/26/2021 15:19	CML
Total Dissolved Solids	**5920**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	**0.5**		mg/L	0.5	0.4	5310 C-2011	04/28/2021 22:08	04/28/2021 22:08	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.833**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.866**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**1.70**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**3540**	D	mg/L	100	72.0	SW846 9056	05/03/2021 13:11	05/03/2021 13:11	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/30/2021 19:16	04/30/2021 19:16	CSC
Sulfate	**2280**		mg/L	100	50	SW846 9056	04/30/2021 19:45	04/30/2021 19:45	CSC

D

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ANALYTICAL RESULTS

Lab Sample ID: **1033766-08**
Description: **FIELD BLANK**

Sample Collection Date Time: 04/22/2021 13:35
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:34	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:25	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Calcium	ND	U	mg/L	0.40	0.13	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:25	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:25	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH
Sodium	ND	U	mg/L	0.26	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:25	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:34	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U	mg/L	8	8	HACH 8000	04/24/2021 11:35	04/24/2021 11:35	SLP
Specific Conductance (Lab)	ND	U	umhos/cm	1	1	2510 B-2011	04/26/2021 15:57	04/26/2021 15:57	CML
pH (Lab)	**7.50**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:20	04/26/2021 15:20	CML
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK
Total Organic Carbon	ND	U	mg/L	0.5	0.4	5310 C-2011	04/28/2021 22:29	04/28/2021 22:29	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.249**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.397**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.646**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U, M1	mg/L	0.5	0.4	SW846 9056	04/30/2021 20:29	04/30/2021 20:29	CSC
Fluoride	ND	U, M1	mg/L	0.2	0.2	SW846 9056	04/30/2021 20:29	04/30/2021 20:29	CSC
Sulfate	ND	M1, U	mg/L	1	0.5	SW846 9056	04/30/2021 20:29	04/30/2021 20:29	CSC

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Notes for work order 1033766

- 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.
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.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).

Standard Qualifiers/Acronymns

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 BAD3159 - EPA 200.2										
Blank (BAD3159-BLK1)										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 16:44										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
LCS (BAD3159-BS1)										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 16:47										
Boron	0.14	0.10	mg/L	0.125		108	85-115			
Calcium	6.42	0.40	mg/L	6.25		103	85-115			
Iron	6.30	0.100	mg/L	6.25		101	85-115			
Sodium	6.47	0.26	mg/L	6.25		104	85-115			
Matrix Spike (BAD3159-MS1) **Source: 1033766-01**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:38										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	40.3	40.0	mg/L	6.25	31.6	139	80-120			D2, M1
Iron	5.70	10.0	mg/L	6.25	ND	91.3	80-120			D2, J
Sodium	200	26.0	mg/L	6.25	198	35.0	80-120			D2, M2
Matrix Spike (BAD3159-MS2) **Source: 1033769-02**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:44										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	273	40.0	mg/L	6.25	281	NR	80-120			D2, M2
Iron	6.50	10.0	mg/L	6.25	ND	104	80-120			D2, J
Sodium	281	26.0	mg/L	6.25	252	478	80-120			D2, M1
Matrix Spike Dup (BAD3159-MSD1) **Source: 1033766-01**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:41										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	37.8	40.0	mg/L	6.25	31.6	99.7	80-120	6.36	20	D2, J
Iron	5.67	10.0	mg/L	6.25	ND	90.8	80-120	0.527	20	D2, J
Sodium	185	26.0	mg/L	6.25	198	NR	80-120	7.43	20	D2, M2

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD3159 - EPA 200.2										
Matrix Spike Dup (BAD3159-MSD2) **Source: 1033769-02**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:47										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	274	40.0	mg/L	6.25	281	NR	80-120	0.533	20	D2, M2
Iron	6.41	10.0	mg/L	6.25	ND	102	80-120	1.41	20	D2, J
Sodium	282	26.0	mg/L	6.25	252	494	80-120	0.365	20	D2, M1
Post Spike (BAD3159-PS1) **Source: 1033766-01**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:50										
Boron	1590		ug/L	125	1450	111	75-125			D2
Calcium	37400		ug/L	6250	31600	93.3	75-125			D2
Iron	5450		ug/L	6250	137	85.0	75-125			D2
Sodium	184000		ug/L	6250	198000	NR	75-125			D2, M2
Batch BAD4105 - EPA 200.2										
Blank (BAD4105-BLK1)										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:07										
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	0.001	0.003	mg/L							J
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

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
LCS (BAD4105-BS1)										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:09										
Antimony	0.067	0.005	mg/L	0.0625		107	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		104	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		107	85-115			
Arsenic	0.0665	0.0010	mg/L	0.0625		106	85-115			
Barium	0.065	0.004	mg/L	0.0625		105	85-115			
Beryllium	0.0647	0.0020	mg/L	0.0625		104	85-115			
Cadmium	0.0658	0.0010	mg/L	0.0625		105	85-115			
Chromium	0.0632	0.0020	mg/L	0.0625		101	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		101	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.064	0.002	mg/L	0.0625		103	85-115			
Lithium	0.07	0.02	mg/L	0.0625		106	85-115			
Selenium	0.065	0.003	mg/L	0.0625		104	85-115			
Thallium	0.0655	0.0020	mg/L	0.0625		105	85-115			
Matrix Spike (BAD4105-MS1)	**Source: 1033766-01RE1**									
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:56										
Molybdenum	0.06	0.01	mg/L	0.0625	ND	101	80-120			
Mercury	0.0026	0.0005	mg/L	0.00250	ND	102	80-120			
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120			
Arsenic	0.0682	0.0010	mg/L	0.0625	0.0005	108	80-120			
Barium	0.150	0.004	mg/L	0.0625	0.081	111	80-120			
Beryllium	0.0633	0.0020	mg/L	0.0625	ND	101	80-120			
Cadmium	0.0647	0.0010	mg/L	0.0625	0.0001	103	80-120			
Chromium	0.0618	0.0020	mg/L	0.0625	ND	99.0	80-120			
Cobalt	0.060	0.004	mg/L	0.0625	ND	96.1	80-120			
Copper	0.057	0.003	mg/L	0.0625	ND	91.9	80-120			
Lead	0.062	0.002	mg/L	0.0625	ND	99.6	80-120			
Lithium	0.09	0.02	mg/L	0.0625	0.03	107	80-120			
Selenium	0.067	0.003	mg/L	0.0625	ND	107	80-120			
Thallium	0.0632	0.0020	mg/L	0.0625	ND	101	80-120			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
Matrix Spike (BAD4105-MS2) **Source: 1033769-02RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 17:00										
Mercury	0.0025	0.0005	mg/L	0.00250	ND	100	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	0.01	96.7	80-120			
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120			
Arsenic	0.0682	0.0010	mg/L	0.0625	ND	109	80-120			
Barium	0.083	0.004	mg/L	0.0625	0.018	104	80-120			
Beryllium	0.0595	0.0020	mg/L	0.0625	ND	95.2	80-120			
Cadmium	0.0630	0.0010	mg/L	0.0625	ND	101	80-120			
Chromium	0.0606	0.0020	mg/L	0.0625	ND	97.0	80-120			
Cobalt	0.058	0.004	mg/L	0.0625	ND	93.3	80-120			
Copper	0.059	0.003	mg/L	0.0625	0.003	88.9	80-120			
Lead	0.061	0.002	mg/L	0.0625	ND	97.0	80-120			
Lithium	0.10	0.02	mg/L	0.0625	0.03	104	80-120			
Selenium	0.071	0.003	mg/L	0.0625	ND	114	80-120			
Thallium	0.0611	0.0020	mg/L	0.0625	ND	97.7	80-120			
Matrix Spike Dup (BAD4105-MSD1) **Source: 1033766-01RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:58										
Mercury	0.0025	0.0005	mg/L	0.00250	ND	102	80-120	0.157	20	
Molybdenum	0.06	0.01	mg/L	0.0625	ND	99.1	80-120	1.90	20	
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120	1.89	20	
Arsenic	0.0665	0.0010	mg/L	0.0625	0.0005	106	80-120	2.58	20	
Barium	0.149	0.004	mg/L	0.0625	0.081	109	80-120	0.716	20	
Beryllium	0.0619	0.0020	mg/L	0.0625	ND	99.0	80-120	2.22	20	
Cadmium	0.0641	0.0010	mg/L	0.0625	0.0001	102	80-120	1.06	20	
Chromium	0.0604	0.0020	mg/L	0.0625	ND	96.6	80-120	2.45	20	
Cobalt	0.058	0.004	mg/L	0.0625	ND	93.6	80-120	2.65	20	
Copper	0.056	0.003	mg/L	0.0625	ND	89.2	80-120	2.94	20	
Lead	0.061	0.002	mg/L	0.0625	ND	97.1	80-120	2.56	20	
Lithium	0.09	0.02	mg/L	0.0625	0.03	106	80-120	1.23	20	
Selenium	0.066	0.003	mg/L	0.0625	ND	105	80-120	2.13	20	
Thallium	0.0613	0.0020	mg/L	0.0625	ND	98.1	80-120	2.98	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
Matrix Spike Dup (BAD4105-MSD2) **Source: 1033769-02RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 17:03										
Molybdenum	0.07	0.01	mg/L	0.0625	0.01	96.0	80-120	0.601	20	
Mercury	0.0025	0.0005	mg/L	0.00250	ND	99.4	80-120	0.722	20	
Antimony	0.068	0.005	mg/L	0.0625	ND	108	80-120	0.816	20	
Arsenic	0.0677	0.0010	mg/L	0.0625	ND	108	80-120	0.662	20	
Barium	0.083	0.004	mg/L	0.0625	0.018	105	80-120	1.08	20	
Beryllium	0.0596	0.0020	mg/L	0.0625	ND	95.3	80-120	0.207	20	
Cadmium	0.0634	0.0010	mg/L	0.0625	ND	101	80-120	0.710	20	
Chromium	0.0602	0.0020	mg/L	0.0625	ND	96.3	80-120	0.675	20	
Cobalt	0.058	0.004	mg/L	0.0625	ND	92.8	80-120	0.533	20	
Copper	0.059	0.003	mg/L	0.0625	0.003	88.2	80-120	0.698	20	
Lead	0.060	0.002	mg/L	0.0625	ND	95.9	80-120	1.20	20	
Lithium	0.10	0.02	mg/L	0.0625	0.03	102	80-120	1.09	20	
Selenium	0.071	0.003	mg/L	0.0625	ND	114	80-120	0.0674	20	
Thallium	0.0606	0.0020	mg/L	0.0625	ND	97.0	80-120	0.728	20	
Post Spike (BAD4105-PS1) **Source: 1033766-01RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 17:05										
Antimony	0.082	0.006	mg/L	0.0781	ND	105	75-125			
Mercury	0.0032	0.0006	mg/L	0.00312	ND	103	75-125			
Molybdenum	0.08	0.01	mg/L	0.0781	ND	99.7	75-125			
Arsenic	0.0827	0.0012	mg/L	0.0781	0.0005	106	75-125			
Barium	0.166	0.005	mg/L	0.0781	0.081	110	75-125			
Beryllium	0.0784	0.0025	mg/L	0.0781	ND	100	75-125			
Cadmium	0.0809	0.0012	mg/L	0.0781	0.0001	103	75-125			
Chromium	0.0751	0.0025	mg/L	0.0781	ND	96.2	75-125			
Cobalt	0.073	0.005	mg/L	0.0781	ND	93.4	75-125			
Copper	0.071	0.004	mg/L	0.0781	ND	90.6	75-125			
Lead	0.076	0.002	mg/L	0.0781	ND	97.8	75-115			
Lithium	0.11	0.02	mg/L	0.0781	0.03	108	75-125			
Selenium	0.082	0.004	mg/L	0.0781	ND	105	75-125			
Thallium	0.0771	0.0025	mg/L	0.0781	ND	98.7	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 BAD3293 - Default Prep Wet Chem										
Blank (BAD3293-BLK1)										
Prepared: 4/24/2021 11:28, Analyzed: 4/24/2021 11:28										
Chemical Oxygen Demand	ND	8	mg/L							U
LCS (BAD3293-BS1)										
Prepared: 4/24/2021 11:28, Analyzed: 4/24/2021 11:28										
Chemical Oxygen Demand	115	8	mg/L	125		92.4	90-110			
Duplicate (BAD3293-DUP1) **Source: 1033766-01**										
Prepared: 4/24/2021 11:37, Analyzed: 4/24/2021 11:37										
Chemical Oxygen Demand	ND	8	mg/L		ND				25	U
Matrix Spike (BAD3293-MS1) **Source: 1033766-01**										
Prepared: 4/24/2021 11:38, Analyzed: 4/24/2021 11:38										
Chemical Oxygen Demand	224	8	mg/L	250	ND	89.7	90-110			M2
Matrix Spike Dup (BAD3293-MSD1) **Source: 1033766-01**										
Prepared: 4/24/2021 11:38, Analyzed: 4/24/2021 11:38										
Chemical Oxygen Demand	227	8	mg/L	250	ND	90.8	90-110	1.27	10	
Batch BAD3304 - Default Prep Wet Chem										
Blank (BAD3304-BLK1)										
Prepared: 4/28/2021 19:20, Analyzed: 4/28/2021 19:20										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAD3304-BS1)										
Prepared: 4/28/2021 18:59, Analyzed: 4/28/2021 18:59										
Total Organic Carbon	4.9	0.5	mg/L	5.00		98.2	80-120			
Duplicate (BAD3304-DUP1) **Source: 1040147-01**										
Prepared: 4/29/2021 0:36, Analyzed: 4/29/2021 0:36										
Total Organic Carbon	0.8	0.5	mg/L		0.8			0.143	25	
Duplicate (BAD3304-DUP2) **Source: 1040303-01**										
Prepared: 4/29/2021 3:25, Analyzed: 4/29/2021 3:25										
Total Organic Carbon	4.1	0.5	mg/L		4.1			0.905	25	

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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 BAD3304 - Default Prep Wet Chem										
Matrix Spike (BAD3304-MS1) **Source: 1040147-02**										
Prepared: 4/29/2021 0:57, Analyzed: 4/29/2021 0:57										
Total Organic Carbon	3.2	0.5	mg/L	2.50	0.7	102	80-120			
Matrix Spike (BAD3304-MS2) **Source: 1040303-02**										
Prepared: 4/29/2021 3:46, Analyzed: 4/29/2021 3:46										
Total Organic Carbon	7.5	0.5	mg/L	5.00	2.4	101	80-120			
Batch BAD3475 - Default Prep Wet Chem										
LCS (BAD3475-BS1)										
Prepared: 4/26/2021 15:12, Analyzed: 4/26/2021 15:12										
pH (Lab)	8.00	0.10	Std. Units				98.8-101.2			
LCS (BAD3475-BS2)										
Prepared: 4/26/2021 15:25, Analyzed: 4/26/2021 15:25										
pH (Lab)	8.02	0.10	Std. Units				98.8-101.2			
Duplicate (BAD3475-DUP1) **Source: 1033768-02**										
Prepared: 4/26/2021 15:23, Analyzed: 4/26/2021 15:23										
pH (Lab)	7.32	0.10	Std. Units		7.32			0.00	10	H3
Duplicate (BAD3475-DUP2) **Source: 1033769-06**										**H3**
Prepared: 4/26/2021 15:36, Analyzed: 4/26/2021 15:36										
pH (Lab)	7.48	0.10	Std. Units		7.47			0.134	10	
Batch BAD3485 - Default Prep Wet Chem										
Blank (BAD3485-BLK1)										
Prepared: 4/26/2021 15:48, Analyzed: 4/26/2021 15:48										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BAD3485-BS1)										
Prepared: 4/26/2021 15:49, Analyzed: 4/26/2021 15:49										
Specific Conductance (Lab)	1410		umhos/cm	1410		100	80-120			

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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 BAD3485 - Default Prep Wet Chem										
Duplicate (BAD3485-DUP1) **Source: 1033766-08**										
Prepared: 4/26/2021 15:58, Analyzed: 4/26/2021 15:58										
Specific Conductance (Lab)	ND	1	umhos/cm		ND				0.938	U
Batch BAD3583 - Default Prep Wet Chem										
Blank (BAD3583-BLK1)										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAD3583-BS1)										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	1500	25	mg/L	1500		99.7	80-120			
Duplicate (BAD3583-DUP1) **Source: 1033768-01**										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	5060	50	mg/L		5130			1.33	10	
Duplicate (BAD3583-DUP2) **Source: 1033769-01**										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	276	50	mg/L		280			1.44	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 BAD4101 - Default Prep IC										
Blank (BAD4101-BLK1)										
Prepared: 4/30/2021 15:12, Analyzed: 4/30/2021 15:12										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAD4101-BS1)										
Prepared: 4/30/2021 14:57, Analyzed: 4/30/2021 14:57										
Fluoride	9.7		mg/L	10.0		96.6	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10		mg/L	10.0		99.4	90-110			
Matrix Spike (BAD4101-MS1) **Source: 1033766-08**										
Prepared: 4/30/2021 21:41, Analyzed: 4/30/2021 21:41										
Fluoride	12.8		mg/L	10.0	0.0	128	75-125			M1
Chloride	13.2		mg/L	10.0	0.04	132	75-125			M1
Sulfate	13		mg/L	10.0	0.0009	132	75-125			M1
Matrix Spike Dup (BAD4101-MSD1) **Source: 1033766-08**										
Prepared: 4/30/2021 21:56, Analyzed: 4/30/2021 21:56										
Fluoride	13.1		mg/L	10.0	0.0	131	75-125	2.84	15	M1
Chloride	13.5		mg/L	10.0	0.04	134	75-125	1.93	15	M1
Sulfate	13		mg/L	10.0	0.0009	135	75-125	2.44	15	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
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 1033766

Shipped By: Client

Temperature: 2.00° 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: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed
required information

Compliance Monitoring? Yes ✓ No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-01 A	04-22-21	9:30	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 : /				
1033766-01 B	04-22-21	9:30	Plastic 1L	1	MW1	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1033766-01 C	04-22-21	9:30	Plastic 500mL pH<2 w/H2SO4	1	MW1	g / c	COD TOC
			Preservation Check: pH : /				
1033766-01 D	04-22-21	9:30	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW1	g / c	Radium 226 (sub)
			Preservation Check: pH : /				

Preservation Check Performed by: NOV 2.0

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 9:30

pH 6.90 Cond (~~umho~~ mS) .004 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 14.33 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed	M. Mott	4/22/21	1350
M. Mott	[illegible]	4/22/21	1505

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P.O. Box 907
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Chain of Custody

Scheduled for: 03/16/2021

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Report To:
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Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed *required information*

Compliance Monitoring? Yes ✓ No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-01 E	04-22-21	9:30	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-01 F	04-22-21	9:30	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-01 G	04-22-21	9:30	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW1	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-01 H	04-22-21	9:30	AG 250mL pH<2 w/H2SO4	1	MW1	g / c	TOC
			Preservation Check: pH :				

Preservation Check Performed by: NOV

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 9:30

pH 6.90 Cond ~~(umho)~~ mS .004 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 14.33 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed	[illegible]	4/22/21	1350
[illegible]	[illegible]	4/22/21	1505

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Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-02 A	4/22/21	1315	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 : ____				
1033766-02 B	4/22/21	1315	Plastic 1L	1	MW2	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1033766-02 C	4/22/21	1315	Plastic 500mL pH<2 w/H2SO4	1	MW2	g / c	COD TOC
			Preservation Check: pH : ____				
1033766-02 D	4/22/21	1315	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW2	g / c	Radium 226 (sub)
			Preservation Check: pH : ____				
1033766-02 E	4/22/21	1315	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/22/21 Time (24 hr) 1315

pH 6.69 Cond (~~umho~~) mS/cm 1.33 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.97 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

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Collected by (Signature):

required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-02 F	4/22/21	1315	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-02 G	4/22/21	1315	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW2	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-02 H	4/22/21	1315	AG 250mL pH<2 w/H2SO4	1	MW2	g / c	TOC
			Preservation Check: pH :				
1033766-03 A	4/22/21	1205	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 :				
1033766-03 B	4/22/21	1205	Plastic 1L	1	MW3A	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/22/21 Time (24 hr) 1315

pH 6.69 Cond ~~(umho)~~ mS/cm 1.33 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.97 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#:
Quote#

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Collected by (Signature):

required information

Compliance Monitoring? Yes X No
Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-03 C	4/22/21	1205	Plastic 500mL pH<2 w/H2SO4	1	MW3A	g / c	COD TOC
			Preservation Check: pH :				
1033766-03 D	4/22/21	1205	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW3A	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033766-03 E	4/22/21	1205	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-03 F	4/22/21	1205	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-03 G	4/22/21	1205	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW3A	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-03 H	4/22/21	1205	AG 250mL pH<2 w/H2SO4	1	MW3A	g / c	TOC
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/22/21 Time (24 hr) 1205

pH 7.26 Cond ~~(umho)~~ mS/cm 6.20 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 14.97 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: Ky

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): Travis Sneed *required information*

Compliance Monitoring? Yes ✓ No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-04 A	04-22-21	12:40	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 :				
1033766-04 B	04-22-21	12:40	Plastic 1L	1	MW4	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1033766-04 C	04-22-21	12:40	Plastic 500mL pH<2 w/H2SO4	1	MW4	g / c	COD TOC
			Preservation Check: pH :				
1033766-04 D	04-22-21	12:40	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW4	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033766-04 E	04-22-21	12:40	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDI

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 12:40

pH 7.12 Cond (~~umho~~ mS) .041 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed		4/22/21	1350
		4/22/21	1505

☐ **PACE- Check here if trip charge applied to associated COC**

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
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Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed *required information*

Compliance Monitoring? Yes ✓ No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-04 F	04-22-21	12:40	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-04 G	04-22-21	12:40	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW4	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-04 H	04-22-21	12:40	AG 250mL pH<2 w/H2SO4	1	MW4	g / c	TOC
			Preservation Check: pH :				
1033766-05 A	04-22-21	11:25	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 :				
1033766-05 B	04-22-21	11:25	Plastic 1L	1	MW5	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: NDY

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 12:40

pH 7.12 Cond (~~umho~~ mS) .041 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) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed		4/22/21	1350
		4/22/21	1505

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Printed: 3/16/2021 11:49:06AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed *required information*

Compliance Monitoring? Yes ✓ No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-05 C	04-22-21	11:25	Plastic 500mL pH<2 w/H2SO4	1	MW5	g / c	COD TOC
			Preservation Check: pH :				
1033766-05 D	04-22-21	11:25	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW5	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033766-05 E	04-22-21	11:25	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-05 F	04-22-21	11:25	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-05 G	04-22-21	11:25	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-05 H	04-22-21	11:25	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 11:25

pH 6.92 Cond ~~(umho)~~ mS .020 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 13.58 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed	[illegible]	4/22/21	1350
[illegible]	[illegible]	4/22/21	1505

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *Travis Sneed*

required information

Compliance Monitoring? Yes ✓ No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-06 A	04-22-21	10:30	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 :				
1033766-06 B	04-22-21	10:30	Plastic 1L	1	MW6	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1033766-06 C	04-22-21	10:30	Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
			Preservation Check: pH :				
1033766-06 D	04-22-21	10:30	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW6	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033766-06 E	04-22-21	10:30	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 10:30

pH 6.72 Cond (~~umho~~ mS) .609 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 16.00 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed		4/22/21	1350
		4/22/21	1505

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): Travis Sneed
required information

Compliance Monitoring? Yes ✓ No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-06 F	04-22-21	10:30	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-06 G	04-22-21	10:30	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-06 H	04-22-21	10:30	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH :				
1033766-07 A	04-22-21	1218	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 :				
1033766-07 B	4/22/21	1218	Plastic 1L	1	DUPLICATE	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: NDY

Field data collected by: Travis Sneed Date (mm/dd/yy) 04-22-21 Time (24 hr) 10:30

pH 6.72 Cond (MS ~~umho~~) .009 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.00 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed	[signature]	4/22/21	1350
[signature]	[signature]	4/22/21	1505

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): P. Hill

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 # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-07 C	04-22-21	1218	Plastic 500mL pH<2 w/H2SO4	1	DUPLICATE	g / c	COD TOC
			Preservation Check: pH :				
1033766-07 D	04-22-21	1218	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033766-07 E	04-22-21	1218	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-07 F	04-22-21	1218	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-07 G	04-22-21	1218	Plastic 1L pH<2 w/HNO3 (Sub)	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-07 H	04-22-21	1218	AG 250mL pH<2 w/H2SO4	1	DUPLICATE	g / c	TOC
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/22/21 Time (24 hr) 1218

pH 7.26 Cond ~~(umho)~~ mS/cm 6.20 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 14.97 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
P. Hill	Nay Yay	4/22/21	1505

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-08 A	4/22/21	1335	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 :				
1033766-08 B	4/22/21	1335	Plastic 1L	1	FIELD BLANK	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1033766-08 C	4/22/21	1335	Plastic 500mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	COD TOC
			Preservation Check: pH :				
1033766-08 D	4/22/21	1335	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	FIELD BLANK	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033766-08 E	4/22/21	1335	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/22/21 Time (24 hr) 1335

pH ___ Cond (umho) ___ Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033766 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033766-08 F	4/22/21	1335	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033766-08 G	4/22/21	1335	Plastic 1L pH<2 w/HNO3 (Sub)	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033766-08 H	4/22/21	1335	AG 250mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	TOC
			Preservation Check: pH :				

Preservation Check Performed by: NDV

Field data collected by: Philip Hill Date (mm/dd/yy) 4/22/21 Time (24 hr) 1335

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

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 19, 2021

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

RE: Project: 1033766
Pace Project No.: 30417662

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on April 27, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Carin A. Ferris

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

Enclosures

cc: Doug Wolfe, 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: 1033766
Pace Project No.: 30417662

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1033766
Pace Project No.: 30417662

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30417662001	**1033766-01**	Water	04/22/21 09:30	04/27/21 09:45
30417662002	**1033766-02**	Water	04/22/21 13:15	04/27/21 09:45
30417662003	**1033766-03**	Water	04/22/21 12:05	04/27/21 09:45
30417662004	**1033766-04**	Water	04/22/21 12:40	04/27/21 09:45
30417662005	**1033766-05**	Water	04/22/21 11:25	04/27/21 09:45
30417662006	**1033766-06**	Water	04/22/21 10:30	04/27/21 09:45
30417662007	**1033766-07**	Water	04/22/21 12:18	04/27/21 09:45
30417662008	**1033766-08**	Water	04/22/21 13:35	04/27/21 09:45

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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: 1033766
Pace Project No.: 30417662

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30417662001	**1033766-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662002	**1033766-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662003	**1033766-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662004	**1033766-04**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662005	**1033766-05**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662006	**1033766-06**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662007	**1033766-07**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417662008	**1033766-08**	EPA 903.1	MK1	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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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033766
Pace Project No.: 30417662

Sample: 1033766-01 **Lab ID: 30417662001** Collected: 04/22/21 09:30 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.264 ± 0.318 (0.486) C:NA T:83%**	pCi/L	05/19/21 15:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.148 ± 0.311 (0.687) C:80% T:81%**	pCi/L	05/18/21 10:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.412 ± 0.629 (1.17)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033766-02 **Lab ID: 30417662002** Collected: 04/22/21 13:15 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.
• 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.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.454 ± 0.367 (0.205) C:NA T:79%**	pCi/L	05/19/21 15:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.807 ± 0.420 (0.736) C:76% T:77%**	pCi/L	05/18/21 10:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.26 ± 0.787 (0.941)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033766-03 **Lab ID: 30417662003** Collected: 04/22/21 12:05 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.
• 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.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.440 ± 0.356 (0.199) C:NA T:84%**	pCi/L	05/19/21 15:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.808 ± 0.375 (0.639) C:78% T:97%**	pCi/L	05/18/21 10:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.25 ± 0.731 (0.838)**	pCi/L	05/19/21 17:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033766
Pace Project No.: 30417662

Sample: 1033766-04 **Lab ID: 30417662004** Collected: 04/22/21 12:40 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.0649 ± 0.296 (0.603) C:NA T:87%**	pCi/L	05/19/21 15:48	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.917 ± 0.405 (0.661) C:75% T:95%**	pCi/L	05/18/21 10:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.982 ± 0.701 (1.26)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033766-05 **Lab ID: 30417662005** Collected: 04/22/21 11:25 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.
• 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.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.566 ± 0.523 (0.762) C:NA T:95%**	pCi/L	05/19/21 16:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.670 ± 0.348 (0.611) C:80% T:90%**	pCi/L	05/18/21 10:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.24 ± 0.871 (1.37)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033766-06 **Lab ID: 30417662006** Collected: 04/22/21 10:30 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.
• 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.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.334 ± 0.349 (0.492) C:NA T:88%**	pCi/L	05/19/21 16:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.340 ± 0.326 (0.670) C:79% T:90%**	pCi/L	05/18/21 10:51	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.674 ± 0.675 (1.16)**	pCi/L	05/19/21 17:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033766
Pace Project No.: 30417662

Sample: 1033766-07 **Lab ID: 30417662007** Collected: 04/22/21 12:18 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.833 ± 0.553 (0.645) C:NA T:81%**	pCi/L	05/19/21 16:28	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.866 ± 0.378 (0.606) C:81% T:85%**	pCi/L	05/18/21 10:52	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.70 ± 0.931 (1.25)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033766-08 **Lab ID: 30417662008** Collected: 04/22/21 13:35 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.249 ± 0.519 (0.935) C:NA T:90%**	pCi/L	05/19/21 16:28	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.397 ± 0.336 (0.672) C:78% T:82%**	pCi/L	05/18/21 10:52	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.646 ± 0.855 (1.61)**	pCi/L	05/19/21 17:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033766
Pace Project No.: 30417662

QC Batch: 446744 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: 30417662001, 30417662002, 30417662003, 30417662004, 30417662005, 30417662006, 30417662007, 30417662008

METHOD BLANK: 2155912 Matrix: Water
Associated Lab Samples: 30417662001, 30417662002, 30417662003, 30417662004, 30417662005, 30417662006, 30417662007, 30417662008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.11 ± 0.370 (0.473) C:81% T:97%	pCi/L	05/18/21 10:51	1c

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: 1033766
Pace Project No.: 30417662

QC Batch: 446745 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: 30417662001, 30417662002, 30417662003, 30417662004, 30417662005, 30417662006, 30417662007, 30417662008

METHOD BLANK: 2155915 Matrix: Water
Associated Lab Samples: 30417662001, 30417662002, 30417662003, 30417662004, 30417662005, 30417662006, 30417662007, 30417662008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.322 ± 0.448 (0.757) C:NA T:89%	pCi/L	05/19/21 15:48	

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

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1033766
Pace Project No.: 30417662

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.
Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1c	Ra-228 Method Blank activity is greater than the MDC and required detection limit of 1.0 pCi/L. Samples with activity results below the RDL and/or MDC are reportable without qualification.

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Chain of Custody

WO# : 30417662

30417662

Workorder: 1033766 Workorder Name: Green Landfill Semiannual Owner Received Date: 4/22/2021 Results Requested By:

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1													
2	1033766-01		04/22/21 09:30	IR44-McCoy	Water						X	X	CO1
3	1033766-02		04/22/21 13:15	IR44-McCoy	Water						X	X	CO2
4	1033766-03		04/22/21 12:05	IR44-McCoy	Water						X	X	CO3
5	1033766-04		04/22/21 12:40	IR44-McCoy	Water						X	X	CO4
6	1033766-05		04/22/21 11:25	IR44-McCoy	Water						X	X	CO5
7	1033766-06		04/22/21 10:30	IR44-McCoy	Water						X	X	CO6
8	1033766-07		04/22/21 12:18	IR44-McCoy	Water						X	X	CO7
9	1033766-08		04/22/21 13:35	IR44-McCoy	Water						X	X	CO8
10													

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1			Amy Andreyo	4-22-21 9:45	
2					
3					

Cooler Temperature on Receipt 5.8 °C | **Custody Seal Y or (N)** | **Received on Ice (Y) or N** | **Sample Intact (Y) or N**

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

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1033766

30417662

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: 1033766-01	**Water**	**Sampled:04/22/2021 09:30**	**Specific Method**	
Radium 228 (sub)		10/19/2021 09:30	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/19/2021 09:30	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/19/2021 09:30	EPA 903.1	
Sample ID: 1033766-02	**Water**	**Sampled:04/22/2021 13:15**	**Specific Method**	
Radium 226 (sub)		10/19/2021 13:15	EPA 903.1	
Radium 228 (sub)		10/19/2021 13:15	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/19/2021 13:15	EPA 904.0 Radium Sum C	
Sample ID: 1033766-03	**Water**	**Sampled:04/22/2021 12:05**	**Specific Method**	
Radium Total (sub)		10/19/2021 12:05	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/19/2021 12:05	EPA 903.1	
Radium 228 (sub)		10/19/2021 12:05	EPA 904.0 Radium Sum C	
Sample ID: 1033766-04	**Water**	**Sampled:04/22/2021 12:40**	**Specific Method**	
Radium 228 (sub)		10/19/2021 12:40	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/19/2021 12:40	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/19/2021 12:40	EPA 903.1	
Sample ID: 1033766-05	**Water**	**Sampled:04/22/2021 11:25**	**Specific Method**	
Radium 228 (sub)		10/19/2021 11:25	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/19/2021 11:25	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/19/2021 11:25	EPA 903.1	

Released By	Date	Received By	Date
04.26.21			
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1033766

30417662

Analysis		Expires	Laboratory ID	Comments
Sample ID: 1033766-06	**Water**	**Sampled:04/22/2021 10:30**	**Specific Method**	
Radium 226 (sub)		10/19/2021 10:30	EPA 903.1	
Radium 228 (sub)		10/19/2021 10:30	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/19/2021 10:30	EPA 904.0 Radium Sum C	
Sample ID: 1033766-07	**Water**	**Sampled:04/22/2021 12:18**	**Specific Method**	
Radium 226 (sub)		10/19/2021 12:18	EPA 903.1	
Radium 228 (sub)		10/19/2021 12:18	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/19/2021 12:18	EPA 904.0 Radium Sum C	
Sample ID: 1033766-08	**Water**	**Sampled:04/22/2021 13:35**	**Specific Method**	
Radium Total (sub)		10/19/2021 13:35	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/19/2021 13:35	EPA 903.1	
Radium 228 (sub)		10/19/2021 13:35	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
Released By	Date	Received By	Date

Pittsburgh Lab Sample Condition Upon Receipt

304176622

Pace Analytical

Client Name: Pace Kentucky Project #

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

Label JSM
LIMS Login JSM

Tracking #: 1107 3388 1548

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

Thermometer Used 9 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 5.9 °C Correction Factor: -0.1 °C Final Temp: 5.8 °C

Temp should be above freezing to 6°C

pH paper Lot# 101101 Date and Initials of person examining contents: 4-27-21 JG

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4. no name or signature
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. no date or time on samples
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. added 2.5 mL HNO3 to samples 01G, 02D, 02F, 03G, 03G, 05D, 06D, 06F, 06G
All containers meet method preservation requirements.		✓		Initial when completed JG Date/time of preservation 4-27-21 Lot # of added preservative DL21-0308
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JG Date: 4-27-21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

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

Certificate of Analysis
1033767

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 06/29/2021 11:13

Project Name:	Green Landfill Semiannual Well MW104	Workorder:	1033767

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 05/26/2021 15:20.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

Rob Whittington, Project Manager

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

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

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033767-01	MW-104/	Groundwater	05/26/2021 12:30	05/26/2021 15:20	Phillip Hill

LabNumber	Measurement	Value
1033767-01	Field Conductance	7760
	Field pH	7.55
	Field Temp (C)	18.48

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

ANALYTICAL RESULTS

Lab Sample ID: **1033767-01**
Description: **MW-104**

Sample Collection Date Time: 05/26/2021 12:30
Sample Received Date Time: 05/26/2021 15:20

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Arsenic	**0.0008**	J	mg/L	0.0010	0.0004	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Barium	**0.016**		mg/L	0.004	0.001	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Boron	**0.26**	M4	mg/L	0.10	0.10	SW846 6010 B	05/28/2021 07:43	05/28/2021 19:10	MRW D
Cadmium	**0.0001**	J	mg/L	0.0010	0.0001	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Calcium	**459**	D1, M1, M2	mg/L	40.0	13.0	SW846 6010 B	05/28/2021 07:43	05/28/2021 19:26	MRW D
Chromium	**0.0012**	J	mg/L	0.0020	0.0006	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Copper	**0.002**	B, J	mg/L	0.003	0.001	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Iron	**0.321**		mg/L	0.100	0.050	SW846 6010 B	05/28/2021 07:43	05/28/2021 19:10	MRW D
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Lithium	**0.02**	M1	mg/L	0.02	0.005	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Molybdenum	**0.002**	J	mg/L	0.01	0.002	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB
Sodium	**806**	D1, M1	mg/L	26.0	10.0	SW846 6010 B	05/28/2021 07:43	05/28/2021 19:26	MRW D
Thallium	**0.0001**	J	mg/L	0.0020	0.0001	SW846-6020 A	05/28/2021 07:43	06/01/2021 13:58	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**143**		mg/L	8	8	HACH 8000	06/01/2021 14:28	06/01/2021 14:28	SLP
pH (Lab)	**6.88**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	05/27/2021 15:33	05/27/2021 15:33	GAT
Total Dissolved Solids	**7330**		mg/L	50	50	2540 C-2011	05/27/2021 11:44	05/27/2021 11:44	DJK
Total Organic Carbon	**0.8**		mg/L	0.5	0.4	5310 C-2011	05/27/2021 15:37	05/27/2021 15:37	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00	_Sub	pCi/L			EPA 903.1	06/24/2021 00:00	06/24/2021 00:00	xxx
See Attached Subcontract Report	**0.385**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/23/2021 00:00	06/23/2021 00:00	xxx
See Attached Subcontract Report	**0.385**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/24/2021 00:00	06/24/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1650**	D	mg/L	500	360	SW846 9056	06/02/2021 21:22	06/02/2021 21:22	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	06/02/2021 21:07	06/02/2021 21:07	CSC
Sulfate	**1970**	D	mg/L	1000	500	SW846 9056	06/02/2021 21:22	06/02/2021 21:22	CSC

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Notes for work order 1033767

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

Qualifiers

_Sub	See subcontractors report.
B	Target analyte detected in method blank at or above the method reporting limit.
D	Results reported from dilution.
D1	Sample required dilution due to high concentration of target analyte.
D2	Sample required dilution due to matrix interference.
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.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for , but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).

Standard Qualifiers/Acronymns

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 BAE3494 - EPA 200.2										
Blank (BAE3494-BLK1)										
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:04										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
Blank (BAE3494-BLK2)										
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 13:51										
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	0.006	0.003	mg/L							B
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
LCS (BAE3494-BS1)										
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:07										
Boron	0.13	0.10	mg/L	0.125		101	85-115			
Calcium	6.49	0.40	mg/L	6.25		104	85-115			
Iron	6.02	0.100	mg/L	6.25		96.3	85-115			
Sodium	6.23	0.26	mg/L	6.25		99.6	85-115			
LCS (BAE3494-BS2)										
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 13:55										
Mercury	0.0025	0.0005	mg/L	0.00250		100	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		101	85-115			
Antimony	0.066	0.005	mg/L	0.0625		105	85-115			
Arsenic	0.0645	0.0010	mg/L	0.0625		103	85-115			
Barium	0.064	0.004	mg/L	0.0625		103	85-115			
Beryllium	0.0657	0.0020	mg/L	0.0625		105	85-115			
Cadmium	0.0639	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0639	0.0020	mg/L	0.0625		102	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		101	85-115			
Copper	0.065	0.003	mg/L	0.0625		104	85-115			B
Lead	0.063	0.002	mg/L	0.0625		100	85-115			
Lithium	0.06	0.02	mg/L	0.0625		103	85-115			
Selenium	0.064	0.003	mg/L	0.0625		103	85-115			
Thallium	0.0642	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 BAE3494 - EPA 200.2										
Matrix Spike (BAE3494-MS1)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:39										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	449	40.0	mg/L	6.25	459	NR	80-120			D2, M2
Iron	5.95	10.0	mg/L	6.25	ND	95.1	80-120			D2, J
Sodium	784	26.0	mg/L	6.25	806	NR	80-120			D2, M1
Matrix Spike (BAE3494-MS2)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 14:27										
Molybdenum	0.07	0.05	mg/L	0.0625	ND	109	80-120			D2
Mercury	0.0029	0.0025	mg/L	0.00250	ND	118	80-120			D2
Antimony	0.072	0.025	mg/L	0.0625	ND	115	80-120			D2
Arsenic	0.0699	0.0050	mg/L	0.0625	ND	112	80-120			D2
Barium	0.085	0.020	mg/L	0.0625	0.016	110	80-120			D2
Beryllium	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0670	0.0050	mg/L	0.0625	ND	107	80-120			D2
Chromium	0.0681	0.0100	mg/L	0.0625	ND	109	80-120			D2
Cobalt	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Copper	0.066	0.015	mg/L	0.0625	ND	105	80-120			D2, B
Lead	0.062	0.010	mg/L	0.0625	ND	99.6	80-120			D2
Lithium	0.09	0.10	mg/L	0.0625	0.02	145	80-120			D2, M1, J
Selenium	0.068	0.015	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Matrix Spike Dup (BAE3494-MSD1)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:42										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	469	40.0	mg/L	6.25	459	170	80-120	4.50	20	D2, M1
Iron	6.23	10.0	mg/L	6.25	ND	99.7	80-120	4.66	20	D2, J
Sodium	821	26.0	mg/L	6.25	806	225	80-120	4.59	20	D2, M1
Matrix Spike Dup (BAE3494-MSD2)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 14:31										
Molybdenum	0.07	0.05	mg/L	0.0625	ND	106	80-120	3.22	20	D2
Antimony	0.068	0.025	mg/L	0.0625	ND	110	80-120	4.43	20	D2
Mercury	0.0027	0.0025	mg/L	0.00250	ND	107	80-120	9.61	20	D2
Arsenic	0.0670	0.0050	mg/L	0.0625	ND	107	80-120	4.21	20	D2
Barium	0.082	0.020	mg/L	0.0625	0.016	105	80-120	3.82	20	D2
Beryllium	0.0600	0.0100	mg/L	0.0625	ND	96.0	80-120	8.16	20	D2
Cadmium	0.0643	0.0050	mg/L	0.0625	ND	103	80-120	4.02	20	D2
Chromium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120	4.09	20	D2
Cobalt	0.066	0.020	mg/L	0.0625	ND	105	80-120	4.63	20	D2
Copper	0.063	0.015	mg/L	0.0625	ND	101	80-120	4.17	20	D2, B
Lead	0.060	0.010	mg/L	0.0625	ND	96.3	80-120	3.42	20	D2
Lithium	0.09	0.10	mg/L	0.0625	0.02	136	80-120	6.22	20	D2, M1, J
Selenium	0.066	0.015	mg/L	0.0625	ND	105	80-120	3.17	20	D2
Thallium	0.0611	0.0100	mg/L	0.0625	ND	97.7	80-120	2.83	20	D2

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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 BAE3494 - EPA 200.2										
Post Spike (BAE3494-PS1)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:45										
Boron	ND	10.0	mg/L	0.125	ND		75-125			D2, M4, U
Calcium	439	40.0	mg/L	6.25	459	NR	75-125			D2, M2
Iron	5.82	10.0	mg/L	6.25	ND	93.2	75-125			D2, J
Sodium	769	26.0	mg/L	6.25	806	NR	75-125			D2, M1
Post Spike (BAE3494-PS2)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 14:34										
Antimony	0.065	0.025	mg/L	0.0625	ND	104	75-125			D2
Molybdenum	0.06	0.05	mg/L	0.0625	ND	104	75-125			D2
Mercury	0.0025	0.0025	mg/L	0.00250	ND	99.2	75-125			D2
Arsenic	0.0659	0.0050	mg/L	0.0625	ND	105	75-125			D2
Barium	0.079	0.020	mg/L	0.0625	0.016	99.4	75-125			D2
Beryllium	0.0576	0.0100	mg/L	0.0625	ND	92.1	75-125			D2
Cadmium	0.0612	0.0050	mg/L	0.0625	ND	98.0	75-125			D2
Chromium	0.0632	0.0100	mg/L	0.0625	ND	101	75-125			D2
Cobalt	0.063	0.020	mg/L	0.0625	ND	101	75-125			D2
Copper	0.061	0.015	mg/L	0.0625	ND	97.2	75-125			D2, B
Lead	0.057	0.010	mg/L	0.0625	ND	91.2	75-115			D2
Lithium	0.08	0.10	mg/L	0.0625	0.02	127	75-125			D2, M1, J
Selenium	0.062	0.015	mg/L	0.0625	ND	99.5	75-125			D2
Thallium	0.0578	0.0100	mg/L	0.0625	ND	92.5	75-125			D2

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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 BAE3468 - Default Prep Wet Chem										
Blank (BAE3468-BLK1)										
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAE3468-BS1)										
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	1480	25	mg/L	1500		98.9	80-120			
Duplicate (BAE3468-DUP1)	**Source: 1033767-01**									
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	7370	50	mg/L		7330			0.435	10	
Duplicate (BAE3468-DUP2)	**Source: 1054822-02**									
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	622	50	mg/L		626			0.641	10	
Batch BAE3472 - Default Prep Wet Chem										
Blank (BAE3472-BLK1)										
Prepared: 5/27/2021 14:54, Analyzed: 5/27/2021 14:54										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAE3472-BS1)										
Prepared: 5/27/2021 14:33, Analyzed: 5/27/2021 14:33										
Total Organic Carbon	5.0	0.5	mg/L	5.00		99.1	80-120			
Duplicate (BAE3472-DUP1)	**Source: 1041055-01**									
Prepared: 5/27/2021 20:11, Analyzed: 5/27/2021 20:11										
Total Organic Carbon	1.4	0.5	mg/L		1.5			1.73	25	
Duplicate (BAE3472-DUP2)	**Source: 1051778-01**									
Prepared: 5/28/2021 1:27, Analyzed: 5/28/2021 1:27										
Total Organic Carbon	2.2	0.5	mg/L		2.2			0.974	25	
Matrix Spike (BAE3472-MS1)	**Source: 1041055-02**									
Prepared: 5/27/2021 20:32, Analyzed: 5/27/2021 20:32										
Total Organic Carbon	3.5	0.5	mg/L	2.50	0.9	101	80-120			

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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 BAE3472 - Default Prep Wet Chem										
Matrix Spike (BAE3472-MS2) **Source: 1051778-02**										
Prepared: 5/28/2021 1:48, Analyzed: 5/28/2021 1:48										
Total Organic Carbon	6.5	0.5	mg/L	5.00	1.4	103	80-120			
Batch BAE3546 - Default Prep Wet Chem										
LCS (BAE3546-BS1)										
Prepared: 5/27/2021 15:31, Analyzed: 5/27/2021 15:31										
pH (Lab)	8.03		Std. Units	8.00		100	98.8-101.2			
LCS (BAE3546-BS2)										
Prepared: 5/27/2021 15:47, Analyzed: 5/27/2021 15:47										
pH (Lab)	8.00		Std. Units	8.00		100	98.8-101.2			
Duplicate (BAE3546-DUP1) **Source: 1054904-01**										
Prepared: 5/27/2021 15:45, Analyzed: 5/27/2021 15:45										
pH (Lab)	6.13	0.10	Std. Units		6.13			0.00	10	H3
Duplicate (BAE3546-DUP2) **Source: 1060443-01**										
Prepared: 5/27/2021 15:55, Analyzed: 5/27/2021 15:55										
pH (Lab)	7.49	0.10	Std. Units		7.48			0.134	10	H3
Batch BAF0072 - Default Prep Wet Chem										
Blank (BAF0072-BLK1)										
Prepared: 6/1/2021 14:08, Analyzed: 6/1/2021 14:08										
Chemical Oxygen Demand	ND	8	mg/L							U
LCS (BAF0072-BS1)										
Prepared: 6/1/2021 14:16, Analyzed: 6/1/2021 14:16										
Chemical Oxygen Demand	123	8	mg/L	125		98.2	90-110			
Duplicate (BAF0072-DUP1) **Source: 1053442-01**										
Prepared: 6/1/2021 14:32, Analyzed: 6/1/2021 14:32										
Chemical Oxygen Demand	65	8	mg/L		53			21.5	25	

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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 BAF0072 - Default Prep Wet Chem										
Matrix Spike (BAF0072-MS1)	**Source: 1053442-01**									
Prepared: 6/1/2021 14:32, Analyzed: 6/1/2021 14:32										
Chemical Oxygen Demand	287	8	mg/L	250	53	93.7	90-110			
Matrix Spike Dup (BAF0072-MSD1)	**Source: 1053442-01**									
Prepared: 6/1/2021 14:32, Analyzed: 6/1/2021 14:32										
Chemical Oxygen Demand	263	8	mg/L	250	53	84.1	90-110	8.75	10	M2

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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 BAF0333 - Default Prep IC										
Blank (BAF0333-BLK1)										
Prepared: 6/2/2021 20:52, Analyzed: 6/2/2021 20:52										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAF0333-BS1)										
Prepared: 6/2/2021 20:37, Analyzed: 6/2/2021 20:37										
Fluoride	9.3		mg/L	10.0		92.6	90-110			
Chloride	9.8		mg/L	10.0		97.8	90-110			
Sulfate	9		mg/L	10.0		94.5	90-110			
Matrix Spike (BAF0333-MS1)	**Source: 1034460-04**									
Prepared: 6/3/2021 1:05, Analyzed: 6/3/2021 1:05										
Fluoride	11.9		mg/L	10.0	0.6	113	75-125			
Chloride	84.2		mg/L	10.0	75.6	85.6	75-125			
Sulfate	40		mg/L	10.0	25	147	75-125			M1
Matrix Spike Dup (BAF0333-MSD1)	**Source: 1034460-04**									
Prepared: 6/3/2021 1:20, Analyzed: 6/3/2021 1:20										
Chloride	84.2		mg/L	10.0	75.6	85.6	75-125	0.00119	15	
Fluoride	13.3		mg/L	10.0	0.6	127	75-125	10.7	15	M1
Sulfate	40		mg/L	10.0	25	153	75-125	1.58	15	M1

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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

Sample Acceptance Checklist for Work Order 1033767

Shipped By: Client

Temperature: 2.50° 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: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033767 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033767-01 A	5/26/21	1230	Plastic 500mL pH<2 w/HNO3	1	MW-104	g / c	Thallium Tot 6020 Antimony Tot 6020 Beryllium Tot 6020 Barium Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Iron Tot 6010B Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020
			Preservation Check: pH : ✓				
1033767-01 B	5/26/21	1230	Plastic 1L	1	MW-104	g / c	Chloride 9056 Fluoride 9056 pH (Lab) Sulfate 9056 TDS
1033767-01 C	5/26/21	1230	Plastic 500mL pH<2 w/H2SO4	1	MW-104	g / c	COD TOC
			Preservation Check: pH : ✓				
1033767-01 D	5/26/21	1230	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-104	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1033767-01 E	5/26/21	1230	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDC

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/26/21 Time (24 hr) 1230

pH 7.55 Cond ~~(umho)~~ mS/cm 7.76 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.48 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		5/26/21	1520
	Thermometer Serial Number		
	✓181390287		
	181460057		

☐ PACE- Check here if trip charge applied to associated COC Temp 2.5°C Printed: 3/16/2021 11:56:38AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes Y 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 # 1033767 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033767-01 F	5/26/21	1230	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1033767-01 G	5/26/21	1230	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-104	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1033767-01 H	5/26/21	1230	AG 250mL pH<2 w/H2SO4	1	MW-104	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: JOG

Field data collected by: Phillip Hill 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) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		5/26/21	1520

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 3/16/2021 11:56:38AM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 24, 2021

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

RE: Project: 1033767
Pace Project No.: 30424048

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 28, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Carin A. Ferris

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

Enclosures

cc: Doug Wolfe, 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: 1033767
Pace Project No.: 30424048

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1033767
Pace Project No.: 30424048

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30424048001	**1033767-01**	Water	05/26/21 12:30	05/28/21 09:30

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1033767
Pace Project No.: 30424048

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30424048001	**1033767-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033767
Pace Project No.: 30424048

Sample: 1033767-01 **Lab ID: 30424048001** Collected: 05/26/21 12:30 Received: 05/28/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

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

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.000 ± 0.420 (0.842) C:NA T:101%**	pCi/L	06/24/21 12:39	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.385 ± 0.420 (0.881) C:74% T:89%**	pCi/L	06/23/21 14:34	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.385 ± 0.840 (1.72)**	pCi/L	06/24/21 15:29	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: 1033767
Pace Project No.: 30424048

QC Batch: 451463
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: 30424048001

METHOD BLANK: 2178862 Matrix: Water

Associated Lab Samples: 30424048001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	2.60 ± 0.715 (0.766) C:69% T:83%	pCi/L	06/23/21 11:15	1c

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: 1033767
Pace Project No.: 30424048

QC Batch: 451462
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: 30424048001

METHOD BLANK: 2178860 Matrix: Water

Associated Lab Samples: 30424048001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0414 ± 0.269 (0.543) C:NA T:104%	pCi/L	06/24/21 12:07	

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: 1033767
Pace Project No.: 30424048

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.
Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1c	Method Blank Ra-228 activity greater than the reporting limit of 1.0 pCi/L due to a detector anomaly. Samples in the batch were not affected. Samples with activity less than the reporting limit of 1.0 pCi/L are reportable without qualification.

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1033767

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: 1033767-01	**Water**	**Sampled:05/26/2021 12:30**	**Specific Method**	
Radium Total (sub)		11/22/2021 12:30	EPA 904.0 Radium Sum C	
Radium 228 (sub)		11/22/2021 12:30	EPA 904.0 Radium Sum C	
Radium 226 (sub)		11/22/2021 12:30	EPA 903.1	

Col

WO# : 30424048

30424048

Released By	Date	Received By	Date
	05.27.21		5-28-21 0930
Released By	Date	Received By	Date

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KY

Project # 30424048

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label # _____ LIMS Login BLM

Tracking #: 407338835 73

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

Thermometer Used — Type of Ice: Wet Blue (None)

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

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1CD361 / Date and Initials of person examining contents: JC 6-4-21
Chain of Custody Present:	–			1.
Chain of Custody Filled Out:	–			2.
Chain of Custody Relinquished:	–			3.
Sampler Name & Signature on COC:		–		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	–			5.
Samples Arrived within Hold Time:	–			6.
Short Hold Time Analysis (<72hr remaining):		–		7.
Rush Turn Around Time Requested:		–		8.
Sufficient Volume:	–			9.
Correct Containers Used:	–			10.
-Pace Containers Used:		–		
Containers Intact:	–			11.
Orthophosphate field filtered			–	12.
Hex Cr Aqueous sample field filtered			–	13.
Organic Samples checked for dechlorination:			–	14.
Filtered volume received for Dissolved tests			–	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	–			16. Added 2-5 mL Hno3 to sample
All containers meet method preservation requirements.	–	–		Initial when completed: JC Date/time of preservation: 6-4-21 0935 Lot # of added preservative: DL 21-0579
Headspace in VOA Vials (>6mm):			–	17.
Trip Blank Present:			–	18.
Trip Blank Custody Seals Present			–	
Rad Samples Screened < 0.5 mrem/hr	–			Initial when completed: JC Date: 6-4-21 Survey Meter SN: 1563

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

30424048

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1033767 Workorder Name: Green Landfill Semiannual Owner Received Date: 5/26/2021 Results Requested By:

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1													
2	1033767-01		05/26/21 12:30	IR44-McCoy	Water						X	X	CeI
3													
4													
5													
6													
7													
8													
9													
10													

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1				5-28-21	c93c
2					
3					

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

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

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

Certificate of Analysis
1085992

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 10/26/2021 08:48

Project Name:	Green Landfill Semiannual Groundwater	Workorder:	1085992

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 09/23/2021 15:37.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

Rob Whittington, Project Manager

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

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

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1085992-01	MW1/	Groundwater	09/23/2021 09:00	09/23/2021 15:37	Travis Sneed
1085992-02	MW2/	Groundwater	09/23/2021 11:25	09/23/2021 15:37	Travis Sneed
1085992-03	MW3A/	Groundwater	09/23/2021 13:45	09/23/2021 15:37	Travis Sneed
1085992-04	MW4/	Groundwater	09/23/2021 09:55	09/23/2021 15:37	Phillip Hill
1085992-05	MW5/	Groundwater	09/23/2021 09:55	09/23/2021 15:37	Phillip Hill
1085992-06	MW6/	Groundwater	09/23/2021 09:00	09/23/2021 15:37	Phillip Hill
1085992-07	DUPLICATE/	Groundwater	09/23/2021 10:15	09/23/2021 15:37	Phillip Hill
1085992-08	FIELD BLANK/	Water	09/23/2021 12:10	09/23/2021 15:37	Phillip Hill

LabNumber	Measurement	Value
1085992-01	Field Conductance	940
	Field pH	7.28
	Field Temp (C)	15.81
1085992-02	Field Conductance	1740
	Field pH	6.27
	Field Temp (C)	16.03
1085992-03	Field Conductance	8100
	Field pH	6.77
	Field Temp (C)	15.84
1085992-04	Field Conductance	6520
	Field pH	6.52
	Field Temp (C)	16.12
1085992-05	Field Conductance	6140
	Field pH	6.67
	Field Temp (C)	15.03
1085992-06	Field Conductance	5100
	Field pH	6.87
	Field Temp (C)	17.07
1085992-07	Field Conductance	6140
	Field pH	6.67
	Field Temp (C)	15.03

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

ANALYTICAL RESULTS

Lab Sample ID: **1085992-01**
Description: **MW1**

Sample Collection Date Time: 09/23/2021 09:00
Sample Received Date Time: 09/23/2021 15:37

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	M2, U	mg/L	0.005	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Arsenic	ND	M1, M2, U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Barium	**0.078**	M2	mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Beryllium	ND	M2, U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:31	NKP
Boron	**1.68**	D1, M1, M4	mg/L	0.50	0.50	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:24	MRWD
Cadmium	ND	M2, U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Calcium	**26.4**	D1, M1	mg/L	2.00	0.65	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:24	MRWD
Chromium	ND	M2, U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Cobalt	ND	M2, U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Copper	ND	M1, M2, U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Iron	ND	D2, U	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:21	MRWD
Lead	ND	M2, U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Lithium	**0.03**	M1, M2	mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:31	NKP
Mercury	ND	M1, M2, U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Molybdenum	ND	M1, M2, U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Selenium	ND	M2, U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP
Sodium	**202**	D1, M1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:40	MRWD
Thallium	ND	M1, M2, U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:16	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	ND	U	mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:24	KBZ
Specific Conductance (Lab)	**976**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:28	09/24/2021 14:28	GAT
pH (Lab)	**7.32**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:02	09/24/2021 13:02	CML
Total Dissolved Solids	**584**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**1.3**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 14:26	09/27/2021 14:26	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**-0.123**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**1.53**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**1.53**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**6.2**		mg/L	0.5	0.4	SW846 9056	10/02/2021 15:02	10/02/2021 15:02	CSC
Fluoride	**0.6**		mg/L	0.2	0.2	SW846 9056	10/02/2021 15:02	10/02/2021 15:02	CSC
Sulfate	**33**	D	mg/L	2	1	SW846 9056	10/03/2021 15:16	10/03/2021 15:16	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-02**
Description: **MW2**

Sample Collection Date Time: 09/23/2021 11:25
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:18	NKP
Arsenic	**0.0250**		mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Barium	**0.329**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:33	NKP
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:43	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Calcium	**193**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:52	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Iron	**10.3**	D1	mg/L	0.500	0.250	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:46	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Lithium	**0.006**	J	mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:33	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Molybdenum	**0.002**	J	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP
Sodium	**60.1**	D1	mg/L	2.60	1.00	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:49	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:18	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**19**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:24	KBZ
Specific Conductance (Lab)	**1640**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:29	09/24/2021 14:29	GAT
pH (Lab)	**6.73**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:03	09/24/2021 13:03	CML
Total Dissolved Solids	**1070**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**1.7**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 14:48	09/27/2021 14:48	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	0.00	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.591**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.591**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**301**	D	mg/L	10.0	7.2	SW846 9056	10/06/2021 16:15	10/06/2021 16:15	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	10/06/2021 15:45	10/06/2021 15:45	CSC
Sulfate	**205**	D	mg/L	10	5	SW846 9056	10/06/2021 16:00	10/06/2021 16:00	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-03**
Description: **MW3A**

Sample Collection Date Time: 09/23/2021 13:45
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:28	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Barium	**0.045**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:35	NKP
Boron	**0.37**		mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:56	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Calcium	**483**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:15	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Iron	**0.054**	J	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 17:56	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Lithium	**0.76**		mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:35	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP
Sodium	**331**	D1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:15	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:28	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**941**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:38	KBZ
Specific Conductance (Lab)	**7900**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:30	09/24/2021 14:30	GAT
pH (Lab)	**6.78**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:04	09/24/2021 13:04	CML
Total Dissolved Solids	**6490**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**0.6**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 15:09	09/27/2021 15:09	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.504**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.960**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**1.46**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1780**	D	mg/L	100	72.0	SW846 9056	10/03/2021 15:31	10/03/2021 15:31	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	10/02/2021 15:17	10/02/2021 15:17	CSC
Sulfate	**2380**	D	mg/L	100	50	SW846 9056	10/02/2021 15:47	10/02/2021 15:47	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-04**
Description: **MW4**

Sample Collection Date Time: 09/23/2021 09:55
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:30	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Barium	**0.030**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:37	NKP
Boron	**1.43**	D1	mg/L	0.50	0.50	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:21	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Calcium	**841**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:27	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:18	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Lithium	**1.44**	D2	mg/L	0.20	0.05	SW846-6020 A	09/27/2021 08:55	10/05/2021 10:56	NKP
Mercury	**0.0002**	J	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP
Sodium	**290**	D1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:27	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:30	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**625**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:38	KBZ
Specific Conductance (Lab)	**6270**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:31	09/24/2021 14:31	GAT
pH (Lab)	**6.58**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:05	09/24/2021 13:05	CML
Total Dissolved Solids	**5610**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**0.7**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 17:16	09/27/2021 17:16	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.338**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.213**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.551**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

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Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1910**	D	mg/L	100	72.0	SW846 9056	10/03/2021 15:46	10/03/2021 15:46	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	10/02/2021 16:01	10/02/2021 16:01	CSC
Sulfate	**1780**	D	mg/L	200	100	SW846 9056	10/03/2021 15:46	10/03/2021 15:46	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-05**
Description: **MW5**

Sample Collection Date Time: 09/23/2021 09:55
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:32	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Barium	**0.013**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:39	NKP
Boron	**0.23**		mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:30	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Calcium	**453**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:40	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:30	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Lithium	**0.35**		mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:39	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP
Sodium	**203**	D1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:40	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:32	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**107**	D	mg/L	80	80	HACH 8000	09/28/2021 10:24	09/28/2021 12:24	KBZ
Specific Conductance (Lab)	**5940**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:32	09/24/2021 14:32	GAT
pH (Lab)	**6.74**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:06	09/24/2021 13:06	CML
Total Dissolved Solids	**5630**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**0.8**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 17:37	09/27/2021 17:37	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.057**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.962**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**1.02**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2250**	D	mg/L	50.0	36.0	SW846 9056	10/02/2021 17:30	10/02/2021 17:30	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	10/02/2021 17:01	10/02/2021 17:01	CSC
Sulfate	**1000**	D	mg/L	200	100	SW846 9056	10/03/2021 16:01	10/03/2021 16:01	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-06**
Description: **MW6**

Sample Collection Date Time: 09/23/2021 09:00
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:34	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Barium	**0.009**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:41	NKP
Boron	**0.18**		mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:53	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Calcium	**417**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:02	MRWD
Chromium	**0.0006**	J	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 18:53	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Lithium	**0.04**		mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:41	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP
Sodium	**463**	D1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:02	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:34	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**21**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:25	KBZ
Specific Conductance (Lab)	**5060**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:33	09/24/2021 14:33	GAT
pH (Lab)	**6.68**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:07	09/24/2021 13:07	CML
Total Dissolved Solids	**5080**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**2.7**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 17:58	09/27/2021 17:58	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.109**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**-0.014**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.109**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**130**	D, M2	mg/L	10.0	7.2	SW846 9056	10/02/2021 18:00	10/02/2021 18:00	CSC
Fluoride	ND	M2, U	mg/L	0.2	0.2	SW846 9056	10/02/2021 17:45	10/02/2021 17:45	CSC
Sulfate	**1620**	D, M2	mg/L	200	100	SW846 9056	10/03/2021 16:16	10/03/2021 16:16	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-07**
Description: **DUPLICATE**

Sample Collection Date Time: 09/23/2021 10:15
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:36	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Barium	**0.014**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:44	NKP
Boron	**0.23**		mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:05	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Calcium	**477**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:15	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:05	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Lithium	**0.33**		mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:44	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP
Sodium	**214**	D1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:15	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:36	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**68**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:25	KBZ
Specific Conductance (Lab)	**5870**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:41	09/24/2021 14:41	GAT
pH (Lab)	**6.79**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:08	09/24/2021 13:08	CML
Total Dissolved Solids	**5630**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**0.7**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 18:19	09/27/2021 18:19	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.389**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**0.831**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**1.22**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2260**	D	mg/L	50.0	36.0	SW846 9056	10/06/2021 16:29	10/06/2021 16:29	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	10/01/2021 16:36	10/01/2021 16:36	CSC
Sulfate	**1110**	D	mg/L	200	100	SW846 9056	10/06/2021 16:59	10/06/2021 16:59	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085992-08**
Description: **FIELD BLANK**

Sample Collection Date Time: 09/23/2021 12:10
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:38	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:46	NKP
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:18	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Calcium	ND	U	mg/L	0.40	0.13	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:18	MRWD
Chromium	**0.0009**	J	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Iron	ND	U	mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:18	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:46	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP
Sodium	ND	U	mg/L	0.26	0.10	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:18	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:38	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**9**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:25	KBZ
Specific Conductance (Lab)	**1**		umhos/cm	1	1	2510 B-2011	09/24/2021 14:43	09/24/2021 14:43	GAT
pH (Lab)	**7.35**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:09	09/24/2021 13:09	CML
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	ND	U	mg/L	0.5	0.4	5310 C-2011	09/27/2021 18:40	09/27/2021 18:40	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**1.29**	_Sub	pCi/L			EPA 903.1	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**1.73**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 15:52	RCW
See Attached Subcontract Report	**3.02**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/25/2021 15:50	10/25/2021 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	10/01/2021 17:04	10/01/2021 17:04	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	10/01/2021 17:04	10/01/2021 17:04	CSC
Sulfate	**4**		mg/L	1	0.5	SW846 9056	10/01/2021 17:04	10/01/2021 17:04	CSC

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Notes for work order 1085992

- 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.
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.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.

Standard Qualifiers/Acronymns

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 BAI2994 - EPA 200.2										
Blank (BAI2994-BLK1)										
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 17:14										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
Blank (BAI2994-BLK2)										
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 17:38										
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
LCS (BAI2994-BS1)										
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 17:18										
Boron	0.13	0.10	mg/L	0.125		103	85-115			
Calcium	6.42	0.40	mg/L	6.25		103	85-115			
Iron	6.29	0.100	mg/L	6.25		101	85-115			
Sodium	6.51	0.26	mg/L	6.25		104	85-115			
LCS (BAI2994-BS2)										
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 17:40										
Molybdenum	0.07	0.01	mg/L	0.0625		108	85-115			
Mercury	0.0025	0.0005	mg/L	0.00250		101	85-115			
Antimony	0.069	0.005	mg/L	0.0625		110	85-115			
Arsenic	0.0632	0.0010	mg/L	0.0625		101	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0571	0.0020	mg/L	0.0625		91.4	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		103	85-115			
Copper	0.065	0.003	mg/L	0.0625		104	85-115			
Lead	0.066	0.002	mg/L	0.0625		105	85-115			
Lithium	0.06	0.02	mg/L	0.0625		88.9	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0656	0.0020	mg/L	0.0625		105	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 BAI2994 - EPA 200.2										
Matrix Spike (BAI2994-MS1)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 19:53										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	36.4	40.0	mg/L	6.25	26.4	161	80-120			D2, M1, J
Iron	6.94	10.0	mg/L	6.25	ND	111	80-120			D2, J
Sodium	227	26.0	mg/L	6.25	202	391	80-120			D2, M1
Matrix Spike (BAI2994-MS2)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 19:18										
Antimony	ND	5.00	mg/L	0.0625	ND		80-120			D2, M2, U
Mercury	ND	0.500	mg/L	0.00250	ND		80-120			D2, M2, U
Molybdenum	ND	10.0	mg/L	0.0625	ND		80-120			D2, M2, U
Arsenic	ND	1.00	mg/L	0.0625	ND		80-120			D2, M2, U
Barium	ND	4.00	mg/L	0.0625	ND		80-120			D2, M2, U
Beryllium	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Cadmium	ND	1.00	mg/L	0.0625	ND		80-120			D2, M2, U
Chromium	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Cobalt	ND	4.00	mg/L	0.0625	ND		80-120			D2, M2, U
Copper	ND	3.00	mg/L	0.0625	ND		80-120			D2, M2, U
Lead	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Lithium	ND	20.0	mg/L	0.0625	ND		80-120			D2, M2, U
Selenium	ND	3.00	mg/L	0.0625	ND		80-120			D2, M2, U
Thallium	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Matrix Spike Dup (BAI2994-MSD1)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 19:56										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	35.4	40.0	mg/L	6.25	26.4	145	80-120	2.79	20	D2, M1, J
Iron	6.78	10.0	mg/L	6.25	ND	109	80-120	2.24	20	D2, J
Sodium	220	26.0	mg/L	6.25	202	280	80-120	3.09	20	D2, M1
Matrix Spike Dup (BAI2994-MSD2)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 19:20										
Antimony	ND	5.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Molybdenum	ND	10.0	mg/L	0.0625	ND		80-120		20	D2, M2, U
Mercury	ND	0.500	mg/L	0.00250	ND		80-120		20	D2, M2, U
Arsenic	ND	1.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Barium	ND	4.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Beryllium	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Cadmium	ND	1.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Chromium	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Cobalt	ND	4.00	mg/L	0.0625	ND		80-120		20	D2, M2, Y1, U
Copper	ND	3.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Lead	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Lithium	ND	20.0	mg/L	0.0625	ND		80-120		20	D2, M2, U
Selenium	ND	3.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Thallium	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U

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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 BAI2994 - EPA 200.2										
Post Spike (BAI2994-PS1)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 20:09										
Boron	1910		ug/L	125	1680	187	75-125			D2, M1
Calcium	34500		ug/L	6250	26400	131	75-125			D2, M1
Iron	6720		ug/L	6250	8.75	107	75-125			D2
Sodium	215000		ug/L	6250	202000	211	75-125			D2, M1
Post Spike (BAI2994-PS2)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 19:31										
Antimony	78.0		ug/L	62.5	0.057	125	75-125			D2
Molybdenum	104		ug/L	62.5	0.96	165	75-125			D2, M1
Mercury	18.0		ug/L	2.50	0.0120	720	75-125			D2, M1
Arsenic	99.0		ug/L	62.5	0.333	158	75-125			D2, M1
Barium	131		ug/L	62.5	78.1	84.6	75-125			D2
Beryllium	-55.0		ug/L	62.5	-0.0050		75-125			D2, M2, U
Cadmium	71.0		ug/L	62.5	0.0260	114	75-125			D2
Chromium	55.0		ug/L	62.5	0.371	87.4	75-125			D2
Cobalt	31.0		ug/L	62.5	-0.041	49.6	75-125			D2, M2
Copper	110		ug/L	62.5	-0.674	176	75-125			D2, M1
Lead	60.0		ug/L	62.5	-0.031	96.0	75-115			D2
Lithium	155		ug/L	62.5	27.1	205	75-125			D2, M1
Selenium	76.0		ug/L	62.5	0.029	122	75-125			D2
Thallium	79.0		ug/L	62.5	0.0080	126	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 BAI2922 - Default Prep Wet Chem										
Blank (BAI2922-BLK1)										
Prepared: 9/27/2021 11:17, Analyzed: 9/27/2021 11:17										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAI2922-BS1)										
Prepared: 9/27/2021 10:56, Analyzed: 9/27/2021 10:56										
Total Organic Carbon	4.8	0.5	mg/L	5.00		95.3	80-120			
Duplicate (BAI2922-DUP1) **Source: 1072865-01**										
Prepared: 9/27/2021 16:33, Analyzed: 9/27/2021 16:33										
Total Organic Carbon	14.9	0.5	mg/L		15.1			1.32	25	
Duplicate (BAI2922-DUP2) **Source: 1090111-01**										
Prepared: 9/27/2021 21:49, Analyzed: 9/27/2021 21:49										
Total Organic Carbon	2.4	0.5	mg/L		2.4			0.177	25	
Matrix Spike (BAI2922-MS1) **Source: 1072866-01**										
Prepared: 9/27/2021 16:54, Analyzed: 9/27/2021 16:54										
Total Organic Carbon	14.0	0.5	mg/L	2.50	11.7	93.0	80-120			
Matrix Spike (BAI2922-MS2) **Source: 1090111-02**										
Prepared: 9/27/2021 22:10, Analyzed: 9/27/2021 22:10										
Total Organic Carbon	6.1	0.5	mg/L	5.00	1.5	92.5	80-120			
Batch BAI2943 - Default Prep Wet Chem										
LCS (BAI2943-BS1)										
Prepared: 9/24/2021 13:00, Analyzed: 9/24/2021 13:00										
pH (Lab)	8.01		Std. Units	8.00		100	98.8-101.2			
LCS (BAI2943-BS2)										
Prepared: 9/24/2021 13:13, Analyzed: 9/24/2021 13:13										
pH (Lab)	8.04		Std. Units	8.00		100	98.8-101.2			
Duplicate (BAI2943-DUP1) **Source: 1085993-01**										
Prepared: 9/24/2021 13:11, Analyzed: 9/24/2021 13:11										
pH (Lab)	6.70	0.10	Std. Units		6.69			0.149	10	H3

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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 BAI2943 - Default Prep Wet Chem										
Duplicate (BAI2943-DUP2) **Source: 1094315-01**										
Prepared: 9/24/2021 13:16, Analyzed: 9/24/2021 13:16										
pH (Lab)	7.92	0.10	Std. Units		7.92			0.00	10	H3
Batch BAI2951 - Default Prep Wet Chem										
Blank (BAI2951-BLK1)										
Prepared: 9/24/2021 14:22, Analyzed: 9/24/2021 14:22										
Specific Conductance (Lab)	ND	1	umhos/cm							U
LCS (BAI2951-BS1)										
Prepared: 9/24/2021 14:23, Analyzed: 9/24/2021 14:23										
Specific Conductance (Lab)	1410		umhos/cm	1410		100	80-120			
Duplicate (BAI2951-DUP1) **Source: 1085992-06**										
Prepared: 9/24/2021 14:37, Analyzed: 9/24/2021 14:37										
Specific Conductance (Lab)	5060	1	umhos/cm		5060			0.00	0.938	
Duplicate (BAI2951-DUP2) **Source: 1094459-03**										
Prepared: 9/24/2021 14:52, Analyzed: 9/24/2021 14:52										
Specific Conductance (Lab)	701	1	umhos/cm		582			18.6	0.938	Y1
Batch BAI3122 - Default Prep Wet Chem										
Blank (BAI3122-BLK1)										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAI3122-BS1)										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	1490	25	mg/L	1500		99.3	80-120			
Duplicate (BAI3122-DUP1) **Source: 1085992-01**										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	590	50	mg/L		584			1.02	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 BAI3122 - Default Prep Wet Chem										
Duplicate (BAI3122-DUP2) **Source: 1093963-03**										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	98	50	mg/L		98			0.00	10	
Batch BAI3272 - Default Prep Wet Chem										
Blank (BAI3272-BLK1)										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:11										
Chemical Oxygen Demand	ND	8	mg/L							U
LCS (BAI3272-BS1)										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:11										
Chemical Oxygen Demand	133	8	mg/L	125		107	90-110			
Duplicate (BAI3272-DUP1) **Source: 1085992-01**										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:29										
Chemical Oxygen Demand	ND	8	mg/L		ND				25	U
Duplicate (BAI3272-DUP2) **Source: 1091532-02RE1**										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:43										
Chemical Oxygen Demand	12	8	mg/L		ND				25	
Matrix Spike (BAI3272-MS1) **Source: 1085992-01**										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:29										
Chemical Oxygen Demand	255	8	mg/L	250	ND	102	90-110			
Matrix Spike Dup (BAI3272-MSD1) **Source: 1085992-01**										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:29										
Chemical Oxygen Demand	266	8	mg/L	250	ND	106	90-110	4.24	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 BAI3740 - Default Prep IC										
Blank (BAI3740-BLK1)										
Prepared: 10/1/2021 16:21, Analyzed: 10/1/2021 16:21										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAI3740-BS1)										
Prepared: 10/1/2021 16:07, Analyzed: 10/1/2021 16:07										
Fluoride	9.9		mg/L	10.0		98.5	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10		mg/L	10.0		98.2	90-110			
Matrix Spike (BAI3740-MS1) **Source: 1085994-06**										
Prepared: 10/1/2021 20:55, Analyzed: 10/1/2021 20:55										
Chloride	11.1		mg/L	10.0	0.05	111	75-125			
Fluoride	10.9		mg/L	10.0	0.0	109	75-125			
Sulfate	11		mg/L	10.0	0.08	110	75-125			
Matrix Spike Dup (BAI3740-MSD1) **Source: 1085994-06**										
Prepared: 10/1/2021 21:09, Analyzed: 10/1/2021 21:09										
Chloride	11.5		mg/L	10.0	0.05	114	75-125	2.77	15	
Fluoride	11.2		mg/L	10.0	0.0	112	75-125	2.04	15	
Sulfate	11		mg/L	10.0	0.08	111	75-125	1.33	15	
Batch BAJ0191 - Default Prep IC										
Blank (BAJ0191-BLK1)										
Prepared: 10/2/2021 14:03, Analyzed: 10/2/2021 14:03										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAJ0191-BS1)										
Prepared: 10/2/2021 13:48, Analyzed: 10/2/2021 13:48										
Fluoride	9.7		mg/L	10.0		97.4	90-110			
Chloride	9.8		mg/L	10.0		98.1	90-110			
Sulfate	10		mg/L	10.0		99.3	90-110			

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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 BAJ0191 - Default Prep IC										
Matrix Spike (BAJ0191-MS1) **Source: 1085992-06**										
Prepared: 10/2/2021 18:30, Analyzed: 10/2/2021 18:30										
Fluoride	0.0		mg/L	10.0	0.0		75-125			M2, U
Chloride	112		mg/L	10.0	117	NR	75-125			M2
Sulfate	532		mg/L	10.0	1460	NR	75-125			M2
Matrix Spike Dup (BAJ0191-MSD1) **Source: 1085992-06**										
Prepared: 10/2/2021 18:45, Analyzed: 10/2/2021 18:45										
Chloride	114		mg/L	10.0	117	NR	75-125	1.58	15	M2
Fluoride	0.0		mg/L	10.0	0.0		75-125		15	M2, U
Sulfate	541		mg/L	10.0	1460	NR	75-125	1.72	15	M2
Batch BAJ0698 - Default Prep IC										
Blank (BAJ0698-BLK1)										
Prepared: 10/6/2021 12:45, Analyzed: 10/6/2021 12:45										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAJ0698-BS1)										
Prepared: 10/6/2021 12:30, Analyzed: 10/6/2021 12:30										
Chloride	10.0		mg/L	10.0		99.6	90-110			
Fluoride	9.5		mg/L	10.0		94.8	90-110			
Sulfate	10		mg/L	10.0		95.8	90-110			
Matrix Spike (BAJ0698-MS1) **Source: 1094011-01**										
Prepared: 10/6/2021 14:45, Analyzed: 10/6/2021 14:45										
Chloride	49.0		mg/L	20.0	32.7	81.3	75-125			D
Fluoride	21.2		mg/L	20.0	0.0	106	75-125			D
Sulfate	50		mg/L	20.0	31	95.0	75-125			D
Matrix Spike Dup (BAJ0698-MSD1) **Source: 1094011-01**										
Prepared: 10/6/2021 15:00, Analyzed: 10/6/2021 15:00										
Chloride	48.9		mg/L	20.0	32.7	80.7	75-125	0.249	15	D
Fluoride	21.9		mg/L	20.0	0.0	110	75-125	3.12	15	D
Sulfate	50		mg/L	20.0	31	96.0	75-125	0.438	15	D

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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
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

Sample Acceptance Checklist for Work Order 1085992

Shipped By: Client

Temperature: 0.40° 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: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): Tina's Sneed *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-01 A	9/23/21	900	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 : ✓				
1085992-01 B	9/23/21	900	Plastic 1L	1	MW1	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1085992-01 C	9/23/21	900	Plastic 500mL pH<2 w/H2SO4	1	MW1	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-01 D	9/23/21	900	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW1	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				

Thermometer Serial Number
181390287
✓ 181460057
Temp 0.4°C

Preservation Check Performed by: NDY

Field data collected by: Tina's Sneed Date (mm/dd/yy) 9/23/21 Time (24 hr) 900

pH 7.28 Cond ~~(umho)~~ mS/cm 0.940 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.81 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Tina's Sneed		9/23/21	1430
		9-23-21	1537

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:23:40PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): Travis Sneed
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-01 E	9/23/21	900	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-01 F	9/23/21	900	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW1	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-01 G	9/23/21	900	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW1	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-01 H	9/23/21	900	AG 250mL pH<2 w/H2SO4	1	MW1	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: NOY

Field data collected by: Travis Sneed Date (mm/dd/yy) 9/23/21 Time (24 hr) 900

pH 7.28 Cond ~~(umho)~~ mS/cm 0.940 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.81 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed	[illegible]	9/23/21	1430
[illegible]	[illegible]	9-23-21	1537

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Printed: 8/31/2021 4:23:40PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: _____

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
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 # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-02 A	9/23/21	1125	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 : ✓				
1085992-02 B	9/23/21	1125	Plastic 1L	1	MW2	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1085992-02 C	9/23/21	1125	Plastic 500mL pH<2 w/H2SO4	1	MW2	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-02 D	9/23/21	1125	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW2	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-02 E	9/23/21	1125	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

Field data collected by: _____ Date (mm/dd/yy) 9/23/21 Time (24 hr) 1125

pH 6.27 Cond ~~(umho)~~ mS/cm 1.74 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.03 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
_____	_____	9/23/21	1537
_____	_____	_____	_____
_____	_____	_____	_____

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-02 F	9/23/21	1125	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW2	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-02 G	9/23/21	1125	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW2	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-02 H	9/23/21	1125	AG 250mL pH<2 w/H2SO4	1	MW2	g / c	TOC
			Preservation Check: pH : ✓				
1085992-03 A	9/23/21	1125	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 : ✓				
1085992-03 B	9/23/21		Plastic 1L	1	MW3A	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: NOY

Field data collected by: Philip M Hill Date (mm/dd/yy) 9/23/21 Time (24 hr) 1125

pH ____ Cond (umho) ____ Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): Travis Sneed *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-03 C	9/23/21	1345	Plastic 500mL pH<2 w/H2SO4	1	MW3A	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-03 D	9/23/21	1345	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW3A	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-03 E	9/23/21	1345	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-03 F	9/23/21	1345	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW3A	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-03 G	9/23/21	1345	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW3A	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-03 H	9/23/21	1345	AG 250mL pH<2 w/H2SO4	1	MW3A	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

Field data collected by: Travis Sneed Date (mm/dd/yy) ___ Time (24 hr) ___

pH 6.77 Cond ~~(umho)~~ mS/cm 8.10 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.84 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
Travis Sneed	[illegible]	9/23/21	1490
[illegible]	[illegible]	9-23-21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-04 A	9/23/21	955	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 : ✓				
1085992-04 B	9/23/21	955	Plastic 1L	1	MW4	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1085992-04 C	9/23/21	955	Plastic 500mL pH<2 w/H2SO4	1	MW4	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-04 D	9/23/21	955	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW4	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-04 E	9/23/21	955	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hi'y Date (mm/dd/yy) 9/23/21 Time (24 hr) 955

pH 6.52 Cond ~~(umho)~~ mS/cm 6.52 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 16.12 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/29/21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY
Workorder # **1085992**

Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-04 F	9/23/21	955	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW4	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-04 G	9/23/21	955	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW4	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-04 H	9/23/21	955	AG 250mL pH<2 w/H2SO4	1	MW4	g / c	TOC
			Preservation Check: pH : ✓				
1085992-05 A	9/23/21	955	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 : ✓				
1085992-05 B	9/23/21	955	Plastic 1L	1	MW5	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: NDY

MW4
Field data collected by: Phillip HH Date (mm/dd/yy) 9/23/21 Time (24 hr) 955

pH 6.52 Cond ~~(umho)~~ mS/cm 6.52 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 16.12 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-05 C	9/23/21	955	Plastic 500mL pH<2 w/H2SO4	1	MW5	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-05 D	9/23/21	955	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW5	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-05 E	9/23/21	955	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-05 F	9/23/21	955	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW5	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-05 G	9/23/21	955	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW5	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-05 H	9/23/21	955	AG 250mL pH<2 w/H2SO4	1	MW5	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: NOV

Field data collected by: Phillips/Hall Date (mm/dd/yy) 9/23/21 Time (24 hr) 955

pH 6.67 Cond ~~(umho)~~ mS/cm 6.14 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 15.03 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1430
		9-23-21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-06 A	9/23/21	900	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 : ✓				
1085992-06 B	9/23/21	900	Plastic 1L	1	MW6	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1085992-06 C	9/23/21	900	Plastic 500mL pH<2 w/H2SO4	1	MW6	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-06 D	9/23/21	900	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW6	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-06 E	9/23/21	900	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/23/21 Time (24 hr) 900

pH 6.87 Cond ~~(umho)~~ mS/cm 5.10 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.07 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): MTY
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-06 F	9/23/21	900	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW6	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-06 G	9/23/21	900	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW6	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-06 H	9/23/21	900	AG 250mL pH<2 w/H2SO4	1	MW6	g / c	TOC
			Preservation Check: pH : ✓				
1085992-07 A	9/23/21 tot	1015	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 : ✓				
1085992-07 B	9/23/21	1015	Plastic 1L	1	DUPLICATE	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/23/21 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) ___ or (CFS) ___ or (g/min) ___

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
MTY		9/23/21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature):

required information

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-07 C	9/23/21	1015	Plastic 500mL pH<2 w/H2SO4	1	DUPLICATE	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-07 D	9/23/21	1015	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-07 E	9/23/21	1015	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-07 F	9/23/21	1015	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-07 G	9/23/21	1015	Plastic 1L pH<2 w/HNO3 (Sub)	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-07 H	9/23/21	1015	AG 250mL pH<2 w/H2SO4	1	DUPLICATE	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

Field data collected by: Travis Speed Date (mm/dd/yy) 9/23/21 Time (24 hr) 1015

pH 6.67 Cond ~~(umho)~~ µS/cm 6.14 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 15.03 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1430
		9-23-21	1537

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Printed: 8/31/2021 4:23:40PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
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 # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-08 A	9/23/21	1210	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 : ✓				
1085992-08 B	9/23/21	1210	Plastic 1L	1	FIELD BLANK	g / c	pH (Lab) Conductivity (Lab) TDS Sulfate 9056 Chloride 9056 Fluoride 9056
1085992-08 C	9/23/21	1210	Plastic 500mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	COD TOC
			Preservation Check: pH : ✓				
1085992-08 D	9/23/21	1210	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	FIELD BLANK	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085992-08 E	9/23/21	1210	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Landfill Semiannual Groundwater

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085992 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085992-08 F	9/23/21	1210	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085992-08 G	9/23/21	1210	Plastic 1L pH<2 w/HNO3 (Sub)	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085992-08 H	9/23/21	1210	AG 250mL pH<2 w/H2SO4	1	FIELD BLANK	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: NDY

Field data collected by: _____ Date (mm/dd/yy) 9/23/21 Time (24 hr) 1210

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

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

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Printed: 8/31/2021 4:23:40PM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

October 21, 2021

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

RE: Project: 1085992
Pace Project No.: 30443064

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1085992
Pace Project No.: 30443064

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 1085992
Pace Project No.: 30443064

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30443064001	**1085992-01**	Water	09/23/21 09:00	09/28/21 13:00
30443064002	**1085992-02**	Water	09/23/21 11:25	09/28/21 13:00
30443064003	**1085992-03**	Water	09/23/21 13:45	09/28/21 13:00
30443064004	**1085992-04**	Water	09/23/21 09:55	09/28/21 13:00
30443064005	**1085992-05**	Water	09/23/21 09:55	09/28/21 13:00
30443064006	**1085992-06**	Water	09/23/21 09:00	09/28/21 13:00
30443064007	**1085992-07**	Water	09/23/21 10:15	09/28/21 13:00
30443064008	**1085992-08**	Water	09/23/21 12:10	09/28/21 13:00

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SAMPLE ANALYTE COUNT

Project: 1085992
Pace Project No.: 30443064

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30443064001	**1085992-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064002	**1085992-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064003	**1085992-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064004	**1085992-04**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064005	**1085992-05**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064006	**1085992-06**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064007	**1085992-07**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30443064008	**1085992-08**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1085992
Pace Project No.: 30443064

Sample: 1085992-01 **Lab ID: 30443064001** Collected: 09/23/21 09:00 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.123 ± 0.483 (1.03) C:NA T:95%**	pCi/L	10/19/21 13:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.53 ± 0.672 (1.13) C:65% T:75%**	pCi/L	10/20/21 14:26	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.53 ± 1.16 (2.16)**	pCi/L	10/21/21 14:48	7440-14-4	

Sample: 1085992-02 **Lab ID: 30443064002** Collected: 09/23/21 11:25 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.000 ± 0.525 (1.05) C:NA T:88%**	pCi/L	10/19/21 13:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.591 ± 0.563 (1.16) C:67% T:66%**	pCi/L	10/20/21 14:26	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.591 ± 1.09 (2.21)**	pCi/L	10/21/21 14:48	7440-14-4	

Sample: 1085992-03 **Lab ID: 30443064003** Collected: 09/23/21 13:45 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.504 ± 0.573 (0.933) C:NA T:100%**	pCi/L	10/19/21 13:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.960 ± 0.834 (1.69) C:63% T:75%**	pCi/L	10/20/21 17:38	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.46 ± 1.41 (2.62)**	pCi/L	10/21/21 14:48	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1085992
Pace Project No.: 30443064

Sample: 1085992-04 **Lab ID: 30443064004** Collected: 09/23/21 09:55 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.338 ± 0.385 (0.607) C:NA T:95%**	pCi/L	10/19/21 13:27	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.213 ± 0.725 (1.63) C:64% T:77%**	pCi/L	10/20/21 17:38	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.551 ± 1.11 (2.24)**	pCi/L	10/21/21 14:48	7440-14-4	

Sample: 1085992-05 **Lab ID: 30443064005** Collected: 09/23/21 09:55 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.0572 ± 0.297 (0.616) C:NA T:96%**	pCi/L	10/19/21 13:27	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.962 ± 0.740 (1.47) C:65% T:81%**	pCi/L	10/20/21 17:38	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.02 ± 1.04 (2.09)**	pCi/L	10/21/21 14:48	7440-14-4	

Sample: 1085992-06 **Lab ID: 30443064006** Collected: 09/23/21 09:00 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:

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

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.109 ± 0.338 (0.654) C:NA T:94%**	pCi/L	10/19/21 13:27	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**-0.0138 ± 0.642 (1.49) C:64% T:79%**	pCi/L	10/20/21 17:38	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.109 ± 0.980 (2.14)**	pCi/L	10/21/21 14:48	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1085992
Pace Project No.: 30443064

Sample: 1085992-07 **Lab ID: 30443064007** Collected: 09/23/21 10:15 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.389 ± 0.364 (0.516) C:NA T:98%**	pCi/L	10/19/21 13:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.831 ± 0.713 (1.44) C:64% T:78%**	pCi/L	10/20/21 17:38	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.22 ± 1.08 (1.96)**	pCi/L	10/21/21 14:48	7440-14-4	

Sample: 1085992-08 **Lab ID: 30443064008** Collected: 09/23/21 12:10 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**1.29 ± 0.663 (0.696) C:NA T:90%**	pCi/L	10/19/21 13:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.73 ± 0.823 (1.42) C:72% T:72%**	pCi/L	10/20/21 17:36	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**3.02 ± 1.49 (2.12)**	pCi/L	10/21/21 14:48	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1085992
Pace Project No.: 30443064

QC Batch: 466842 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: 30443064001, 30443064002, 30443064003, 30443064004, 30443064005, 30443064006, 30443064007, 30443064008

METHOD BLANK: 2254334 Matrix: Water
Associated Lab Samples: 30443064001, 30443064002, 30443064003, 30443064004, 30443064005, 30443064006, 30443064007, 30443064008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0498 ± 0.293 (0.652) C:NA T:83%	pCi/L	10/19/21 13:11	

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.

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1085992
Pace Project No.: 30443064

QC Batch: 466843 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: 30443064001, 30443064002, 30443064003, 30443064004, 30443064005, 30443064006, 30443064007, 30443064008

METHOD BLANK: 2254336 Matrix: Water
Associated Lab Samples: 30443064001, 30443064002, 30443064003, 30443064004, 30443064005, 30443064006, 30443064007, 30443064008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.393 ± 0.458 (0.963) C:66% T:72%	pCi/L	10/20/21 14:32	

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1085992
Pace Project No.: 30443064

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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SUBCONTRACT ORDER

Pace Analytical Services, LLC Ke

1085992

WO# : 30443064

30443064

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 L

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: 1085992-01	**Water**	**Sampled:09/23/2021 09:00**	**Specific Method**	001
Radium 228 (sub)		03/22/2022 09:00	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/22/2022 09:00	EPA 903.1	
Radium Total (sub)		03/22/2022 09:00	EPA 904.0 Radium Sum C	
Sample ID: 1085992-02	**Water**	**Sampled:09/23/2021 11:25**	**Specific Method**	002
Radium 226 (sub)		03/22/2022 11:25	EPA 903.1	
Radium 228 (sub)		03/22/2022 11:25	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/22/2022 11:25	EPA 904.0 Radium Sum C	
Sample ID: 1085992-03	**Water**	**Sampled:09/23/2021 13:45**	**Specific Method**	003
Radium Total (sub)		03/22/2022 13:45	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/22/2022 13:45	EPA 903.1	
Radium 228 (sub)		03/22/2022 13:45	EPA 904.0 Radium Sum C	
Sample ID: 1085992-04	**Water**	**Sampled:09/23/2021 09:55**	**Specific Method**	004
Radium Total (sub)		03/22/2022 09:55	EPA 904.0 Radium Sum C	
Radium 228 (sub)		03/22/2022 09:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/22/2022 09:55	EPA 903.1	
Sample ID: 1085992-05	**Water**	**Sampled:09/23/2021 09:55**	**Specific Method**	005
Radium 226 (sub)		03/22/2022 09:55	EPA 903.1	
Radium Total (sub)		03/22/2022 09:55	EPA 904.0 Radium Sum C	
Radium 228 (sub)		03/22/2022 09:55	EPA 904.0 Radium Sum C	

Released By	09-27-21 Date	Received By	9/28/21 1300 Date
Released By	Date	Received By	9-28-21 13:00 Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1085992

WO# : 30443064

PM: CAF Due Date: 10/19/21

CLIENT: PACE_44_MVKY

Analysis		Expires	Laboratory ID	Comments
Sample ID: 1085992-06	**Water**	**Sampled:09/23/2021 09:00**	**Specific Method**	006
Radium Total (sub)		03/22/2022 09:00	EPA 904.0 Radium Sum C	
Radium 228 (sub)		03/22/2022 09:00	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/22/2022 09:00	EPA 903.1	
Sample ID: 1085992-07	**Water**	**Sampled:09/23/2021 10:15**	**Specific Method**	007 ~~006~~ JAG 9/30/21
Radium 226 (sub)		03/22/2022 10:15	EPA 903.1	
Radium 228 (sub)		03/22/2022 10:15	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/22/2022 10:15	EPA 904.0 Radium Sum C	
Sample ID: 1085992-08	**Water**	**Sampled:09/23/2021 12:10**	**Specific Method**	008
Radium 226 (sub)		03/22/2022 12:10	EPA 903.1	
Radium 228 (sub)		03/22/2022 12:10	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/22/2022 12:10	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
	09.27.21		9/28/21 1300
Released By	Date	Received By	Date
			9-28-21 13:10

Chain of Custody

WO# : 30443064

PM: CAF Due Date: 10/19/21

CLIENT: PACE_44_MVKY

Pace Analytical
www.pacelabs.com

Workorder: 1085992 Workorder Name: Green Landfill Semiannual Owner Received Date: 9/23/2021 Results Requested By: 10/7/2021

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1													
2	1085992-01		09/23/21 09:00	IR44-McCoy	Water						X	X	
3	1085992-02		09/23/21 11:25	IR44-McCoy	Water						X	X	
4	1085992-03		09/23/21 13:45	IR44-McCoy	Water						X	X	
5	1085992-04		09/23/21 09:55	IR44-McCoy	Water						X	X	
6	1085992-05		09/23/21 09:55	IR44-McCoy	Water						X	X	
7	1085992-06		09/23/21 09:00	IR44-McCoy	Water						X	X	
8	1085992-07		09/23/21 10:15	IR44-McCoy	Water						X	X	
9	1085992-08		09/23/21 12:10	IR44-McCoy	Water						X	X	
10													

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1					
2					
3					

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

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace Kentucky Project #

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

Label JA
LIMS Login VPM

Tracking #: 1107 3389 3118

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

Thermometer Used 13 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 14.9 °C Correction Factor: -0.1 °C Final Temp: 14.8 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D0411 / Date and Initials of person examining contents: 9-30-21 JA
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:		✓		2. no container preservative type 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 date or time on samples
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. added 2.5 mL HNO3 to 1085992-06 (three samples)
All containers meet method preservation requirements.		✓		Initial when completed JA Date/time of preservation 9.30.21 15:44
				Lot # of added preservative DL21-0919
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JA Date: 9.30.21 Survey Meter SN: 1563

WO#: 30443064
PM: CAF Due Date: 10/19/21
CLIENT: PACE_44_MVKY

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

Pace Analytical®

WO#: 30443064

PM: CAF Due Date: 10/19/21

CLIENT: PACE_44_MVKY

tainer Count

Client Pace KY

Site 1085992

Profile Number 11851

Notes

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

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	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 unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

WO#: 30443064

Sample Custody

By Nancy Yeager

Printed 09/27/2021 09:0(

PM: CAF **Due Date: 10/19/21**

CLIENT: PACE_44_MVKY

Lab ID	Container	Cooler	Last Own	Departme	Location	Home Locat	Status	Dispositio	Custody Date
1085992-01	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-01	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-01	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-02	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-02	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-02	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-03	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-03	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-03	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-04	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-04	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-04	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-05	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-05	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-05	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-06	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-06	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-06	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-07	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-07	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-07	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-08	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-08	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085992-08	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085993-01	Plastic 1L pH<2 w/HNO3 Rad 226 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085993-01	Plastic 1L pH<2 w/HNO3 Rad 228 (Safe)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59
1085993-01	Plastic 1L pH<2 w/HNO3 (Sub)	Default Coole	NDY	Wet Chem	In-Transit		Reviewed	Active (Out)	09/27/2021 08:59

Relinquished By — Date: 09.27.21 — Received By — Date: 9-28-21 13:00

Relinquished By — Date — Received By — Date

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

Certificate of Analysis
1085993

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 10/20/2021 10:17

Project Name:	Green Landfill Semiannual Well MW104	Workorder:	1085993

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 09/23/2021 15:37.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

Rob Whittington, Project Manager

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

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

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1085993-01	MW-104/	Groundwater	09/23/2021 13:35	09/23/2021 15:37	Phillip Hill

LabNumber	Measurement	Value
1085993-01	Field Conductance	8300
	Field pH	6.22
	Field Temp (C)	17.24

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

ANALYTICAL RESULTS

Lab Sample ID: **1085993-01**
Description: **MW-104**

Sample Collection Date Time: 09/23/2021 13:35
Sample Received Date Time: 09/23/2021 15:37

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	09/27/2021 08:55	10/01/2021 14:40	NKP
Arsenic	**0.0010**		mg/L	0.0010	0.0004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Barium	**0.017**		mg/L	0.004	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:48	NKP
Boron	**0.25**		mg/L	0.10	0.10	SW846 6010 B	09/27/2021 08:55	09/29/2021 09:50	MRWD
Cadmium	**0.0006**	J	mg/L	0.0010	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Calcium	**466**	D1	mg/L	40.0	13.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:50	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Copper	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Iron	**0.407**		mg/L	0.100	0.050	SW846 6010 B	09/27/2021 08:55	09/29/2021 09:50	MRWD
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	09/27/2021 08:55	10/04/2021 13:48	NKP
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP
Sodium	**815**	D1	mg/L	26.0	10.0	SW846 6010 B	09/27/2021 08:55	09/27/2021 19:50	MRWD
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	09/27/2021 08:55	10/01/2021 14:40	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chemical Oxygen Demand	**182**		mg/L	8	8	HACH 8000	09/28/2021 10:24	09/28/2021 12:25	KBZ
pH (Lab)	**6.69**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/24/2021 13:10	09/24/2021 13:10	CML
Total Dissolved Solids	**7230**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG
Total Organic Carbon	**1.0**		mg/L	0.5	0.4	5310 C-2011	09/27/2021 19:01	09/27/2021 19:01	HMF

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.203**	_Sub	pCi/L			EPA 903.1	10/19/2021 15:32	10/19/2021 15:32	xxx
See Attached Subcontract Report	**1.16**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/14/2021 11:22	10/14/2021 11:22	xxx
See Attached Subcontract Report	**1.36**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	10/19/2021 16:50	10/19/2021 16:50	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**1430**	M2	mg/L	100	72.0	SW846 9056	10/04/2021 15:17	10/04/2021 15:17	CSC
Fluoride	**0.4**	M2, Y2	mg/L	0.2	0.2	SW846 9056	10/04/2021 15:02	10/04/2021 15:02	CSC
Sulfate	**1900**	D, M1	mg/L	200	100	SW846 9056	10/04/2021 15:17	10/04/2021 15:17	CSC

Pace Analytical Services, LLC
P.O. Box 907
Madisonville, KY 42431
270.821.7375
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Notes for work order 1085993

- 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.
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.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y1	Sample RPD exceeded the method control limit.
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronymns

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 BAI2994 - EPA 200.2										
Blank (BAI2994-BLK1)										
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 17:14										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Iron	ND	0.100	mg/L							U
Sodium	ND	0.26	mg/L							U
Blank (BAI2994-BLK2)										
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 17:38										
Molybdenum	ND	0.01	mg/L							U
Mercury	ND	0.0005	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
Copper	ND	0.003	mg/L							U
Lead	ND	0.002	mg/L							U
Lithium	ND	0.02	mg/L							U
Selenium	ND	0.003	mg/L							U
Thallium	ND	0.0020	mg/L							U
LCS (BAI2994-BS1)										
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 17:18										
Boron	0.13	0.10	mg/L	0.125		103	85-115			
Calcium	6.42	0.40	mg/L	6.25		103	85-115			
Iron	6.29	0.100	mg/L	6.25		101	85-115			
Sodium	6.51	0.26	mg/L	6.25		104	85-115			
LCS (BAI2994-BS2)										
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 17:40										
Mercury	0.0025	0.0005	mg/L	0.00250		101	85-115			
Molybdenum	0.07	0.01	mg/L	0.0625		108	85-115			
Antimony	0.069	0.005	mg/L	0.0625		110	85-115			
Arsenic	0.0632	0.0010	mg/L	0.0625		101	85-115			
Barium	0.064	0.004	mg/L	0.0625		102	85-115			
Beryllium	0.0571	0.0020	mg/L	0.0625		91.4	85-115			
Cadmium	0.0635	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0651	0.0020	mg/L	0.0625		104	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		103	85-115			
Copper	0.065	0.003	mg/L	0.0625		104	85-115			
Lead	0.066	0.002	mg/L	0.0625		105	85-115			
Lithium	0.06	0.02	mg/L	0.0625		88.9	85-115			
Selenium	0.063	0.003	mg/L	0.0625		100	85-115			
Thallium	0.0656	0.0020	mg/L	0.0625		105	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI2994 - EPA 200.2										
Matrix Spike (BAI2994-MS1)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 19:53										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	36.4	40.0	mg/L	6.25	26.4	161	80-120			D2, M1, J
Iron	6.94	10.0	mg/L	6.25	ND	111	80-120			D2, J
Sodium	227	26.0	mg/L	6.25	202	391	80-120			D2, M1
Matrix Spike (BAI2994-MS2)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 19:18										
Molybdenum	ND	10.0	mg/L	0.0625	ND		80-120			D2, M2, U
Mercury	ND	0.500	mg/L	0.00250	ND		80-120			D2, M2, U
Antimony	ND	5.00	mg/L	0.0625	ND		80-120			D2, M2, U
Arsenic	ND	1.00	mg/L	0.0625	ND		80-120			D2, M2, U
Barium	ND	4.00	mg/L	0.0625	ND		80-120			D2, M2, U
Beryllium	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Cadmium	ND	1.00	mg/L	0.0625	ND		80-120			D2, M2, U
Chromium	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Cobalt	ND	4.00	mg/L	0.0625	ND		80-120			D2, M2, U
Copper	ND	3.00	mg/L	0.0625	ND		80-120			D2, M2, U
Lead	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Lithium	ND	20.0	mg/L	0.0625	ND		80-120			D2, M2, U
Selenium	ND	3.00	mg/L	0.0625	ND		80-120			D2, M2, U
Thallium	ND	2.00	mg/L	0.0625	ND		80-120			D2, M2, U
Matrix Spike Dup (BAI2994-MSD1)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 19:56										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	35.4	40.0	mg/L	6.25	26.4	145	80-120	2.79	20	D2, M1, J
Iron	6.78	10.0	mg/L	6.25	ND	109	80-120	2.24	20	D2, J
Sodium	220	26.0	mg/L	6.25	202	280	80-120	3.09	20	D2, M1
Matrix Spike Dup (BAI2994-MSD2)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 19:20										
Antimony	ND	5.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Molybdenum	ND	10.0	mg/L	0.0625	ND		80-120		20	D2, M2, U
Mercury	ND	0.500	mg/L	0.00250	ND		80-120		20	D2, M2, U
Arsenic	ND	1.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Barium	ND	4.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Beryllium	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Cadmium	ND	1.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Chromium	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Cobalt	ND	4.00	mg/L	0.0625	ND		80-120		20	D2, M2, Y1, U
Copper	ND	3.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Lead	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Lithium	ND	20.0	mg/L	0.0625	ND		80-120		20	D2, M2, U
Selenium	ND	3.00	mg/L	0.0625	ND		80-120		20	D2, M2, U
Thallium	ND	2.00	mg/L	0.0625	ND		80-120		20	D2, M2, U

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI2994 - EPA 200.2										
Post Spike (BAI2994-PS1)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/27/2021 20:09										
Boron	1910		ug/L	125	1680	187	75-125			D2, M1
Calcium	34500		ug/L	6250	26400	131	75-125			D2, M1
Iron	6720		ug/L	6250	8.75	107	75-125			D2
Sodium	215000		ug/L	6250	202000	211	75-125			D2, M1
Post Spike (BAI2994-PS2)	**Source: 1085992-01**									
Prepared: 9/27/2021 8:55, Analyzed: 9/30/2021 19:31										
Mercury	18.0		ug/L	2.50	0.0120	720	75-125			D2, M1
Molybdenum	104		ug/L	62.5	0.96	165	75-125			D2, M1
Antimony	78.0		ug/L	62.5	0.057	125	75-125			D2
Arsenic	99.0		ug/L	62.5	0.333	158	75-125			D2, M1
Barium	131		ug/L	62.5	78.1	84.6	75-125			D2
Beryllium	-55.0		ug/L	62.5	-0.0050		75-125			D2, M2, U
Cadmium	71.0		ug/L	62.5	0.0260	114	75-125			D2
Chromium	55.0		ug/L	62.5	0.371	87.4	75-125			D2
Cobalt	31.0		ug/L	62.5	-0.041	49.6	75-125			D2, M2
Copper	110		ug/L	62.5	-0.674	176	75-125			D2, M1
Lead	60.0		ug/L	62.5	-0.031	96.0	75-115			D2
Lithium	155		ug/L	62.5	27.1	205	75-125			D2, M1
Selenium	76.0		ug/L	62.5	0.029	122	75-125			D2
Thallium	79.0		ug/L	62.5	0.0080	126	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 BAI2922 - Default Prep Wet Chem										
Blank (BAI2922-BLK1)										
Prepared: 9/27/2021 11:17, Analyzed: 9/27/2021 11:17										
Total Organic Carbon	ND	0.5	mg/L							U
LCS (BAI2922-BS1)										
Prepared: 9/27/2021 10:56, Analyzed: 9/27/2021 10:56										
Total Organic Carbon	4.8	0.5	mg/L	5.00		95.3	80-120			
Duplicate (BAI2922-DUP1) **Source: 1072865-01**										
Prepared: 9/27/2021 16:33, Analyzed: 9/27/2021 16:33										
Total Organic Carbon	14.9	0.5	mg/L		15.1			1.32	25	
Duplicate (BAI2922-DUP2) **Source: 1090111-01**										
Prepared: 9/27/2021 21:49, Analyzed: 9/27/2021 21:49										
Total Organic Carbon	2.4	0.5	mg/L		2.4			0.177	25	
Matrix Spike (BAI2922-MS1) **Source: 1072866-01**										
Prepared: 9/27/2021 16:54, Analyzed: 9/27/2021 16:54										
Total Organic Carbon	14.0	0.5	mg/L	2.50	11.7	93.0	80-120			
Matrix Spike (BAI2922-MS2) **Source: 1090111-02**										
Prepared: 9/27/2021 22:10, Analyzed: 9/27/2021 22:10										
Total Organic Carbon	6.1	0.5	mg/L	5.00	1.5	92.5	80-120			
Batch BAI2943 - Default Prep Wet Chem										
LCS (BAI2943-BS1)										
Prepared: 9/24/2021 13:00, Analyzed: 9/24/2021 13:00										
pH (Lab)	8.01		Std. Units	8.00		100	98.8-101.2			
LCS (BAI2943-BS2)										
Prepared: 9/24/2021 13:13, Analyzed: 9/24/2021 13:13										
pH (Lab)	8.04		Std. Units	8.00		100	98.8-101.2			
Duplicate (BAI2943-DUP1) **Source: 1085993-01**										
Prepared: 9/24/2021 13:11, Analyzed: 9/24/2021 13:11										
pH (Lab)	6.70	0.10	Std. Units		6.69			0.149	10	H3

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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 BAI2943 - Default Prep Wet Chem										
Duplicate (BAI2943-DUP2) **Source: 1094315-01**										
Prepared: 9/24/2021 13:16, Analyzed: 9/24/2021 13:16										
pH (Lab)	7.92	0.10	Std. Units		7.92			0.00	10	H3
Batch BAI3122 - Default Prep Wet Chem										
Blank (BAI3122-BLK1)										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAI3122-BS1)										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	1490	25	mg/L	1500		99.3	80-120			
Duplicate (BAI3122-DUP1) **Source: 1085992-01**										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	590	50	mg/L		584			1.02	10	
Duplicate (BAI3122-DUP2) **Source: 1093963-03**										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	98	50	mg/L		98			0.00	10	
Batch BAI3272 - Default Prep Wet Chem										
Blank (BAI3272-BLK1)										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:11										
Chemical Oxygen Demand	ND	8	mg/L							U
LCS (BAI3272-BS1)										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:11										
Chemical Oxygen Demand	133	8	mg/L	125		107	90-110			
Duplicate (BAI3272-DUP1) **Source: 1085992-01**										
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:29										
Chemical Oxygen Demand	ND	8	mg/L		ND				25	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 BAI3272 - Default Prep Wet Chem										
Duplicate (BAI3272-DUP2)	**Source: 1091532-02RE1**									
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:43										
Chemical Oxygen Demand	12	8	mg/L		ND				25	
Matrix Spike (BAI3272-MS1)	**Source: 1085992-01**									
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:29										
Chemical Oxygen Demand	255	8	mg/L	250	ND	102	90-110			
Matrix Spike Dup (BAI3272-MSD1)	**Source: 1085992-01**									
Prepared: 9/28/2021 10:24, Analyzed: 9/28/2021 12:29										
Chemical Oxygen Demand	266	8	mg/L	250	ND	106	90-110	4.24	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 BAJ0324 - Default Prep IC										
Blank (BAJ0324-BLK1)										
Prepared: 10/4/2021 14:47, Analyzed: 10/4/2021 14:47										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAJ0324-BS1)										
Prepared: 10/4/2021 14:32, Analyzed: 10/4/2021 14:32										
Fluoride	10.4		mg/L	10.0		104	90-110			
Chloride	10.8		mg/L	10.0		108	90-110			
Sulfate	10		mg/L	10.0		104	90-110			
Matrix Spike (BAJ0324-MS1) **Source: 1085993-01**										
Prepared: 10/4/2021 17:01, Analyzed: 10/4/2021 17:01										
Fluoride	2.4		mg/L	10.0	0.4	20.7	75-125			M2
Chloride	0.0		mg/L	10.0	1290	NR	75-125			M2, U
Sulfate	1030		mg/L	10.0	1710	NR	75-125			M1
Matrix Spike Dup (BAJ0324-MSD1) **Source: 1085993-01**										
Prepared: 10/4/2021 17:16, Analyzed: 10/4/2021 17:16										
Fluoride	3.0		mg/L	10.0	0.4	26.7	75-125	22.0	15	M2, Y2
Chloride	0.0		mg/L	10.0	1290	NR	75-125		15	M2, U
Sulfate	1030		mg/L	10.0	1710	NR	75-125	0.328	15	M1

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
5310 C-2011 in Water	
Total Organic Carbon	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) ADEM Drinking Water Mdv (41880) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431 AK Drinking Water MADV (KY00020)
HACH 8000 in Water	
Chemical Oxygen Demand	KY Wastewater Mdv (00030) VA NELAC MDV (460210) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
SW846 6010 B in Water	
Calcium	VA NELAC MDV (460210)

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Sample Acceptance Checklist for Work Order 1085993

Shipped By: Client

Temperature: 0.40° 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
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Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085993 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085993-01 A	9/23/21	1335	Plastic 500mL pH<2 w/HNO3	1	MW-104	g / c	Thallium Tot 6020 Antimony Tot 6020 Beryllium Tot 6020 Barium Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Copper Tot 6020 Iron Tot 6010B Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020
			Preservation Check: pH : ✓				
1085993-01 B	9/23/21	1335	Plastic 1L	1	MW-104	g / c	Chloride 9056 Fluoride 9056 pH (Lab) Sulfate 9056 TDS
1085993-01 C	9/23/21	1335	Plastic 500mL pH<2 w/H2SO4	1	MW-104	g / c	COD TOC
			Preservation Check: pH : ✓				
1085993-01 D	9/23/21	1335	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-104	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085993-01 E	9/23/21	1335	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Thermometer Serial Number
181390287
✓ 181460057
Temp 0.4 °C

Preservation Check Performed by: JDG

Field data collected by: Phillips Date (mm/dd/yy) 9/23/21 Time (24 hr) 1335

pH 6.22 Cond (umho) Sfc 8.32 8.30 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.24 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:24:26PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: Green Landfill Semiannual Well MW104

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085993 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085993-01 F	9/23/21	1335	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-104	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085993-01 G	9/23/21	1335	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-104	g / c	Radium Total (sub)
			Preservation Check: pH : ✓				
1085993-01 H	9/23/21	1335	AG 250mL pH<2 w/H2SO4	1	MW-104	g / c	TOC
			Preservation Check: pH : ✓				

Preservation Check Performed by: JDG

Field data collected by: Phillip/HH Date (mm/dd/yy) 9/23/21 Time (24 hr) 1335

pH 6.22 ~~4.0~~ Cond (~~umho~~) ms/cm 8.30 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.24 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/23/21	1537

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 8/31/2021 4:24:26PM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

October 19, 2021

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

RE: Project: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville

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Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30443533001	**1085993-01**	Water	09/23/21 13:35	09/28/21 13:00

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Greensburg, PA 15601
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SAMPLE ANALYTE COUNT

Project: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30443533001	**1085993-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

Sample: 1085993-01 **Lab ID: 30443533001** Collected: 09/23/21 13:35 Received: 09/28/21 13:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.203 ± 0.315 (0.546) C:NA T:96%**	pCi/L	10/19/21 15:32	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.16 ± 0.601 (1.10) C:60% T:88%**	pCi/L	10/14/21 11:22	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.36 ± 0.916 (1.65)**	pCi/L	10/19/21 16:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

QC Batch: 467226
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: 30443533001

METHOD BLANK: 2256263 Matrix: Water
Associated Lab Samples: 30443533001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.807 ± 0.365 (0.589) C:64% T:99%	pCi/L	10/14/21 11:24	

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: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

QC Batch: 467225
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: 30443533001

METHOD BLANK: 2256262 Matrix: Water
Associated Lab Samples: 30443533001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0444 ± 0.261 (0.533) C:NA T:90%	pCi/L	10/19/21 15:32	

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: 1085993/Big Rivers Electric Co
Pace Project No.: 30443533

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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Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1085993 Workorder Name: Green Landfill Semiannual Owner Received Date: 9/23/2021 Results Requested By: 10/6/2021

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

WO# : 30443533

30443533

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1													
2	1085993-01		09/23/21 13:35	IR44-McCoy	Water						X	X	001
3													
4													
5													
6													
7													
8													
9													
10													

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1			(1 Hock	9/23/21 13:00	
2					
3					

Cooler Temperature on Receipt 14-8 °C	Custody Seal Y or (N)	Received on Ice (Y) or N	Sample Intact (Y) or N

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace Kentucky Project #

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

Label AF
LIMS Login AF

Tracking #: 1107 3389 3118

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

Thermometer Used 13 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 14.9 °C Correction Factor: -0.1 °C Final Temp: 14.8 °C

Temp should be above freezing to 6°C

WO#: 30443533
PM: CAF Due Date: 10/19/21
CLIENT: PACE_44_MVKY

Comments:	Yes	No	N/A	pH paper Lot# 10D0411 / Date and Initials of person examining contents: 9-30-21 JA
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:		✓		2. NO preservation listed
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. NO time/date on sample
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed JA Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JA Date: 9-30-21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

Appendix E
Green Surface Impoundment Analytical Laboratory Reports

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

Certificate of Analysis
1033768

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 05/04/2021 13:29

Project Name:	Green Surface Impoundment	Workorder:	1033768

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 04/23/2021 15:43.

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

Rob Whittington, Project Manager

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

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

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033768-01	MW11/	Groundwater	04/23/2021 10:55	04/23/2021 15:43	Phillip Hill
1033768-02	MW12/	Groundwater	04/23/2021 11:55	04/23/2021 15:43	Phillip Hill
1033768-03	MW13/	Groundwater	04/23/2021 13:10	04/23/2021 15:43	Phillip Hill
1033768-04	MW14/	Groundwater	04/23/2021 14:00	04/23/2021 15:43	Phillip Hill
1033768-05	DUPLICATE/	Groundwater	04/23/2021 12:15	04/23/2021 15:43	Phillip Hill
1033768-06	FIELD BLANK/	Water	04/23/2021 14:20	04/23/2021 15:43	Phillip Hill

LabNumber	Measurement	Value
1033768-01	Field Conductance	6210
	Field pH	7.11
	Field Temp (C)	15.53
1033768-02	Field Conductance	710
	Field pH	7.33
	Field Temp (C)	15.63
1033768-03	Field Conductance	893
	Field pH	6.77
	Field Temp (C)	16.45
1033768-04	Field Conductance	1270
	Field pH	6.88
	Field Temp (C)	16.9

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

ANALYTICAL RESULTS

Lab Sample ID: **1033768-01**
Description: **MW11**

Sample Collection Date Time: 04/23/2021 10:55
Sample Received Date Time: 04/23/2021 15:43

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.78**	M4	mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 20:12	AKB
Calcium	**343**	D1, M2	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 20:19	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.05**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:21	04/26/2021 15:21	CML
Total Dissolved Solids	**5130**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**3190**	D	mg/L	100	72.0	SW846 9056	05/03/2021 13:25	05/03/2021 13:25	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	04/30/2021 20:43	04/30/2021 20:43	CSC
Sulfate	**1600**	D	mg/L	100	50	SW846 9056	04/30/2021 20:58	04/30/2021 20:58	CSC

ANALYTICAL RESULTS

Lab Sample ID: **1033768-02**
Description: **MW12**

Sample Collection Date Time: 04/23/2021 11:55
Sample Received Date Time: 04/23/2021 15:43

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	04/26/2021 09:30	04/26/2021 20:22	AKB
Calcium	**91.5**	D1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 20:25	AKB

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	4500-H+ B-2000	04/26/2021 15:22	04/26/2021 15:22	CML
Total Dissolved Solids	**576**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**14.7**		mg/L	0.5	0.4	SW846 9056	04/30/2021 21:27	04/30/2021 21:27	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	04/30/2021 21:27	04/30/2021 21:27	CSC
Sulfate	**14**		mg/L	1	0.5	SW846 9056	04/30/2021 21:27	04/30/2021 21:27	CSC

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

ANALYTICAL RESULTS

Lab Sample ID: **1033768-03**
Description: **MW13**

Sample Collection Date Time: 04/23/2021 13:10
Sample Received Date Time: 04/23/2021 15:43

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	04/26/2021 09:30	04/26/2021 20:31	AKB
Calcium	**90.1**	D1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 20:35	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.04**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:26	04/26/2021 15:26	CML
Total Dissolved Solids	**706**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**26.4**	D	mg/L	1.0	0.7	SW846 9056	05/03/2021 14:41	05/03/2021 14:41	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	05/03/2021 14:27	05/03/2021 14:27	CSC
Sulfate	**82**	D	mg/L	10	5	SW846 9056	05/03/2021 14:56	05/03/2021 14:56	CSC

ANALYTICAL RESULTS

Lab Sample ID: **1033768-04**
Description: **MW14**

Sample Collection Date Time: 04/23/2021 14:00
Sample Received Date Time: 04/23/2021 15:43

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	**0.17**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 20:50	AKB
Calcium	**199**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 20:57	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.05**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:27	04/26/2021 15:27	CML
Total Dissolved Solids	**1040**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**117**	D	mg/L	5.0	3.6	SW846 9056	05/03/2021 16:41	05/03/2021 16:41	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	05/03/2021 16:26	05/03/2021 16:26	CSC
Sulfate	**180**	D	mg/L	10	5	SW846 9056	05/03/2021 16:41	05/03/2021 16:41	CSC

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Madisonville, KY 42431
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ANALYTICAL RESULTS

Lab Sample ID: **1033768-05**
Description: **DUPLICATE**

Sample Collection Date Time: 04/23/2021 12:15
Sample Received Date Time: 04/23/2021 15:43

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	04/26/2021 09:30	04/26/2021 21:00	AKB
Calcium	**94.4**	D1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 21:03	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.30**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:28	04/26/2021 15:28	CML
Total Dissolved Solids	**632**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**13.6**		mg/L	0.5	0.4	SW846 9056	05/03/2021 17:11	05/03/2021 17:11	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	05/03/2021 17:11	05/03/2021 17:11	CSC
Sulfate	**8**		mg/L	1	0.5	SW846 9056	05/03/2021 17:11	05/03/2021 17:11	CSC

ANALYTICAL RESULTS

Lab Sample ID: **1033768-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 04/23/2021 14:20
Sample Received Date Time: 04/23/2021 15:43

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	04/26/2021 09:30	04/26/2021 21:10	AKB
Calcium	ND	U	mg/L	0.40	0.13	SW846 6010 B	04/26/2021 09:30	04/26/2021 21:10	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.88**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:29	04/26/2021 15:29	CML
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	05/03/2021 21:56	05/03/2021 21:56	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	05/03/2021 21:56	05/03/2021 21:56	CSC
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	05/03/2021 21:56	05/03/2021 21:56	CSC

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Notes for work order 1033768

- 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.
H3	Sample received and analyzed past holding time.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for , but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronymns

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 BAD3347 - EPA 200.2										
Blank (BAD3347-BLK1)										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:56										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
LCS (BAD3347-BS1)										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 20:09										
Boron	0.14	0.10	mg/L	0.125		109	85-115			
Calcium	6.41	0.40	mg/L	6.25		103	85-115			
Matrix Spike (BAD3347-MS1) **Source: 1033768-01**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 21:13										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	328	40.0	mg/L	6.25	343	NR	80-120			D2, M2
Matrix Spike Dup (BAD3347-MSD1) **Source: 1033768-01**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 21:25										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	333	40.0	mg/L	6.25	343	NR	80-120	1.51	20	D2, M2
Post Spike (BAD3347-PS1) **Source: 1033768-01**										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 21:28										
Boron	ND	10.0	mg/L	0.125	ND		75-125			D2, M4, U
Calcium	334	40.0	mg/L	6.25	343	NR	75-125			D2, M2

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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 BAD3475 - Default Prep Wet Chem										
LCS (BAD3475-BS1)										
Prepared: 4/26/2021 15:12, Analyzed: 4/26/2021 15:12										
pH (Lab)	8.00	0.10	Std. Units				98.8-101.2			
LCS (BAD3475-BS2)										
Prepared: 4/26/2021 15:25, Analyzed: 4/26/2021 15:25										
pH (Lab)	8.02	0.10	Std. Units				98.8-101.2			
Duplicate (BAD3475-DUP1) **Source: 1033768-02**										
Prepared: 4/26/2021 15:23, Analyzed: 4/26/2021 15:23										
pH (Lab)	7.32	0.10	Std. Units		7.32			0.00	10	H3
Duplicate (BAD3475-DUP2) **Source: 1033769-06**										**H3**
Prepared: 4/26/2021 15:36, Analyzed: 4/26/2021 15:36										
pH (Lab)	7.48	0.10	Std. Units		7.47			0.134	10	
Batch BAD3583 - Default Prep Wet Chem										
Blank (BAD3583-BLK1)										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAD3583-BS1)										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	1500	25	mg/L	1500		99.7	80-120			
Duplicate (BAD3583-DUP1) **Source: 1033768-01**										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	5060	50	mg/L		5130			1.33	10	
Duplicate (BAD3583-DUP2) **Source: 1033769-01**										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	276	50	mg/L		280			1.44	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 BAD4100 - Default Prep IC										
Blank (BAD4100-BLK1)										
Prepared: 5/3/2021 14:12, Analyzed: 5/3/2021 14:12										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAD4100-BS1)										
Prepared: 5/3/2021 13:57, Analyzed: 5/3/2021 13:57										
Chloride	10.1		mg/L	10.0		101	90-110			
Fluoride	9.5		mg/L	10.0		94.8	90-110			
Sulfate	10		mg/L	10.0		99.1	90-110			
Matrix Spike (BAD4100-MS1) **Source: 1033769-06**										
Prepared: 5/3/2021 22:11, Analyzed: 5/3/2021 22:11										
Fluoride	9.7		mg/L	10.0	0.0	96.8	75-125			
Chloride	10.2		mg/L	10.0	0.0	102	75-125			
Sulfate	10		mg/L	10.0	0	97.3	75-125			
Matrix Spike Dup (BAD4100-MSD1) **Source: 1033769-06**										
Prepared: 5/3/2021 22:25, Analyzed: 5/3/2021 22:25										
Fluoride	8.1		mg/L	10.0	0.0	80.9	75-125	17.9	15	Y2
Chloride	8.5		mg/L	10.0	0.0	85.0	75-125	18.3	15	Y2
Sulfate	8		mg/L	10.0	0	79.4	75-125	20.3	15	Y2
Batch BAD4101 - Default Prep IC										
Blank (BAD4101-BLK1)										
Prepared: 4/30/2021 15:12, Analyzed: 4/30/2021 15:12										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAD4101-BS1)										
Prepared: 4/30/2021 14:57, Analyzed: 4/30/2021 14:57										
Chloride	10.1		mg/L	10.0		101	90-110			
Fluoride	9.7		mg/L	10.0		96.6	90-110			
Sulfate	10		mg/L	10.0		99.4	90-110			

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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 BAD4101 - Default Prep IC										
Matrix Spike (BAD4101-MS1) **Source: 1033766-08**										
Prepared: 4/30/2021 21:41, Analyzed: 4/30/2021 21:41										
Fluoride	12.8		mg/L	10.0	0.0	128	75-125			M1
Chloride	13.2		mg/L	10.0	0.04	132	75-125			M1
Sulfate	13		mg/L	10.0	0.0009	132	75-125			M1
Matrix Spike Dup (BAD4101-MSD1) **Source: 1033766-08**										
Prepared: 4/30/2021 21:56, Analyzed: 4/30/2021 21:56										
Fluoride	13.1		mg/L	10.0	0.0	131	75-125	2.84	15	M1
Chloride	13.5		mg/L	10.0	0.04	134	75-125	1.93	15	M1
Sulfate	13		mg/L	10.0	0.0009	135	75-125	2.44	15	M1

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030)
4500-H+ B-2000 in Water	
pH (Lab)	KY Drinking Water Mdv (00030) TN Drinking Water (02819)
SW846 6010 B in Water	

Sample Acceptance Checklist for Work Order 1033768

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: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

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

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033768 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033768-01 A	4/23/21	1055	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ___				
1033768-01 B	4/23/21	1055	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ___				
1033768-01 C	4/23/21	1055	Plastic 1L	1	MW11	g / c	Chloride 9056 pH (Lab) Sulfate 9056 Fluoride 9056 TDS
1033768-02 A	4/23/21	1155	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ___				
1033768-02 B	4/23/21	1155	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ___				
1033768-02 C	4/23/21	1155	Plastic 1L	1	MW12	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056

1.4

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/23/21 Time (24 hr) 1055

pH 7.11 Cond ~~(umho)~~ mS/cm 4.21 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 15.53 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	4/23/21	1543

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Printed: 3/16/2021 11:57:52AM

Pace Analytical Services LLC Kentucky
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Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

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Collected by (Signature): *required information*

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1033768 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033768-03 A	4/23/21	1310	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH :				
1033768-03 B	4/23/21	1310	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Boron Tot 6010B Calcium Tot 6010B
			Preservation Check: pH :				
1033768-03 C	4/23/21	1310	Plastic 1L	1	MW13	g / c	pH (Lab) TDS Fluoride 9056 Chloride 9056 Sulfate 9056
1033768-04 A	4/23/21	1400	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH :				
1033768-04 B	4/23/21	1400	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH :				
1033768-04 C	4/23/21	1400	Plastic 1L	1	MW14	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
1033768-05 A	4/23/21	1215	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Boron Tot 6010B Calcium Tot 6010B
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/23/21 Time (24 hr) 1310

pH 6.77 Cond ~~(umho)~~ mS/cm 0.893 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 16.45 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/23/21	1543

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Printed: 3/16/2021 11:57:52AM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033768 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033768-05 B	4/23/21	1215	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ____				
1033768-05 C	4/23/21	1215	Plastic 1L	1	DUPLICATE	g / c	Sulfate 9056 TDS pH (Lab) Fluoride 9056 Chloride 9056
1033768-06 A	4/23/21	1420	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ____				
1033768-06 B	4/23/21	1420	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ____				
1033768-06 C	4/23/21	1420	Plastic 1L	1	FIELD BLANK	g / c	TDS Sulfate 9056 pH (Lab) Chloride 9056 Fluoride 9056

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/23/21 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) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/23/21	1543

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 3/16/2021 11:57:52AM

Pace Analytical Services, LLC
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Certificate of Analysis
1085994

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 10/07/2021 09:32

Project Name:	Green Surface Impoundment	Workorder:	1085994

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 09/24/2021 15:32.

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

Rob Whittington, Project Manager

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

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

SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1085994-01	MW11/	Groundwater	09/24/2021 12:05	09/24/2021 15:32	Phillip Hill
1085994-02	MW12/	Groundwater	09/24/2021 13:10	09/24/2021 15:32	Phillip Hill
1085994-03	MW13/	Groundwater	09/24/2021 14:10	09/24/2021 15:32	Phillip Hill
1085994-04	MW14/	Groundwater	09/24/2021 15:20	09/24/2021 15:32	Phillip Hill
1085994-05	DUPLICATE/	Groundwater	09/24/2021 14:35	09/24/2021 15:32	Phillip Hill
1085994-06	FIELD BLANK/	Water	09/24/2021 15:30	09/24/2021 15:32	Phillip Hill

LabNumber	Measurement	Value
1085994-01	Field Conductance	7630
	Field pH	6.57
	Field Temp (C)	18.17
1085994-03	Field Conductance	1070
	Field pH	6.51
	Field Temp (C)	20.24

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ANALYTICAL RESULTS

Lab Sample ID: **1085994-01**
Description: **MW11**

Sample Collection Date Time: 09/24/2021 12:05
Sample Received Date Time: 09/24/2021 15:32

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:10	MRWD
Calcium	**347**	D1, M1, M2	mg/L	40.0	13.0	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:23	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.00**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/28/2021 15:16	09/28/2021 15:16	CML
Total Dissolved Solids	**5030**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**2040**	D	mg/L	100	72.0	SW846 9056	10/01/2021 17:48	10/01/2021 17:48	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	10/01/2021 17:19	10/01/2021 17:19	CSC
Sulfate	**1980**	D	mg/L	100	50	SW846 9056	10/01/2021 17:33	10/01/2021 17:33	CSC

ANALYTICAL RESULTS

Lab Sample ID: **1085994-02**
Description: **MW12**

Sample Collection Date Time: 09/24/2021 13:10
Sample Received Date Time: 09/24/2021 15:32

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:26	MRWD
Calcium	**91.8**	D2	mg/L	4.00	1.30	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:26	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.28**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/28/2021 15:17	09/28/2021 15:17	CML
Total Dissolved Solids	**622**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**16.2**		mg/L	0.5	0.4	SW846 9056	10/01/2021 18:02	10/01/2021 18:02	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	10/01/2021 18:02	10/01/2021 18:02	CSC
Sulfate	**31**	D	mg/L	2	1	SW846 9056	10/06/2021 16:44	10/06/2021 16:44	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085994-03**
Description: **MW13**

Sample Collection Date Time: 09/24/2021 14:10
Sample Received Date Time: 09/24/2021 15:32

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:33	MRWD
Calcium	**87.9**	D2	mg/L	4.00	1.30	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:33	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.00**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/28/2021 15:18	09/28/2021 15:18	CML
Total Dissolved Solids	**754**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**32.3**	D	mg/L	1.0	0.7	SW846 9056	10/01/2021 18:31	10/01/2021 18:31	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	10/01/2021 18:16	10/01/2021 18:16	CSC
Sulfate	**121**	D	mg/L	10	5	SW846 9056	10/01/2021 18:45	10/01/2021 18:45	CSC

ANALYTICAL RESULTS

Lab Sample ID: **1085994-04**
Description: **MW14**

Sample Collection Date Time: 09/24/2021 15:20
Sample Received Date Time: 09/24/2021 15:32

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:39	MRWD
Calcium	**212**	D1	mg/L	40.0	13.0	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:42	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.12**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/28/2021 15:19	09/28/2021 15:19	CML
Total Dissolved Solids	**1050**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**186**	D	mg/L	5.0	3.6	SW846 9056	10/01/2021 19:43	10/01/2021 19:43	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	10/01/2021 19:28	10/01/2021 19:28	CSC
Sulfate	**324**	D	mg/L	20	10	SW846 9056	10/01/2021 19:57	10/01/2021 19:57	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085994-05**
Description: **DUPLICATE**

Sample Collection Date Time: 09/24/2021 14:35
Sample Received Date Time: 09/24/2021 15:32

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:45	MRWD
Calcium	**87.1**	D2	mg/L	4.00	1.30	SW846 6010 B	09/28/2021 11:41	09/30/2021 17:45	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**6.98**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/28/2021 15:20	09/28/2021 15:20	CML
Total Dissolved Solids	**732**		mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	HAG

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**31.4**	D	mg/L	10.0	7.2	SW846 9056	10/01/2021 20:26	10/01/2021 20:26	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	10/01/2021 20:11	10/01/2021 20:11	CSC
Sulfate	**115**	D	mg/L	20	10	SW846 9056	10/01/2021 20:26	10/01/2021 20:26	CSC

ANALYTICAL RESULTS

Lab Sample ID: **1085994-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 09/24/2021 15:30
Sample Received Date Time: 09/24/2021 15:32

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Boron	ND	D2, U	mg/L	1.00	1.00	SW846 6010 B	09/28/2021 11:41	09/30/2021 18:01	MRWD
Calcium	ND	D2, U	mg/L	4.00	1.30	SW846 6010 B	09/28/2021 11:41	09/30/2021 18:01	MRWD

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.78**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/28/2021 15:21	09/28/2021 15:21	CML
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	09/27/2021 20:50	09/27/2021 20:50	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	10/01/2021 20:40	10/01/2021 20:40	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	10/01/2021 20:40	10/01/2021 20:40	CSC
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	10/01/2021 20:40	10/01/2021 20:40	CSC

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Notes for work order 1085994

- 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.
H3	Sample received and analyzed past holding time.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M2	Matrix spike recovery was low; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for , but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).

Standard Qualifiers/Acronymns

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 BAI3139 - EPA 200.2										
Blank (BAI3139-BLK1)										
Prepared: 9/28/2021 11:41, Analyzed: 9/30/2021 17:04										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
LCS (BAI3139-BS1)										
Prepared: 9/28/2021 11:41, Analyzed: 9/30/2021 17:07										
Boron	0.12	0.10	mg/L	0.125		98.8	85-115			
Calcium	6.39	0.40	mg/L	6.25		102	85-115			
Matrix Spike (BAI3139-MS1) **Source: 1085994-01**										
Prepared: 9/28/2021 11:41, Analyzed: 9/30/2021 18:07										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	306	40.0	mg/L	6.25	347	NR	80-120			D2, M2
Matrix Spike Dup (BAI3139-MSD1) **Source: 1085994-01**										
Prepared: 9/28/2021 11:41, Analyzed: 9/30/2021 18:11										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	336	40.0	mg/L	6.25	347	NR	80-120	9.27	20	D2, M1
Post Spike (BAI3139-PS1) **Source: 1085994-01**										
Prepared: 9/28/2021 11:41, Analyzed: 9/30/2021 18:14										
Boron	904		ug/L	125	769	108	75-125			D2
Calcium	335000		ug/L	6250	347000	NR	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 BAI3122 - Default Prep Wet Chem										
Blank (BAI3122-BLK1)										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAI3122-BS1)										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	1490	25	mg/L	1500		99.3	80-120			
Duplicate (BAI3122-DUP1) **Source: 1085992-01**										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	590	50	mg/L		584			1.02	10	
Duplicate (BAI3122-DUP2) **Source: 1093963-03**										
Prepared: 9/27/2021 20:50, Analyzed: 9/27/2021 20:50										
Total Dissolved Solids	98	50	mg/L		98			0.00	10	
Batch BAI3313 - Default Prep Wet Chem										
LCS (BAI3313-BS1)										
Prepared: 9/28/2021 15:14, Analyzed: 9/28/2021 15:14										
pH (Lab)	8.01		Std. Units	8.00		100	98.8-101.2			
Duplicate (BAI3313-DUP1) **Source: 1085994-06**										
Prepared: 9/28/2021 15:22, Analyzed: 9/28/2021 15:22										
pH (Lab)	7.77	0.10	Std. Units		7.78			0.129	10	H3

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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 BAI3740 - Default Prep IC										
Blank (BAI3740-BLK1)										
Prepared: 10/1/2021 16:21, Analyzed: 10/1/2021 16:21										
Chloride	ND	0.5	mg/L							U
Fluoride	ND	0.2	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAI3740-BS1)										
Prepared: 10/1/2021 16:07, Analyzed: 10/1/2021 16:07										
Fluoride	9.9		mg/L	10.0		98.5	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10		mg/L	10.0		98.2	90-110			
Matrix Spike (BAI3740-MS1) **Source: 1085994-06**										
Prepared: 10/1/2021 20:55, Analyzed: 10/1/2021 20:55										
Fluoride	10.9		mg/L	10.0	0.0	109	75-125			
Chloride	11.1		mg/L	10.0	0.05	111	75-125			
Sulfate	11		mg/L	10.0	0.08	110	75-125			
Matrix Spike Dup (BAI3740-MSD1) **Source: 1085994-06**										
Prepared: 10/1/2021 21:09, Analyzed: 10/1/2021 21:09										
Chloride	11.5		mg/L	10.0	0.05	114	75-125	2.77	15	
Fluoride	11.2		mg/L	10.0	0.0	112	75-125	2.04	15	
Sulfate	11		mg/L	10.0	0.08	111	75-125	1.33	15	
Batch BAJ0698 - Default Prep IC										
Blank (BAJ0698-BLK1)										
Prepared: 10/6/2021 12:45, Analyzed: 10/6/2021 12:45										
Sulfate	ND	1	mg/L							U
LCS (BAJ0698-BS1)										
Prepared: 10/6/2021 12:30, Analyzed: 10/6/2021 12:30										
Sulfate	10		mg/L	10.0		95.8	90-110			

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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 BAJ0698 - Default Prep IC										
Matrix Spike (BAJ0698-MS1) **Source: 1094011-01**										
Prepared: 10/6/2021 14:45, Analyzed: 10/6/2021 14:45										
Sulfate	50		mg/L	20.0	31	95.0	75-125			D
Matrix Spike Dup (BAJ0698-MSD1) **Source: 1094011-01**										
Prepared: 10/6/2021 15:00, Analyzed: 10/6/2021 15:00										
Sulfate	50		mg/L	20.0	31	96.0	75-125	0.438	15	D

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 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 1085994

Shipped By: Client

Temperature: 1.70° 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: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085994 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085994-01 A	9/24/21	1205	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-01 B	9/24/21	1205	Plastic 500mL pH<2 w/HNO3	1	MW11	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-01 C	9/24/21	1205	Plastic 1L	1	MW11	g / c	Chloride 9056 pH (Lab) Sulfate 9056 Fluoride 9056 TDS
1085994-02 A	9/24/21	1310	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-02 B	9/24/21	1310	Plastic 500mL pH<2 w/HNO3	1	MW12	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-02 C	9/24/21	1310	Plastic 1L	1	MW12	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056

Thermometer Serial Number
✓ 181390287
181460057

Preservation Check Performed by: AEI

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/24/21 Time (24 hr) 1205 Temp 1.7 °C

MW11
pH 6.57 Cond ~~umho~~ mS/cm 7.63 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 18.17 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/24/21	1532

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:25:00PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): *required information*

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1085994 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085994-03 A	9/24/21	1410	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-03 B	9/24/21	1410	Plastic 500mL pH<2 w/HNO3	1	MW13	g / c	Boron Tot 6010B Calcium Tot 6010B
			Preservation Check: pH : ✓				
1085994-03 C	9/24/21	1410	Plastic 1L	1	MW13	g / c	pH (Lab) TDS Fluoride 9056 Chloride 9056 Sulfate 9056
1085994-04 A	9/24/21	1520	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-04 B	9/24/21	1520	Plastic 500mL pH<2 w/HNO3	1	MW14	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-04 C	9/24/21	1520	Plastic 1L	1	MW14	g / c	TDS Sulfate 9056 pH (Lab) Fluoride 9056 Chloride 9056
1085994-05 A	9/24/21	1435	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Boron Tot 6010B Calcium Tot 6010B
			Preservation Check: pH : ✓				

Preservation Check Performed by: AEA

MW13
Field data collected by: Phillip Hill Date (mm/dd/yy) 9/24/21 Time (24 hr) 1410

pH 6.51 Cond ~~(umho)~~ mS/cm 1.07 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 20.24 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/24/21	1532

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:25:00PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: Green Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes Y 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 # 1085994 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085994-05 B	9/24/21	1435	Plastic 500mL pH<2 w/HNO3	1	DUPLICATE	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-05 C	9/24/21	1435	Plastic 1L	1	DUPLICATE	g / c	Sulfate 9056 TDS pH (Lab) Fluoride 9056 Chloride 9056
1085994-06 A	9/24/21	1530	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-06 B	9/24/21	1530	Plastic 500mL pH<2 w/HNO3	1	FIELD BLANK	g / c	Calcium Tot 6010B Boron Tot 6010B
			Preservation Check: pH : ✓				
1085994-06 C	9/24/21	1530	Plastic 1L	1	FIELD BLANK	g / c	TDS Sulfate 9056 pH (Lab) Chloride 9056 Fluoride 9056

Preservation Check Performed by: Aer

Field data collected by: _____ Date (mm/dd/yy) 9/24/21 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) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/24/21	1532

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:25:00PM

Appendix F
Reid/HMP&L Surface Impoundment Analytical Laboratory Reports

Pace Analytical Services, LLC
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270.821.7375
www.pacelabs.com

Certificate of Analysis
1033769

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 05/24/2021 09:00

Project Name:	HMPL Surface Impoundment	Workorder:	1033769

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 04/22/2021 15:05.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

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
1033769-01	MW7/	Groundwater	04/21/2021 11:15	04/22/2021 15:05	Phillip Hill
1033769-02	MW8/	Groundwater	04/21/2021 13:00	04/22/2021 15:05	Phillip Hill
1033769-03	MW9/	Groundwater	04/21/2021 14:50	04/22/2021 15:05	Phillip Hill
1033769-04	MW10/	Groundwater	04/21/2021 15:55	04/22/2021 15:05	Phillip Hill
1033769-05	DUPLICATE/	Groundwater	04/21/2021 13:43	04/22/2021 15:05	Phillip Hill
1033769-06	FIELD BLANK/	Water	04/21/2021 16:25	04/22/2021 15:05	Phillip Hill

LabNumber	Measurement	Value
1033769-01	Field Conductance	328
	Field pH	7.75
	Field Temp (C)	16.0
1033769-02	Field Conductance	2050
	Field pH	6.64
	Field Temp (C)	13.68
1033769-03	Field Conductance	462
	Field pH	7.12
	Field Temp (C)	13.59
1033769-04	Field Conductance	605
	Field pH	9.88
	Field Temp (C)	15.25
1033769-05	Field Conductance	2050
	Field pH	6.64
	Field Temp (C)	13.68

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ANALYTICAL RESULTS

Lab Sample ID: **1033769-01**
Description: **MW7**

Sample Collection Date Time: 04/21/2021 11:15
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:36	DMH
Arsenic	**0.0026**		mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Barium	**0.082**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Boron	**0.34**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:28	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Calcium	**43.4**	D1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:31	AKB
Chromium	**0.0007**	J	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Lithium	**0.008**	J	mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Molybdenum	**0.005**	J	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:36	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.63**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:30	04/26/2021 15:30	CML
Total Dissolved Solids	**280**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.197**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.506**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.703**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**4.9**		mg/L	0.5	0.4	SW846 9056	05/03/2021 18:57	05/03/2021 18:57	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	05/03/2021 18:57	05/03/2021 18:57	CSC
Sulfate	**15**		mg/L	1	0.5	SW846 9056	05/03/2021 18:57	05/03/2021 18:57	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033769-02**
Description: **MW8**

Sample Collection Date Time: 04/21/2021 13:00
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:38	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Barium	**0.018**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Boron	**1.42**	D1, M4	mg/L	1.00	1.00	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:41	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Calcium	**281**	D1, M2	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:53	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Copper	**0.003**		mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Molybdenum	**0.01**		mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:38	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.27**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:31	04/26/2021 15:31	CML
Total Dissolved Solids	**2000**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.559**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**1.38**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**1.94**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**45.8**	D	mg/L	2.5	1.8	SW846 9056	05/03/2021 19:27	05/03/2021 19:27	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	05/03/2021 19:12	05/03/2021 19:12	CSC
Sulfate	**1090**	D	mg/L	200	100	SW846 9056	05/03/2021 19:42	05/03/2021 19:42	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033769-03**
Description: **MW9**

Sample Collection Date Time: 04/21/2021 14:50
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:40	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Barium	**0.782**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Boron	**0.23**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 18:57	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Calcium	**66.9**	D1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:00	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Lithium	**0.01**	J	mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:40	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.34**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:32	04/26/2021 15:32	CML
Total Dissolved Solids	**422**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**2.31**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**1.68**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**3.99**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**22.5**		mg/L	0.5	0.4	SW846 9056	05/03/2021 19:57	05/03/2021 19:57	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	05/03/2021 19:57	05/03/2021 19:57	CSC
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	05/03/2021 19:57	05/03/2021 19:57	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033769-04**
Description: **MW10**

Sample Collection Date Time: 04/21/2021 15:55
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:50	DMH
Arsenic	**0.0018**		mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Barium	**0.089**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Boron	**0.54**		mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:06	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Calcium	**7.95**	D1	mg/L	4.00	1.30	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:09	AKB
Chromium	**0.0007**	J	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Lithium	**0.57**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Mercury	**0.0003**	J	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Molybdenum	**0.007**	J	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:50	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**9.31**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:33	04/26/2021 15:33	CML
Total Dissolved Solids	**530**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.274**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.495**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.769**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**21.4**		mg/L	0.5	0.4	SW846 9056	05/03/2021 20:11	05/03/2021 20:11	CSC
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	05/03/2021 20:11	05/03/2021 20:11	CSC
Sulfate	**52**	D	mg/L	5	2	SW846 9056	05/03/2021 20:26	05/03/2021 20:26	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033769-05**
Description: **DUPLICATE**

Sample Collection Date Time: 04/21/2021 13:43
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:52	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Barium	**0.018**		mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Boron	**1.52**	D1	mg/L	1.00	1.00	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:19	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Calcium	**279**	D1	mg/L	40.0	13.0	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:31	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Lithium	**0.03**		mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Molybdenum	**0.01**		mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:52	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.30**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:34	04/26/2021 15:34	CML
Total Dissolved Solids	**2240**		mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.205**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**1.31**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**1.52**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**63.3**	D	mg/L	2.5	1.8	SW846 9056	05/04/2021 11:21	05/04/2021 11:21	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	05/03/2021 21:11	05/03/2021 21:11	CSC
Sulfate	**1100**	D	mg/L	50	25	SW846 9056	05/03/2021 21:26	05/03/2021 21:26	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1033769-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 04/21/2021 16:25
Sample Received Date Time: 04/22/2021 15:05

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	04/30/2021 12:25	04/30/2021 16:54	DMH
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:34	AKB
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Calcium	ND	U	mg/L	0.40	0.13	SW846 6010 B	04/26/2021 09:30	04/26/2021 19:34	AKB
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	04/30/2021 12:25	04/30/2021 16:54	DMH

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.47**		Std. Units	0.10	0.10	4500-H+ B-2000	04/26/2021 15:35	04/26/2021 15:35	CML
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	04/27/2021 15:34	04/27/2021 15:34	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**-0.124**	_Sub	pCi/L			EPA 903.1	05/19/2021 00:00	05/19/2021 00:00	xxx
See Attached Subcontract Report	**0.502**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/18/2021 00:00	05/18/2021 00:00	xxx
See Attached Subcontract Report	**0.502**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	05/19/2021 00:00	05/19/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	05/03/2021 21:56	05/03/2021 21:56	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	05/03/2021 21:56	05/03/2021 21:56	CSC
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	05/03/2021 21:56	05/03/2021 21:56	CSC

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Notes for work order 1033769

- 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.
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.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).
Y2	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

Standard Qualifiers/Acronymns

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 BAD3159 - EPA 200.2										
Blank (BAD3159-BLK1)										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 16:44										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
LCS (BAD3159-BS1)										
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 16:47										
Boron	0.14	0.10	mg/L	0.125		108	85-115			
Calcium	6.42	0.40	mg/L	6.25		103	85-115			
Matrix Spike (BAD3159-MS1)	**Source: 1033766-01**									
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:38										
Boron	ND	10.0	mg/L	0.125	ND		80-120			U, D2, M4
Calcium	40.3	40.0	mg/L	6.25	31.6	139	80-120			D2, M1
Matrix Spike (BAD3159-MS2)	**Source: 1033769-02**									
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:44										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	273	40.0	mg/L	6.25	281	NR	80-120			D2, M2
Matrix Spike Dup (BAD3159-MSD1)	**Source: 1033766-01**									
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:41										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	37.8	40.0	mg/L	6.25	31.6	99.7	80-120	6.36	20	D2, J
Matrix Spike Dup (BAD3159-MSD2)	**Source: 1033769-02**									
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:47										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, U, M4
Calcium	274	40.0	mg/L	6.25	281	NR	80-120	0.533	20	D2, M2
Post Spike (BAD3159-PS1)	**Source: 1033766-01**									
Prepared: 4/26/2021 9:30, Analyzed: 4/26/2021 19:50										
Boron	1590		ug/L	125	1450	111	75-125			D2
Calcium	37400		ug/L	6250	31600	93.3	75-125			D2

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
Blank (BAD4105-BLK1)										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:07										
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
Copper	0.001	0.003	mg/L							J
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
LCS (BAD4105-BS1)										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:09										
Molybdenum	0.07	0.01	mg/L	0.0625		104	85-115			
Antimony	0.067	0.005	mg/L	0.0625		107	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		107	85-115			
Arsenic	0.0665	0.0010	mg/L	0.0625		106	85-115			
Barium	0.065	0.004	mg/L	0.0625		105	85-115			
Beryllium	0.0647	0.0020	mg/L	0.0625		104	85-115			
Cadmium	0.0658	0.0010	mg/L	0.0625		105	85-115			
Chromium	0.0632	0.0020	mg/L	0.0625		101	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		101	85-115			
Copper	0.064	0.003	mg/L	0.0625		103	85-115			
Lead	0.064	0.002	mg/L	0.0625		103	85-115			
Lithium	0.07	0.02	mg/L	0.0625		106	85-115			
Selenium	0.065	0.003	mg/L	0.0625		104	85-115			
Thallium	0.0655	0.0020	mg/L	0.0625		105	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
Matrix Spike (BAD4105-MS1) **Source: 1033766-01RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:56										
Mercury	0.0026	0.0005	mg/L	0.00250	ND	102	80-120			
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120			
Molybdenum	0.06	0.01	mg/L	0.0625	ND	101	80-120			
Arsenic	0.0682	0.0010	mg/L	0.0625	0.0005	108	80-120			
Barium	0.150	0.004	mg/L	0.0625	0.081	111	80-120			
Beryllium	0.0633	0.0020	mg/L	0.0625	ND	101	80-120			
Cadmium	0.0647	0.0010	mg/L	0.0625	0.0001	103	80-120			
Chromium	0.0618	0.0020	mg/L	0.0625	ND	99.0	80-120			
Cobalt	0.060	0.004	mg/L	0.0625	ND	96.1	80-120			
Copper	0.057	0.003	mg/L	0.0625	ND	91.9	80-120			
Lead	0.062	0.002	mg/L	0.0625	ND	99.6	80-120			
Lithium	0.09	0.02	mg/L	0.0625	0.03	107	80-120			
Selenium	0.067	0.003	mg/L	0.0625	ND	107	80-120			
Thallium	0.0632	0.0020	mg/L	0.0625	ND	101	80-120			
Matrix Spike (BAD4105-MS2) **Source: 1033769-02RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 17:00										
Mercury	0.0025	0.0005	mg/L	0.00250	ND	100	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	0.01	96.7	80-120			
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120			
Arsenic	0.0682	0.0010	mg/L	0.0625	ND	109	80-120			
Barium	0.083	0.004	mg/L	0.0625	0.018	104	80-120			
Beryllium	0.0595	0.0020	mg/L	0.0625	ND	95.2	80-120			
Cadmium	0.0630	0.0010	mg/L	0.0625	ND	101	80-120			
Chromium	0.0606	0.0020	mg/L	0.0625	ND	97.0	80-120			
Cobalt	0.058	0.004	mg/L	0.0625	ND	93.3	80-120			
Copper	0.059	0.003	mg/L	0.0625	0.003	88.9	80-120			
Lead	0.061	0.002	mg/L	0.0625	ND	97.0	80-120			
Lithium	0.10	0.02	mg/L	0.0625	0.03	104	80-120			
Selenium	0.071	0.003	mg/L	0.0625	ND	114	80-120			
Thallium	0.0611	0.0020	mg/L	0.0625	ND	97.7	80-120			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
Matrix Spike Dup (BAD4105-MSD1) **Source: 1033766-01RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 16:58										
Molybdenum	0.06	0.01	mg/L	0.0625	ND	99.1	80-120	1.90	20	
Mercury	0.0025	0.0005	mg/L	0.00250	ND	102	80-120	0.157	20	
Antimony	0.067	0.005	mg/L	0.0625	ND	107	80-120	1.89	20	
Arsenic	0.0665	0.0010	mg/L	0.0625	0.0005	106	80-120	2.58	20	
Barium	0.149	0.004	mg/L	0.0625	0.081	109	80-120	0.716	20	
Beryllium	0.0619	0.0020	mg/L	0.0625	ND	99.0	80-120	2.22	20	
Cadmium	0.0641	0.0010	mg/L	0.0625	0.0001	102	80-120	1.06	20	
Chromium	0.0604	0.0020	mg/L	0.0625	ND	96.6	80-120	2.45	20	
Cobalt	0.058	0.004	mg/L	0.0625	ND	93.6	80-120	2.65	20	
Copper	0.056	0.003	mg/L	0.0625	ND	89.2	80-120	2.94	20	
Lead	0.061	0.002	mg/L	0.0625	ND	97.1	80-120	2.56	20	
Lithium	0.09	0.02	mg/L	0.0625	0.03	106	80-120	1.23	20	
Selenium	0.066	0.003	mg/L	0.0625	ND	105	80-120	2.13	20	
Thallium	0.0613	0.0020	mg/L	0.0625	ND	98.1	80-120	2.98	20	
Matrix Spike Dup (BAD4105-MSD2) **Source: 1033769-02RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 17:03										
Antimony	0.068	0.005	mg/L	0.0625	ND	108	80-120	0.816	20	
Molybdenum	0.07	0.01	mg/L	0.0625	0.01	96.0	80-120	0.601	20	
Mercury	0.0025	0.0005	mg/L	0.00250	ND	99.4	80-120	0.722	20	
Arsenic	0.0677	0.0010	mg/L	0.0625	ND	108	80-120	0.662	20	
Barium	0.083	0.004	mg/L	0.0625	0.018	105	80-120	1.08	20	
Beryllium	0.0596	0.0020	mg/L	0.0625	ND	95.3	80-120	0.207	20	
Cadmium	0.0634	0.0010	mg/L	0.0625	ND	101	80-120	0.710	20	
Chromium	0.0602	0.0020	mg/L	0.0625	ND	96.3	80-120	0.675	20	
Cobalt	0.058	0.004	mg/L	0.0625	ND	92.8	80-120	0.533	20	
Copper	0.059	0.003	mg/L	0.0625	0.003	88.2	80-120	0.698	20	
Lead	0.060	0.002	mg/L	0.0625	ND	95.9	80-120	1.20	20	
Lithium	0.10	0.02	mg/L	0.0625	0.03	102	80-120	1.09	20	
Selenium	0.071	0.003	mg/L	0.0625	ND	114	80-120	0.0674	20	
Thallium	0.0606	0.0020	mg/L	0.0625	ND	97.0	80-120	0.728	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAD4105 - EPA 200.2										
Post Spike (BAD4105-PS1) **Source: 1033766-01RE1**										
Prepared: 4/30/2021 12:25, Analyzed: 4/30/2021 17:05										
Antimony	0.082	0.006	mg/L	0.0781	ND	105	75-125			
Mercury	0.0032	0.0006	mg/L	0.00312	ND	103	75-125			
Molybdenum	0.08	0.01	mg/L	0.0781	ND	99.7	75-125			
Arsenic	0.0827	0.0012	mg/L	0.0781	0.0005	106	75-125			
Barium	0.166	0.005	mg/L	0.0781	0.081	110	75-125			
Beryllium	0.0784	0.0025	mg/L	0.0781	ND	100	75-125			
Cadmium	0.0809	0.0012	mg/L	0.0781	0.0001	103	75-125			
Chromium	0.0751	0.0025	mg/L	0.0781	ND	96.2	75-125			
Cobalt	0.073	0.005	mg/L	0.0781	ND	93.4	75-125			
Copper	0.071	0.004	mg/L	0.0781	ND	90.6	75-125			
Lead	0.076	0.002	mg/L	0.0781	ND	97.8	75-115			
Lithium	0.11	0.02	mg/L	0.0781	0.03	108	75-125			
Selenium	0.082	0.004	mg/L	0.0781	ND	105	75-125			
Thallium	0.0771	0.0025	mg/L	0.0781	ND	98.7	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 BAD3475 - Default Prep Wet Chem										
LCS (BAD3475-BS1)										
Prepared: 4/26/2021 15:12, Analyzed: 4/26/2021 15:12										
pH (Lab)	8.00	0.10	Std. Units				98.8-101.2			
LCS (BAD3475-BS2)										
Prepared: 4/26/2021 15:25, Analyzed: 4/26/2021 15:25										
pH (Lab)	8.02	0.10	Std. Units				98.8-101.2			
Duplicate (BAD3475-DUP1) **Source: 1033768-02**										
Prepared: 4/26/2021 15:23, Analyzed: 4/26/2021 15:23										
pH (Lab)	7.32	0.10	Std. Units		7.32			0.00	10	H3
Duplicate (BAD3475-DUP2) **Source: 1033769-06**										**H3**
Prepared: 4/26/2021 15:36, Analyzed: 4/26/2021 15:36										
pH (Lab)	7.48	0.10	Std. Units		7.47			0.134	10	
Batch BAD3583 - Default Prep Wet Chem										
Blank (BAD3583-BLK1)										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAD3583-BS1)										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	1500	25	mg/L	1500		99.7	80-120			
Duplicate (BAD3583-DUP1) **Source: 1033768-01**										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	5060	50	mg/L		5130			1.33	10	
Duplicate (BAD3583-DUP2) **Source: 1033769-01**										
Prepared: 4/27/2021 15:34, Analyzed: 4/27/2021 15:34										
Total Dissolved Solids	276	50	mg/L		280			1.44	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 BAD4100 - Default Prep IC										
Blank (BAD4100-BLK1)										
Prepared: 5/3/2021 14:12, Analyzed: 5/3/2021 14:12										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAD4100-BS1)										
Prepared: 5/3/2021 13:57, Analyzed: 5/3/2021 13:57										
Fluoride	9.5		mg/L	10.0		94.8	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10		mg/L	10.0		99.1	90-110			
Matrix Spike (BAD4100-MS1)	**Source: 1033769-06**									
Prepared: 5/3/2021 22:11, Analyzed: 5/3/2021 22:11										
Chloride	10.2		mg/L	10.0	0.0	102	75-125			
Fluoride	9.7		mg/L	10.0	0.0	96.8	75-125			
Sulfate	10		mg/L	10.0	0	97.3	75-125			
Matrix Spike Dup (BAD4100-MSD1)	**Source: 1033769-06**									
Prepared: 5/3/2021 22:25, Analyzed: 5/3/2021 22:25										
Chloride	8.5		mg/L	10.0	0.0	85.0	75-125	18.3	15	Y2
Fluoride	8.1		mg/L	10.0	0.0	80.9	75-125	17.9	15	Y2
Sulfate	8		mg/L	10.0	0	79.4	75-125	20.3	15	Y2

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 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 1033769

Shipped By: Client

Temperature: 2.00° 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: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-01 A	4/21/21	1115	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 :				
1033769-01 B	4/21/21	1115	Plastic 1L	1	MW7	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1033769-01 C	4/21/21	1115	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW7	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033769-01 D	4/21/21	1115	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-01 E	4/21/21	1115	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1115

pH 7.75 Cond ~~(umho)~~ mS/cm 0.328 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 16.00 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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Chain of Custody

Scheduled for: 03/16/2021

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Chad Phillips
PO Box 24
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Phone: (270) 844-6000
PWS ID#:
State: KY

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Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

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Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-01 F	4/21/21	1115	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW7	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033769-02 A	4/21/21	1300	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 :				
1033769-02 B	4/21/21	1300	Plastic 1L	1	MW8	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1033769-02 C	4/21/21	1300	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW8	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033769-02 D	4/21/21	1300	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1300

pH 6.64 Cond ~~(umho)~~ mS/cm 2.05 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 13.68 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

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Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

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Collected by (Signature): [signature]

required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-02 E	4/21/21	1300	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-02 F	4/21/21	1300	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033769-03 A	4/21/21	1450	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 :				
1033769-03 B	4/21/21	1450	Plastic 1L	1	MW9	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1033769-03 C	4/21/21	1450	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW9	g / c	Radium 226 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1450

pH 7.12 ~~13.59~~ Cond ~~(umho)~~ mS/cm 0.462 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 13.59 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	4/22/21	1505

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Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
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Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

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Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-03 D	4/21/21	1450	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-03 E	4/21/21	1450	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-03 F	4/21/21	1450	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW9	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033769-04 A	4/21/21	1555	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 :				
1033769-04 B	4/21/21	1555	Plastic 1L	1	MW10	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1450

pH 7.12 Cond ~~(umho)~~ mS/cm 0.462 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 13.59 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

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Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-04 C	4/21/21	1555	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW10	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033769-04 D	4/21/21	1555	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-04 E	4/21/21	1555	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-04 F	4/21/21	1555	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW10	g / c	Radium Total (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1555

pH 9.88 Cond ~~(umho)~~ mS/cm 0.605 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 15.25 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

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P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-05 A	4/21/21	1343	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 :				
1033769-05 B	4/21/21	1343	Plastic 1L	1	DUPLICATE	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1033769-05 C	4/21/21	1343	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033769-05 D	4/21/21	1343	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-05 E	4/21/21	1343	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1343

pH 6.64 Cond ~~(umho)~~ mS/cm 2.05 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 13.68 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1585

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Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
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Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): M. Mill

required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-05 F	4/21/21	1343	Plastic 1L pH<2 w/HNO3 (Sub)	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH :				
1033769-06 A	4/21/21	1625	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 :				
1033769-06 B	4/21/21	1625	Plastic 1L	1	FIELD BLANK	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1033769-06 C	4/21/21	1625	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	FIELD BLANK	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1033769-06 D	4/21/21	1625	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NOY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 Time (24 hr) 1625

pH ___ Cond (umho) ___ Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
M. Mill	[illegible]	4/22/21	1505

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Chain of Custody

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PWS ID#:
State: KY

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PO Box 24
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Quote#

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Collected by (Signature): _____

required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033769 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033769-06 E	4/21/21	1625	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH :				
1033769-06 F	4/21/21	1625	Plastic 1L pH<2 w/HNO3 (Sub)	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 4/21/21 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) _____ or (CFS) _____ or (g/min) _____

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		4/22/21	1505

☐ **PACE- Check here if trip charge applied to associated COC**

Printed: 3/16/2021 11:59:08AM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 19, 2021

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

RE: Project: 1033769
Pace Project No.: 30417663

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on April 27, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Carin A. Ferris

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

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1033769
Pace Project No.: 30417663

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 1033769
Pace Project No.: 30417663

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30417663001	**1033769-01**	Water	04/21/21 11:15	04/27/21 09:45
30417663002	**1033769-02**	Water	04/21/21 13:00	04/27/21 09:45
30417663003	**1033769-03**	Water	04/21/21 14:50	04/27/21 09:45
30417663004	**1033769-04**	Water	04/21/21 15:55	04/27/21 09:45
30417663005	**1033769-05**	Water	04/21/21 13:43	04/27/21 09:45
30417663006	**1033769-06**	Water	04/21/21 16:25	04/27/21 09:45

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SAMPLE ANALYTE COUNT

Project: 1033769
Pace Project No.: 30417663

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30417663001	**1033769-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417663002	**1033769-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417663003	**1033769-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417663004	**1033769-04**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417663005	**1033769-05**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30417663006	**1033769-06**	EPA 903.1	MK1	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: 1033769
Pace Project No.: 30417663

Sample: 1033769-01 **Lab ID: 30417663001** Collected: 04/21/21 11:15 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.197 ± 0.387 (0.707) C:NA T:89%**	pCi/L	05/19/21 16:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.506 ± 0.403 (0.802) C:77% T:79%**	pCi/L	05/18/21 10:52	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.703 ± 0.790 (1.51)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033769-02 **Lab ID: 30417663002** Collected: 04/21/21 13:00 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.559 ± 0.371 (0.168) C:NA T:91%**	pCi/L	05/19/21 16:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.38 ± 0.520 (0.810) C:79% T:83%**	pCi/L	05/18/21 10:52	15262-20-1	2c
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.94 ± 0.891 (0.978)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033769-03 **Lab ID: 30417663003** Collected: 04/21/21 14:50 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.
• 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.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**2.31 ± 0.940 (0.919) C:NA T:80%**	pCi/L	05/19/21 16:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.68 ± 0.528 (0.691) C:77% T:90%**	pCi/L	05/18/21 10:52	15262-20-1	2c
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**3.99 ± 1.47 (1.61)**	pCi/L	05/19/21 17:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033769
Pace Project No.: 30417663

Sample: 1033769-04 **Lab ID: 30417663004** Collected: 04/21/21 15:55 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.274 ± 0.466 (0.822) C:NA T:81%**	pCi/L	05/19/21 16:28	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.495 ± 0.419 (0.847) C:77% T:78%**	pCi/L	05/18/21 10:52	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.769 ± 0.885 (1.67)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033769-05 **Lab ID: 30417663005** Collected: 04/21/21 13:43 Received: 04/27/21 09:45 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.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.205 ± 0.484 (0.896) C:NA T:88%**	pCi/L	05/19/21 16:44	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.31 ± 0.503 (0.792) C:76% T:86%**	pCi/L	05/18/21 10:52	15262-20-1	2c
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.52 ± 0.987 (1.69)**	pCi/L	05/19/21 17:24	7440-14-4	

Sample: 1033769-06 **Lab ID: 30417663006** Collected: 04/21/21 16:25 Received: 04/27/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**-0.124 ± 0.283 (0.667) C:NA T:91%**	pCi/L	05/19/21 16:44	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.502 ± 0.359 (0.696) C:77% T:86%**	pCi/L	05/18/21 10:53	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.502 ± 0.642 (1.36)**	pCi/L	05/19/21 17:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033769
Pace Project No.: 30417663

QC Batch: 446744 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: 30417663001, 30417663002, 30417663003, 30417663004, 30417663005, 30417663006

METHOD BLANK: 2155912 Matrix: Water
Associated Lab Samples: 30417663001, 30417663002, 30417663003, 30417663004, 30417663005, 30417663006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.11 ± 0.370 (0.473) C:81% T:97%	pCi/L	05/18/21 10:51	1c

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
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1033769
Pace Project No.: 30417663

QC Batch: 446745 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: 30417663001, 30417663002, 30417663003, 30417663004, 30417663005, 30417663006

METHOD BLANK: 2155915 Matrix: Water
Associated Lab Samples: 30417663001, 30417663002, 30417663003, 30417663004, 30417663005, 30417663006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.322 ± 0.448 (0.757) C:NA T:89%	pCi/L	05/19/21 15:48	

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

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1033769
Pace Project No.: 30417663

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

SAMPLE QUALIFIERS

Sample: 30417663005

[1] Sample collection dates and times were not present on the sample containers.

ANALYTE QUALIFIERS

1c Ra-228 Method Blank activity is greater than the MDC and required detection limit of 1.0 pCi/L. Samples with activity results below the RDL and/or MDC are reportable without qualification.

2c Ra-228 Method Blank activity is greater than the MDC and required detection limit of 1.0 pCi/L. Samples with activity results below the RDL and/or MDC are reportable without qualification. Samples with activity above RDL of 1.0 pCi/L reported with client permission.

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Chain of Custody

WO# : 30417663

30417663

Pace Analytical

Workorder: 1033769 Workorder Name: HMPL Surface Impoundme Owner Received Date: 4/22/2021 Results Requested By:

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1									
2	1033769-01		04/21/21 11:15	IR44-McCoy	Water		X	X	001
3	1033769-02		04/21/21 13:00	IR44-McCoy	Water		X	X	002
4	1033769-03		04/21/21 14:50	IR44-McCoy	Water		X	X	003
5	1033769-04		04/21/21 15:55	IR44-McCoy	Water		X	X	004
6	1033769-05		04/21/21 13:43	IR44-McCoy	Water		X	X	005
7	1033769-06		04/21/21 16:25	IR44-McCoy	Water		X	X	006
8									
9									
10									

Transfers	Released By (Received By)	Date/Time	Reveived By	Date/Time	Comments
1	[signature]	4-27-21 9:45			
2					
3					

Cooler Temperature on Receipt 5.2 °C | **Custody Seal Y or N** | **Received on Ice Y or N** | **Sample Intact Y or N**

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace Kentucky

Project # 30417663

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label DAM

LIMS Login DAM

Tracking #: 1107 3388 1548

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

Thermometer Used 9 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 5.3 °C Correction Factor: -0.1 °C Final Temp: 5.2 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D1101

Date and Initials of person examining contents: 4-27-21 JA

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4. no name or signature
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. no date or time on samples
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. added 2.5 mL HNO_3 to samples 03C, 03D, 05C, 05D
All containers meet method preservation requirements.		✓		Initial when completed JA Date/time of preservation 4-27-21 15:37
				Lot # of added preservative DL21-0308
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JA Date: 4-27-21 Survey Meter SN: 1563

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1033769

30417663

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: 1033769-01	**Water**	**Sampled:04/21/2021 11:15**	**Specific Method**	
Radium 228 (sub)		10/18/2021 11:15	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/18/2021 11:15	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/18/2021 11:15	EPA 903.1	
Sample ID: 1033769-02	**Water**	**Sampled:04/21/2021 13:00**	**Specific Method**	
Radium 226 (sub)		10/18/2021 13:00	EPA 903.1	
Radium 228 (sub)		10/18/2021 13:00	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/18/2021 13:00	EPA 904.0 Radium Sum C	
Sample ID: 1033769-03	**Water**	**Sampled:04/21/2021 14:50**	**Specific Method**	
Radium Total (sub)		10/18/2021 14:50	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/18/2021 14:50	EPA 903.1	
Radium 228 (sub)		10/18/2021 14:50	EPA 904.0 Radium Sum C	
Sample ID: 1033769-04	**Water**	**Sampled:04/21/2021 15:55**	**Specific Method**	
Radium 226 (sub)		10/18/2021 15:55	EPA 903.1	
Radium 228 (sub)		10/18/2021 15:55	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/18/2021 15:55	EPA 904.0 Radium Sum C	
Sample ID: 1033769-05	**Water**	**Sampled:04/21/2021 13:43**	**Specific Method**	
Radium Total (sub)		10/18/2021 13:43	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/18/2021 13:43	EPA 903.1	
Radium 228 (sub)		10/18/2021 13:43	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
[signature]	04-26-21		
Released By	Date	Received By	Date

SUBCONTRACT ORDER 30417663

Pace Analytical Services, LLC Kentucky

1033769

Analysis		Expires	Laboratory ID	Comments
Sample ID: 1033769-06	**Water**	**Sampled:04/21/2021 16:25**	**Specific Method**	
Radium 228 (sub)		10/18/2021 16:25	EPA 904.0 Radium Sum C	
Radium Total (sub)		10/18/2021 16:25	EPA 904.0 Radium Sum C	
Radium 226 (sub)		10/18/2021 16:25	EPA 903.1	

Released By	Date	Received By	Date
Released By	Date	Received By	Date

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Certificate of Analysis
1033770

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 06/29/2021 11:13

Project Name:	HMPL Surface Impoundment Well MW110	Workorder:	1033770

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 05/26/2021 15:20.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

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
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SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1033770-01	MW-110/	Groundwater	05/26/2021 13:40	05/26/2021 15:20	Phillip Hill

LabNumber	Measurement	Value
1033770-01	Field Conductance	1290
	Field pH	7.75
	Field Temp (C)	17.46

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ANALYTICAL RESULTS

Lab Sample ID: **1033770-01**
Description: **MW-110**

Sample Collection Date Time: 05/26/2021 13:40
Sample Received Date Time: 05/26/2021 15:20

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Barium	**0.055**		mg/L	0.004	0.001	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Boron	**0.54**		mg/L	0.10	0.10	SW846 6010 B	05/28/2021 07:43	05/28/2021 19:29	MRW D
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Calcium	**163**	D1	mg/L	40.0	13.0	SW846 6010 B	05/28/2021 07:43	05/28/2021 19:35	MRW D
Chromium	**0.0009**	J	mg/L	0.0020	0.0006	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Lithium	**0.02**		mg/L	0.02	0.005	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	05/28/2021 07:43	06/01/2021 14:20	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.25**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	05/27/2021 15:34	05/27/2021 15:34	GAT
Total Dissolved Solids	**1140**		mg/L	50	50	2540 C-2011	05/27/2021 11:44	05/27/2021 11:44	DJK

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.211**	_Sub	pCi/L			EPA 903.1	06/24/2021 00:00	06/24/2021 00:00	xxx
See Attached Subcontract Report	**0.425**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/23/2021 00:00	06/23/2021 00:00	xxx
See Attached Subcontract Report	**0.636**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	06/24/2021 00:00	06/24/2021 00:00	xxx

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**21.8**		mg/L	0.5	0.4	SW846 9056	06/02/2021 21:37	06/02/2021 21:37	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	06/02/2021 21:37	06/02/2021 21:37	CSC
Sulfate	**428**	D	mg/L	100	50	SW846 9056	06/02/2021 21:52	06/02/2021 21:52	CSC

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Notes for work order 1033770

- 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.
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.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).

Standard Qualifiers/Acronymns

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 BAE3494 - EPA 200.2										
Blank (BAE3494-BLK1)										
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:04										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Blank (BAE3494-BLK2)										
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 13:51										
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
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
LCS (BAE3494-BS1)										
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:07										
Boron	0.13	0.10	mg/L	0.125		101	85-115			
Calcium	6.49	0.40	mg/L	6.25		104	85-115			
LCS (BAE3494-BS2)										
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 13:55										
Antimony	0.066	0.005	mg/L	0.0625		105	85-115			
Molybdenum	0.06	0.01	mg/L	0.0625		101	85-115			
Mercury	0.0025	0.0005	mg/L	0.00250		100	85-115			
Arsenic	0.0645	0.0010	mg/L	0.0625		103	85-115			
Barium	0.064	0.004	mg/L	0.0625		103	85-115			
Beryllium	0.0657	0.0020	mg/L	0.0625		105	85-115			
Cadmium	0.0639	0.0010	mg/L	0.0625		102	85-115			
Chromium	0.0639	0.0020	mg/L	0.0625		102	85-115			
Cobalt	0.063	0.004	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		103	85-115			
Selenium	0.064	0.003	mg/L	0.0625		103	85-115			
Thallium	0.0642	0.0020	mg/L	0.0625		103	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 BAE3494 - EPA 200.2										
Matrix Spike (BAE3494-MS1)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:39										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	449	40.0	mg/L	6.25	459	NR	80-120			D2, M2
Matrix Spike (BAE3494-MS2)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 14:27										
Mercury	0.0029	0.0025	mg/L	0.00250	ND	118	80-120			D2
Molybdenum	0.07	0.05	mg/L	0.0625	ND	109	80-120			D2
Antimony	0.072	0.025	mg/L	0.0625	ND	115	80-120			D2
Arsenic	0.0699	0.0050	mg/L	0.0625	ND	112	80-120			D2
Barium	0.085	0.020	mg/L	0.0625	0.016	110	80-120			D2
Beryllium	0.0651	0.0100	mg/L	0.0625	ND	104	80-120			D2
Cadmium	0.0670	0.0050	mg/L	0.0625	ND	107	80-120			D2
Chromium	0.0681	0.0100	mg/L	0.0625	ND	109	80-120			D2
Cobalt	0.069	0.020	mg/L	0.0625	ND	110	80-120			D2
Lead	0.062	0.010	mg/L	0.0625	ND	99.6	80-120			D2
Lithium	0.09	0.10	mg/L	0.0625	0.02	145	80-120			D2, M1, J
Selenium	0.068	0.015	mg/L	0.0625	ND	109	80-120			D2
Thallium	0.0628	0.0100	mg/L	0.0625	ND	101	80-120			D2
Matrix Spike Dup (BAE3494-MSD1)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:42										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	469	40.0	mg/L	6.25	459	170	80-120	4.50	20	D2, M1
Matrix Spike Dup (BAE3494-MSD2)	**Source: 1033767-01**									
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 14:31										
Antimony	0.068	0.025	mg/L	0.0625	ND	110	80-120	4.43	20	D2
Molybdenum	0.07	0.05	mg/L	0.0625	ND	106	80-120	3.22	20	D2
Mercury	0.0027	0.0025	mg/L	0.00250	ND	107	80-120	9.61	20	D2
Arsenic	0.0670	0.0050	mg/L	0.0625	ND	107	80-120	4.21	20	D2
Barium	0.082	0.020	mg/L	0.0625	0.016	105	80-120	3.82	20	D2
Beryllium	0.0600	0.0100	mg/L	0.0625	ND	96.0	80-120	8.16	20	D2
Cadmium	0.0643	0.0050	mg/L	0.0625	ND	103	80-120	4.02	20	D2
Chromium	0.0654	0.0100	mg/L	0.0625	ND	105	80-120	4.09	20	D2
Cobalt	0.066	0.020	mg/L	0.0625	ND	105	80-120	4.63	20	D2
Lead	0.060	0.010	mg/L	0.0625	ND	96.3	80-120	3.42	20	D2
Lithium	0.09	0.10	mg/L	0.0625	0.02	136	80-120	6.22	20	D2, M1, J
Selenium	0.066	0.015	mg/L	0.0625	ND	105	80-120	3.17	20	D2
Thallium	0.0611	0.0100	mg/L	0.0625	ND	97.7	80-120	2.83	20	D2

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAE3494 - EPA 200.2										
Post Spike (BAE3494-PS1) **Source: 1033767-01**										
Prepared: 5/28/2021 7:43, Analyzed: 5/28/2021 19:45										
Boron	ND	10.0	mg/L	0.125	ND		75-125			D2, M4, U
Calcium	439	40.0	mg/L	6.25	459	NR	75-125			D2, M2
Post Spike (BAE3494-PS2) **Source: 1033767-01**										
Prepared: 5/28/2021 7:43, Analyzed: 6/1/2021 14:34										
Antimony	0.065	0.025	mg/L	0.0625	ND	104	75-125			D2
Mercury	0.0025	0.0025	mg/L	0.00250	ND	99.2	75-125			D2
Molybdenum	0.06	0.05	mg/L	0.0625	ND	104	75-125			D2
Arsenic	0.0659	0.0050	mg/L	0.0625	ND	105	75-125			D2
Barium	0.079	0.020	mg/L	0.0625	0.016	99.4	75-125			D2
Beryllium	0.0576	0.0100	mg/L	0.0625	ND	92.1	75-125			D2
Cadmium	0.0612	0.0050	mg/L	0.0625	ND	98.0	75-125			D2
Chromium	0.0632	0.0100	mg/L	0.0625	ND	101	75-125			D2
Cobalt	0.063	0.020	mg/L	0.0625	ND	101	75-125			D2
Lead	0.057	0.010	mg/L	0.0625	ND	91.2	75-115			D2
Lithium	0.08	0.10	mg/L	0.0625	0.02	127	75-125			D2, M1, J
Selenium	0.062	0.015	mg/L	0.0625	ND	99.5	75-125			D2
Thallium	0.0578	0.0100	mg/L	0.0625	ND	92.5	75-125			D2

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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 BAE3468 - Default Prep Wet Chem										
Blank (BAE3468-BLK1)										
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAE3468-BS1)										
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	1480	25	mg/L	1500		98.9	80-120			
Duplicate (BAE3468-DUP1) **Source: 1033767-01**										
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	7370	50	mg/L		7330			0.435	10	
Duplicate (BAE3468-DUP2) **Source: 1054822-02**										
Prepared: 5/27/2021 11:44, Analyzed: 5/27/2021 11:44										
Total Dissolved Solids	622	50	mg/L		626			0.641	10	
Batch BAE3546 - Default Prep Wet Chem										
LCS (BAE3546-BS1)										
Prepared: 5/27/2021 15:31, Analyzed: 5/27/2021 15:31										
pH (Lab)	8.03		Std. Units	8.00		100	98.8-101.2			
LCS (BAE3546-BS2)										
Prepared: 5/27/2021 15:47, Analyzed: 5/27/2021 15:47										
pH (Lab)	8.00		Std. Units	8.00		100	98.8-101.2			
Duplicate (BAE3546-DUP1) **Source: 1054904-01**										
Prepared: 5/27/2021 15:45, Analyzed: 5/27/2021 15:45										
pH (Lab)	6.13	0.10	Std. Units		6.13			0.00	10	H3
Duplicate (BAE3546-DUP2) **Source: 1060443-01**										
Prepared: 5/27/2021 15:55, Analyzed: 5/27/2021 15:55										
pH (Lab)	7.49	0.10	Std. Units		7.48			0.134	10	H3

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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 BAF0333 - Default Prep IC										
Blank (BAF0333-BLK1)										
Prepared: 6/2/2021 20:52, Analyzed: 6/2/2021 20:52										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAF0333-BS1)										
Prepared: 6/2/2021 20:37, Analyzed: 6/2/2021 20:37										
Chloride	9.8		mg/L	10.0		97.8	90-110			
Fluoride	9.3		mg/L	10.0		92.6	90-110			
Sulfate	9		mg/L	10.0		94.5	90-110			
Matrix Spike (BAF0333-MS1)	**Source: 1034460-04**									
Prepared: 6/3/2021 1:05, Analyzed: 6/3/2021 1:05										
Fluoride	11.9		mg/L	10.0	0.6	113	75-125			
Chloride	84.2		mg/L	10.0	75.6	85.6	75-125			
Sulfate	40		mg/L	10.0	25	147	75-125			M1
Matrix Spike Dup (BAF0333-MSD1)	**Source: 1034460-04**									
Prepared: 6/3/2021 1:20, Analyzed: 6/3/2021 1:20										
Chloride	84.2		mg/L	10.0	75.6	85.6	75-125	0.00119	15	
Fluoride	13.3		mg/L	10.0	0.6	127	75-125	10.7	15	M1
Sulfate	40		mg/L	10.0	25	153	75-125	1.58	15	M1

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 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 1033770

Shipped By: Client

Temperature: 2.50° 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: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Well MW110

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033770 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033770-01 A	5/26/21	1340	Plastic 500mL pH<2 w/HNO3	1	MW-110	g / c	Thallium Tot 6020 Antimony Tot 6020 Beryllium Tot 6020 Barium Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020
			Preservation Check: pH : ✓				
1033770-01 B	5/26/21	1340	Plastic 1L	1	MW-110	g / c	Fluoride 9056 pH (Lab) Sulfate 9056 TDS Chloride 9056
1033770-01 C	5/26/21	1340	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-110	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1033770-01 D	5/26/21	1340	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1033770-01 E	5/26/21	1340	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: SDG

Field data collected by: Phillip Hill Date (mm/dd/yy) 5/26/21 Time (24 hr) 1340

pH 7.75 Cond ~~(umho)~~ mS/cm 1.29 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 17.46 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		5/26/21	1520
	Thermometer Serial Number		
	~~181390287~~ ✓		
	~~181460057~~		

☐ PACE- Check here if trip charge applied to associated COC

Temp 2.5°C Printed: 3/16/2021 12:05:16PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 03/16/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Well MW110

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature):

required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1033770 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1033770-01 F	5/26/21	1340	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-110	g / c	Radium Total (sub)

Preservation Check: pH : ✓

Preservation Check Performed by: JDG

Field data collected by: Philip Hix 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) ___ or (CFS) ___ or (g/min) ___

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		5/26/21	1520

☐ PACE- Check here if trip charge applied to associated COC

Printed: 3/16/2021 12:05:16PM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 24, 2021

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

RE: Project: 1033770
Pace Project No.: 30424046

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on May 28, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Carin A. Ferris

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

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1033770
Pace Project No.: 30424046

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1033770
Pace Project No.: 30424046

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30424046001	**1033770-01**	Water	05/26/21 13:40	05/28/21 09:30

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1033770
Pace Project No.: 30424046

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30424046001	**1033770-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1033770
Pace Project No.: 30424046

Sample: 1033770-01 **Lab ID: 30424046001** Collected: 05/26/21 13:40 Received: 05/28/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

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

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.211 ± 0.388 (0.693) C:NA T:97%**	pCi/L	06/24/21 12:39	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.425 ± 0.497 (1.05) C:70% T:80%**	pCi/L	06/23/21 14:34	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.636 ± 0.885 (1.74)**	pCi/L	06/24/21 15:29	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: 1033770
Pace Project No.: 30424046

QC Batch: 451463
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: 30424046001

METHOD BLANK: 2178862
Matrix: Water
Associated Lab Samples: 30424046001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	2.60 ± 0.715 (0.766) C:69% T:83%	pCi/L	06/23/21 11:15	1c

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: 1033770
Pace Project No.: 30424046

QC Batch: 451462
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: 30424046001

METHOD BLANK: 2178860
Matrix: Water
Associated Lab Samples: 30424046001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0414 ± 0.269 (0.543) C:NA T:104%	pCi/L	06/24/21 12:07	

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: 1033770
Pace Project No.: 30424046

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1c	Method Blank Ra-228 activity greater than the reporting limit of 1.0 pCi/L due to a detector anomaly. Samples in the batch were not affected. Samples with activity less than the reporting limit of 1.0 pCi/L are reportable without qualification.

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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1033770

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: 1033770-01	**Water**	**Sampled:05/26/2021 13:40**	**Specific Method**	C01
Radium Total (sub)		11/22/2021 13:40	EPA 904.0 Radium Sum C	
Radium 228 (sub)		11/22/2021 13:40	EPA 904.0 Radium Sum C	
Radium 226 (sub)		11/22/2021 13:40	EPA 903.1	

WO# : 30424046



Nancy George 05-27-21
Released By Date

Received By S-28-21 0930
Received By Date

Released By Date

Received By Date

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KY

Project # 30424046

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label: JL

Tracking #: 107338835 73

LIMS Login: BLM

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

Thermometer Used: — Type of Ice: Wet Blue (None)

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

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 160361 / Date and Initials of person examining contents: JL 6-4-21
Chain of Custody Present:	—			1.
Chain of Custody Filled Out:	—			2.
Chain of Custody Relinquished:	—			3.
Sampler Name & Signature on COC:		—		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	—			5.
Samples Arrived within Hold Time:	—			6.
Short Hold Time Analysis (<72hr remaining):		—		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	—			9.
Correct Containers Used: -Pace Containers Used:	—	—		10.
Containers Intact:	—			11.
Orthophosphate field filtered			—	12.
Hex Cr Aqueous sample field filtered			—	13.
Organic Samples checked for dechlorination:			—	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	—			16. added 2.5mL HCl to samples
All containers meet method preservation requirements.		—		Initial when completed: JL Date/time of preservation: 6-4-21 0935 Lot # of added preservative: DL 21-0579
Headspace in VOA Vials (>6mm):			—	17.
Trip Blank Present:			—	18.
Trip Blank Custody Seals Present			—	
Rad Samples Screened < 0.5 mrem/hr	—			Initial when completed: JL Date: 6-4-21 Survey Meter SN: 1563

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

30424046

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1033770 Workorder Name: HMPL Surface Impoundme Owner Received Date: 5/26/2021 Results Requested By:

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1													
2	1033770-01		05/26/21 13:40	IR44-McCoy	Water						X	X	COC
3													
4													
5													
6													
7													
8													
9													
10													

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1				5-28-21	COC
2					
3					

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

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

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

Certificate of Analysis
1085995

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 11/08/2021 16:43

Project Name:	HMPL Surface Impoundment	Workorder:	1085995

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 09/29/2021 16:33.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

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
1085995-01	MW7/	Groundwater	09/29/2021 10:15	09/29/2021 16:33	Phillip Hill
1085995-02	MW8/	Groundwater	09/29/2021 11:40	09/29/2021 16:33	Phillip Hill
1085995-03	MW9/	Groundwater	09/29/2021 13:35	09/29/2021 16:33	Phillip Hill
1085995-04	MW10/	Groundwater	09/29/2021 14:55	09/29/2021 16:33	Phillip Hill
1085995-05	DUPLICATE/	Groundwater	09/29/2021 12:10	09/29/2021 16:33	Phillip Hill
1085995-06	FIELD BLANK/	Water	09/29/2021 13:55	09/29/2021 16:33	Phillip Hill

LabNumber	Measurement	Value
1085995-01	Field Conductance	865
	Field pH	7.08
	Field Temp (C)	19.59
1085995-02	Field Conductance	2390
	Field pH	6.12
	Field Temp (C)	22.79
1085995-03	Field Conductance	465
	Field pH	6.23
	Field Temp (C)	19.71
1085995-04	Field Conductance	626
	Field pH	8.26
	Field Temp (C)	27.31
1085995-05	Field Conductance	2390
	Field pH	6.12
	Field Temp (C)	22.79

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

ANALYTICAL RESULTS

Lab Sample ID: **1085995-01**
Description: **MW7**

Sample Collection Date Time: 09/29/2021 10:15
Sample Received Date Time: 09/29/2021 16:33

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	M2, U	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Arsenic	ND	M2, U	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Barium	**0.074**	M2	mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Beryllium	ND	M2, U	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Boron	**1.77**	D1, M2	mg/L	0.50	0.50	SW846 6010 B	10/01/2021 08:15	10/05/2021 16:54	MRWD
Cadmium	ND	M2, U	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Calcium	**27.0**	D1, M2	mg/L	2.00	0.65	SW846 6010 B	10/01/2021 08:15	10/05/2021 16:54	MRWD
Chromium	ND	M2, U	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Cobalt	ND	M2, U	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Lithium	**0.03**	M1, M2	mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Mercury	ND	M2, U	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Molybdenum	ND	M2, U	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	AKB
Thallium	ND	M2, U	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:25	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	4500-H+ B-2000	09/30/2021 09:39	09/30/2021 09:39	JLW
Total Dissolved Solids	**610**		mg/L	50	50	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.211**	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.701**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.912**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**6.5**		mg/L	0.5	0.4	SW846 9056	10/07/2021 22:22	10/07/2021 22:22	CSC
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	10/07/2021 22:22	10/07/2021 22:22	CSC
Sulfate	**34**	D	mg/L	2	1	SW846 9056	10/08/2021 19:50	10/08/2021 19:50	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085995-02**
Description: **MW8**

Sample Collection Date Time: 09/29/2021 11:40
Sample Received Date Time: 09/29/2021 16:33

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Barium	**0.020**		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Boron	**1.50**	D1	mg/L	0.50	0.50	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:04	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Calcium	**267**	D1	mg/L	40.0	13.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:33	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Lithium	**0.04**		mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Molybdenum	**0.01**		mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:44	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.24**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/30/2021 09:40	09/30/2021 09:40	JLW
Total Dissolved Solids	**2090**		mg/L	50	50	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.162**	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**1.56**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**1.72**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**61.4**	D	mg/L	2.5	1.8	SW846 9056	10/07/2021 22:36	10/07/2021 22:36	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	10/08/2021 20:05	10/08/2021 20:05	CSC
Sulfate	**2320**	D	mg/L	100	50	SW846 9056	10/07/2021 22:51	10/07/2021 22:51	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085995-03**
Description: **MW9**

Sample Collection Date Time: 09/29/2021 13:35
Sample Received Date Time: 09/29/2021 16:33

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Barium	**0.248**		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:10	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Calcium	**59.4**	D1	mg/L	4.00	1.30	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:16	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Lithium	**0.005**	J	mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:48	AKB

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	4500-H+ B-2000	09/30/2021 09:41	09/30/2021 09:41	JLW
Total Dissolved Solids	**264**		mg/L	50	50	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.319**	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.812**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**1.13**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**7.2**		mg/L	0.5	0.4	SW846 9056	10/07/2021 23:05	10/07/2021 23:05	CSC
Fluoride	**0.2**		mg/L	0.2	0.2	SW846 9056	10/07/2021 23:05	10/07/2021 23:05	CSC
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	10/07/2021 23:05	10/07/2021 23:05	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085995-04**
Description: **MW10**

Sample Collection Date Time: 09/29/2021 14:55
Sample Received Date Time: 09/29/2021 16:33

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Arsenic	**0.0017**		mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Barium	**0.096**		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Boron	**0.54**		mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:29	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Calcium	**8.25**		mg/L	0.40	0.13	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:29	MRWD
Chromium	**0.0006**	J	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Lithium	**0.49**		mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Mercury	**0.0002**	J	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Molybdenum	**0.007**	J	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:52	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**9.22**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/30/2021 09:42	09/30/2021 09:42	JLW
Total Dissolved Solids	**514**		mg/L	50	50	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.307**	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.385**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.692**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**20.7**		mg/L	0.5	0.4	SW846 9056	10/07/2021 23:19	10/07/2021 23:19	CSC
Fluoride	**0.5**		mg/L	0.2	0.2	SW846 9056	10/07/2021 23:19	10/07/2021 23:19	CSC
Sulfate	**61**	D	mg/L	5	2	SW846 9056	10/07/2021 23:34	10/07/2021 23:34	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085995-05**
Description: **DUPLICATE**

Sample Collection Date Time: 09/29/2021 12:10
Sample Received Date Time: 09/29/2021 16:33

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	u	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Arsenic	ND	u	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Barium	**0.015**		mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Beryllium	ND	u	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Boron	**1.48**	D1	mg/L	0.50	0.50	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:42	MRWD
Cadmium	ND	u	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Calcium	**266**	D1	mg/L	40.0	13.0	SW846 6010 B	10/01/2021 08:15	10/06/2021 13:45	MRWD
Chromium	ND	u	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Cobalt	ND	u	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Lead	ND	u	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Lithium	**0.02**		mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Mercury	ND	u	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Molybdenum	**0.01**		mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Selenium	ND	u	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB
Thallium	ND	u	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:55	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.37**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/30/2021 09:43	09/30/2021 09:43	JLW
Total Dissolved Solids	**2200**		mg/L	50	50	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.349**	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**1.64**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**1.99**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**66.3**	D	mg/L	10.0	7.2	SW846 9056	10/08/2021 00:03	10/08/2021 00:03	CSC
Fluoride	**0.4**		mg/L	0.2	0.2	SW846 9056	10/07/2021 23:48	10/07/2021 23:48	CSC
Sulfate	**2180**	D, H2	mg/L	100	50	SW846 9056	11/08/2021 13:28	11/08/2021 13:28	CSC

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ANALYTICAL RESULTS

Lab Sample ID: **1085995-06**
Description: **FIELD BLANK**

Sample Collection Date Time: 09/29/2021 13:55
Sample Received Date Time: 09/29/2021 16:33

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Barium	ND	U	mg/L	0.004	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Boron	ND	U	mg/L	0.10	0.10	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:48	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Calcium	ND	U	mg/L	0.40	0.13	SW846 6010 B	10/01/2021 08:15	10/05/2021 17:48	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Lithium	ND	U	mg/L	0.02	0.005	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	10/01/2021 08:15	10/07/2021 11:59	AKB

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.40**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	09/30/2021 09:44	09/30/2021 09:44	JLW
Total Dissolved Solids	ND	U	mg/L	50	50	2540 C-2011	10/05/2021 12:57	10/05/2021 12:57	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.201**	_Sub	pCi/L			EPA 903.1	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.006**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW
See Attached Subcontract Report	**0.207**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/08/2021 09:53	11/08/2021 09:55	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	ND	U	mg/L	0.5	0.4	SW846 9056	10/08/2021 00:17	10/08/2021 00:17	CSC
Fluoride	ND	U	mg/L	0.2	0.2	SW846 9056	10/08/2021 00:17	10/08/2021 00:17	CSC
Sulfate	ND	U	mg/L	1	0.5	SW846 9056	10/08/2021 00:17	10/08/2021 00:17	CSC

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Notes for work order 1085995

- 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.
H2	Initial analysis within holding time. Reanalysis was 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.
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/Acronymns

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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Madisonville, KY 42431
270.821.7375
www.pacelabs.com

Metals by SW846 6000 Series Methods Madisonville - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3647 - EPA 200.2										
Blank (BAI3647-BLK1)										
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:35										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
Blank (BAI3647-BLK2)										
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:18										
Mercury	ND	0.0005	mg/L							U
Molybdenum	ND	0.01	mg/L							U
Antimony	ND	0.005	mg/L							U
Arsenic	ND	0.0010	mg/L							U
Barium	ND	0.004	mg/L							U
Beryllium	ND	0.0020	mg/L							U
Cadmium	ND	0.0010	mg/L							U
Chromium	ND	0.0020	mg/L							U
Cobalt	ND	0.004	mg/L							U
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
LCS (BAI3647-BS1)										
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 16:38										
Boron	0.11	0.10	mg/L	0.125		86.2	85-115			
Calcium	6.25	0.40	mg/L	6.25		100	85-115			
LCS (BAI3647-BS2)										
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 11:21										
Molybdenum	0.06	0.01	mg/L	0.0625		103	85-115			
Mercury	0.0027	0.0005	mg/L	0.00250		108	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Arsenic	0.0625	0.0010	mg/L	0.0625		100	85-115			
Barium	0.061	0.004	mg/L	0.0625		98.1	85-115			
Beryllium	0.0607	0.0020	mg/L	0.0625		97.2	85-115			
Cadmium	0.0618	0.0010	mg/L	0.0625		98.9	85-115			
Chromium	0.0645	0.0020	mg/L	0.0625		103	85-115			
Cobalt	0.063	0.004	mg/L	0.0625		100	85-115			
Lead	0.063	0.002	mg/L	0.0625		101	85-115			
Lithium	0.06	0.02	mg/L	0.0625		97.9	85-115			
Selenium	0.061	0.003	mg/L	0.0625		97.8	85-115			
Thallium	0.0650	0.0020	mg/L	0.0625		104	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3647 - EPA 200.2										
Matrix Spike (BAI3647-MS1)	**Source: 1085995-01**									
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:04										
Boron	1.85	1.00	mg/L	0.125	1.77	66.3	80-120			D2, M2
Calcium	33.1	4.00	mg/L	6.25	27.0	98.2	80-120			D2
Matrix Spike (BAI3647-MS2)	**Source: 1093012-01**									
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:11										
Boron	8.84	1.00	mg/L	0.125	8.69	122	80-120			D2, M1
Calcium	603	4.00	mg/L	6.25	608	NR	80-120			D2
Matrix Spike (BAI3647-MS3)	**Source: 1085995-01**									
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:39										
Mercury	0.0026	0.0050	mg/L	0.00250	ND	105	80-120			D2, J
Molybdenum	0.06	0.10	mg/L	0.0625	ND	99.0	80-120			D2, J
Antimony	0.064	0.050	mg/L	0.0625	ND	103	80-120			D2
Arsenic	0.0610	0.0100	mg/L	0.0625	ND	97.5	80-120			D2
Barium	0.133	0.040	mg/L	0.0625	0.074	95.3	80-120			D2
Beryllium	0.0654	0.0200	mg/L	0.0625	ND	105	80-120			D2
Cadmium	0.0589	0.0100	mg/L	0.0625	ND	94.2	80-120			D2
Chromium	0.0587	0.0200	mg/L	0.0625	ND	93.9	80-120			D2
Cobalt	0.059	0.040	mg/L	0.0625	ND	94.1	80-120			D2
Lead	0.061	0.020	mg/L	0.0625	ND	97.0	80-120			D2
Lithium	0.10	0.20	mg/L	0.0625	ND	158	80-120			D2, M1, J
Selenium	0.060	0.030	mg/L	0.0625	ND	96.5	80-120			D2
Thallium	0.0634	0.0200	mg/L	0.0625	ND	101	80-120			D2
Matrix Spike (BAI3647-MS4)	**Source: 1093012-01**									
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:47										
Mercury	0.0027	0.0050	mg/L	0.00250	ND	108	80-120			D2, J
Molybdenum	0.07	0.10	mg/L	0.0625	ND	111	80-120			D2, J
Antimony	0.066	0.050	mg/L	0.0625	ND	106	80-120			D2
Arsenic	0.0637	0.0100	mg/L	0.0625	ND	102	80-120			D2
Barium	0.073	0.040	mg/L	0.0625	0.013	96.1	80-120			D2
Beryllium	0.0622	0.0200	mg/L	0.0625	ND	99.6	80-120			D2
Cadmium	0.0591	0.0100	mg/L	0.0625	ND	94.6	80-120			D2
Chromium	0.0594	0.0200	mg/L	0.0625	ND	95.0	80-120			D2
Cobalt	0.069	0.040	mg/L	0.0625	ND	110	80-120			D2
Lead	0.059	0.020	mg/L	0.0625	ND	94.6	80-120			D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	173	80-120			D2, M1
Selenium	0.062	0.030	mg/L	0.0625	ND	98.6	80-120			D2
Thallium	0.0625	0.0200	mg/L	0.0625	ND	100	80-120			D2

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3647 - EPA 200.2										
Matrix Spike Dup (BAI3647-MSD1) **Source: 1085995-01**										
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:07										
Boron	1.88	1.00	mg/L	0.125	1.77	87.6	80-120	1.43	20	D2
Calcium	33.5	4.00	mg/L	6.25	27.0	105	80-120	1.35	20	D2
Matrix Spike Dup (BAI3647-MSD2) **Source: 1093012-01**										
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:23										
Boron	8.80	1.00	mg/L	0.125	8.69	87.5	80-120	0.490	20	D2
Calcium	624	4.00	mg/L	6.25	608	264	80-120	3.40	20	D2, M3
Matrix Spike Dup (BAI3647-MSD3) **Source: 1085995-01**										
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:43										
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	5.52	20	D2, J
Antimony	0.065	0.050	mg/L	0.0625	ND	104	80-120	1.27	20	D2
Molybdenum	0.06	0.10	mg/L	0.0625	ND	102	80-120	2.74	20	D2, J
Arsenic	0.0619	0.0100	mg/L	0.0625	ND	99.0	80-120	1.53	20	D2
Barium	0.136	0.040	mg/L	0.0625	0.074	99.1	80-120	1.77	20	D2
Beryllium	0.0653	0.0200	mg/L	0.0625	ND	104	80-120	0.210	20	D2
Cadmium	0.0597	0.0100	mg/L	0.0625	ND	95.5	80-120	1.41	20	D2
Chromium	0.0598	0.0200	mg/L	0.0625	ND	95.7	80-120	1.82	20	D2
Cobalt	0.060	0.040	mg/L	0.0625	ND	95.3	80-120	1.36	20	D2
Lead	0.060	0.020	mg/L	0.0625	ND	96.6	80-120	0.496	20	D2
Lithium	0.10	0.20	mg/L	0.0625	ND	162	80-120	2.31	20	D2, M1, J
Selenium	0.059	0.030	mg/L	0.0625	ND	94.5	80-120	2.10	20	D2
Thallium	0.0641	0.0200	mg/L	0.0625	ND	103	80-120	1.12	20	D2
Matrix Spike Dup (BAI3647-MSD4) **Source: 1093012-01**										
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:51										
Mercury	0.0028	0.0050	mg/L	0.00250	ND	111	80-120	2.57	20	D2, J
Molybdenum	0.07	0.10	mg/L	0.0625	ND	116	80-120	4.42	20	D2, J
Antimony	0.068	0.050	mg/L	0.0625	ND	109	80-120	2.65	20	D2
Arsenic	0.0674	0.0100	mg/L	0.0625	ND	108	80-120	5.63	20	D2
Barium	0.076	0.040	mg/L	0.0625	0.013	101	80-120	3.96	20	D2
Beryllium	0.0618	0.0200	mg/L	0.0625	ND	98.8	80-120	0.731	20	D2
Cadmium	0.0605	0.0100	mg/L	0.0625	ND	96.7	80-120	2.28	20	D2
Chromium	0.0616	0.0200	mg/L	0.0625	ND	98.6	80-120	3.74	20	D2
Cobalt	0.071	0.040	mg/L	0.0625	ND	114	80-120	3.46	20	D2
Lead	0.061	0.020	mg/L	0.0625	ND	98.0	80-120	3.61	20	D2
Lithium	0.24	0.20	mg/L	0.0625	0.13	167	80-120	1.57	20	D2, M1
Selenium	0.062	0.030	mg/L	0.0625	ND	99.5	80-120	0.933	20	D2
Thallium	0.0648	0.0200	mg/L	0.0625	ND	104	80-120	3.62	20	D2

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BAI3647 - EPA 200.2										
Post Spike (BAI3647-PS1) **Source: 1085995-01**										
Prepared: 10/1/2021 8:15, Analyzed: 10/5/2021 19:26										
Boron	1820		ug/L	125	1770	40.5	75-125			D2, M2
Calcium	28200		ug/L	6250	27000	19.5	75-125			D2, M2
Post Spike (BAI3647-PS2) **Source: 1085995-01**										
Prepared: 10/1/2021 8:15, Analyzed: 10/7/2021 12:54										
Molybdenum	1.91		ug/L	62.5	1.33	0.934	75-125			D2, M2
Mercury	0.173		ug/L	2.50	0.0559	4.70	75-125			D2, M2
Antimony	0.148		ug/L	62.5	0.184	NR	75-125			D2, M2
Arsenic	0.646		ug/L	62.5	0.329	0.508	75-125			D2, M2
Barium	78.5		ug/L	62.5	73.8	7.64	75-125			D2, M2
Beryllium	-0.0723		ug/L	62.5	0.0019	NR	75-125			D2, M2, U
Cadmium	0.0690		ug/L	62.5	0.0294	0.0633	75-125			D2, M2
Chromium	0.0170		ug/L	62.5	0.224	NR	75-125			D2, M2
Cobalt	0.055		ug/L	62.5	0.045	0.0150	75-125			D2, M2
Lead	-0.348		ug/L	62.5	-0.045		75-115			D2, M2, U
Lithium	31.7		ug/L	62.5	25.6	9.80	75-125			D2, M2
Selenium	0.078		ug/L	62.5	0.053	0.0395	75-125			D2, M2
Thallium	0.463		ug/L	62.5	0.0639	0.638	75-125			D2, M2

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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 BAI3622 - Default Prep Wet Chem										
LCS (BAI3622-BS1)										
Prepared: 9/30/2021 9:36, Analyzed: 9/30/2021 9:36										
pH (Lab)	8.08		Std. Units	8.00		101	98.8-101.2			
Duplicate (BAI3622-DUP1) **Source: 1094594-01**										
Prepared: 9/30/2021 9:47, Analyzed: 9/30/2021 9:47										
pH (Lab)	5.66	0.10	Std. Units		5.67			0.177	10	H3
Batch BAJ0532 - Default Prep Wet Chem										
Blank (BAJ0532-BLK1)										
Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAJ0532-BS1)										
Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57										
Total Dissolved Solids	1450	25	mg/L	1500		96.9	80-120			
Duplicate (BAJ0532-DUP1) **Source: 1085995-01**										
Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57										
Total Dissolved Solids	612	50	mg/L		610			0.327	10	
Duplicate (BAJ0532-DUP2) **Source: 1101910-01**										
Prepared: 10/5/2021 12:57, Analyzed: 10/5/2021 12:57										
Total Dissolved Solids	510	50	mg/L		512			0.391	10	

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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 BAJ1084 - Default Prep IC										
Blank (BAJ1084-BLK1)										
Prepared: 10/7/2021 22:07, Analyzed: 10/7/2021 22:07										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAJ1084-BS1)										
Prepared: 10/7/2021 21:53, Analyzed: 10/7/2021 21:53										
Fluoride	9.1		mg/L	10.0		90.8	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	10		mg/L	10.0		102	90-110			
Matrix Spike (BAJ1084-MS1) **Source: 1085995-06**										
Prepared: 10/8/2021 1:01, Analyzed: 10/8/2021 1:01										
Chloride	12.3		mg/L	10.0	0.05	123	75-125			
Fluoride	12.2		mg/L	10.0	0.0	122	75-125			
Sulfate	12		mg/L	10.0	0.2	122	75-125			
Matrix Spike Dup (BAJ1084-MSD1) **Source: 1085995-06**										
Prepared: 10/8/2021 1:15, Analyzed: 10/8/2021 1:15										
Chloride	12.3		mg/L	10.0	0.05	123	75-125	0.00	15	
Fluoride	12.1		mg/L	10.0	0.0	121	75-125	0.800	15	
Sulfate	13		mg/L	10.0	0.2	124	75-125	1.13	15	
Batch BAJ1450 - Default Prep IC										
Blank (BAJ1450-BLK1)										
Prepared: 10/11/2021 16:18, Analyzed: 10/11/2021 16:18										
Sulfate	ND	1	mg/L							U
LCS (BAJ1450-BS1)										
Prepared: 10/11/2021 16:03, Analyzed: 10/11/2021 16:03										
Sulfate	9		mg/L	10.0		93.4	90-110			

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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 BAJ1450 - Default Prep IC										
Matrix Spike (BAJ1450-MS1) **Source: 1101794-04**										
Prepared: 10/11/2021 18:42, Analyzed: 10/11/2021 18:42										
Sulfate	27		mg/L	10.0	16	117	75-125			
Matrix Spike Dup (BAJ1450-MSD1) **Source: 1101794-04**										
Prepared: 10/11/2021 18:57, Analyzed: 10/11/2021 18:57										
Sulfate	28		mg/L	10.0	16	122	75-125	1.73	15	

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 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 1085995

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: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): [signature]

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

required information

*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 # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-01 A	9/29/21	1015	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 : ___				
1085995-01 B	9/29/21	1015	Plastic 1L	1	MW7	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1085995-01 C	9/29/21	1015	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW7	g / c	Radium 226 (sub)
			Preservation Check: pH : ___				
1085995-01 D	9/29/21	1015	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				
1085995-01 E	9/29/21	1015	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW7	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				

Preservation Check Performed by: NA

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/29/21 Time (24 hr) 1015

pH 7.08 Cond ~~(umhos)~~ mS/cm 0.865 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 19.59 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	9/29/21	1633

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:25:37PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): PHM

required information

Compliance Monitoring? Yes Y 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 # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-01 F	9/29/21	1015	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW7	g / c	Radium Total (sub)
			Preservation Check: pH :				
1085995-02 A	9/29/21	1140	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 :				
1085995-02 B	9/29/21	1140	Plastic 1L	1	MW8	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1085995-02 C	9/29/21	1140	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW8	g / c	Radium 226 (sub)
			Preservation Check: pH :				
1085995-02 D	9/29/21	1140	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH :				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/29/21 Time (24 hr) 1140

pH 6.12 Cond ~~(umho)~~ mS/cm 2.39 Res Cl (mg/L) ____ Tot Cl (mg/L) ____ Free Cl (mg/L) ____

Temp (oC) 22.79 or (oF) ____ Static Water Level ____ DO (mg/L) ____ Turb. (NTU) ____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
PHM		9/29/21	1633

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation
Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-02 E	9/29/21	1140	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW8	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
1085995-02 F	9/29/21	1140	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW8	g / c	Radium Total (sub)
			Preservation Check: pH : ____				
1085995-03 A	9/29/21	1335	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 : ____				
1085995-03 B	9/29/21	1335	Plastic 1L	1	MW9	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1085995-03 C	9/29/21	1335	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW9	g / c	Radium 226 (sub)
			Preservation Check: pH : ____				

Preservation Check Performed by: NOY

Field data collected by: phillip HH Date (mm/dd/yy) 9/29/21 Time (24 hr) 1335

pH 6.23 Cond ~~(umho)~~ mS/cm 0.465 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 19.71 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/29/21	1633

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-03 D	9/29/21	1335	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
1085995-03 E	9/29/21	1335	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW9	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
1085995-03 F	9/29/21	1335	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW9	g / c	Radium Total (sub)
			Preservation Check: pH : ____				
1085995-04 A	9/29/21	1455	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 : ____				
1085995-04 B	9/29/21	1455	Plastic 1L	1	MW10	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056

Preservation Check Performed by: Noy

Field data collected by: MW10 Phillip Hill Date (mm/dd/yy) 9/29/21 Time (24 hr) 1455

pH 8.26 Cond (~~umho~~) mS/cm 0.626 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 27.31 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/29/21	1633

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-04 C	9/29/21	1455	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW10	g / c	Radium 226 (sub)
			Preservation Check: pH : ____				
1085995-04 D	9/29/21	1455	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
1085995-04 E	9/29/21	1455	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW10	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
1085995-04 F	9/29/21	1455	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW10	g / c	Radium Total (sub)
			Preservation Check: pH : ____				

Preservation Check Performed by: Noy

Field data collected by: Phillip Hall Date (mm/dd/yy) 9/29/21 Time (24 hr) 1455

pH 8.26 Cond ~~(umho)~~ mS/cm 0.626 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 27.31 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/29/21	1633

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Pace Analytical Services LLC Kentucky
P.O. Box 907
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Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature): [signature]
required information

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-05 A	9/29/21	1210	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 : ___				
1085995-05 B	9/29/21	1210	Plastic 1L	1	DUPLICATE	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1085995-05 C	9/29/21	1210	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	DUPLICATE	g / c	Radium 226 (sub)
			Preservation Check: pH : ___				
1085995-05 D	9/29/21	1210	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				
1085995-05 E	9/29/21	1210	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	DUPLICATE	g / c	Radium 228 (sub)
			Preservation Check: pH : ___				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/29/21 Time (24 hr) 1210

pH 6.12 Cond ~~(umho)~~ mS/cm 2.39 Res Cl (mg/L) ___ Tot Cl (mg/L) ___ Free Cl (mg/L) ___

Temp (oC) 22.79 or (oF) ___ Static Water Level ___ DO (mg/L) ___ Turb. (NTU) ___

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
[signature]	[signature]	9/29/21	1633

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-05 F	9/29/21	1210	Plastic 1L pH<2 w/HNO3 (Sub)	1	DUPLICATE	g / c	Radium Total (sub)
			Preservation Check: pH : ____				
1085995-06 A	9/29/21	1355	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 : ____				
1085995-06 B	9/29/21	1355	Plastic 1L	1	FIELD BLANK	g / c	Fluoride 9056 TDS Sulfate 9056 pH (Lab) Chloride 9056
1085995-06 C	9/29/21	1355	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	FIELD BLANK	g / c	Radium 226 (sub)
			Preservation Check: pH : ____				
1085995-06 D	9/29/21	1355	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				

Preservation Check Performed by: NDY

Field data collected by: Phillip Hill Date (mm/dd/yy) 9/29/21 Time (24 hr) _____

pH _____ Cond ~~(umho)~~ N/A _____ Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/29/21	1633

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Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#: _____
Quote# _____

Please Print Legibly

Collected by (Signature): _____ *required information*

Compliance Monitoring? Yes X No ___

Samples Chlorinated? Yes ___ No ___

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

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

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

LAB USE ONLY Workorder # 1085995 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085995-06 E	9/29/21	1355	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	FIELD BLANK	g / c	Radium 228 (sub)
			Preservation Check: pH : ____				
1085995-06 F	9/29/21	1355	Plastic 1L pH<2 w/HNO3 (Sub)	1	FIELD BLANK	g / c	Radium Total (sub)
			Preservation Check: pH : ____				

Thermometer Serial Number
√ 181390287
___ 181460057
Temp 4.8°C

Preservation Check Performed by: NDY

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
		9/29/21	1633

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

November 05, 2021

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

RE: Project: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

Dear Rob Whittington:

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

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30446213001	**1085995-01**	Water	09/29/21 10:15	10/18/21 10:15
30446213002	**1085995-02**	Water	09/29/21 11:40	10/18/21 10:15
30446213003	**1085995-03**	Water	09/29/21 13:35	10/18/21 10:15
30446213004	**1085995-04**	Water	09/29/21 14:55	10/18/21 10:15
30446213005	**1085995-05**	Water	09/29/21 14:55	10/18/21 10:15
30446213006	**1085995-06**	Water	09/29/21 13:55	10/18/21 10:15

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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: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30446213001	**1085995-01**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30446213002	**1085995-02**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30446213003	**1085995-03**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30446213004	**1085995-04**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30446213005	**1085995-05**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30446213006	**1085995-06**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	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: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

Sample: 1085995-01 **Lab ID: 30446213001** Collected: 09/29/21 10:15 Received: 10/18/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.211 ± 0.440 (0.794) C:NA T:104%**	pCi/L	11/04/21 15:54	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.701 ± 0.413 (0.766) C:70% T:84%**	pCi/L	11/02/21 11:12	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.912 ± 0.853 (1.56)**	pCi/L	11/05/21 17:27	7440-14-4	

Sample: 1085995-02 **Lab ID: 30446213002** Collected: 09/29/21 11:40 Received: 10/18/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.162 ± 0.410 (0.761) C:NA T:100%**	pCi/L	11/04/21 15:54	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.56 ± 0.545 (0.807) C:73% T:87%**	pCi/L	11/02/21 11:12	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.72 ± 0.955 (1.57)**	pCi/L	11/05/21 17:27	7440-14-4	

Sample: 1085995-03 **Lab ID: 30446213003** Collected: 09/29/21 13:35 Received: 10/18/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.319 ± 0.486 (0.836) C:NA T:96%**	pCi/L	11/04/21 16:10	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.812 ± 0.389 (0.676) C:71% T:98%**	pCi/L	11/02/21 11:12	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.13 ± 0.875 (1.51)**	pCi/L	11/05/21 17:27	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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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: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

Sample: 1085995-04 **Lab ID: 30446213004** Collected: 09/29/21 14:55 Received: 10/18/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.307 ± 0.282 (0.166) C:NA T:96%**	pCi/L	11/04/21 16:10	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.385 ± 0.460 (0.979) C:72% T:92%**	pCi/L	11/02/21 11:07	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.692 ± 0.742 (1.15)**	pCi/L	11/05/21 17:27	7440-14-4	

Sample: 1085995-05 **Lab ID: 30446213005** Collected: 09/29/21 14:55 Received: 10/18/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.349 ± 0.296 (0.367) C:NA T:103%**	pCi/L	11/04/21 16:10	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1.64 ± 0.584 (0.897) C:73% T:85%**	pCi/L	11/02/21 11:07	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**1.99 ± 0.880 (1.26)**	pCi/L	11/05/21 17:27	7440-14-4	

Sample: 1085995-06 **Lab ID: 30446213006** Collected: 09/29/21 13:55 Received: 10/18/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**0.201 ± 0.280 (0.467) C:NA T:103%**	pCi/L	11/04/21 16:10	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**0.00585 ± 0.428 (0.978) C:68% T:91%**	pCi/L	11/02/21 11:07	15262-20-1	
		Pace Analytical Services - Greensburg				
Total Radium	Total Radium Calculation	**0.207 ± 0.708 (1.45)**	pCi/L	11/05/21 17:27	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: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

QC Batch: 469278 | 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: 30446213001, 30446213002, 30446213003, 30446213004, 30446213005, 30446213006

METHOD BLANK: 2266076 Matrix: Water
Associated Lab Samples: 30446213001, 30446213002, 30446213003, 30446213004, 30446213005, 30446213006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.385 ± 0.380 (0.578) C:NA T:93%	pCi/L	11/04/21 15:24	

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: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

QC Batch: 469280 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: 30446213001, 30446213002, 30446213003, 30446213004, 30446213005, 30446213006

METHOD BLANK: 2266077 Matrix: Water
Associated Lab Samples: 30446213001, 30446213002, 30446213003, 30446213004, 30446213005, 30446213006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.113 ± 0.226 (0.556) C:73% T:99%	pCi/L	11/02/21 11:12	

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: 1085995/Big Rivers Electric Co
Pace Project No.: 30446213

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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Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1085995 Workorder Name: HMPL Surface Impoundme Owner Received Date: 9/29/2021 Results Requested By: 10/8/2021

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1									
2	1085995-01		09/29/21 10:15	IR44-McCoy	Water		X	X	001
3	1085995-02		09/29/21 11:40	IR44-McCoy	Water		X	X	002
4	1085995-03		09/29/21 13:35	IR44-McCoy	Water		X	X	003
5	1085995-04		09/29/21 14:55	IR44-McCoy	Water		X	X	004
6	1085995-05		09/29/21 14:55	IR44-McCoy	Water		X	X	005
7	1085995-06		09/29/21 13:55	IR44-McCoy	Water		X	X	006
8									
9									
10									

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1				10/14/21 1015	
2					
3					

Cooler Temperature on Receipt NA °C | **Custody Seal Y or (N)** | **Received on Ice Y or (N)** | **Sample Intact (Y) or N**

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

Pace Analytical®

Pace Greensburg Lab -Sample Container Count

Client Pace KY

Site 1085995

Profile Number

Notes

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

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	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 unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

WO#: 30446213

PM: JLB Due Date: 11/09/21

CLIENT: PACE_44_MVKY

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentuc

1085995

WO# : 30446213

PM: JLB Due Date: 11/09/21

CLIENT: PACE_44_MVKY

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: 1085995-01	**Water**	**Sampled:09/29/2021 10:15**	**Specific Method**	
Radium 228 (sub)		03/28/2022 10:15	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 10:15	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 10:15	EPA 903.1	
Sample ID: 1085995-02	**Water**	**Sampled:09/29/2021 11:40**	**Specific Method**	
Radium 226 (sub)		03/28/2022 11:40	EPA 903.1	
Radium 228 (sub)		03/28/2022 11:40	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 11:40	EPA 904.0 Radium Sum C	
Sample ID: 1085995-03	**Water**	**Sampled:09/29/2021 13:35**	**Specific Method**	
Radium Total (sub)		03/28/2022 13:35	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 13:35	EPA 903.1	
Radium 228 (sub)		03/28/2022 13:35	EPA 904.0 Radium Sum C	
Sample ID: 1085995-04	**Water**	**Sampled:09/29/2021 14:55**	**Specific Method**	
Radium 228 (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 14:55	EPA 903.1	
Sample ID: 1085995-05	**Water**	**Sampled:09/29/2021 14:55**	**Specific Method**	
Radium 226 (sub)		03/28/2022 14:55	EPA 903.1	
Radium 228 (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
[signature]	10-01-21		
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucl

1085995

WO# : 30446213

PM: JLB **Due Date: 11/09/21**

CLIENT: PACE_44_MVKY

Analysis		Expires	Laboratory ID	Comments
Sample ID: 1085995-06	**Water**	**Sampled:09/29/2021 13:55**	**Specific Method**	
Radium Total (sub)		03/28/2022 13:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 13:55	EPA 903.1	
Radium 228 (sub)		03/28/2022 13:55	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
10·01·21			
Released By	Date	Received By	Date

Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KY Project #

WO#: 30446213

Due Date: 11/09/21

PM: JLB

CLIENT: PACE_44_MVKY

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

Label JAG

LIMS Login VPI

Tracking #: 774959566277

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# 10D0411 Date and Initials of person examining contents: JAG 10/19/21

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. No date and time on 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:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16.
All containers meet method preservation requirements.	✓			Initial when completed JAG Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JAG Date: 10/19/21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

WO# : 30446213

PM: JLB **Due Date: 11/09/21**

CLIENT: PACE_44_MVKY

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1085995 Workorder Name: HMPL Surface Impoundme Owner Received Date: 9/29/2021 Results Requested By: 10/8/2021

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1									
2	1085995-01		09/29/21 10:15	IR44-McCoy	Water		X	X	001
3	1085995-02		09/29/21 11:40	IR44-McCoy	Water		X	X	002
4	1085995-03		09/29/21 13:35	IR44-McCoy	Water		X	X	003
5	1085995-04		09/29/21 14:55	IR44-McCoy	Water		X	X	004
6	1085995-05		09/29/21 14:55	IR44-McCoy	Water		X	X	005
7	1085995-06		09/29/21 13:55	IR44-McCoy	Water		X	X	006
8									
9									
10									

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1			[signature] 10/2/21	11:30	
2					
3					

Cooler Temperature on Receipt 19.9 °C **Custody Seal Y or (N)** **Received on Ice (Y) or N** **Sample Intact (Y) or N**

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

Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PaceKY Project #

WO#: 30446213

PM: JLB Due Date: 11/09/21

CLIENT: PACE_44_MVKY

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

Label

LIMS Login

Tracking #: 1107 3389 3045

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

Thermometer Used 12 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 20.3 °C Correction Factor: -0.4 °C Final Temp: 19.9 °C

Temp should be above freezing to 6°C

pH paper Lot# 10004111 Date and Initials of person examining contents: 10-5-21 JLB 10/7/21 dc

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:		X		2. no preservative/number of containers
Chain of Custody Relinquished:		X		3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		X		5. no date/time on labels
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:	X			8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:		X		
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Hex Cr Aqueous sample field filtered			X	13.
Organic Samples checked for dechlorination:			X	14.
Filtered volume received for Dissolved tests			X	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16.
All containers meet method preservation requirements.	X			Initial when completed dc Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	17.
Trip Blank Present:			X	18.
Trip Blank Custody Seals Present			X	
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: dc Date: 10/7/21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution: did not receive volume for samples 01 & 02

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

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

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

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky #_30446213

1085995

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: 1085995-01	**Water**	**Sampled:09/29/2021 10:15**	**Specific Method**	
Radium 228 (sub)		03/28/2022 10:15	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 10:15	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 10:15	EPA 903.1	
Sample ID: 1085995-02	**Water**	**Sampled:09/29/2021 11:40**	**Specific Method**	
Radium 226 (sub)		03/28/2022 11:40	EPA 903.1	
Radium 228 (sub)		03/28/2022 11:40	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 11:40	EPA 904.0 Radium Sum C	
Sample ID: 1085995-03	**Water**	**Sampled:09/29/2021 13:35**	**Specific Method**	
Radium Total (sub)		03/28/2022 13:35	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 13:35	EPA 903.1	
Radium 228 (sub)		03/28/2022 13:35	EPA 904.0 Radium Sum C	
Sample ID: 1085995-04	**Water**	**Sampled:09/29/2021 14:55**	**Specific Method**	
Radium 228 (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 14:55	EPA 903.1	
Sample ID: 1085995-05	**Water**	**Sampled:09/29/2021 14:55**	**Specific Method**	
Radium 226 (sub)		03/28/2022 14:55	EPA 903.1	
Radium 228 (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	
Radium Total (sub)		03/28/2022 14:55	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
[signature]	10-01-21		
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1085995

#_30446213

Analysis		Expires	Laboratory ID	Comments
Sample ID: 1085995-06	**Water**	**Sampled:09/29/2021 13:55**	**Specific Method**	
Radium Total (sub)		03/28/2022 13:55	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/28/2022 13:55	EPA 903.1	
Radium 228 (sub)		03/28/2022 13:55	EPA 904.0 Radium Sum C	

Released By	Date	Received By	Date
[signature]	10-01-21		
Released By	Date	Received By	Date

#-30446213

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Ship to :
Pace Analytical Services LI
1638 Rosey Town Rd Suite
Greensburg, PA 15601

Phone: (724) 850-5615

INTER_LABORATORY WORK ORDER # _____

(To be complete by sending lab)

Sending Project No:	1085995
Receiving Project No:	
Check Box for Consolidated Invoice:	
Date Prepared:	9/30/2021 8:31
REQUESTED COMPLETION DATE:	

Sending Region	IR44-Madisonville	Sending Project Mgr.	Rob Whittington
Receiving Region	Greensburg	External Client	Big Rivers Electric Corporation Reid/
State of Sample Origin	KY	QC Deliverable	**STD Report**

All questions should be addressed to sending project manager.

Requested Reportable Units _____ Report Wet or Dry Weight? N/A Cert Needed: Y

WORK REQUESTED

Method Description	Container Type		Quantity of containers	Preservative	Quantity of Samples	Unit Price	Amount
EPA 903.1	H<2 w/HNO3 Ra				6	110	660
EPA 904.0 Radium Sum	1L pH<2 w/HNO				6	0	0
EPA 904.0 Radium Sum	H<2 w/HNO3 Ra				6	110	660
						TOTAL	

Special Requirements: _____

Receiving Region Department	Acctg. Code	Totals from above	Revenue Allocation	
			Receiving Region (50%) ~~80~~	Client Services Dept. Sending Region (~~50%~~) 20
			~~660~~	~~660~~
* Custom Revenue Allocation		TOTAL	1056	264

FOR ANALYTICAL WORK COMPLETED THIS SECTION ALSO

Chain of Custody Included: ☐ Yes ☐ No Return Samples to Sending Region: ☐ Yes ☐ No

Matrix: ☐ Soil ☐ Water ☐ **Air** ☐ Other (identity) _____

CONFIRMATION OF WORK COMPLETED

Date Completed: _____ Receiving Project Manager: _____

Original sent to the receiving lab - Copy kept at the sending lab.

When work completed: Original sent to the ABM at the receiving laboratory. Copies are made to corporate as needed.

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Certificate of Analysis
1085997

Chad Phillips
Big Rivers Electric Corporation Reid/Green Station
PO Box 24
Henderson KY, 42419

Customer ID: 44-102032
Report Printed: 11/03/2021 10:19

Project Name:	HMPL Surface Impoundment Well MW110	Workorder:	1085997

Dear Chad Phillips

Enclosed are the analytical results for samples received by the laboratory 10/01/2021 15:49.

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

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

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

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

#460210 Madisonville, KY
#460291 Pikeville, KY

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
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SAMPLE SUMMARY

Lab ID	Client Sample ID/Alias	Matrix	Date Collected	Date Received	Sampled By
1085997-01	MW-110/	Groundwater	10/01/2021 13:50	10/01/2021 15:49	Phillip Hill

LabNumber	Measurement	Value
1085997-01	Field Conductance	1240
	Field pH	6.69
	Field Temp (C)	18.00

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ANALYTICAL RESULTS

Lab Sample ID: **1085997-01**
Description: **MW-110**

Sample Collection Date Time: 10/01/2021 13:50
Sample Received Date Time: 10/01/2021 15:49

Metals by SW846 6000 Series Methods Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Antimony	ND	U	mg/L	0.005	0.002	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Arsenic	ND	U	mg/L	0.0010	0.0004	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Barium	**0.049**		mg/L	0.004	0.001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Beryllium	ND	U	mg/L	0.0020	0.0010	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Boron	**0.52**		mg/L	0.10	0.10	SW846 6010 B	10/05/2021 08:21	10/05/2021 15:25	MRWD
Cadmium	ND	U	mg/L	0.0010	0.0001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Calcium	**155**	D1	mg/L	40.0	13.0	SW846 6010 B	10/05/2021 08:21	10/06/2021 14:04	MRWD
Chromium	ND	U	mg/L	0.0020	0.0006	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Cobalt	ND	U	mg/L	0.004	0.004	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Lead	ND	U	mg/L	0.002	0.0005	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Lithium	**0.02**		mg/L	0.02	0.005	SW846-6020 A	10/05/2021 08:21	10/08/2021 10:52	AKB
Mercury	ND	U	mg/L	0.0005	0.0002	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Molybdenum	ND	U	mg/L	0.01	0.002	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Selenium	ND	U	mg/L	0.003	0.001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP
Thallium	ND	U	mg/L	0.0020	0.0001	SW846-6020 A	10/05/2021 08:21	10/05/2021 16:00	NKP

Conventional Chemistry Analyses Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
pH (Lab)	**7.11**	H3	Std. Units	0.10	0.10	4500-H+ B-2000	10/04/2021 14:48	10/04/2021 14:48	CML
Total Dissolved Solids	**1090**		mg/L	50	50	2540 C-2011	10/07/2021 17:37	10/07/2021 17:37	HAG

Subcontracted Analyses

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
See Attached Subcontract Report	**0.214**	_Sub	pCi/L			EPA 903.1	11/03/2021 09:31	11/03/2021 09:33	RCW
See Attached Subcontract Report	**0.438**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/03/2021 09:31	11/03/2021 09:33	RCW
See Attached Subcontract Report	**0.652**	_Sub	pCi/L			EPA 904.0 Radium Sum Calc	11/03/2021 09:31	11/03/2021 09:33	RCW

Ion Chromatography Madisonville

Analyte	Result	Flag	Units	MRL	MDL	Method	Prepared	Analyzed	Analyst
Chloride	**21.1**		mg/L	0.5	0.4	SW846 9056	10/11/2021 18:24	10/11/2021 18:24	CSC
Fluoride	**0.3**		mg/L	0.2	0.2	SW846 9056	10/11/2021 18:24	10/11/2021 18:24	CSC
Sulfate	**853**	D	mg/L	50	25	SW846 9056	10/11/2021 18:39	10/11/2021 18:39	CSC

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Notes for work order 1085997

- 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.
H3	Sample received and analyzed past holding time.
J	Estimated value.
M1	Matrix spike recovery was high; the method control sample recovery was acceptable.
M4	The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.
U	Target analyte was analyzed for, but was below detection limit (the value associated with the qualifier is the laboratory method detection limit in our LIMS system).

Standard Qualifiers/Acronymns

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 BAJ0356 - EPA 200.2										
Blank (BAJ0356-BLK1)										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 15:51										
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 (BAJ0356-BLK2)										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 14:57										
Boron	ND	0.10	mg/L							U
Calcium	ND	0.40	mg/L							U
LCS (BAJ0356-BS1)										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 15:54										
Molybdenum	0.07	0.01	mg/L	0.0625		106	85-115			
Antimony	0.067	0.005	mg/L	0.0625		108	85-115			
Mercury	0.0026	0.0005	mg/L	0.00250		105	85-115			
Arsenic	0.0644	0.0010	mg/L	0.0625		103	85-115			
Barium	0.062	0.004	mg/L	0.0625		99.7	85-115			
Beryllium	0.0593	0.0020	mg/L	0.0625		94.9	85-115			
Cadmium	0.0631	0.0010	mg/L	0.0625		101	85-115			
Chromium	0.0640	0.0020	mg/L	0.0625		102	85-115			
Cobalt	0.064	0.004	mg/L	0.0625		102	85-115			
Lead	0.065	0.002	mg/L	0.0625		104	85-115			
Lithium	0.06	0.02	mg/L	0.0625		89.7	85-115			
Selenium	0.062	0.003	mg/L	0.0625		99.7	85-115			
Thallium	0.0651	0.0020	mg/L	0.0625		104	85-115			

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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 BAJ0356 - EPA 200.2										
LCS (BAJ0356-BS2)										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 15:00										
Boron	0.13	0.10	mg/L	0.125		100	85-115			
Calcium	6.40	0.40	mg/L	6.25		102	85-115			
Matrix Spike (BAJ0356-MS1) **Source: 1085859-01**										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:22										
Mercury	0.0027	0.0005	mg/L	0.00250	ND	107	80-120			
Molybdenum	0.07	0.01	mg/L	0.0625	ND	106	80-120			
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120			
Arsenic	0.0654	0.0010	mg/L	0.0625	0.0007	104	80-120			
Barium	0.601	0.004	mg/L	0.0625	0.542	94.4	80-120			
Beryllium	0.0565	0.0020	mg/L	0.0625	ND	90.4	80-120			
Cadmium	0.0611	0.0010	mg/L	0.0625	0.0001	97.5	80-120			
Chromium	0.0639	0.0020	mg/L	0.0625	ND	102	80-120			
Cobalt	0.062	0.004	mg/L	0.0625	ND	99.9	80-120			
Lead	0.063	0.002	mg/L	0.0625	0.001	99.1	80-120			
Lithium	0.09	0.02	mg/L	0.0625	0.04	87.5	80-120			
Selenium	0.062	0.003	mg/L	0.0625	ND	99.7	80-120			
Thallium	0.0618	0.0020	mg/L	0.0625	ND	98.9	80-120			
Matrix Spike (BAJ0356-MS2) **Source: 1085859-01**										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:51										
Boron	ND	10.0	mg/L	0.125	ND		80-120			D2, M4, U
Calcium	38.6	40.0	mg/L	6.25	26.4	196	80-120			D2, M1, J
Matrix Spike Dup (BAJ0356-MSD1) **Source: 1085859-01**										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:25										
Mercury	0.0026	0.0005	mg/L	0.00250	ND	103	80-120	3.78	20	
Antimony	0.068	0.005	mg/L	0.0625	ND	109	80-120	0.464	20	
Molybdenum	0.07	0.01	mg/L	0.0625	ND	104	80-120	1.70	20	
Arsenic	0.0648	0.0010	mg/L	0.0625	0.0007	103	80-120	0.936	20	
Barium	0.596	0.004	mg/L	0.0625	0.542	85.9	80-120	0.890	20	
Beryllium	0.0560	0.0020	mg/L	0.0625	ND	89.6	80-120	0.915	20	
Cadmium	0.0616	0.0010	mg/L	0.0625	0.0001	98.3	80-120	0.817	20	
Chromium	0.0629	0.0020	mg/L	0.0625	ND	101	80-120	1.53	20	
Cobalt	0.062	0.004	mg/L	0.0625	ND	98.7	80-120	1.17	20	
Lead	0.062	0.002	mg/L	0.0625	0.001	97.9	80-120	1.19	20	
Lithium	0.09	0.02	mg/L	0.0625	0.04	85.7	80-120	1.24	20	
Selenium	0.063	0.003	mg/L	0.0625	ND	101	80-120	1.30	20	
Thallium	0.0608	0.0020	mg/L	0.0625	ND	97.3	80-120	1.60	20	

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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 BAJ0356 - EPA 200.2										
Matrix Spike Dup (BAJ0356-MSD2) **Source: 1085859-01**										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:54										
Boron	ND	10.0	mg/L	0.125	ND		80-120		20	D2, M4, U
Calcium	34.4	40.0	mg/L	6.25	26.4	128	80-120	11.5	20	D2, M1, J
Post Spike (BAJ0356-PS1) **Source: 1085859-01**										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 16:27										
Antimony	64.2		ug/L	62.5	0.326	102	75-125			
Mercury	2.73		ug/L	2.50	0.0730	106	75-125			
Molybdenum	64.2		ug/L	62.5	0.66	102	75-125			
Arsenic	63.5		ug/L	62.5	0.726	100	75-125			
Barium	597		ug/L	62.5	542	89.1	75-125			
Beryllium	55.4		ug/L	62.5	-0.0700	88.7	75-125			
Cadmium	61.2		ug/L	62.5	0.146	97.7	75-125			
Chromium	62.0		ug/L	62.5	0.351	98.6	75-125			
Cobalt	60.8		ug/L	62.5	0.614	96.2	75-125			
Lead	60.9		ug/L	62.5	0.955	96.0	75-115			
Lithium	90.3		ug/L	62.5	37.1	85.1	75-125			
Selenium	62.6		ug/L	62.5	0.207	99.8	75-125			
Thallium	59.1		ug/L	62.5	0.0570	94.4	75-125			
Post Spike (BAJ0356-PS2) **Source: 1085859-01**										
Prepared: 10/5/2021 8:21, Analyzed: 10/5/2021 17:06										
Boron	264		ug/L	125	152	89.6	75-125			D2
Calcium	31500		ug/L	6250	26400	82.0	75-125			D2

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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 BAJ0387 - Default Prep Wet Chem										
LCS (BAJ0387-BS1)										
Prepared: 10/4/2021 14:47, Analyzed: 10/4/2021 14:47										
pH (Lab)	8.03	0.10	Std. Units				98.8-101.2			
Duplicate (BAJ0387-DUP1) **Source: 1093019-01**										
Prepared: 10/4/2021 14:53, Analyzed: 10/4/2021 14:53										
pH (Lab)	5.10	0.10	Std. Units		5.11			0.196	10	H3
Batch BAJ0960 - Default Prep Wet Chem										
Blank (BAJ0960-BLK1)										
Prepared: 10/7/2021 17:37, Analyzed: 10/7/2021 17:37										
Total Dissolved Solids	ND	25	mg/L							U
LCS (BAJ0960-BS1)										
Prepared: 10/7/2021 17:37, Analyzed: 10/7/2021 17:37										
Total Dissolved Solids	1460	25	mg/L	1500		97.2	80-120			
Duplicate (BAJ0960-DUP1) **Source: 1094045-01**										
Prepared: 10/7/2021 17:37, Analyzed: 10/7/2021 17:37										
Total Dissolved Solids	700	50	mg/L		702			0.285	10	
Duplicate (BAJ0960-DUP2) **Source: 1102082-01**										
Prepared: 10/7/2021 17:37, Analyzed: 10/7/2021 17:37										
Total Dissolved Solids	1390	50	mg/L		1390			0.00	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 BAJ1443 - Default Prep IC										
Blank (BAJ1443-BLK1)										
Prepared: 10/11/2021 17:39, Analyzed: 10/11/2021 17:39										
Fluoride	ND	0.2	mg/L							U
Chloride	ND	0.5	mg/L							U
Sulfate	ND	1	mg/L							U
LCS (BAJ1443-BS1)										
Prepared: 10/11/2021 17:24, Analyzed: 10/11/2021 17:24										
Fluoride	10.0		mg/L	10.0		100	90-110			
Chloride	10.1		mg/L	10.0		101	90-110			
Sulfate	11		mg/L	10.0		107	90-110			
Matrix Spike (BAJ1443-MS1) **Source: 1093019-01**										
Prepared: 10/11/2021 23:51, Analyzed: 10/11/2021 23:51										
Fluoride	11.8		mg/L	10.0	0.0	118	75-125			
Chloride	12.1		mg/L	10.0	0.4	118	75-125			
Sulfate	12		mg/L	10.0	0.1	119	75-125			
Matrix Spike Dup (BAJ1443-MSD1) **Source: 1093019-01**										
Prepared: 10/12/2021 0:06, Analyzed: 10/12/2021 0:06										
Fluoride	11.7		mg/L	10.0	0.0	117	75-125	0.273	15	
Chloride	12.1		mg/L	10.0	0.4	117	75-125	0.546	15	
Sulfate	12		mg/L	10.0	0.1	119	75-125	0.217	15	

Certified Analyses included in this Report

Analyte	Certifications
2540 C-2011 in Water	
Total Dissolved Solids	KY Drinking Water Mdv (00030) VA NELAC MDV (460210) KY Wastewater Mdv (00030) TN Drinking Water (02819) WV Wastewater Madisonville (241), 825 Industrial Rd Madisonville, KY 42431
4500-H+ B-2000 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
P.O. Box 907
Madisonville, KY 42431
270.821.7375
www.pacelabs.com

Sample Acceptance Checklist for Work Order 1085997

Shipped By: Client

Temperature: 2.50° 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: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Well MW110

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
Phone: (270) 844-6000
PWS ID#:
State: KY

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419
PO#:
Quote#

Please Print Legibly

Collected by (Signature):

required information

Compliance Monitoring? Yes X No

Samples Chlorinated? Yes No

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

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

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

LAB USE ONLY Workorder # 1085997 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085997-01 A	10/1/21	1350	Plastic 500mL pH<2 w/HNO3	1	MW-110	g / c	Thallium Tot 6020 Antimony Tot 6020 Beryllium Tot 6020 Barium Tot 6020 Arsenic Tot 6020 Boron Tot 6010B Cadmium Tot 6020 Calcium Tot 6010B Chromium Tot 6020 Cobalt Tot 6020 Lead Tot 6020 Lithium Tot 6020 Mercury Tot 6020 Molybdenum Tot 6020
			Preservation Check: pH : ✓				
1085997-01 B	10/1/21	1350	Plastic 1L	1	MW-110	g / c	Fluoride 9056 pH (Lab) Sulfate 9056 TDS Chloride 9056
1085997-01 C	10/1/21	1350	Plastic 1L pH<2 w/HNO3 Rad 226 (Sub)	1	MW-110	g / c	Radium 226 (sub)
			Preservation Check: pH : ✓				
1085997-01 D	10/1/21	1350	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				
1085997-01 E	10/1/21	1350	Plastic 1L pH<2 w/HNO3 Rad 228 (Sub)	1	MW-110	g / c	Radium 228 (sub)
			Preservation Check: pH : ✓				

Preservation Check Performed by: KCA

Field data collected by: Phillip Hill Date (mm/dd/yy) 10/1/21 Time (24 hr) 1250

pH 6.69 Cond ~~(umho)~~ mS/cm 1.24 Res Cl (mg/L) _____ Tot Cl (mg/L) _____ Free Cl (mg/L) _____

Temp (oC) 18.00 or (oF) _____ Static Water Level _____ DO (mg/L) _____ Turb. (NTU) _____

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

Relinquished By: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
	Ashley Lai	10/1/21	1549

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:26:14PM

Pace Analytical Services LLC Kentucky
P.O. Box 907
Madisonville, KY 42431

Chain of Custody

Scheduled for: 08/31/2021

Client: Big Rivers Electric Corporation Reid/Green Station

Project: HMPL Surface Impoundment Well MW110

Report To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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

Invoice To:
Big Rivers Electric Corporation Reid/Green Station
Chad Phillips
PO Box 24
Henderson, KY 42419

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 # 1085997 Sample ID#	*required information* Date (mm/dd/yy):	Collection Time (24 hr):	Bottle and Preservative	Containers	Sample Description	Composite	Sample Analysis Requested
1085997-01 F	12/1/21	1350	Plastic 1L pH<2 w/HNO3 (Sub)	1	MW-110	g / c	Radium Total (sub)

Preservation Check: pH : ✓

Thermometer Serial Number
✓ 181390287
___ 181460057
Temp 2.5 °C

Preservation Check Performed by: AEL

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

Relinquished by: (Signature)	Received by: (Signature)	Date (mm/dd/yy)	Time (24 hr)
	abby Lan	12/1/21	1549

☐ PACE- Check here if trip charge applied to associated COC

Printed: 8/31/2021 4:26:14PM

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

November 02, 2021

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

RE: Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

Dear Rob Whittington:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Greensburg

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

Sincerely,

Jennifer L. Blum
jennifer.blum@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Doug Wolfe, Pace Analytical Madisonville

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30445891001	**10859007-01**	Water	10/01/21 13:50	10/13/21 10:00

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30445891001	**10859007-01**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

Sample: 10859007-01 **Lab ID: 30445891001** Collected: 10/01/21 13:50 Received: 10/13/21 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.214 ± 0.258 (0.394) C:NA T:99%**	pCi/L	11/02/21 13:44	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.438 ± 0.409 (0.837) C:75% T:85%**	pCi/L	10/28/21 14:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.652 ± 0.667 (1.23)**	pCi/L	11/02/21 17:32	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

QC Batch: 469194
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: 30445891001

METHOD BLANK: 2265782 Matrix: Water
Associated Lab Samples: 30445891001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0853 ± 0.251 (0.613) C:78% T:92%	pCi/L	10/28/21 14:00	

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

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

QC Batch: 469193
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: 30445891001

METHOD BLANK: 2265781 Matrix: Water
Associated Lab Samples: 30445891001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.277 ± 0.340 (0.554) C:NA T:93%	pCi/L	11/02/21 13:31	

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

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1085997/Big Rivers Electric Co
Pace Project No.: 30445891

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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SUBCONTRACT ORDER

Pace Analytical Services, LLC Kentucky

1085997

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
				001
Sample ID: 1085997-01	**Water**	**Sampled:10/01/2021 13:50**	**Specific Method**	
Radium Total (sub)		03/30/2022 13:50	EPA 904.0 Radium Sum C	
Radium 228 (sub)		03/30/2022 13:50	EPA 904.0 Radium Sum C	
Radium 226 (sub)		03/30/2022 13:50	EPA 903.1	

WO# : 30445891

30445891

Released By: Jenny Lain	Date: 10-12-21	Received By:	Date: 10/13/21 1000
Released By	Date	Received By	Date

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KY Project #

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

Label AR
LIMS Login VP

Tracking #: 1107 3389 3655

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

Thermometer Used 13 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 18.1 °C Correction Factor: -0.1 °C Final Temp: 18.0 °C

Temp should be above freezing to 6°C

WO#: 30445891

PM: JLB Due Date: 11/03/21

CLIENT: PACE_44_MVKY

Comments:	Yes	No	N/A	pH paper Lot# 1000411 / Date and Initials of person examining contents: AR 10/18/21
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:		X		2. no preservative
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		X		5. no date/time on labels
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:		X		
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Hex Cr Aqueous sample field filtered			X	13.
Organic Samples checked for dechlorination:			X	14.
Filtered volume received for Dissolved tests			X	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16.
All containers meet method preservation requirements.	X			Initial when completed AR Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	17.
Trip Blank Present:			X	18.
Trip Blank Custody Seals Present			X	
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: AR Date: 10/18/21 Survey Meter SN: 1503

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

Pace Greensburg Lab -Sample Container Count

Pace Analytical®

Client: Pace KY

Site: 1085997 / Big Rivers Electric

Profile Number: 11851

Notes:

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

WO#: 30445891

PM: JLB Due Date: 11/03/21

CLIENT: PACE_44_MVKY

Container Codes

Glass

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

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

WO# : 30445891
PM: JLB Due Date: 11/03/21
CLIENT: PACE_44_MVKY

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 1085997 Workorder Name: HMP...mpoundme Owner Received Date: 10/1/2021 Results Requested By: 10/21/2021

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis: EPA 903.1	Requested Analysis: EPA 904.0 Radium Sum Calc	LAB USE ONLY
1									
2	1085997-01		10/01/21 13:50	IR44-McCoy	WW		X	X	
3									
4									
5									
6									
7									
8									
9									
10									

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1					
2					
3					

Cooler Temperature on Receipt _____ °C | **Custody Seal Y or N** | **Received on Ice Y or N** | **Sample Intact Y or N**

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

Appendix G
Green Landfill Statistical Evaluations

GREEN LANDFILL STATISTICAL ANALYSIS

2021 Annual Groundwater Monitoring Report

1.0 INTRODUCTION

Previous statistical analysis of Green Landfill groundwater monitoring data has indicated that certain 40 CFR Part 257 Appendix III constituents at downgradient monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 occur at statistically significant higher concentrations than in background monitoring well MW-1. Based on these results, assessment monitoring is conducted for both 40 CFR Part 257 Appendix III and IV parameters.

The 40 CFR Part 257 Appendix III and IV 2021 groundwater monitoring data at the Green Landfill were evaluated to determine the occurrence of any statistically significant increases over background (SSIs) and whether or not any of the SSIs occurred at a statistically significant level (SSL) above the groundwater protection standard as defined at 40 CFR.95(h).

2.0 STATISTICAL ANALYSIS

A determination of whether SSIs have occurred is required by 40 CFR 257.93(h)(2) for each semiannual monitoring event. The occurrence of SSIs was evaluated using an *interwell* prediction limit approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at the background monitoring well. For the Green Landfill, monitoring well MW-1 is designated as the background well, whereas monitoring wells MW-2, MW-3A, MW-4, MW-5, and MW-6 are designated downgradient detection monitoring wells. In addition, the facility has a characterization well (MW-104) that is not part of the detection monitoring network.

The statistical analyses were performed in accordance with the U.S. Environmental Protection Agency's Final CCR Rule 40 CFR Parts 257.93(f), 257.93(g), and 257.93(h), the Groundwater Monitoring System and Statistical Methods Certification, and following guidance presented in ASTM D6312-17 *Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs,* and US EPA (2009) *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. The test procedures were designed to balance facility-wide false positive rate and statistical power.

Site data are maintained in a Sanitas™ statistical evaluation database that was used to conduct the analyses presented herein.

2.1 Prediction Limits

Appropriate statistical prediction limits (PLs) were developed for each of the 21 Appendix III and Appendix IV monitoring constituents, as outline below, and followed the following general procedures.

1. Analytical Data Review
2. Goodness-of-Fit Testing
3. Perform adjustments to data based on the frequency on non-detect values
4. Comparison to interstation background

The background data set for the statistical analyses consisted of analytical measurements at MW-1 from March 2016 to April 2021 for the April monitoring event. The background utilized for the September 2021 analysis was updated to include the data from that event.

2.1.1 Analytical Data Review

Analytical data were reviewed for consistency with historic data prior to any statistical evaluation. Background data were checked for outliers, and high or low outliers were removed using Dixon's test

following EPA (2009) procedures prior to statistical analysis. Outliers include some previous values with elevated detection limits.

2.1.2 Goodness-of-Fit Testing

Four types of background monitoring data sets.

1. Normally distributed (or transformed normal) data sets with the frequency of censored (non-detect) values less than 50 percent
2. Non-normal (or transformed non-normal) data sets with the frequency of censored values less than 50 percent
3. Data sets for which the population distribution is not known due to the frequency of censored values greater than 50 percent
4. Data consisting of 100 percent censored values

The appropriate statistical comparison depends on the type of data set under consideration. Parametric test procedures are utilized wherever possible to increase statistical power. In general, parametric tests are utilized where the data distribution may be assumed to be normal, or transformed normal (data set 1, above). Non-parametric procedures are used where data may not confidently be assumed to be normal (data set 2, above), or where the frequency of non-detect values precludes the testing of normality (data set 3, above). Finally, it is recognized that for 100 percent non-detect data (data set 4, above) no valid statistical comparison may be made, and comparisons must be made to fixed, arbitrary values, such as the analytical method detection or quantitation limit.

To determine the type of dataset, goodness-of-fit testing was performed on both the raw data and natural logarithm of the raw greater than detection limit values using the Shapiro-Wilk W-test as recommended by US EPA (1992) and Gilbert (1987). The tests were conducted at a 95 percent confidence level with outliers removed from the dataset.

Data sets that could not confidently be determined to be normally or log normally distributed were used to determine *nonparametric* prediction limits. Data that were normally or log normally distributed were considered as a basis for calculating *parametric* prediction limits, providing that the percentage of less than detection limit values was greater than 50 percent.

2.1.3 Adjustments to Data Based on the Frequency of Non-Detect Values

After goodness-of-fit testing was completed, the frequency of less than detection limit (left censored) values was be evaluated. If the degree of left-censoring was greater than 15%, the Kaplan-Meier adjustment was used to obtain adjusted estimates of the sample mean and standard deviation. These adjusted values were then used to calculate the upper prediction limit for those data determined to be normally or log normally distributed during goodness-of-fit testing. For the statistical analysis, non-detect values were represented as one-half the detection limit.

If the degree of censoring is 50% to 100%, no method exists to reasonably estimate the sample mean and standard deviation. In this case, non-parametric procedures are utilized. If the degree of censoring is 100%, as is commonly the case with volatile organic compounds, no estimates of statistics can be calculated. In this case, a simple comparison to method reporting limit (RL) of the individual analyte is employed as the initial statistical evaluation.

2.1.4 Comparison to Background

Based on the results for goodness-of-fit testing and the degree of censoring of the various data sets, comparisons to background were made using prediction limit procedures (US EPA, 2009). Parametric prediction limits were utilized where the data may be assumed to be normally or log normally distributed.

If the data are determined to be not normal or log normal, or the frequency of non-detect values is greater than 50%, nonparametric upper prediction limits were calculated, as recommended by US EPA (2009).

The prediction limit comparisons balance statistical power and false positive rate, as recommended by US EPA (1992, 2009) and ASTM D6312-17 using verification resampling as discussed below.

2.1.5 False Positive Rate Control

A groundwater monitoring event involves a large number of individual statistical comparisons. For normal prediction limits, if the significance level of an individual statistical comparison (test) is α (defined as the *per-test* false positive rate), the *annual* false positive rate (α^*) is given by (Gibbons 1994):

Equation 1

$$\alpha^* = 1 - (1-\alpha)^r$$

where,

r = the number of annual statistical comparisons to be made
(downgradient monitoring stations × analytes × events per year.

For a typical monitoring scenario, the per-test α is held to a value *no less* than 0.01 (40 CFR 257.93(g)(2). Limiting α to the minimum value of 0.01 guards against an excessive false negative rate, or Type II error, but may result in too large an *event-wide* false positive rate. For each of the 2021 monitoring events there are 21 parameters requiring statistical evaluation (Table G1, c =21). There are five downgradient detection monitoring wells in the evaluation (Table G1, w = 5). Assuming two annual statistical evaluations, one associated with each semiannual sample event (n_E = 2), the number of annual statistical comparisons (r) is equal to c x w x n_E = 210. From Equation 1, the annual false positive rate for the two sampling events is 0.88 (Table G1, Row 1). Thus, during each sampling year there would be about an 88 percent probability that a statistically significant result would be obtained even though no real statistical exceedance occurred.

To limit the annual false positive rate to 0.1, as suggested by EPA (2009) (or to a corresponding event-wide false positive rate of 0.05 for semiannual sampling per 40 CFR 257.93(g)(2)), Equation 1 indicates that individual tests would have to be conducted at a significance levels of about 0.00050 (Table G1, Row 2). Very large statistical limits would have to be employed, and the individual *false negative* rate would be unacceptably high at this significance level.

Alternatively, a *verification resampling* strategy is employed to limit the annual-wide false positive rate while maintaining adequate statistical power (EPA 1992, 2009; Gibbons 1994; ASTM 2017). *A statistically significant increase is not declared until both the original sample and some number of verification resamples fail the statistical test procedures*. For the case of one or two verification resampling events, and assuming independence of measurements, α^* may be calculated as (EPA 2009):

Equation 2

$$\alpha^* = 1 - (1-\alpha^m)^r$$

where,

m = the sum of the original sample and number of retest verification samples (1 or 2).

Passing any resample passes the statistical evaluation procedure.

Table G1 Row 3 illustrate a single resample strategy with the resample required to pass. Table G1 Row 4 Row 4 illustrate the case of two verification resamples with one of the two required to pass.

EPA (2009) and 40 CFR 257.93(g)(2) defines two criteria applicable to statistical analysis of groundwater monitoring data:

1. The per-event false positive rate (α^*) shall be no less than 0.05 per evert, or 0.1 annually, and,
2. The per-test false positive rate (α) shall be no less than 0.01.

These criteria were deemed by EPA to provide acceptable balance between false positive rate control and statistical power and are used for this project. The single verification sample resampling strategy

(Table G1, Row 3) fits the EPA criteria and minimizes sampling and analytical cost. A single verification resampling strategy (referred to as "Pass 1 of 2") using a per-test significance level of 0.02240 was therefore used for this statistical analysis. An SSI does not occur unless the original sample and the verification resample both fail the statistical testing.

2.2 Comparison to Groundwater Protection Standard

Appendix IV well / constituents with SSIs indicated by the PL analysis were further evaluated to determine whether they are present at statistically significant levels (SSLs) over the groundwater protection standards (GWPSs). This evaluation was conducted by calculating the parametric or non-parametric mean / median 95% confidence limits for each well / constituent identified as an SSI using the baseline, detection, and assessment monitoring results collected to date. For a constituent to be present at an SSL over the GWPS, the relevant 95% lower confidence limit must be greater than the GWPS.

3.0 RESULTS

Prediction limit results for the two 2021 sampling events are provided in Tables G2 and G3. Interwell exceedances of the relevant PL values are highlighted. Time series plots showing prediction limit results are provided for each downgradient well / parameter in Attachment 1 (April 22, 2021 event) and Attachment 2 (September 23 event). Plots in the attachments are arranged in the constituent order listed in the tables.

Comparison to groundwater protection standard results are provided in Tables G4 and G5.

3.1 Exceedances of Background

The following SSIs were noted for the April 22 event (Table G2). Appendix IV constituents are highlighted in bold.

MW-2	**arsenic**, **barium**, calcium, chloride, **molybdenum**, pH (field), sulfate, total dissolved solids
MW-3A	calcium, chloride, **lithium**, sulfate, total dissolved solids
MW-4	calcium, chloride, **lithium**, **mercury**, **selenium**, sulfate, total dissolved solids
MW-5	**cadmium**, calcium, chloride, **lithium**, sulfate, total dissolved solids
MW-6	calcium, chloride, **lithium**, sulfate, total dissolved solids

Similar results were noted for the September 23 event with exceedances for the following (Table G3).

MW-2	**arsenic**, **barium**, calcium, chloride, **molybdenum**, pH (field), sulfate, total dissolved solids
MW-3A	calcium, chloride, **lithium**, sulfate, total dissolved solids
MW-4	calcium, chloride, **lithium**, pH (field), sulfate, total dissolved solids
MW-5	calcium, chloride, **lithium**, pH (field), sulfate, total dissolved solids
MW-6	calcium, chloride, **lithium**, sulfate, total dissolved solids

Results for exceedances of background were generally consistent between the two events and consistent with 2019 and 2020 results. Appendix IV SSIs in April occurred for arsenic at MW-2, barium at MW-2, cadmium at MW-5, lithium at MW-3A, MW-4, MW-5, and MW-6, mercury at MW-4, and molybdenum at MW-2, and selenium at MW-4. Appendix IV SSIs in September were the same as for April except that the mercury and selenium occurrences at MW-4 and the cadmium exceedance at MW-5 in April did not reoccur in September.

3.2 Comparison to Groundwater Protection Standards

Pursuant to 40 CFR 257.95(f) Appendix IV well / parameters with 2021 SSIs were further evaluated to determine whether they are present at a statistically significant level over the groundwater protection standard. This analysis was conducted by calculating the appropriate parametric or nonparametric 95 percent lower confidence limit (95% LCL) for each well / parameter identified as an SSI for each 2021 event.

The ten Appendix IV SSIs occurring in April are listed in Table G4 showing the 95% LCL computation results compared to the relevant GWPS. The seven Appendix IV SSIs occurring in September are similarly listed in Table G5. The only exceedances of GWPSs for either 2021 sampling event are for lithium at MW-3A, MW-4, MW-5, and MW-6. A time series plot of the lithium concentrations at the downgradient wells is provided in Figure G1. These results are consistent with the 2019 and 2020 analyses.

Arsenic at MW-2 is very close to, but does not exceed, the GWPS of 0.01 mg/L. A time series plot of arsenic concentrations at the downgradient wells is provided in Figure G2. Arsenic concentrations at MWW-2 are highly variable, but do not show apparent trend. MW-2 is also characterized by an abnormally low redox potential and elevated iron concentrations up to 11.1 mg/L. This situation is not apparent in any of the other site monitoring wells. Nine paired arsenic and iron analyses from this well collected from June 2018 to September 2021 show a direct relationship between iron and arsenic concentrations with several arsenic concentrations being over the 0.01 mg/L US EPA MCL level. Geochemically, arsenic may be associated with iron oxyhydroxides and inclusion of ferric iron precipitates in samples may result in high arsenic sample results.

There were no GWPS exceedances for the MW-104 characterization well in 2021.

4.0 REFERENCES

American Society for Testing and Materials (ASTM), 2017, *Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities*. Designation D 6312-17.

Gibbons, R.D. 1994. *Statistical Methods in Ground-Water Monitoring*. John Wiley & Sons.

Gilbert, R.O., 1987, Statistical Methods for Environmental Pollution Monitoring: Van Nostrand Reinhold, New York, 320p.

US EPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*. Office of Solid Waste Management Division, US EPA, Washington, DC.

-------, 1992, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities: Addendum to Interim Final Guidance,* Office of Solid Waste, Permits and State Programs Division, July.

-------, 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* Office of Resource Conservation and Recovery, Program Implementation and Information Division, March.

Tables

Table G1
2021 Annual Monitoring Report
BREC Green Landfill
Calculation of False Positive Rates

Row Number	*Number of Downgradient Stations (w)*	*Number of Constituents (c)*	*Number of Annual Evaluations (n_E)*	*Number of Annual Comparisons ($r = w \times c \times n_E$)*	*Target Annual False Positive Rate (α^*)*	*Retest Strategy (1 of m)*	*Individual Comparison False Positive Rate (α)*
1	5	21	2	210	0.88	1	0.01005
2	5	21	2	210	0.1	1	0.00050
3	5	21	2	210	0.1	2	0.02240
4	5	21	2	210	0.1	3	0.07945

Table G2: 2021 Annual Monitoring Report, BREC Green Landfill, April 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Antimony (mg/L)	MW-2	0.00297	n/a	4/22/2021	0.001ND	No	15	MW-1	n/a	n/a	46.67	n/a	n/a	0.05591	NP Inter
Antimony (mg/L)	MW-3A	0.00297	n/a	4/22/2021	0.001ND	No	15	MW-1	n/a	n/a	46.67	n/a	n/a	0.05591	NP Inter
Antimony (mg/L)	MW-4	0.00297	n/a	4/22/2021	0.001ND	No	15	MW-1	n/a	n/a	46.67	n/a	n/a	0.05591	NP Inter
Antimony (mg/L)	MW-5	0.00297	n/a	4/22/2021	0.001ND	No	15	MW-1	n/a	n/a	46.67	n/a	n/a	0.05591	NP Inter
Antimony (mg/L)	MW-6	0.00297	n/a	4/22/2021	0.001ND	No	15	MW-1	n/a	n/a	46.67	n/a	n/a	0.05591	NP Inter
Arsenic (mg/L)	**MW-2**	**0.003226**	**n/a**	**4/22/2021**	**0.0259**	**Yes**	**16**	**MW-1**	**-7.225**	**0.6594**	**6.25**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Arsenic (mg/L)	MW-3A	0.003226	n/a	4/22/2021	0.0002ND	No	16	MW-1	-7.225	0.6594	6.25	None	ln(x)	0.0224	Param Inter
Arsenic (mg/L)	MW-4	0.003226	n/a	4/22/2021	0.0002ND	No	16	MW-1	-7.225	0.6594	6.25	None	ln(x)	0.0224	Param Inter
Arsenic (mg/L)	MW-5	0.003226	n/a	4/22/2021	0.0002ND	No	16	MW-1	-7.225	0.6594	6.25	None	ln(x)	0.0224	Param Inter
Arsenic (mg/L)	MW-6	0.003226	n/a	4/22/2021	0.0002ND	No	16	MW-1	-7.225	0.6594	6.25	None	ln(x)	0.0224	Param Inter
Barium (mg/L)	**MW-2**	**0.1002**	**n/a**	**4/22/2021**	**0.363**	**Yes**	**16**	**MW-1**	**0.08213**	**0.008027**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Barium (mg/L)	MW-3A	0.1002	n/a	4/22/2021	0.042	No	16	MW-1	0.08213	0.008027	0	None	No	0.0224	Param Inter
Barium (mg/L)	MW-4	0.1002	n/a	4/22/2021	0.029	No	16	MW-1	0.08213	0.008027	0	None	No	0.0224	Param Inter
Barium (mg/L)	MW-5	0.1002	n/a	4/22/2021	0.014	No	16	MW-1	0.08213	0.008027	0	None	No	0.0224	Param Inter
Barium (mg/L)	MW-6	0.1002	n/a	4/22/2021	0.014	No	16	MW-1	0.08213	0.008027	0	None	No	0.0224	Param Inter
Beryllium (mg/L)	MW-2	0.000533	n/a	4/22/2021	0.0005ND	No	14	MW-1	n/a	n/a	92.86	n/a	n/a	0.05925	NP Inter (NDs)
Beryllium (mg/L)	MW-3A	0.000533	n/a	4/22/2021	0.0005ND	No	14	MW-1	n/a	n/a	92.86	n/a	n/a	0.05925	NP Inter (NDs)
Beryllium (mg/L)	MW-4	0.000533	n/a	4/22/2021	0.0005ND	No	14	MW-1	n/a	n/a	92.86	n/a	n/a	0.05925	NP Inter (NDs)
Beryllium (mg/L)	MW-5	0.000533	n/a	4/22/2021	0.0005ND	No	14	MW-1	n/a	n/a	92.86	n/a	n/a	0.05925	NP Inter (NDs)
Beryllium (mg/L)	MW-6	0.000533	n/a	4/22/2021	0.0005ND	No	14	MW-1	n/a	n/a	92.86	n/a	n/a	0.05925	NP Inter (NDs)
Boron (mg/L)	MW-2	2.176	n/a	4/22/2021	0.05ND	No	17	MW-1	1.731	0.1984	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-3A	2.176	n/a	4/22/2021	0.25	No	17	MW-1	1.731	0.1984	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-4	2.176	n/a	4/22/2021	1.38	No	17	MW-1	1.731	0.1984	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-5	2.176	n/a	4/22/2021	0.24	No	17	MW-1	1.731	0.1984	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-6	2.176	n/a	4/22/2021	0.18	No	17	MW-1	1.731	0.1984	0	None	No	0.0224	Param Inter
Cadmium (mg/L)	MW-2	0.000299	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Cadmium (mg/L)	MW-3A	0.000299	n/a	4/22/2021	0.0002	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Cadmium (mg/L)	MW-4	0.000299	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Cadmium (mg/L)	**MW-5**	**0.000299**	**n/a**	**4/22/2021**	**0.0006**	**Yes**	**15**	**MW-1**	**n/a**	**n/a**	**86.67**	**n/a**	**n/a**	**0.05591**	**NP Inter (NDs)**
Cadmium (mg/L)	MW-6	0.000299	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Calcium (mg/L)	**MW-2**	**34.19**	**n/a**	**4/22/2021**	**179**	**Yes**	**16**	**MW-1**	**29.28**	**2.176**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-3A**	**34.19**	**n/a**	**4/22/2021**	**431**	**Yes**	**16**	**MW-1**	**29.28**	**2.176**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-4**	**34.19**	**n/a**	**4/22/2021**	**764**	**Yes**	**16**	**MW-1**	**29.28**	**2.176**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-5**	**34.19**	**n/a**	**4/22/2021**	**498**	**Yes**	**16**	**MW-1**	**29.28**	**2.176**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-6**	**34.19**	**n/a**	**4/22/2021**	**376**	**Yes**	**16**	**MW-1**	**29.28**	**2.176**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-2**	**8.671**	**n/a**	**4/22/2021**	**264**	**Yes**	**16**	**MW-1**	**6.146**	**1.119**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-3A**	**8.671**	**n/a**	**4/22/2021**	**3500**	**Yes**	**16**	**MW-1**	**6.146**	**1.119**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-4**	**8.671**	**n/a**	**4/22/2021**	**2470**	**Yes**	**16**	**MW-1**	**6.146**	**1.119**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-5**	**8.671**	**n/a**	**4/22/2021**	**2080**	**Yes**	**16**	**MW-1**	**6.146**	**1.119**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-6**	**8.671**	**n/a**	**4/22/2021**	**276**	**Yes**	**16**	**MW-1**	**6.146**	**1.119**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chromium (mg/L)	MW-2	0.00354	n/a	4/22/2021	0.0003ND	No	15	MW-1	n/a	n/a	66.67	n/a	n/a	0.05591	NP Inter (NDs)
Chromium (mg/L)	MW-3A	0.00354	n/a	4/22/2021	0.0003ND	No	15	MW-1	n/a	n/a	66.67	n/a	n/a	0.05591	NP Inter (NDs)
Chromium (mg/L)	MW-4	0.00354	n/a	4/22/2021	0.0003ND	No	15	MW-1	n/a	n/a	66.67	n/a	n/a	0.05591	NP Inter (NDs)
Chromium (mg/L)	MW-5	0.00354	n/a	4/22/2021	0.0003ND	No	15	MW-1	n/a	n/a	66.67	n/a	n/a	0.05591	NP Inter (NDs)
Chromium (mg/L)	MW-6	0.00354	n/a	4/22/2021	0.0006	No	15	MW-1	n/a	n/a	66.67	n/a	n/a	0.05591	NP Inter (NDs)

Table G2: 2021 Annual Monitoring Report, BREC Green Landfill, April 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Cobalt (mg/L)	MW-2	0.002289	n/a	4/22/2021	0.002ND	No	14	MW-1	-7.365	0.5596	28.57	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-3A	0.002289	n/a	4/22/2021	0.002ND	No	14	MW-1	-7.365	0.5596	28.57	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-4	0.002289	n/a	4/22/2021	0.002ND	No	14	MW-1	-7.365	0.5596	28.57	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-5	0.002289	n/a	4/22/2021	0.002ND	No	14	MW-1	-7.365	0.5596	28.57	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-6	0.002289	n/a	4/22/2021	0.002ND	No	14	MW-1	-7.365	0.5596	28.57	Kaplan-Meier	ln(x)	0.0224	Param Inter
Fluoride (mg/L)	MW-2	0.6571	n/a	4/22/2021	0.2	No	15	MW-1	0.5484	0.04776	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-3A	0.6571	n/a	4/22/2021	0.4	No	15	MW-1	0.5484	0.04776	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-4	0.6571	n/a	4/22/2021	0.2	No	15	MW-1	0.5484	0.04776	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-5	0.6571	n/a	4/22/2021	0.2	No	15	MW-1	0.5484	0.04776	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-6	0.6571	n/a	4/22/2021	0.4	No	15	MW-1	0.5484	0.04776	0	None	No	0.0224	Param Inter
Lead (mg/L)	MW-2	0.000279	n/a	4/22/2021	0.00025ND	No	15	MW-1	n/a	n/a	60	n/a	n/a	0.05591	NP Inter (NDs)
Lead (mg/L)	MW-3A	0.000279	n/a	4/22/2021	0.00025ND	No	15	MW-1	n/a	n/a	60	n/a	n/a	0.05591	NP Inter (NDs)
Lead (mg/L)	MW-4	0.000279	n/a	4/22/2021	0.00025ND	No	15	MW-1	n/a	n/a	60	n/a	n/a	0.05591	NP Inter (NDs)
Lead (mg/L)	MW-5	0.000279	n/a	4/22/2021	0.00025ND	No	15	MW-1	n/a	n/a	60	n/a	n/a	0.05591	NP Inter (NDs)
Lead (mg/L)	MW-6	0.000279	n/a	4/22/2021	0.00025ND	No	15	MW-1	n/a	n/a	60	n/a	n/a	0.05591	NP Inter (NDs)
Lithium (mg/L)	MW-2	0.03833	n/a	4/22/2021	0.006	No	16	MW-1	0.0305	0.003468	12.5	None	No	0.0224	Param Inter
Lithium (mg/L)	**MW-3A**	**0.03833**	**n/a**	**4/22/2021**	**0.74**	**Yes**	**16**	**MW-1**	**0.0305**	**0.003468**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Lithium (mg/L)	**MW-4**	**0.03833**	**n/a**	**4/22/2021**	**1.44**	**Yes**	**16**	**MW-1**	**0.0305**	**0.003468**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Lithium (mg/L)	**MW-5**	**0.03833**	**n/a**	**4/22/2021**	**0.39**	**Yes**	**16**	**MW-1**	**0.0305**	**0.003468**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Lithium (mg/L)	**MW-6**	**0.03833**	**n/a**	**4/22/2021**	**0.05**	**Yes**	**16**	**MW-1**	**0.0305**	**0.003468**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Mercury (ug/L)	MW-2	0.2	n/a	4/22/2021	0.1ND	No	16	MW-1	n/a	n/a	100	n/a	n/a	0.05293	NP Inter (NDs)
Mercury (ug/L)	MW-3A	0.2	n/a	4/22/2021	0.1ND	No	16	MW-1	n/a	n/a	100	n/a	n/a	0.05293	NP Inter (NDs)
Mercury (ug/L)	**MW-4**	**0.2**	**n/a**	**4/22/2021**	**0.4**	**Yes**	**16**	**MW-1**	**n/a**	**n/a**	**100**	**n/a**	**n/a**	**0.05293**	**NP Inter (NDs)**
Mercury (ug/L)	MW-5	0.2	n/a	4/22/2021	0.1ND	No	16	MW-1	n/a	n/a	100	n/a	n/a	0.05293	NP Inter (NDs)
Mercury (ug/L)	MW-6	0.2	n/a	4/22/2021	0.1ND	No	16	MW-1	n/a	n/a	100	n/a	n/a	0.05293	NP Inter (NDs)
Molybdenum (mg/L)	**MW-2**	**0.001903**	**n/a**	**4/22/2021**	**0.003**	**Yes**	**15**	**MW-1**	**0.001248**	**0.0002882**	**40**	**Kaplan-Meier**	**No**	**0.0224**	**Param Inter**
Molybdenum (mg/L)	MW-3A	0.001903	n/a	4/22/2021	0.001ND	No	15	MW-1	0.001248	0.0002882	40	Kaplan-Meier	No	0.0224	Param Inter
Molybdenum (mg/L)	MW-4	0.001903	n/a	4/22/2021	0.001ND	No	15	MW-1	0.001248	0.0002882	40	Kaplan-Meier	No	0.0224	Param Inter
Molybdenum (mg/L)	MW-5	0.001903	n/a	4/22/2021	0.001ND	No	15	MW-1	0.001248	0.0002882	40	Kaplan-Meier	No	0.0224	Param Inter
Molybdenum (mg/L)	MW-6	0.001903	n/a	4/22/2021	0.001ND	No	15	MW-1	0.001248	0.0002882	40	Kaplan-Meier	No	0.0224	Param Inter
pH [Field] (SU)	**MW-2**	**7.843**	**6.697**	**4/22/2021**	**6.69**	**Yes**	**16**	**MW-1**	**7.27**	**0.2183**	**0**	**None**	**No**	**0.0112**	**Param Inter**
pH [Field] (SU)	MW-3A	7.843	6.697	4/22/2021	7.26	No	16	MW-1	7.27	0.2183	0	None	No	0.0112	Param Inter
pH [Field] (SU)	MW-4	7.843	6.697	4/22/2021	7.12	No	16	MW-1	7.27	0.2183	0	None	No	0.0112	Param Inter
pH [Field] (SU)	MW-5	7.843	6.697	4/22/2021	6.92	No	16	MW-1	7.27	0.2183	0	None	No	0.0112	Param Inter
pH [Field] (SU)	MW-6	7.843	6.697	4/22/2021	6.72	No	16	MW-1	7.27	0.2183	0	None	No	0.0112	Param Inter
Radium 226 + 228 (pCi/L)	MW-2	1.801	n/a	4/22/2021	1.26	No	15	MW-1	-0.2609	0.3731	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-3A	1.801	n/a	4/22/2021	1.475	No	15	MW-1	-0.2609	0.3731	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-4	1.801	n/a	4/22/2021	0.982	No	15	MW-1	-0.2609	0.3731	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-5	1.801	n/a	4/22/2021	1.24	No	15	MW-1	-0.2609	0.3731	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-6	1.801	n/a	4/22/2021	0.674	No	15	MW-1	-0.2609	0.3731	0	None	ln(x)	0.0224	Param Inter

Table G2: 2021 Annual Monitoring Report, BREC Green Landfill, April 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Selenium (mg/L)	MW-2	0.00105	n/a	4/22/2021	0.0005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Selenium (mg/L)	MW-3A	0.00105	n/a	4/22/2021	0.0005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Selenium (mg/L)	**MW-4**	**0.00105**	**n/a**	**4/22/2021**	**0.003**	**Yes**	**15**	**MW-1**	**n/a**	**n/a**	**86.67**	**n/a**	**n/a**	**0.05591**	**NP Inter (NDs)**
Selenium (mg/L)	MW-5	0.00105	n/a	4/22/2021	0.0005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Selenium (mg/L)	MW-6	0.00105	n/a	4/22/2021	0.0005ND	No	15	MW-1	n/a	n/a	86.67	n/a	n/a	0.05591	NP Inter (NDs)
Sulfate (mg/L)	**MW-2**	**33.71**	**n/a**	**4/22/2021**	**199**	**Yes**	**16**	**MW-1**	**3.188**	**0.1462**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-3A**	**33.71**	**n/a**	**4/22/2021**	**2195**	**Yes**	**16**	**MW-1**	**3.188**	**0.1462**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-4**	**33.71**	**n/a**	**4/22/2021**	**2330**	**Yes**	**16**	**MW-1**	**3.188**	**0.1462**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-5**	**33.71**	**n/a**	**4/22/2021**	**3440**	**Yes**	**16**	**MW-1**	**3.188**	**0.1462**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-6**	**33.71**	**n/a**	**4/22/2021**	**3460**	**Yes**	**16**	**MW-1**	**3.188**	**0.1462**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Thallium (mg/L)	MW-2	0.000498	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	53.33	n/a	n/a	0.05591	NP Inter (NDs)
Thallium (mg/L)	MW-3A	0.000498	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	53.33	n/a	n/a	0.05591	NP Inter (NDs)
Thallium (mg/L)	MW-4	0.000498	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	53.33	n/a	n/a	0.05591	NP Inter (NDs)
Thallium (mg/L)	MW-5	0.000498	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	53.33	n/a	n/a	0.05591	NP Inter (NDs)
Thallium (mg/L)	MW-6	0.000498	n/a	4/22/2021	0.00005ND	No	15	MW-1	n/a	n/a	53.33	n/a	n/a	0.05591	NP Inter (NDs)
Total Dissolved Solids (mg/L)	**MW-2**	**652.5**	**n/a**	**4/22/2021**	**1040**	**Yes**	**14**	**MW-1**	**603.1**	**21.51**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-3A**	**652.5**	**n/a**	**4/22/2021**	**5930**	**Yes**	**14**	**MW-1**	**603.1**	**21.51**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-4**	**652.5**	**n/a**	**4/22/2021**	**5040**	**Yes**	**14**	**MW-1**	**603.1**	**21.51**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-5**	**652.5**	**n/a**	**4/22/2021**	**5000**	**Yes**	**14**	**MW-1**	**603.1**	**21.51**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-6**	**652.5**	**n/a**	**4/22/2021**	**5050**	**Yes**	**14**	**MW-1**	**603.1**	**21.51**	**0**	**None**	**No**	**0.0224**	**Param Inter**

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
Inter - Parametric interstation prediction limit
n/a - not applicable
ND - Compound not detected, preceding number is one-half the reporting limit.
NP Inter - Non-parametric interstation prediction limit. Text in parenthesis indicates reason for non-parametric determination, as follows.
NDs - background data contain too high a percentage of non-detect values.
Param - Parametric Prediction Limit

Table G3: 2021 Annual Monitoring Report, BREC Green Landfill, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Antimony (mg/L)	MW-2	0.00297	n/a	9/23/2021	0.001ND	No	16	MW-1	n/a	n/a	50	n/a	n/a	0.05293	NP Inter
Antimony (mg/L)	MW-3A	0.00297	n/a	9/23/2021	0.001ND	No	16	MW-1	n/a	n/a	50	n/a	n/a	0.05293	NP Inter
Antimony (mg/L)	MW-4	0.00297	n/a	9/23/2021	0.001ND	No	16	MW-1	n/a	n/a	50	n/a	n/a	0.05293	NP Inter
Antimony (mg/L)	MW-5	0.00297	n/a	9/23/2021	0.001ND	No	16	MW-1	n/a	n/a	50	n/a	n/a	0.05293	NP Inter
Antimony (mg/L)	MW-6	0.00297	n/a	9/23/2021	0.001ND	No	16	MW-1	n/a	n/a	50	n/a	n/a	0.05293	NP Inter
Arsenic (mg/L)	**MW-2**	**0.003322**	**n/a**	**9/23/2021**	**0.025**	**Yes**	**17**	**MW-1**	**-7.301**	**0.7113**	**11.76**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Arsenic (mg/L)	MW-3A	0.003322	n/a	9/23/2021	0.0002ND	No	17	MW-1	-7.301	0.7113	11.76	None	ln(x)	0.0224	Param Inter
Arsenic (mg/L)	MW-4	0.003322	n/a	9/23/2021	0.0002ND	No	17	MW-1	-7.301	0.7113	11.76	None	ln(x)	0.0224	Param Inter
Arsenic (mg/L)	MW-5	0.003322	n/a	9/23/2021	0.0002ND	No	17	MW-1	-7.301	0.7113	11.76	None	ln(x)	0.0224	Param Inter
Arsenic (mg/L)	MW-6	0.003322	n/a	9/23/2021	0.0002ND	No	17	MW-1	-7.301	0.7113	11.76	None	ln(x)	0.0224	Param Inter
Barium (mg/L)	**MW-2**	**0.09944**	**n/a**	**9/23/2021**	**0.329**	**Yes**	**17**	**MW-1**	**0.08188**	**0.007837**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Barium (mg/L)	MW-3A	0.09944	n/a	9/23/2021	0.045	No	17	MW-1	0.08188	0.007837	0	None	No	0.0224	Param Inter
Barium (mg/L)	MW-4	0.09944	n/a	9/23/2021	0.03	No	17	MW-1	0.08188	0.007837	0	None	No	0.0224	Param Inter
Barium (mg/L)	MW-5	0.09944	n/a	9/23/2021	0.0135	No	17	MW-1	0.08188	0.007837	0	None	No	0.0224	Param Inter
Barium (mg/L)	MW-6	0.09944	n/a	9/23/2021	0.009	No	17	MW-1	0.08188	0.007837	0	None	No	0.0224	Param Inter
Beryllium (mg/L)	MW-2	0.000533	n/a	9/23/2021	0.0005ND	No	15	MW-1	n/a	n/a	93.33	n/a	n/a	0.05591	NP Inter (NDs)
Beryllium (mg/L)	MW-3A	0.000533	n/a	9/23/2021	0.0005ND	No	15	MW-1	n/a	n/a	93.33	n/a	n/a	0.05591	NP Inter (NDs)
Beryllium (mg/L)	MW-4	0.000533	n/a	9/23/2021	0.0005ND	No	15	MW-1	n/a	n/a	93.33	n/a	n/a	0.05591	NP Inter (NDs)
Beryllium (mg/L)	MW-5	0.000533	n/a	9/23/2021	0.0005ND	No	15	MW-1	n/a	n/a	93.33	n/a	n/a	0.05591	NP Inter (NDs)
Beryllium (mg/L)	MW-6	0.000533	n/a	9/23/2021	0.0005ND	No	15	MW-1	n/a	n/a	93.33	n/a	n/a	0.05591	NP Inter (NDs)
Boron (mg/L)	MW-2	2.158	n/a	9/23/2021	0.05ND	No	18	MW-1	1.728	0.1929	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-3A	2.158	n/a	9/23/2021	0.37	No	18	MW-1	1.728	0.1929	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-4	2.158	n/a	9/23/2021	1.43	No	18	MW-1	1.728	0.1929	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-5	2.158	n/a	9/23/2021	0.23	No	18	MW-1	1.728	0.1929	0	None	No	0.0224	Param Inter
Boron (mg/L)	MW-6	2.158	n/a	9/23/2021	0.18	No	18	MW-1	1.728	0.1929	0	None	No	0.0224	Param Inter
Cadmium (mg/L)	MW-2	0.000299	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Cadmium (mg/L)	MW-3A	0.000299	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Cadmium (mg/L)	MW-4	0.000299	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Cadmium (mg/L)	MW-5	0.000299	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Cadmium (mg/L)	MW-6	0.000299	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Calcium (mg/L)	**MW-2**	**34.08**	**n/a**	**9/23/2021**	**193**	**Yes**	**17**	**MW-1**	**29.11**	**2.219**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-3A**	**34.08**	**n/a**	**9/23/2021**	**483**	**Yes**	**17**	**MW-1**	**29.11**	**2.219**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-4**	**34.08**	**n/a**	**9/23/2021**	**841**	**Yes**	**17**	**MW-1**	**29.11**	**2.219**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-5**	**34.08**	**n/a**	**9/23/2021**	**465**	**Yes**	**17**	**MW-1**	**29.11**	**2.219**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Calcium (mg/L)	**MW-6**	**34.08**	**n/a**	**9/23/2021**	**417**	**Yes**	**17**	**MW-1**	**29.11**	**2.219**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-2**	**8.576**	**n/a**	**9/23/2021**	**301**	**Yes**	**17**	**MW-1**	**6.149**	**1.083**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-3A**	**8.576**	**n/a**	**9/23/2021**	**1780**	**Yes**	**17**	**MW-1**	**6.149**	**1.083**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-4**	**8.576**	**n/a**	**9/23/2021**	**1910**	**Yes**	**17**	**MW-1**	**6.149**	**1.083**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-5**	**8.576**	**n/a**	**9/23/2021**	**2255**	**Yes**	**17**	**MW-1**	**6.149**	**1.083**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chloride (mg/L)	**MW-6**	**8.576**	**n/a**	**9/23/2021**	**130**	**Yes**	**17**	**MW-1**	**6.149**	**1.083**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Chromium (mg/L)	MW-2	0.00354	n/a	9/23/2021	0.0003ND	No	16	MW-1	n/a	n/a	68.75	n/a	n/a	0.05293	NP Inter (NDs)
Chromium (mg/L)	MW-3A	0.00354	n/a	9/23/2021	0.0003ND	No	16	MW-1	n/a	n/a	68.75	n/a	n/a	0.05293	NP Inter (NDs)
Chromium (mg/L)	MW-4	0.00354	n/a	9/23/2021	0.0003ND	No	16	MW-1	n/a	n/a	68.75	n/a	n/a	0.05293	NP Inter (NDs)
Chromium (mg/L)	MW-5	0.00354	n/a	9/23/2021	0.0003ND	No	16	MW-1	n/a	n/a	68.75	n/a	n/a	0.05293	NP Inter (NDs)
Chromium (mg/L)	MW-6	0.00354	n/a	9/23/2021	0.0006	No	16	MW-1	n/a	n/a	68.75	n/a	n/a	0.05293	NP Inter (NDs)

Table G3: 2021 Annual Monitoring Report, BREC Green Landfill, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Cobalt (mg/L)	MW-2	0.002261	n/a	9/23/2021	0.002ND	No	15	MW-1	-7.365	0.5596	33.33	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-3A	0.002261	n/a	9/23/2021	0.002ND	No	15	MW-1	-7.365	0.5596	33.33	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-4	0.002261	n/a	9/23/2021	0.002ND	No	15	MW-1	-7.365	0.5596	33.33	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-5	0.002261	n/a	9/23/2021	0.002ND	No	15	MW-1	-7.365	0.5596	33.33	Kaplan-Meier	ln(x)	0.0224	Param Inter
Cobalt (mg/L)	MW-6	0.002261	n/a	9/23/2021	0.002ND	No	15	MW-1	-7.365	0.5596	33.33	Kaplan-Meier	ln(x)	0.0224	Param Inter
Fluoride (mg/L)	MW-2	0.6597	n/a	9/23/2021	0.3	No	16	MW-1	0.5516	0.04791	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-3A	0.6597	n/a	9/23/2021	0.1ND	No	16	MW-1	0.5516	0.04791	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-4	0.6597	n/a	9/23/2021	0.1ND	No	16	MW-1	0.5516	0.04791	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-5	0.6597	n/a	9/23/2021	0.15	No	16	MW-1	0.5516	0.04791	0	None	No	0.0224	Param Inter
Fluoride (mg/L)	MW-6	0.6597	n/a	9/23/2021	0.1ND	No	16	MW-1	0.5516	0.04791	0	None	No	0.0224	Param Inter
Lead (mg/L)	MW-2	0.000279	n/a	9/23/2021	0.00025ND	No	16	MW-1	n/a	n/a	62.5	n/a	n/a	0.05293	NP Inter (NDs)
Lead (mg/L)	MW-3A	0.000279	n/a	9/23/2021	0.00025ND	No	16	MW-1	n/a	n/a	62.5	n/a	n/a	0.05293	NP Inter (NDs)
Lead (mg/L)	MW-4	0.000279	n/a	9/23/2021	0.00025ND	No	16	MW-1	n/a	n/a	62.5	n/a	n/a	0.05293	NP Inter (NDs)
Lead (mg/L)	MW-5	0.000279	n/a	9/23/2021	0.00025ND	No	16	MW-1	n/a	n/a	62.5	n/a	n/a	0.05293	NP Inter (NDs)
Lead (mg/L)	MW-6	0.000279	n/a	9/23/2021	0.00025ND	No	16	MW-1	n/a	n/a	62.5	n/a	n/a	0.05293	NP Inter (NDs)
Lithium (mg/L)	MW-2	0.03549	n/a	9/23/2021	0.006	No	16	MW-1	0.0299	0.002478	12.5	None	No	0.0224	Param Inter
Lithium (mg/L)	**MW-3A**	**0.03549**	**n/a**	**9/23/2021**	**0.76**	**Yes**	**16**	**MW-1**	**0.0299**	**0.002478**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Lithium (mg/L)	**MW-4**	**0.03549**	**n/a**	**9/23/2021**	**1.44**	**Yes**	**16**	**MW-1**	**0.0299**	**0.002478**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Lithium (mg/L)	**MW-5**	**0.03549**	**n/a**	**9/23/2021**	**0.34**	**Yes**	**16**	**MW-1**	**0.0299**	**0.002478**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Lithium (mg/L)	**MW-6**	**0.03549**	**n/a**	**9/23/2021**	**0.04**	**Yes**	**16**	**MW-1**	**0.0299**	**0.002478**	**12.5**	**None**	**No**	**0.0224**	**Param Inter**
Mercury (ug/L)	MW-2	0.2	n/a	9/23/2021	0.1ND	No	17	MW-1	n/a	n/a	100	n/a	n/a	0.05026	NP Inter (NDs)
Mercury (ug/L)	MW-3A	0.2	n/a	9/23/2021	0.1ND	No	17	MW-1	n/a	n/a	100	n/a	n/a	0.05026	NP Inter (NDs)
Mercury (ug/L)	MW-4	0.2	n/a	9/23/2021	0.2	No	17	MW-1	n/a	n/a	100	n/a	n/a	0.05026	NP Inter (NDs)
Mercury (ug/L)	MW-5	0.2	n/a	9/23/2021	0.1ND	No	17	MW-1	n/a	n/a	100	n/a	n/a	0.05026	NP Inter (NDs)
Mercury (ug/L)	MW-6	0.2	n/a	9/23/2021	0.1ND	No	17	MW-1	n/a	n/a	100	n/a	n/a	0.05026	NP Inter (NDs)
Molybdenum (mg/L)	**MW-2**	**0.001898**	**n/a**	**9/23/2021**	**0.002**	**Yes**	**16**	**MW-1**	**0.001248**	**0.0002882**	**43.75**	**Kaplan-Meier**	**No**	**0.0224**	**Param Inter**
Molybdenum (mg/L)	MW-3A	0.001898	n/a	9/23/2021	0.001ND	No	16	MW-1	0.001248	0.0002882	43.75	Kaplan-Meier	No	0.0224	Param Inter
Molybdenum (mg/L)	MW-4	0.001898	n/a	9/23/2021	0.001ND	No	16	MW-1	0.001248	0.0002882	43.75	Kaplan-Meier	No	0.0224	Param Inter
Molybdenum (mg/L)	MW-5	0.001898	n/a	9/23/2021	0.001ND	No	16	MW-1	0.001248	0.0002882	43.75	Kaplan-Meier	No	0.0224	Param Inter
Molybdenum (mg/L)	MW-6	0.001898	n/a	9/23/2021	0.001ND	No	16	MW-1	0.001248	0.0002882	43.75	Kaplan-Meier	No	0.0224	Param Inter
pH [Field] (SU)	**MW-2**	**7.82**	**6.721**	**9/23/2021**	**6.27**	**Yes**	**17**	**MW-1**	**7.271**	**0.2114**	**0**	**None**	**No**	**0.0112**	**Param Inter**
pH [Field] (SU)	MW-3A	7.82	6.721	9/23/2021	6.77	No	17	MW-1	7.271	0.2114	0	None	No	0.0112	Param Inter
pH [Field] (SU)	**MW-4**	**7.82**	**6.721**	**9/23/2021**	**6.17**	**Yes**	**17**	**MW-1**	**7.271**	**0.2114**	**0**	**None**	**No**	**0.0112**	**Param Inter**
pH [Field] (SU)	**MW-5**	**7.82**	**6.721**	**9/23/2021**	**6.67**	**Yes**	**17**	**MW-1**	**7.271**	**0.2114**	**0**	**None**	**No**	**0.0112**	**Param Inter**
pH [Field] (SU)	MW-6	7.82	6.721	9/23/2021	6.87	No	17	MW-1	7.271	0.2114	0	None	No	0.0112	Param Inter
Radium 226 + 228 (pCi/L)	MW-2	1.98	n/a	9/23/2021	0.591	No	16	MW-1	-0.218	0.3992	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-3A	1.98	n/a	9/23/2021	1.46	No	16	MW-1	-0.218	0.3992	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-4	1.98	n/a	9/23/2021	0.551	No	16	MW-1	-0.218	0.3992	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-5	1.98	n/a	9/23/2021	1.12	No	16	MW-1	-0.218	0.3992	0	None	ln(x)	0.0224	Param Inter
Radium 226 + 228 (pCi/L)	MW-6	1.98	n/a	9/23/2021	0.109	No	16	MW-1	-0.218	0.3992	0	None	ln(x)	0.0224	Param Inter
Selenium (mg/L)	MW-2	0.00105	n/a	9/23/2021	0.0005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Selenium (mg/L)	MW-3A	0.00105	n/a	9/23/2021	0.0005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Selenium (mg/L)	MW-4	0.00105	n/a	9/23/2021	0.0005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Selenium (mg/L)	MW-5	0.00105	n/a	9/23/2021	0.0005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)
Selenium (mg/L)	MW-6	0.00105	n/a	9/23/2021	0.0005ND	No	16	MW-1	n/a	n/a	87.5	n/a	n/a	0.05293	NP Inter (NDs)

Table G3: 2021 Annual Monitoring Report, BREC Green Landfill, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Sulfate (mg/L)	**MW-2**	**39.64**	**n/a**	**9/23/2021**	**205**	**Yes**	**18**	**MW-1**	**3.236**	**0.1996**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-3A**	**39.64**	**n/a**	**9/23/2021**	**2380**	**Yes**	**18**	**MW-1**	**3.236**	**0.1996**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-4**	**39.64**	**n/a**	**9/23/2021**	**1780**	**Yes**	**18**	**MW-1**	**3.236**	**0.1996**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-5**	**39.64**	**n/a**	**9/23/2021**	**1055**	**Yes**	**18**	**MW-1**	**3.236**	**0.1996**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Sulfate (mg/L)	**MW-6**	**39.64**	**n/a**	**9/23/2021**	**1620**	**Yes**	**18**	**MW-1**	**3.236**	**0.1996**	**0**	**None**	**ln(x)**	**0.0224**	**Param Inter**
Thallium (mg/L)	MW-2	0.000498	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	56.25	n/a	n/a	0.05293	NP Inter (NDs)
Thallium (mg/L)	MW-3A	0.000498	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	56.25	n/a	n/a	0.05293	NP Inter (NDs)
Thallium (mg/L)	MW-4	0.000498	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	56.25	n/a	n/a	0.05293	NP Inter (NDs)
Thallium (mg/L)	MW-5	0.000498	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	56.25	n/a	n/a	0.05293	NP Inter (NDs)
Thallium (mg/L)	MW-6	0.000498	n/a	9/23/2021	0.00005ND	No	16	MW-1	n/a	n/a	56.25	n/a	n/a	0.05293	NP Inter (NDs)
Total Dissolved Solids (mg/L)	**MW-2**	**650.3**	**n/a**	**9/23/2021**	**1070**	**Yes**	**15**	**MW-1**	**601.8**	**21.31**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-3A**	**650.3**	**n/a**	**9/23/2021**	**6490**	**Yes**	**15**	**MW-1**	**601.8**	**21.31**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-4**	**650.3**	**n/a**	**9/23/2021**	**5610**	**Yes**	**15**	**MW-1**	**601.8**	**21.31**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-5**	**650.3**	**n/a**	**9/23/2021**	**5630**	**Yes**	**15**	**MW-1**	**601.8**	**21.31**	**0**	**None**	**No**	**0.0224**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-6**	**650.3**	**n/a**	**9/23/2021**	**5080**	**Yes**	**15**	**MW-1**	**601.8**	**21.31**	**0**	**None**	**No**	**0.0224**	**Param Inter**

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
Inter - Parametric interstation prediction limit
n/a - not applicable
ND - Compound not detected, preceding number is one-half the reporting limit.
NP Inter - Non-parametric interstation prediction limit. Text in parenthesis indicates reason for non-parametric determination, as follows.
NDs - background data contain too high a percentage of non-detect values.
Param - Parametric Prediction Limit

Table G4: 2021 Annual Monitoring Report, BREC Green Landfill, April 2021 Comparison of 95% LCL to GWPS

Constituent Name	Well	Upper Limit	Lower Limit	GWPS	Exceeds	N	Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transform	Alpha	Method
Arsenic (mg/L)	MW-2	0.01742	0.008941	0.01	No	16	0.01638	0.01289	0	None	ln(x)	0.05	Param.
Barium (mg/L)	MW-2	0.362	0.28	2	No	16	0.3035	0.07218	0	None	No	0.05	NP (selected)
Cadmium (mg/L)	MW-5	0.000154	0.000057	0.005	No	15	0.0001097	0.0001379	86.67	None	No	0.05	NP (NDs)
Lithium (mg/L)	**MW-3A**	**0.766**	**0.678**	**0.04**	**Yes**	**16**	**0.7136**	**0.07244**	**0**	**None**	**No**	**0.05**	**NP (selected)**
Lithium (mg/L)	**MW-4**	**1.77**	**1.25**	**0.04**	**Yes**	**16**	**1.391**	**0.4964**	**6.25**	**None**	**No**	**0.05**	**NP (selected)**
Lithium (mg/L)	**MW-5**	**0.425**	**0.368**	**0.04**	**Yes**	**16**	**0.3886**	**0.08683**	**0**	**None**	**No**	**0.05**	**NP (selected)**
Lithium (mg/L)	**MW-6**	**0.05914**	**0.05321**	**0.04**	**Yes**	**16**	**0.05618**	**0.006754**	**0**	**None**	**No**	**0.05**	**Param.**
Mercury (ug/L)	MW-4	0.5423	0.341	2	No	16	0.4889	0.2493	0	None	ln(x)	0.05	Param.
Molybdenum (mg/L)	MW-2	0.002743	0.002359	0.1	No	15	0.002551	0.0004223	0	None	No	0.05	Param.
Selenium (mg/L)	MW-4	0.002128	0.0006489	0.05	No	15	0.00312	0.005886	40	Kaplan-Meier	ln(x)	0.05	Param.

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
NP - Non-parametric Confidence Limit
Param - Parametric Confidence Limit

Table G5: 2021 Annual Monitoring Report, BREC Green Landfill, September 2021 Comparison of 95% LCL to GWPS

Constituent Name	Well	Upper Limit	Lower Limit	GWPS	Exceeds	N	Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transform	Alpha	Method
Arsenic (mg/L)	MW-2	0.0179	0.009441	0.01	No	17	0.01689	0.01265	0	None	ln(x)	0.05	Param.
Barium (mg/L)	MW-2	0.362	0.28	2	No	17	0.305	0.07016	0	None	No	0.05	NP (selected)
Lithium (mg/L)	**MW-3A**	**0.766**	**0.678**	**0.04**	**Yes**	**17**	**0.7163**	**0.07104**	**0**	**None**	**No**	**0.05**	**NP (selected)**
Lithium (mg/L)	**MW-4**	**1.73**	**1.25**	**0.04**	**Yes**	**17**	**1.394**	**0.4808**	**5.882**	**None**	**No**	**0.05**	**NP (selected)**
Lithium (mg/L)	**MW-5**	**0.4217**	**0.3498**	**0.04**	**Yes**	**17**	**0.3857**	**0.0849**	**0**	**None**	**No**	**0.05**	**Param.**
Lithium (mg/L)	**MW-6**	**0.05845**	**0.05199**	**0.04**	**Yes**	**17**	**0.05522**	**0.007626**	**0**	**None**	**No**	**0.05**	**Param.**
Molybdenum (mg/L)	MW-2	0.002705	0.002328	0.1	No	16	0.002516	0.0004305	0	None	No	0.05	Param.

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
NP - Non-parametric Confidence Limit
Param - Parametric Confidence Limit

Figures

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Time Series

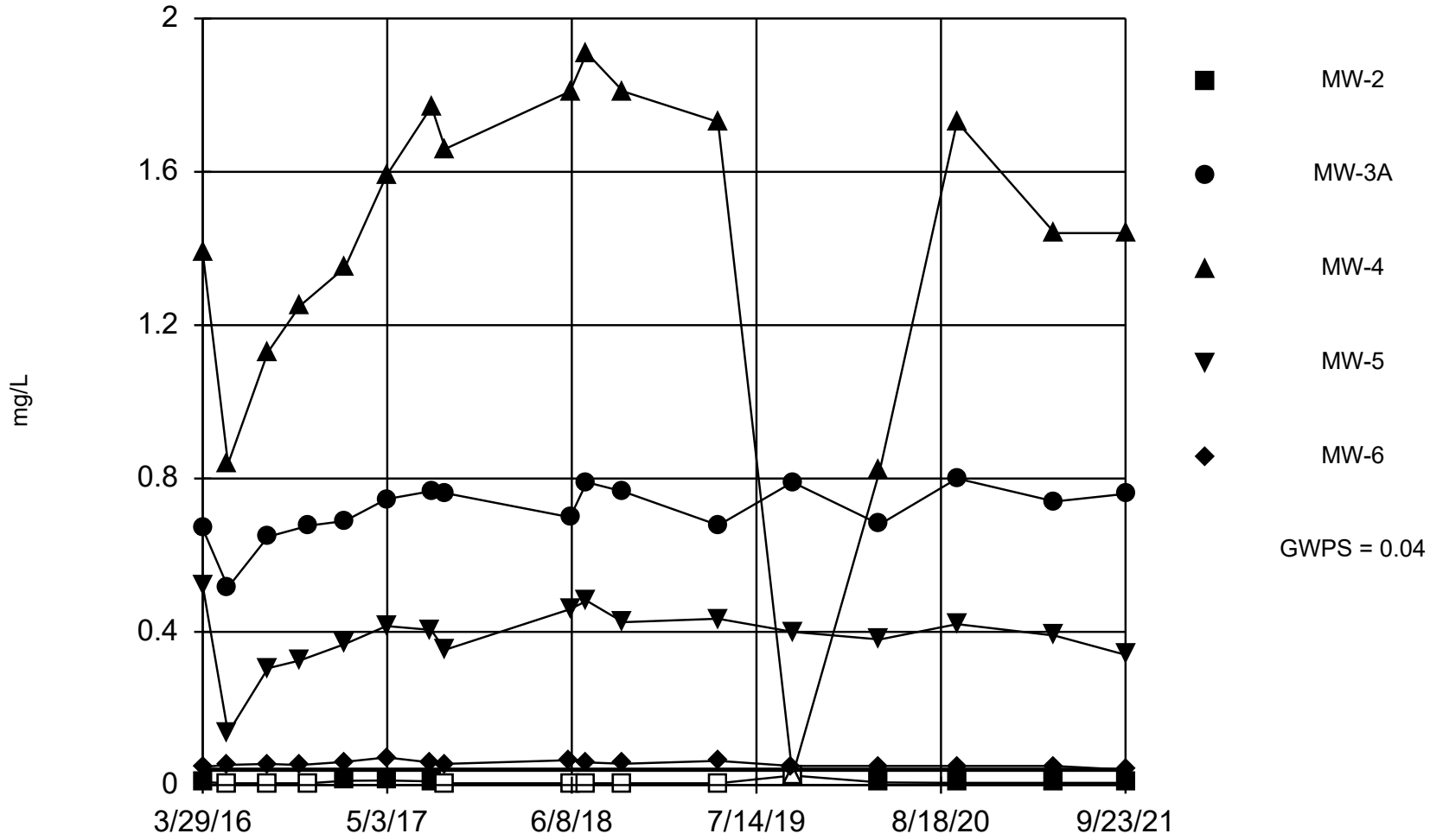


Figure G1

Constituent: Lithium Analysis Run 1/10/2022 2:44 PM

Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Time Series

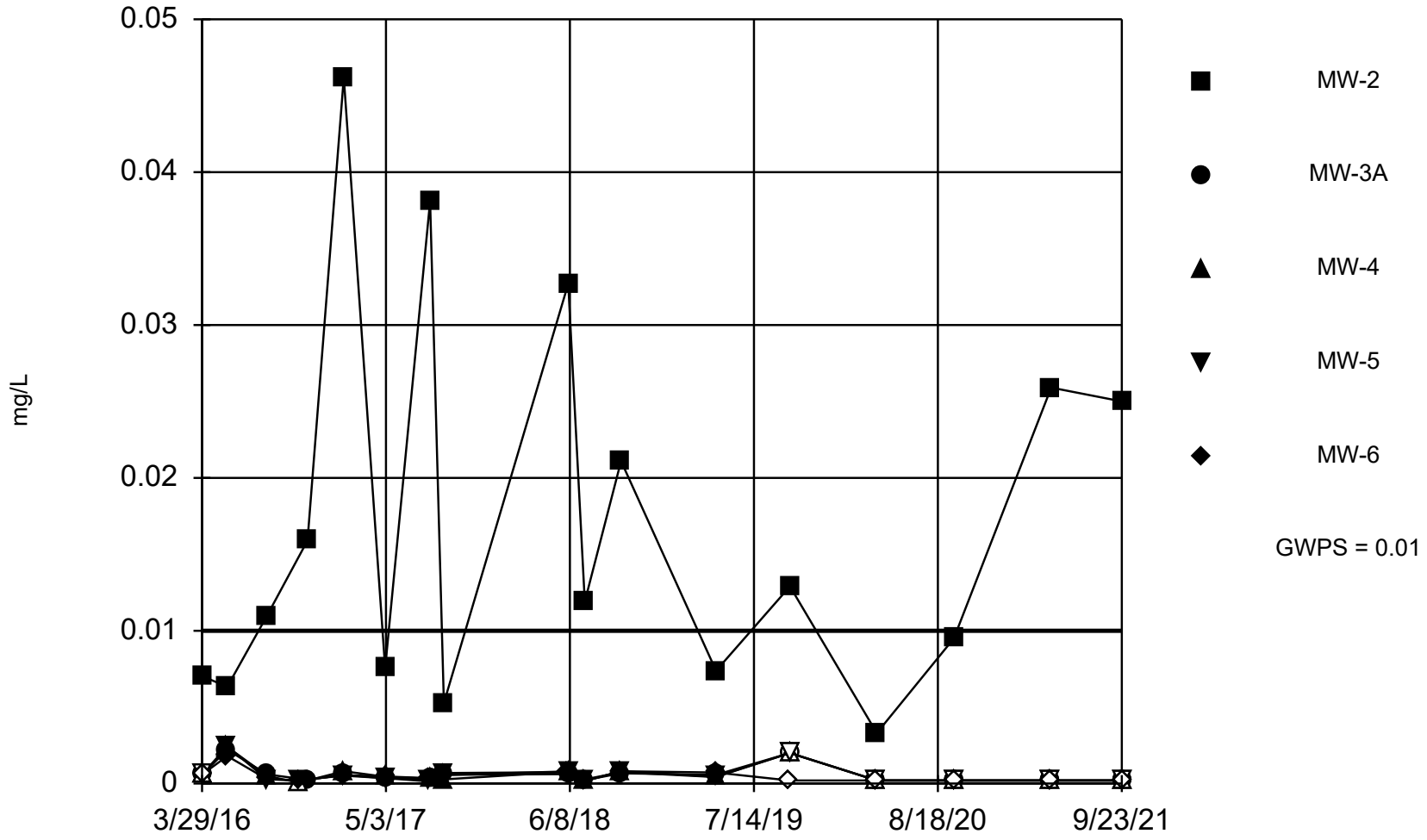


Figure G2

Constituent: Arsenic Analysis Run 1/10/2022 2:57 PM

Facility: BREC Green LF Data File: Green LF All Data

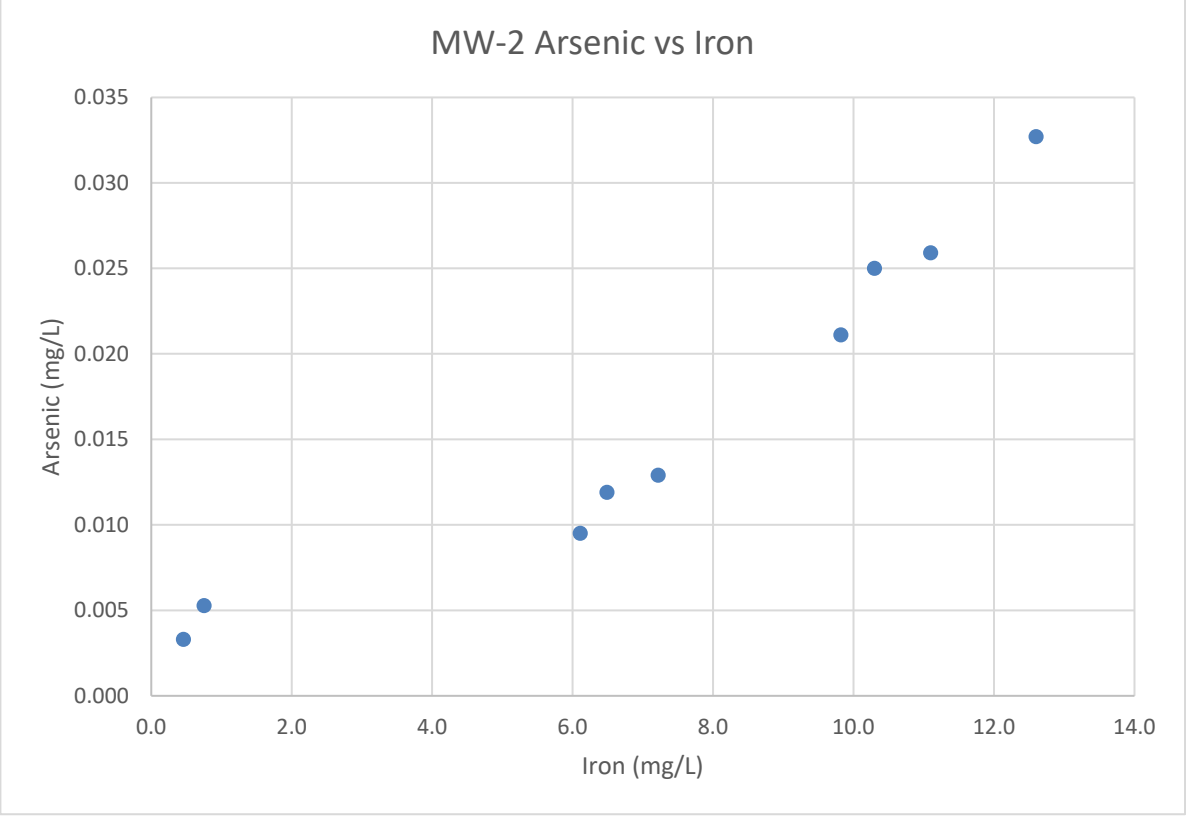
Figure G3. MW-2 Arsenic vs. Iron

Multiple-Constituent Time Series

Analysis Run 7/20/2021 1:53 PM

Facility: BREC Green LF Data File: Green LF All Data

	Arsenic (mg/L)	Iron (mg/L)
3/29/2016	0.0073	
5/23/2016	0.00633	
8/18/2016	0.011	
11/14/2016	0.0159	
2/1/2017	0.0462	
5/2/2017	0.00755	
8/8/2017	0.0381	
9/7/2017	0.00527	0.754
6/5/2018	0.0327	12.6
7/11/2018	0.0119	6.49
9/28/2018	0.0211	9.82
4/23/2019	0.00738	
10/1/2019	0.0129	7.22
4/7/2020	0.0033	0.459
9/22/2020	0.0095	6.11
4/22/2021	0.0259	11.1
9/23/2021	0.025	10.3



Attachment 1

April 2021 Time Series Plots

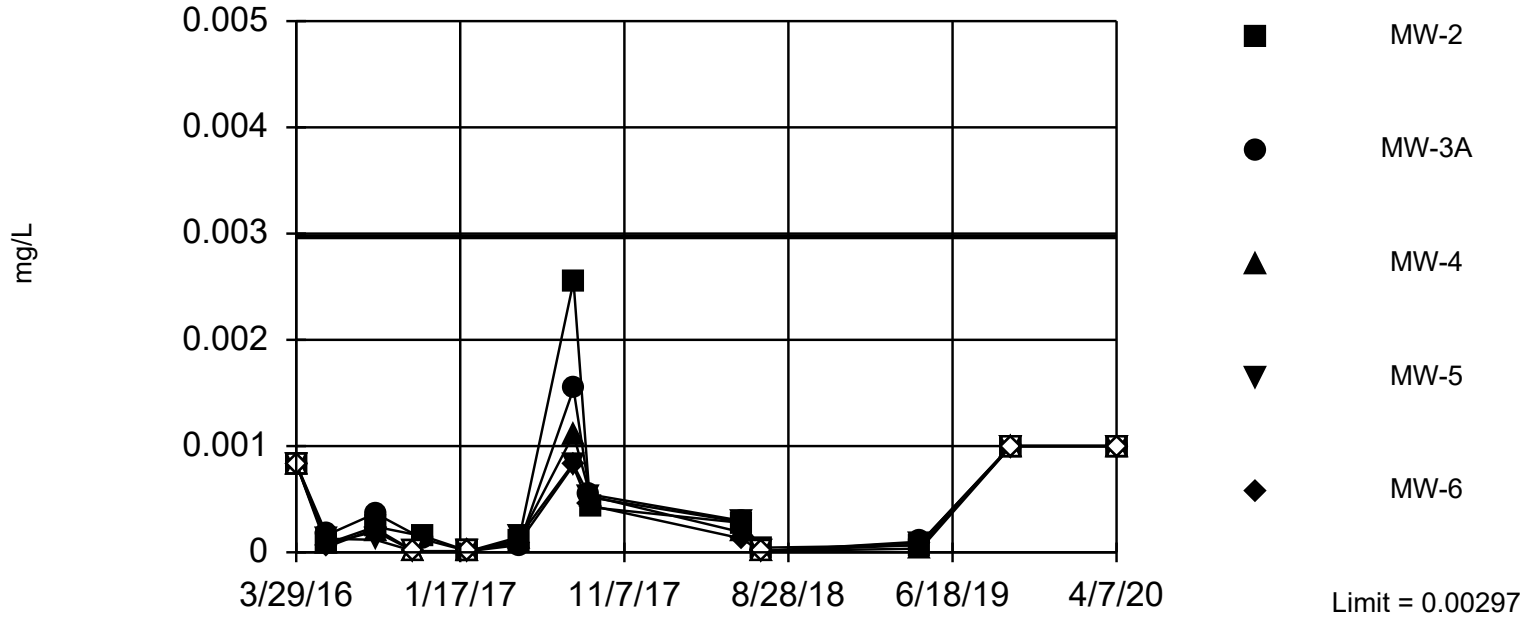
and Prediction Limit Results

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used after natural log transformation resulted in a parametric limit of 103.2, which exceeds 10 times the highest background value (user-adjustable cutoff). Limit is highest of 13 background values. 38.46% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Antimony Analysis Run 12/8/2020 10:44 AM

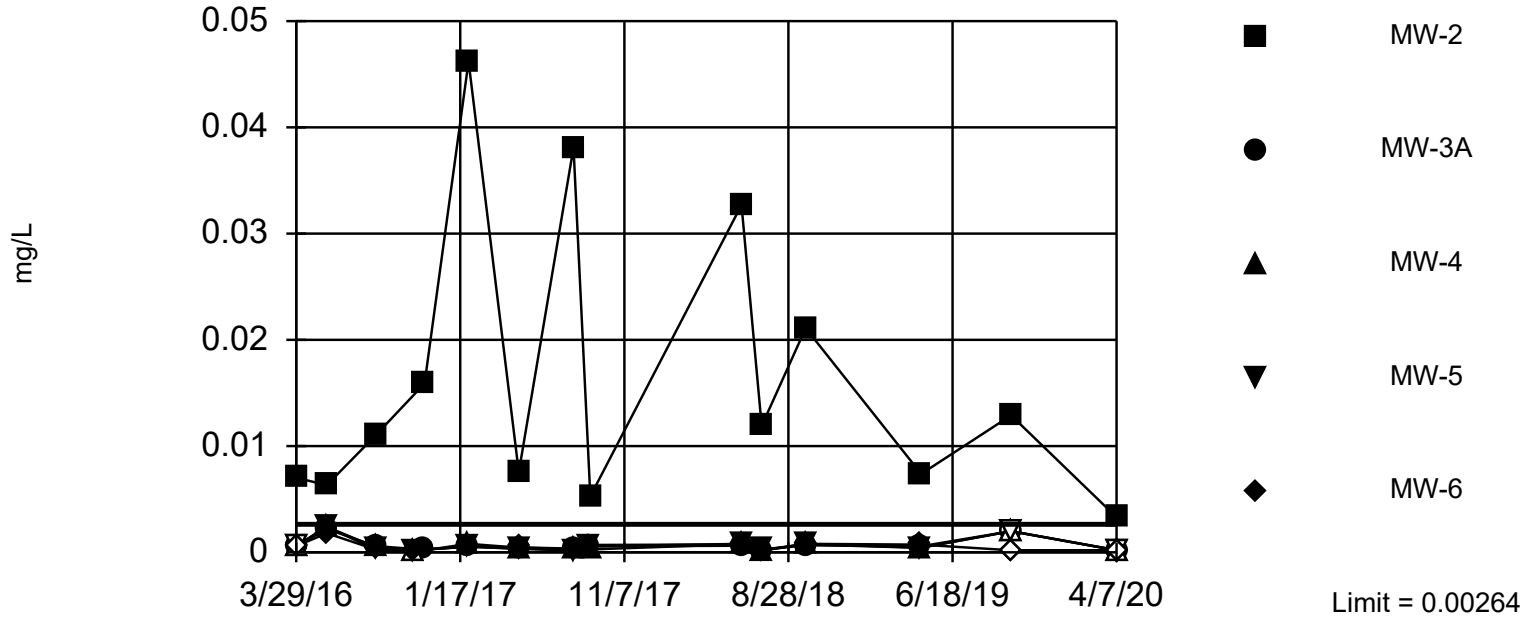
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 14 background values. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

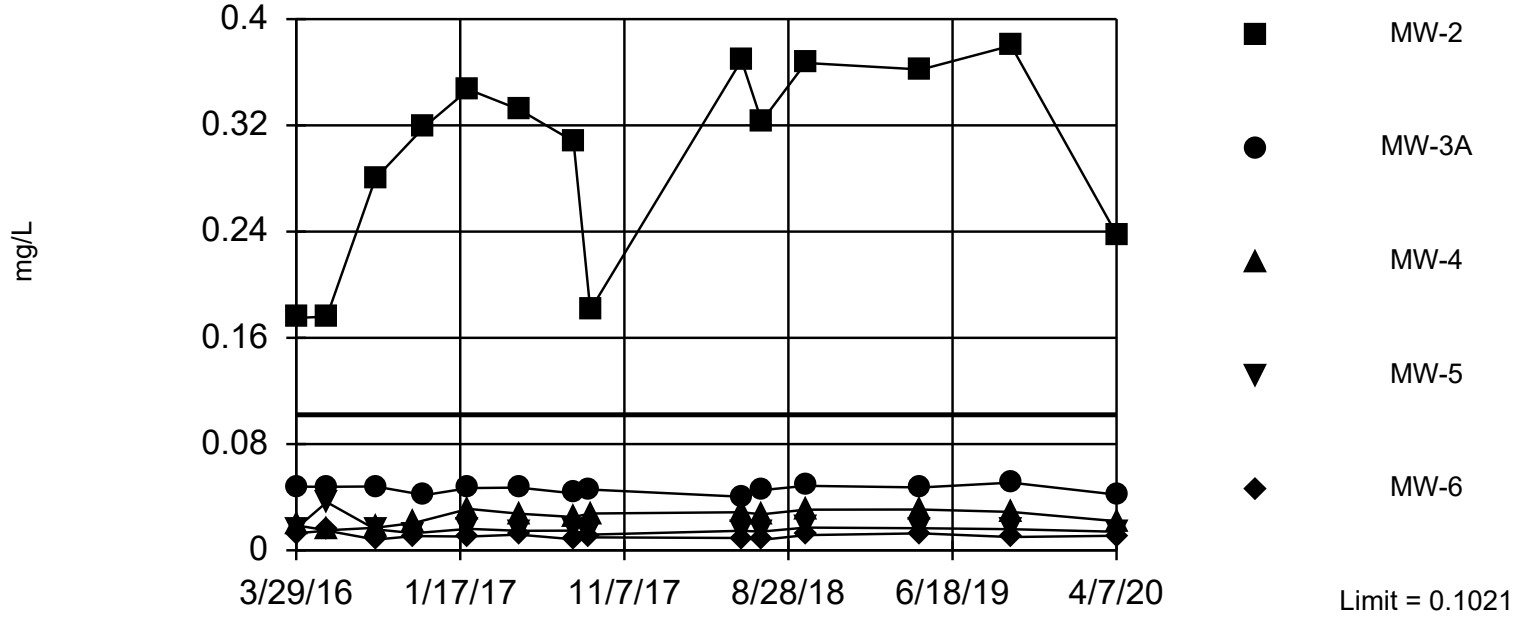
Constituent: Arsenic Analysis Run 12/8/2020 11:05 AM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.08257, Std. Dev.=0.008486, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Barium Analysis Run 12/8/2020 11:09 AM

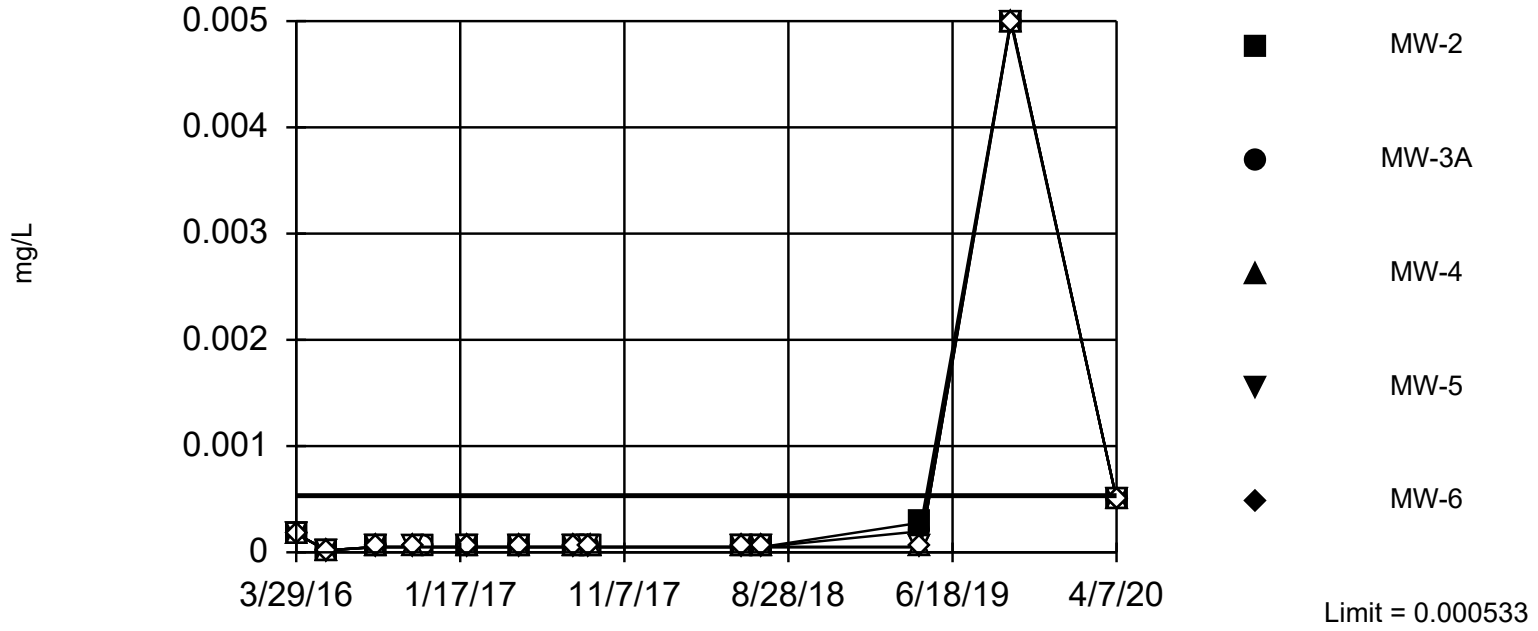
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 12 background values. 91.67% NDs. Report alpha = 0.2941. Individual comparison alpha = 0.06729. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. After outlier removal distribution was non-normal; user chose to continue. One background outlier was removed: <0.01 (9/30/2019).

Constituent: Beryllium Analysis Run 12/8/2020 11:36 AM

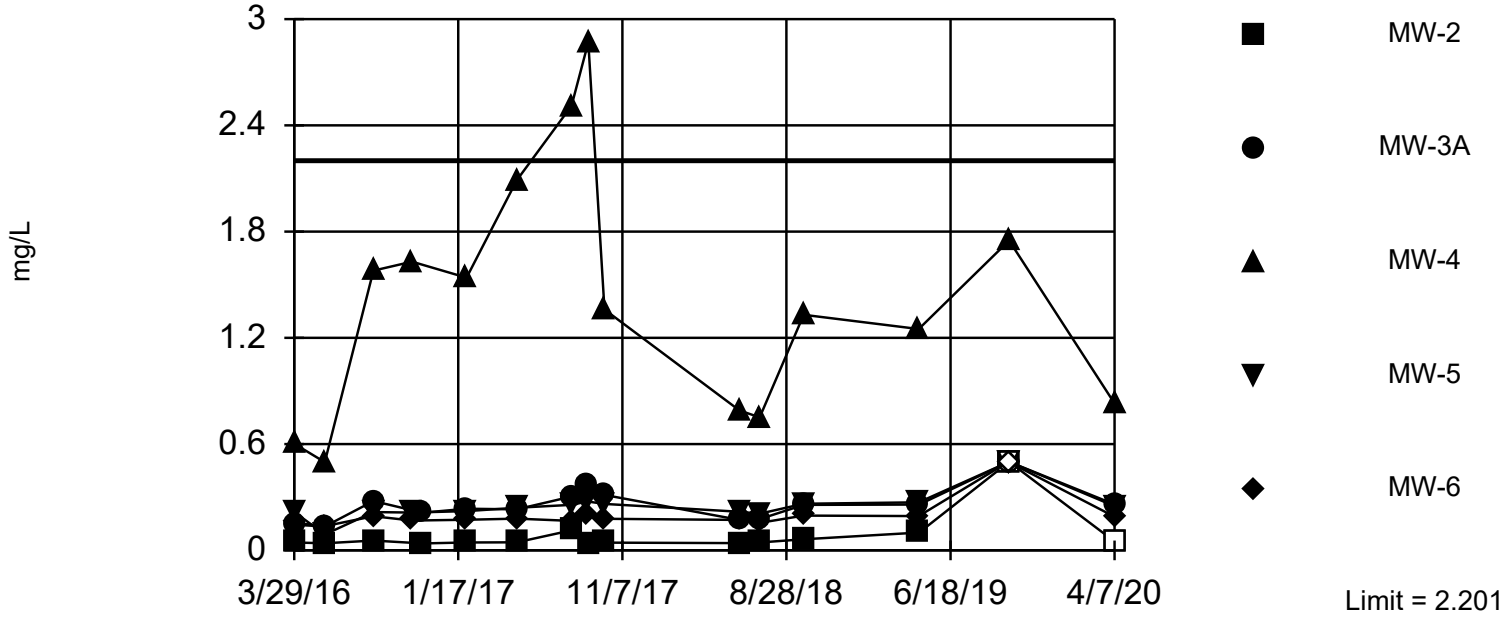
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1.755, Std. Dev.=0.1959, n=15. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Boron Analysis Run 12/8/2020 9:11 AM

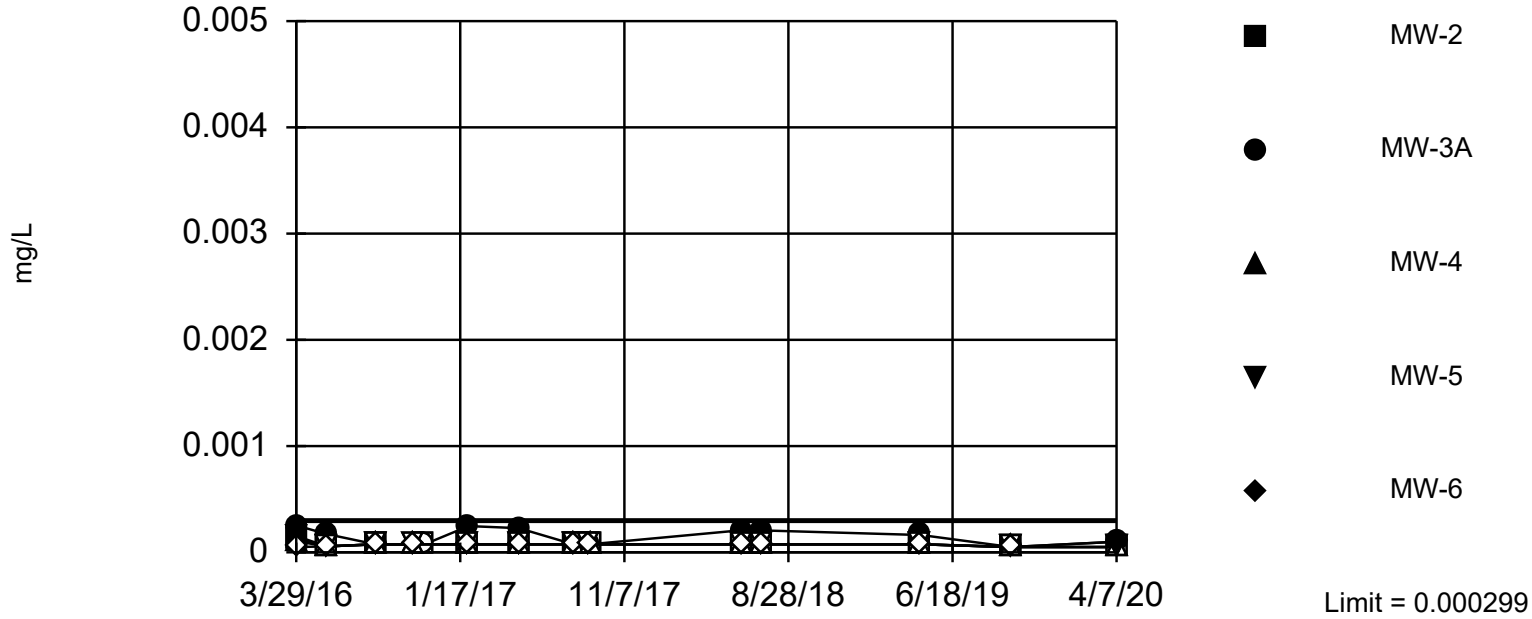
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 13 background values. 92.31% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit.

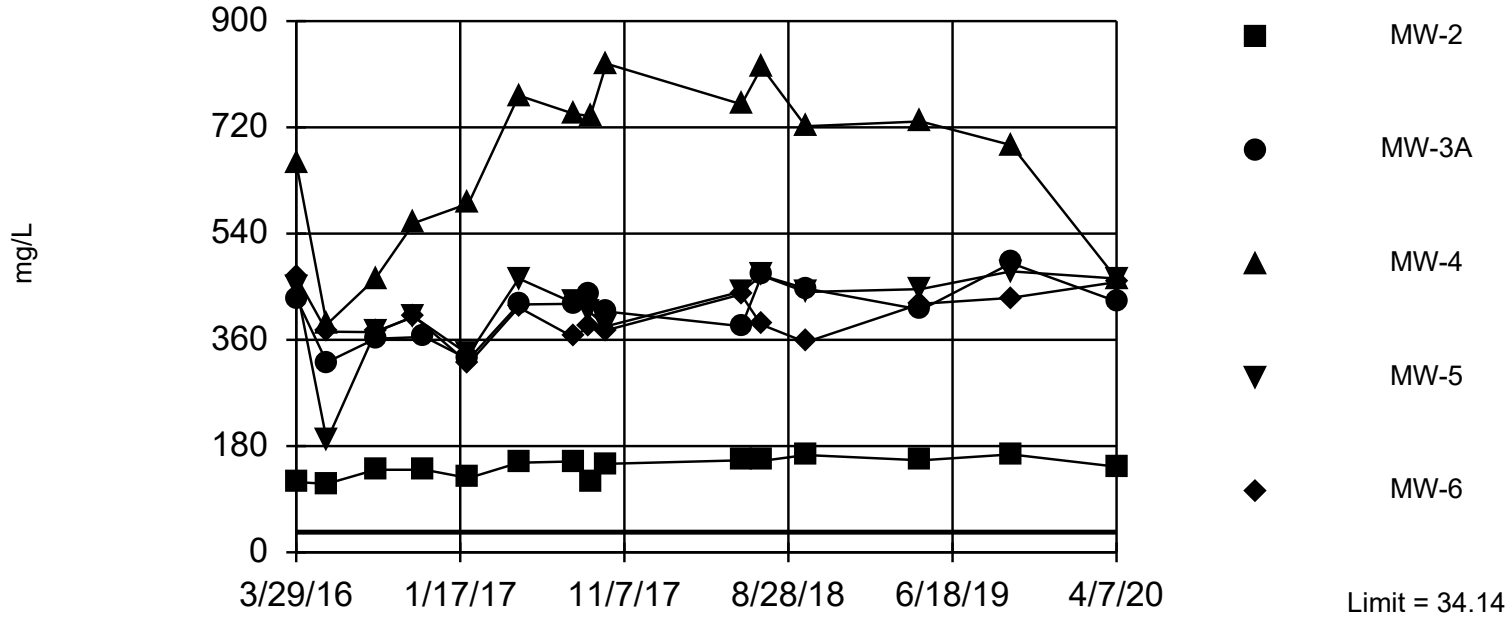
Constituent: Cadmium Analysis Run 12/8/2020 11:42 AM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=29.31, Std. Dev.=2.1, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 20.8 (2/1/2017).

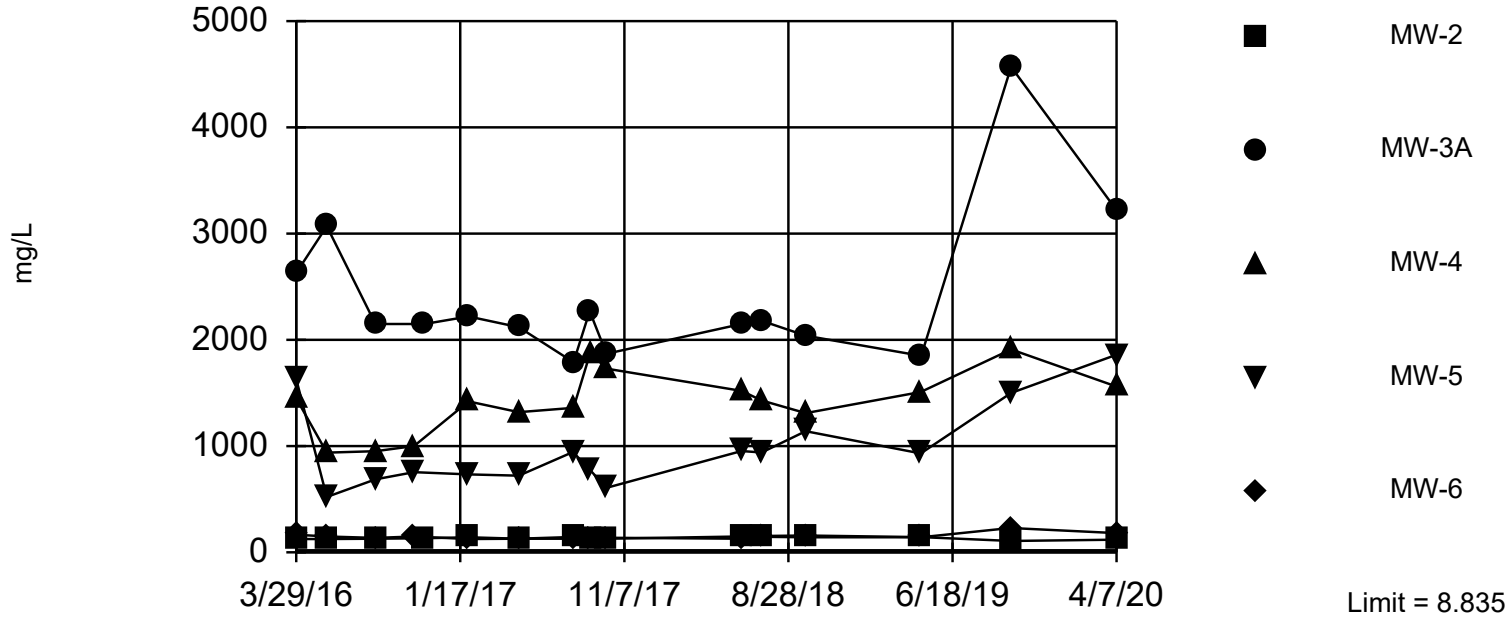
Constituent: Calcium Analysis Run 12/8/2020 9:15 AM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.096, Std. Dev.=1.192, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 0.501 (5/23/2016).

Constituent: Chloride Analysis Run 12/8/2020 10:09 AM

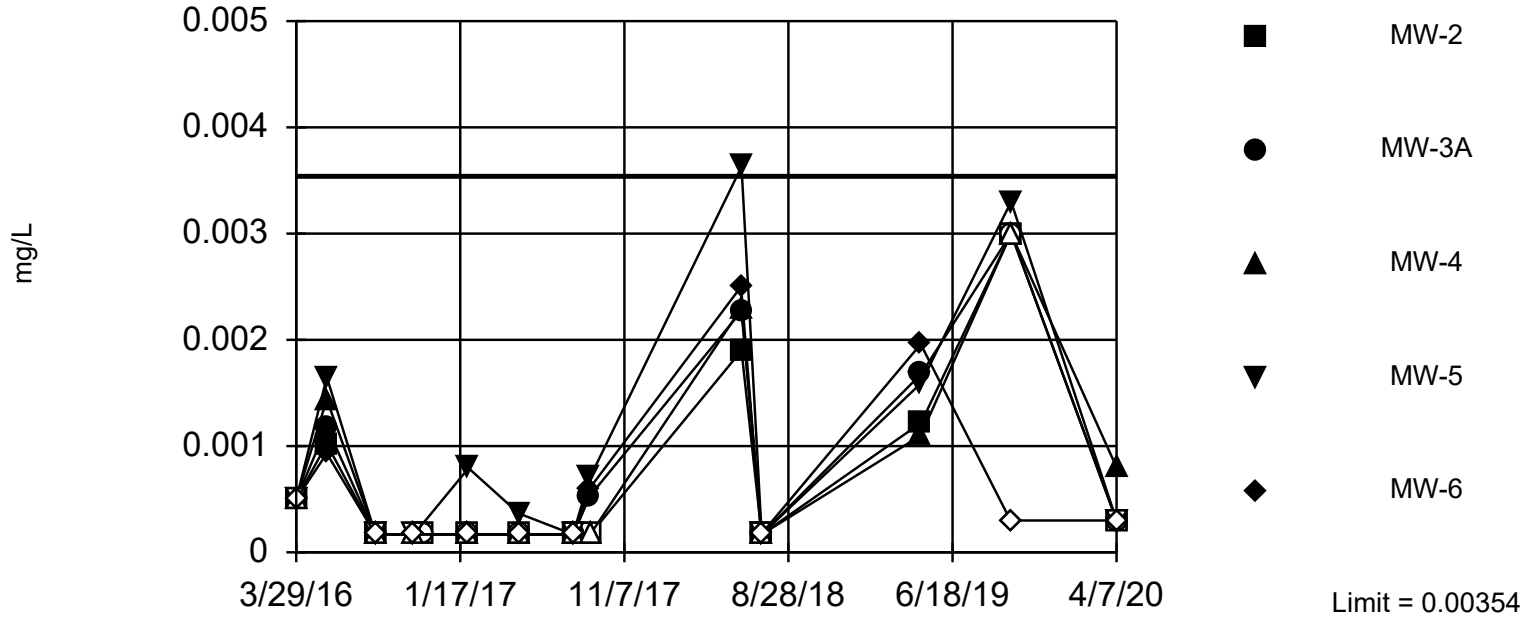
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 13 background values. 61.54% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

Constituent: Chromium Analysis Run 12/8/2020 11:46 AM

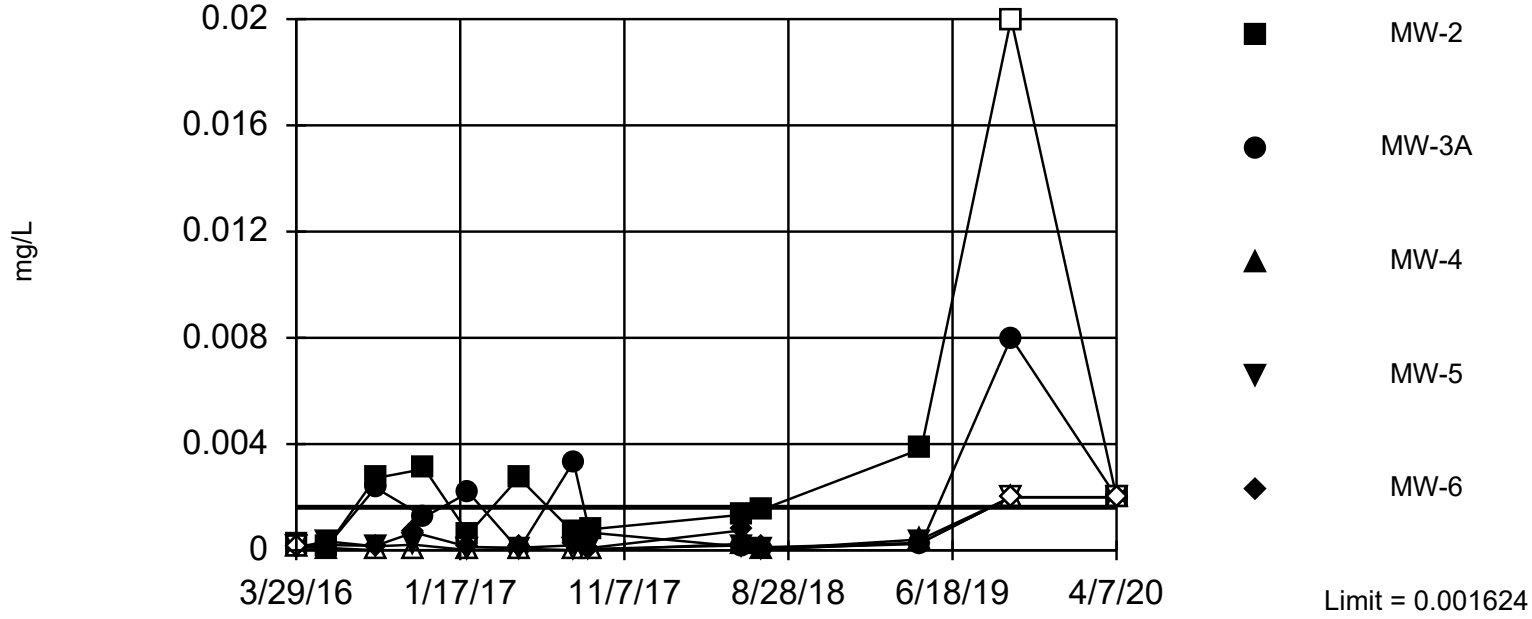
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Aitchison`s Adjustment): Mean=0.0006041, Std. Dev.=0.0004329, n=12, 16.67% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 4.4E-05 (7/10/2018).

Constituent: Cobalt Analysis Run 12/8/2020 11:52 AM

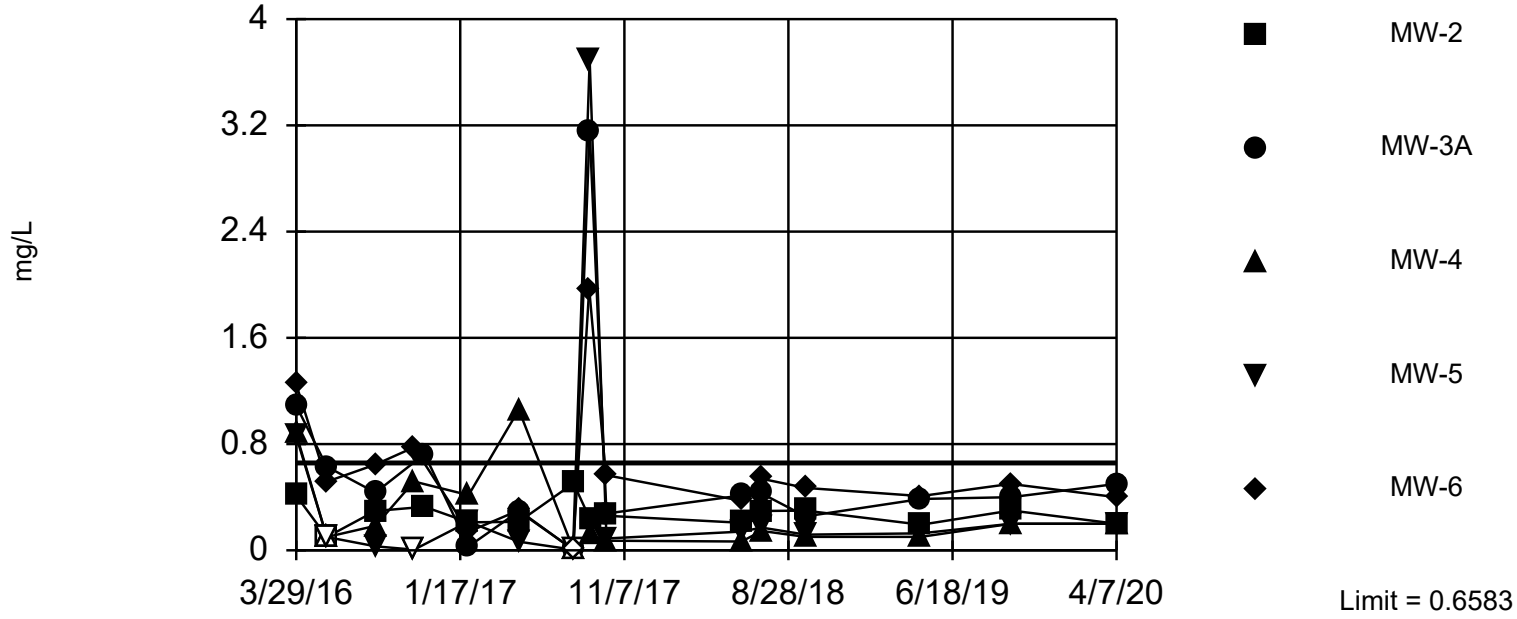
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.5482, Std. Dev.=0.04737, n=13. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. Two background outliers were removed: 0.888 (3/29/2016); 0.0204 (5/23/2016).

Constituent: Fluoride Analysis Run 12/8/2020 10:17 AM

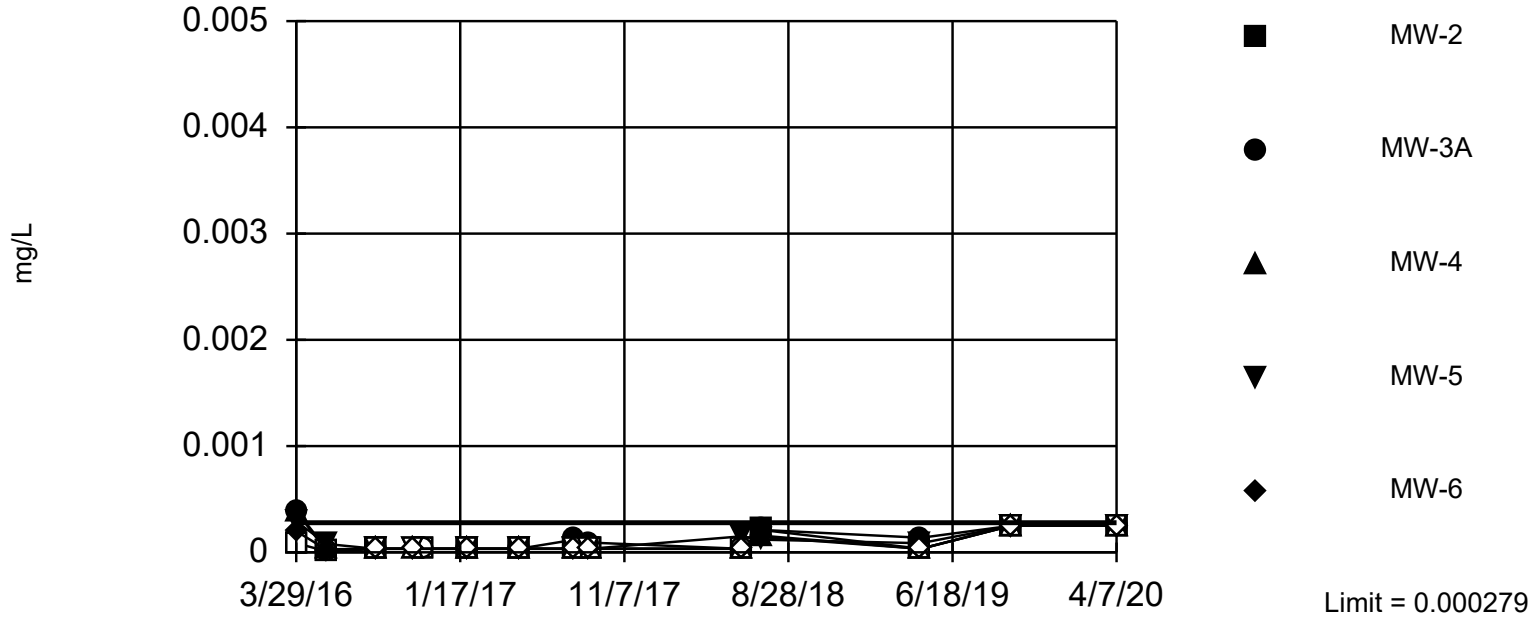
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 13 background values. 53.85% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

Constituent: Lead Analysis Run 12/8/2020 11:54 AM

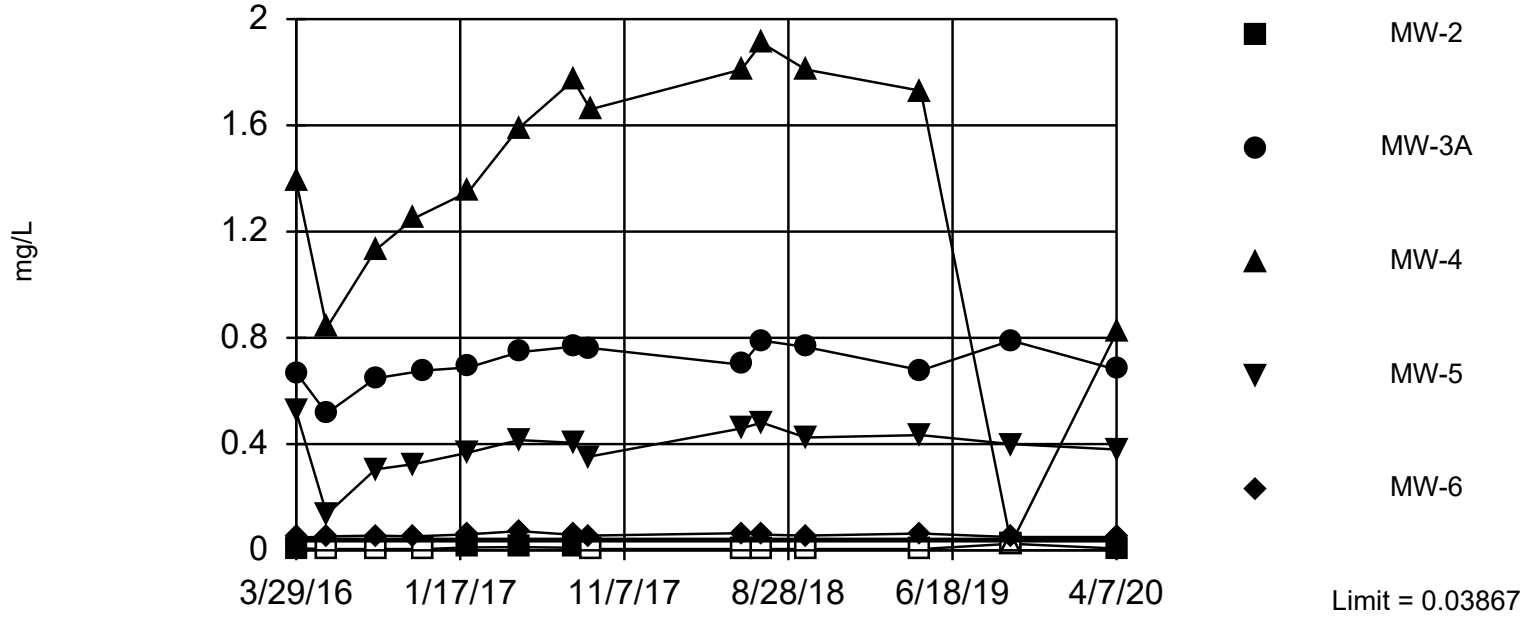
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.03093, Std. Dev.=0.003367, n=14, 7.143% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit.

Constituent: Lithium Analysis Run 12/8/2020 12:03 PM

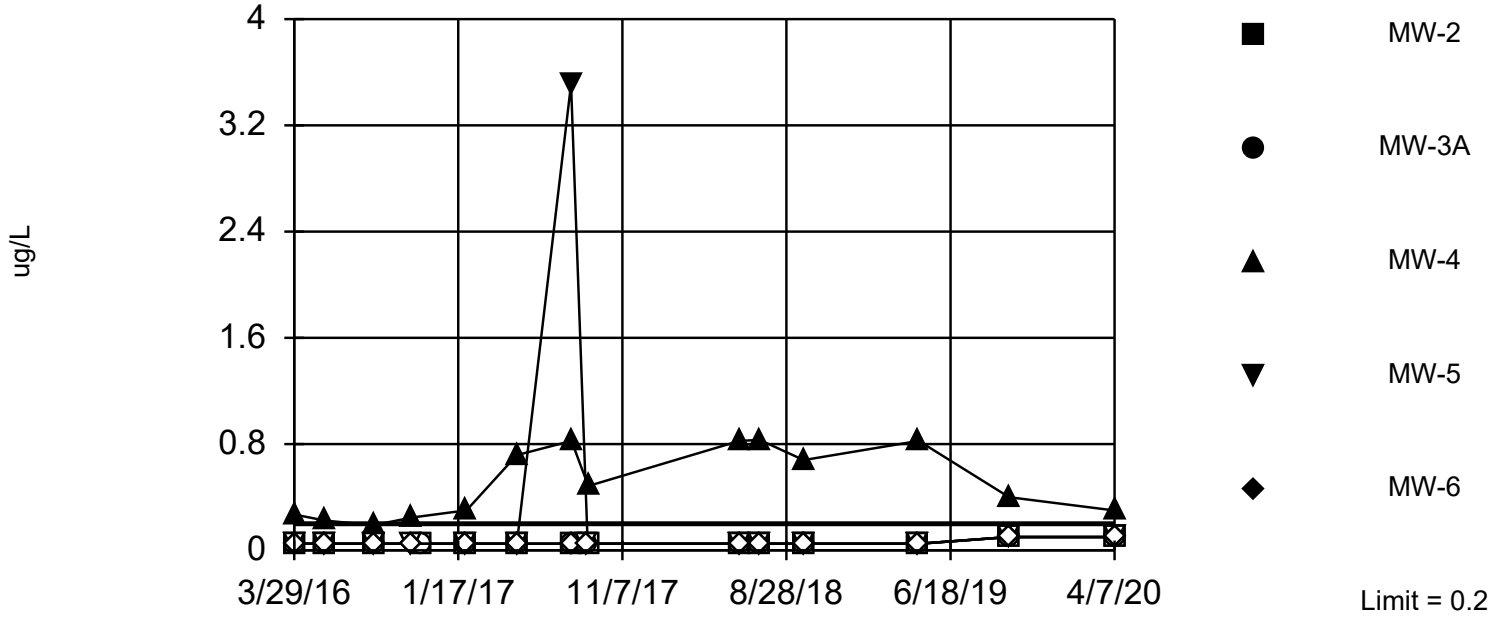
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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%. All background values (n = 14) were censored; limit is most recent reporting limit. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

Constituent: Mercury Analysis Run 12/8/2020 12:09 PM

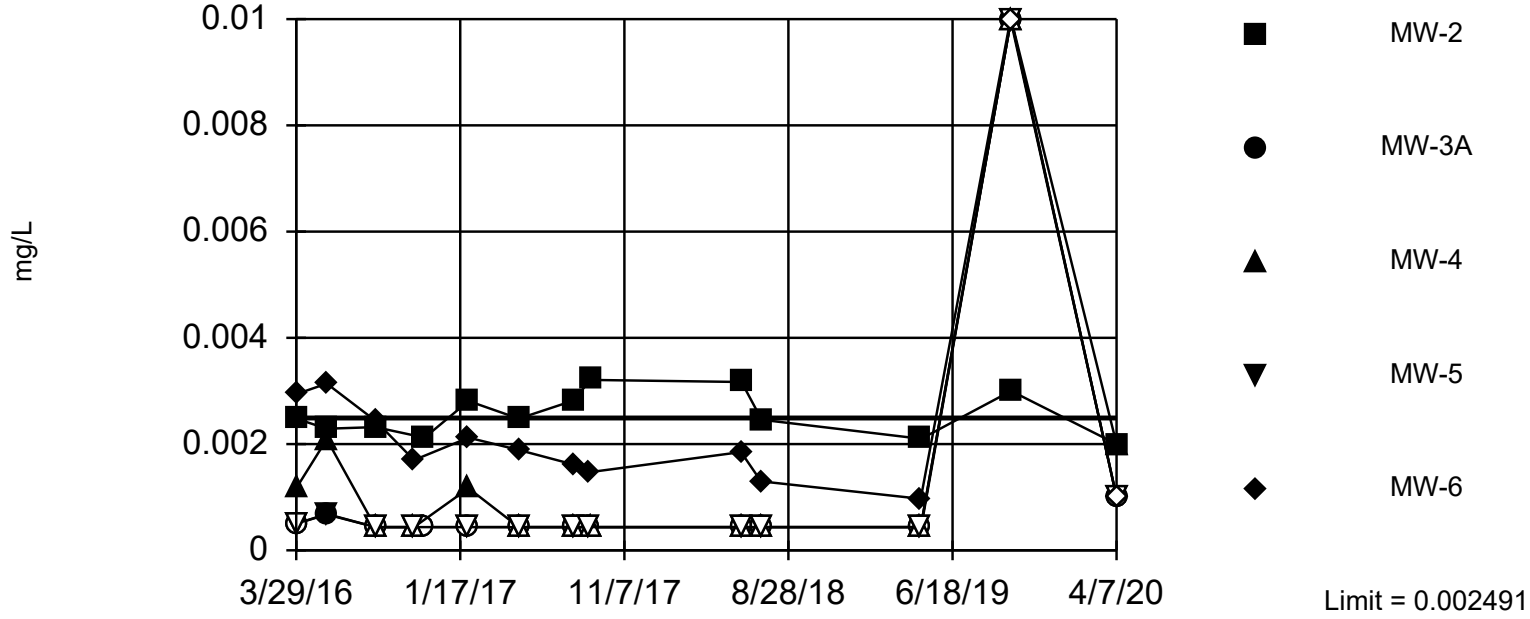
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Aitchison`s Adjustment): Mean=0.0009209, Std. Dev.=0.0006755, n=13, 30.77% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

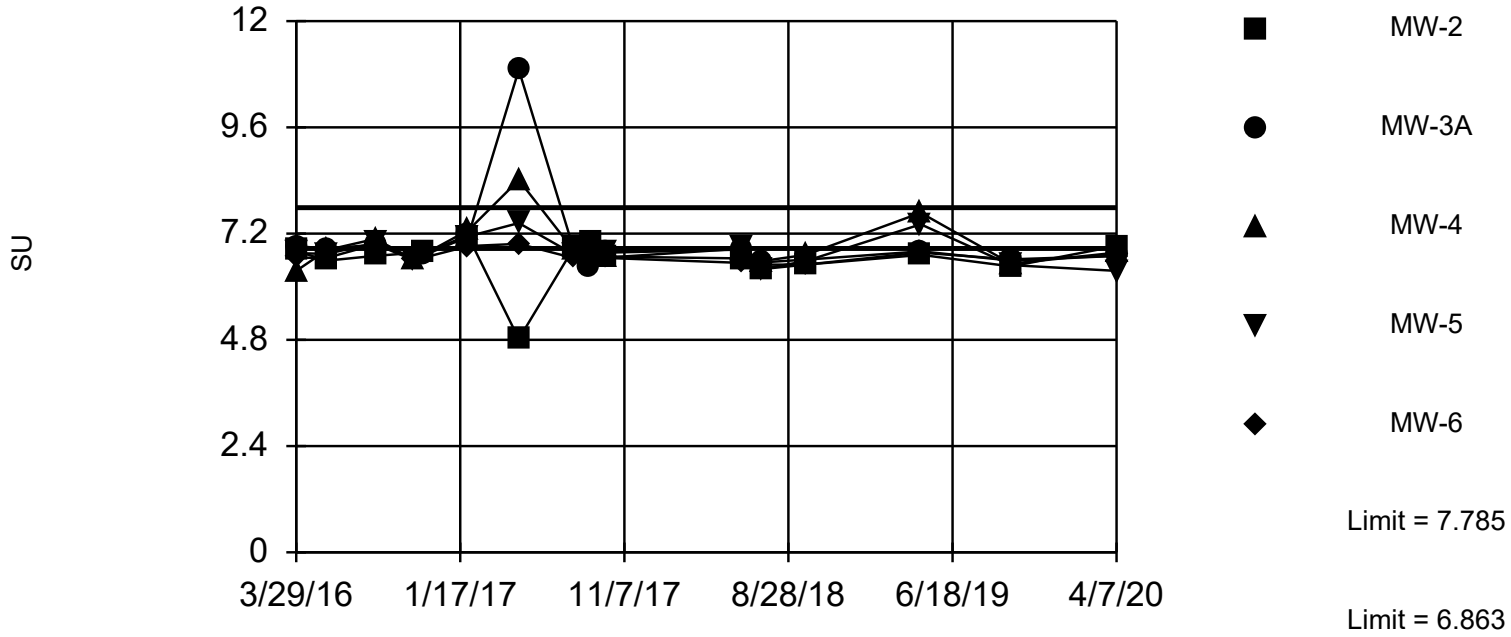
Constituent: Molybdenum Analysis Run 12/8/2020 12:12 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limits: MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.324, Std. Dev.=0.172, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0112. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 4.86 (5/2/2017).

Constituent: pH [Field] Analysis Run 12/8/2020 10:25 AM

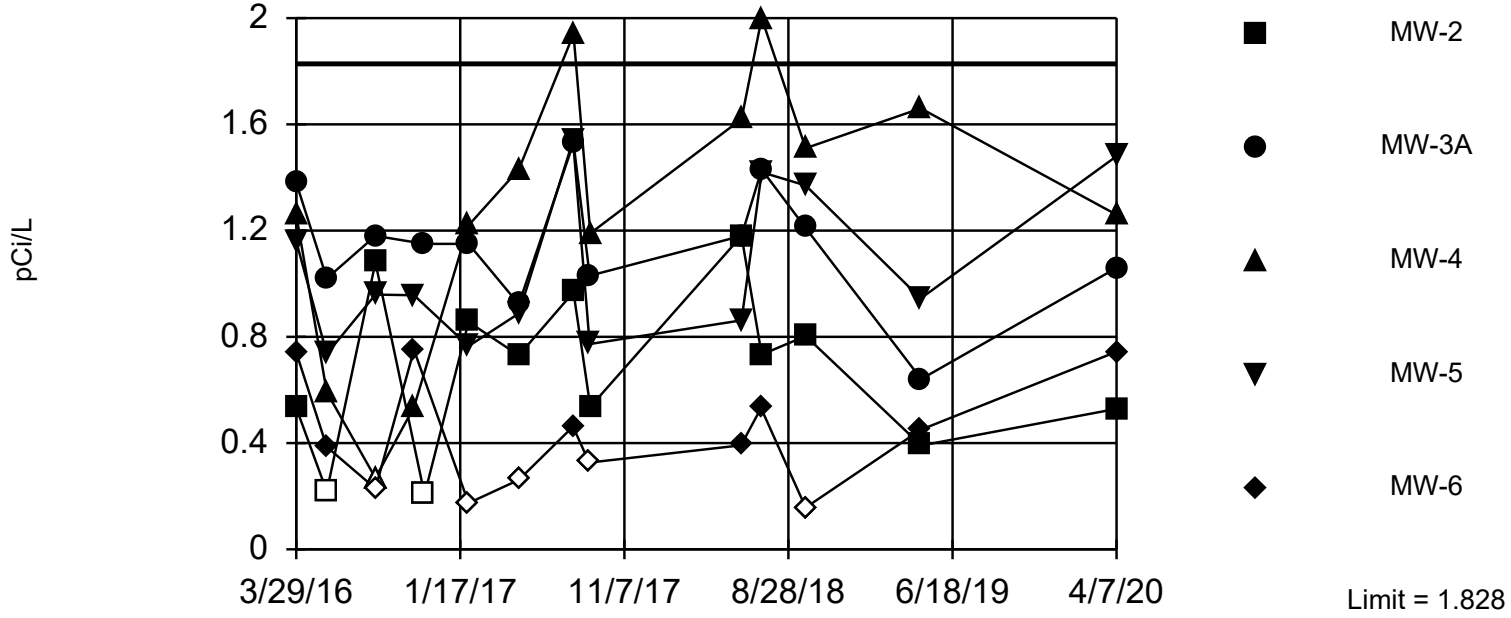
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.1888, Std. Dev.=0.3407, n=13. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit.

Constituent: Radium 226 + 228 Analysis Run 12/9/2020 10:21 AM

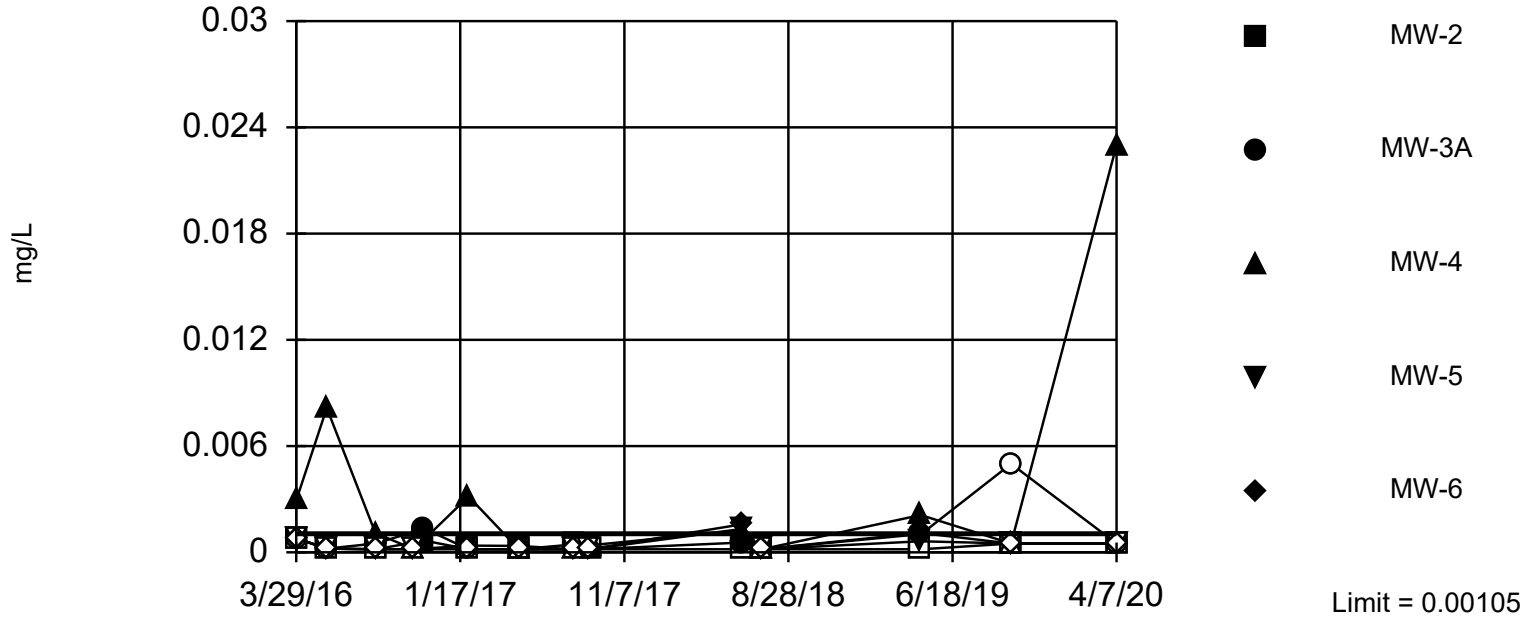
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 13 background values. 84.62% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

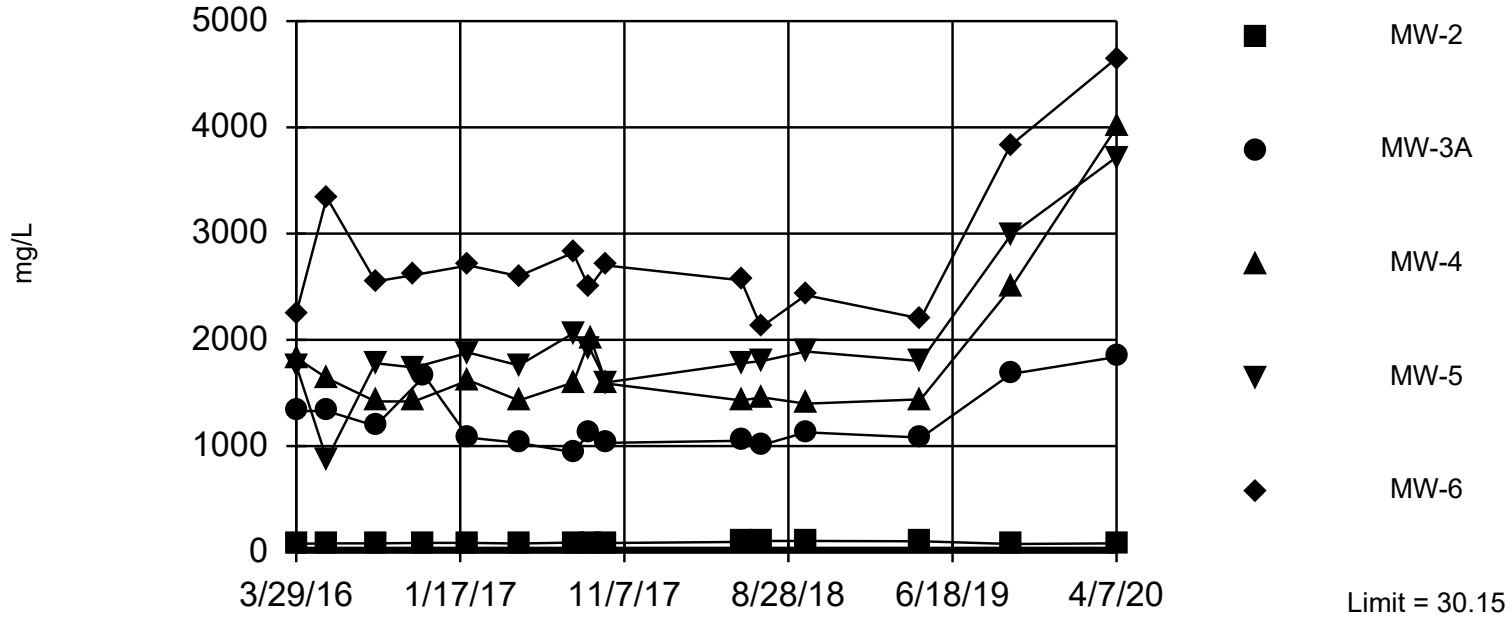
Constituent: Selenium Analysis Run 12/8/2020 1:00 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=23.77, Std. Dev.=2.774, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 35.1 (4/22/2019).

Constituent: Sulfate Analysis Run 12/8/2020 10:30 AM

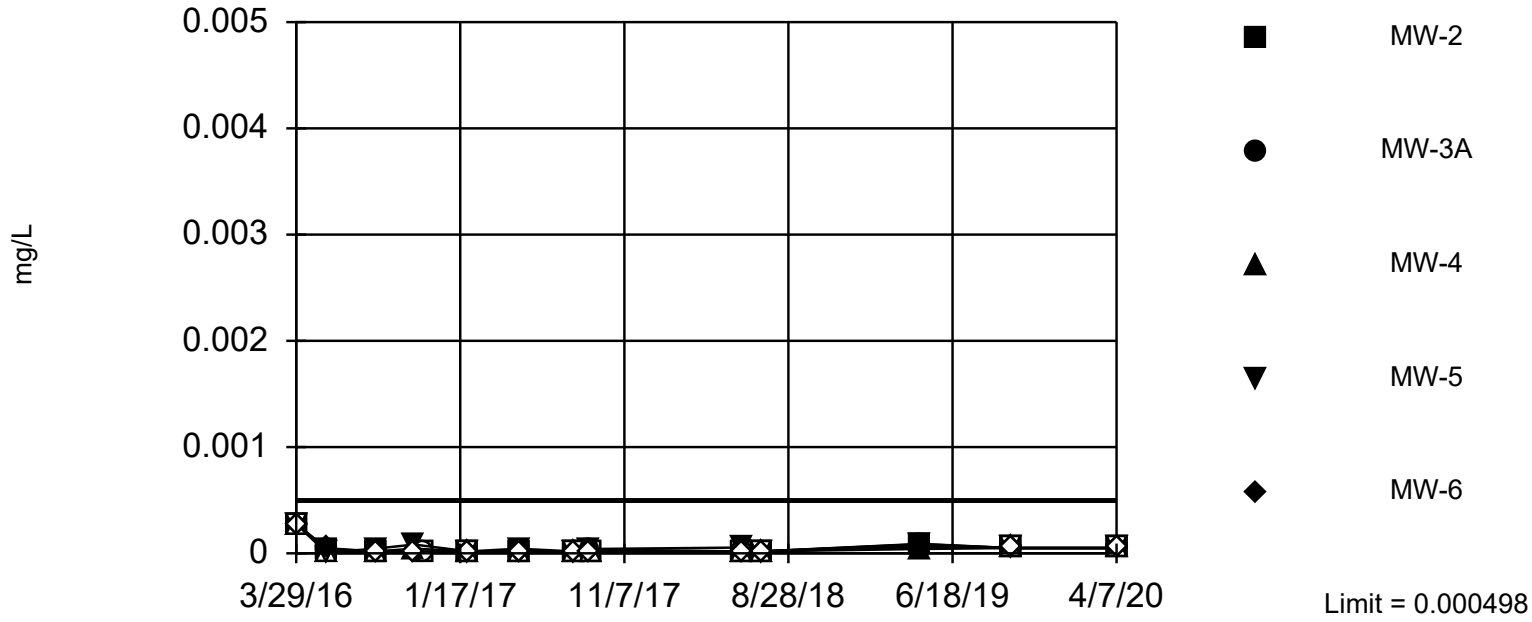
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 13 background values. 53.85% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

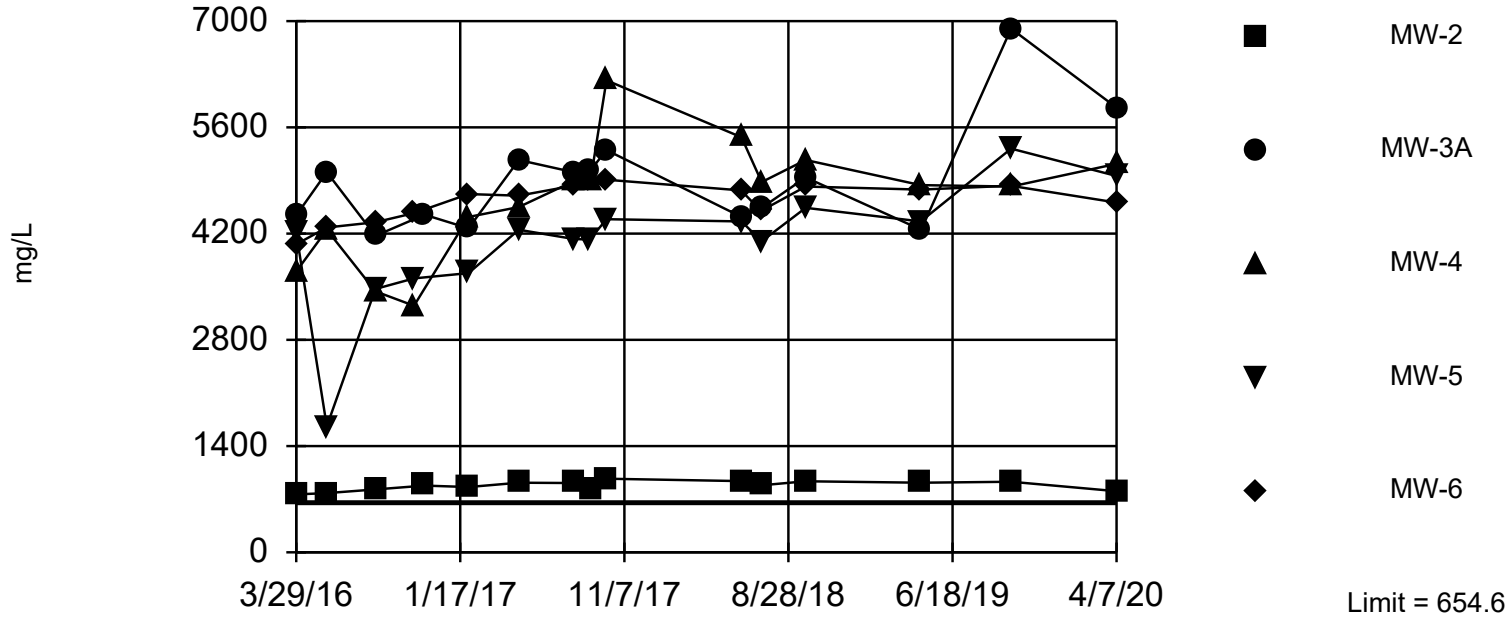
Constituent: Thallium Analysis Run 12/8/2020 1:04 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=604.7, Std. Dev.=21.48, n=13. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. Two background outliers were removed: 444 (9/30/2019); 488 (4/6/2020).

Constituent: Total Dissolved Solids Analysis Run 12/8/2020 10:40 AM

Facility: BREC Green LF Data File: Green LF All Data

Attachment 2

September 2021 Time Series Plots

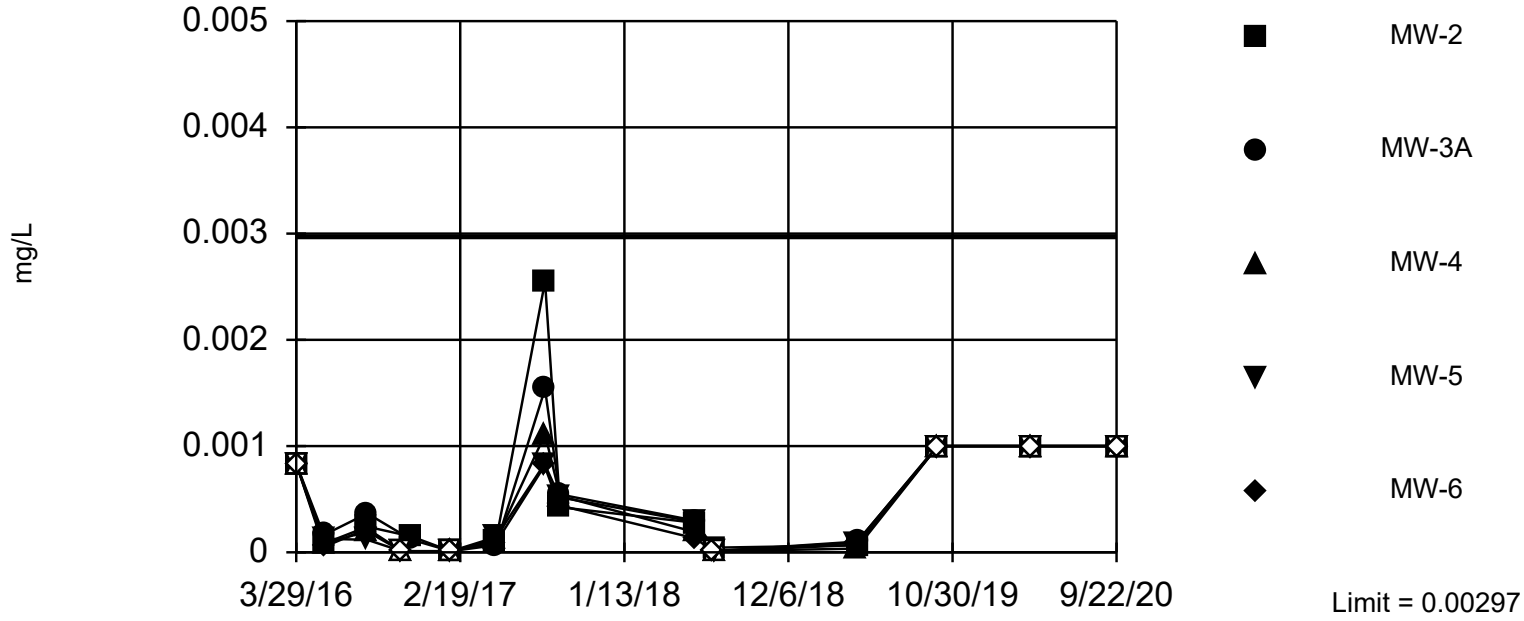
and Prediction Limit Results

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used after natural log transformation resulted in a parametric limit of 147.5, which exceeds 10 times the highest background value (user-adjustable cutoff). Limit is highest of 14 background values. 42.86% NDs. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Antimony Analysis Run 12/7/2020 2:23 PM

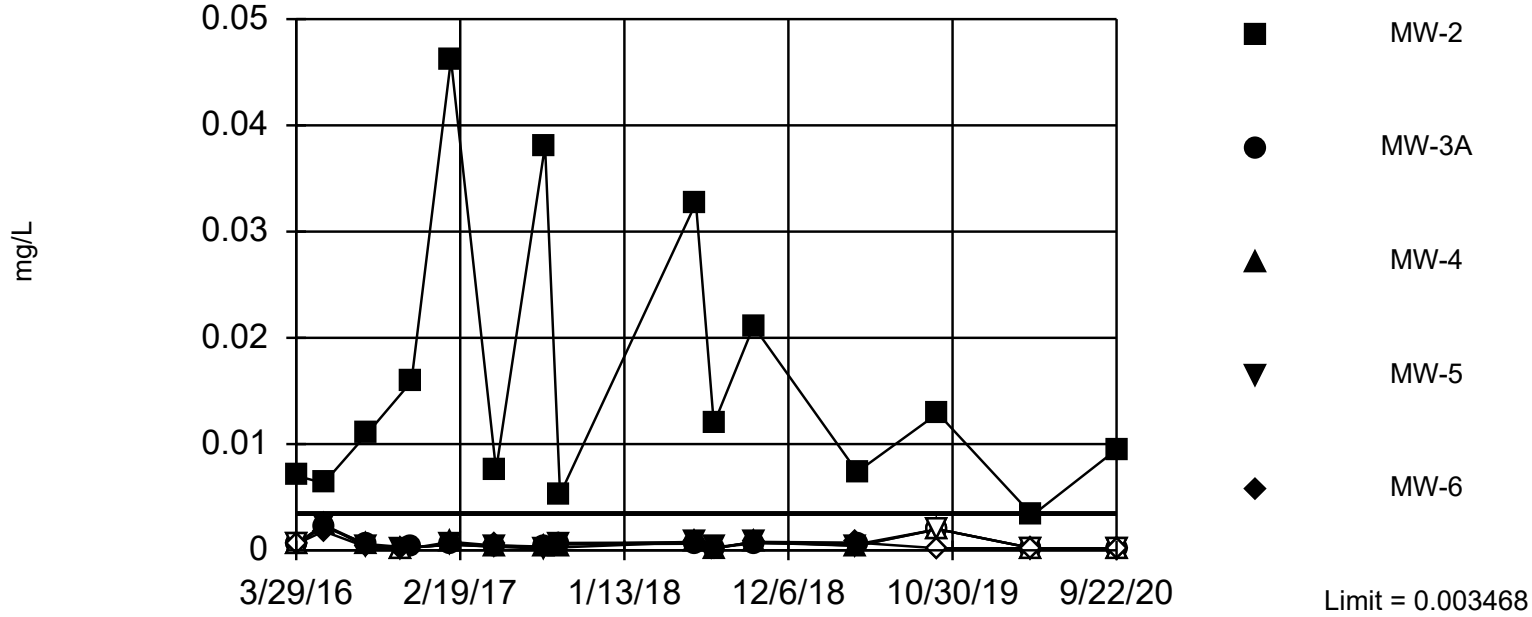
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-7.199, Std. Dev.=0.6746, n=15, 6.667% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

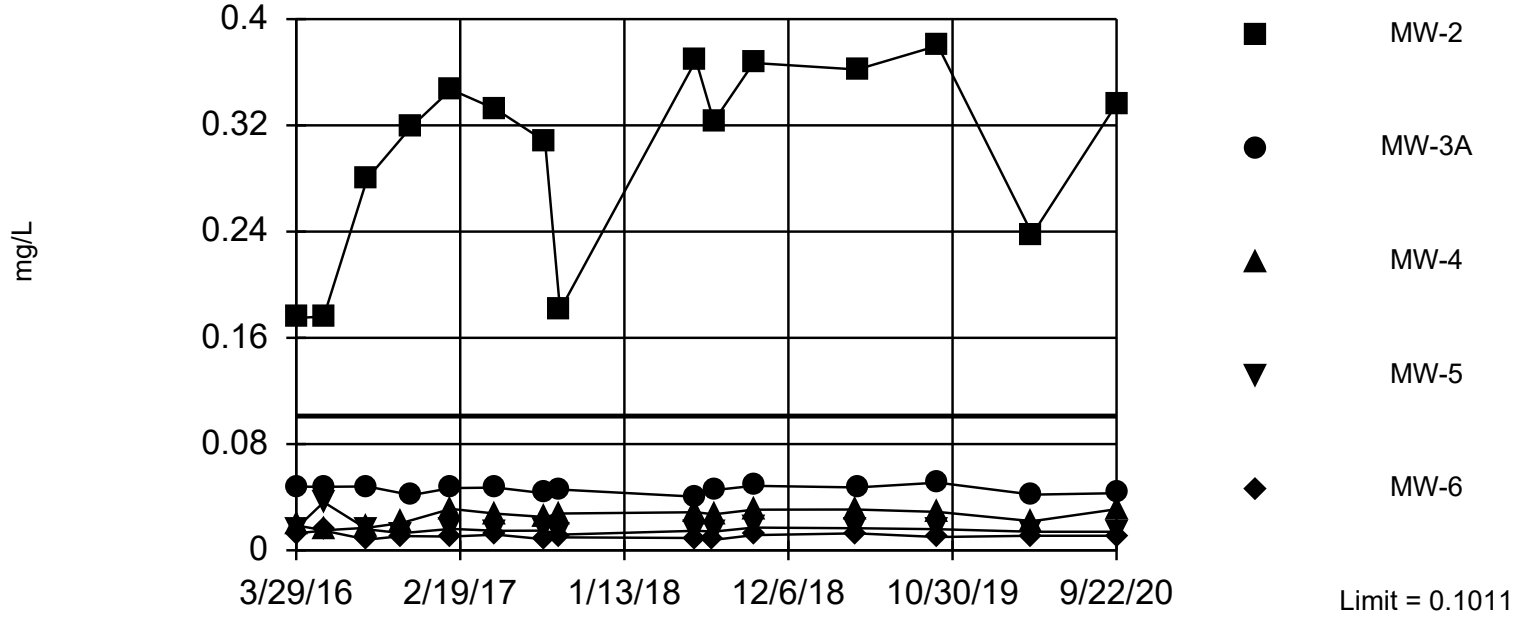
Constituent: Arsenic Analysis Run 12/7/2020 2:36 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.0822, Std. Dev.=0.008303, n=15. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Barium Analysis Run 12/7/2020 2:40 PM

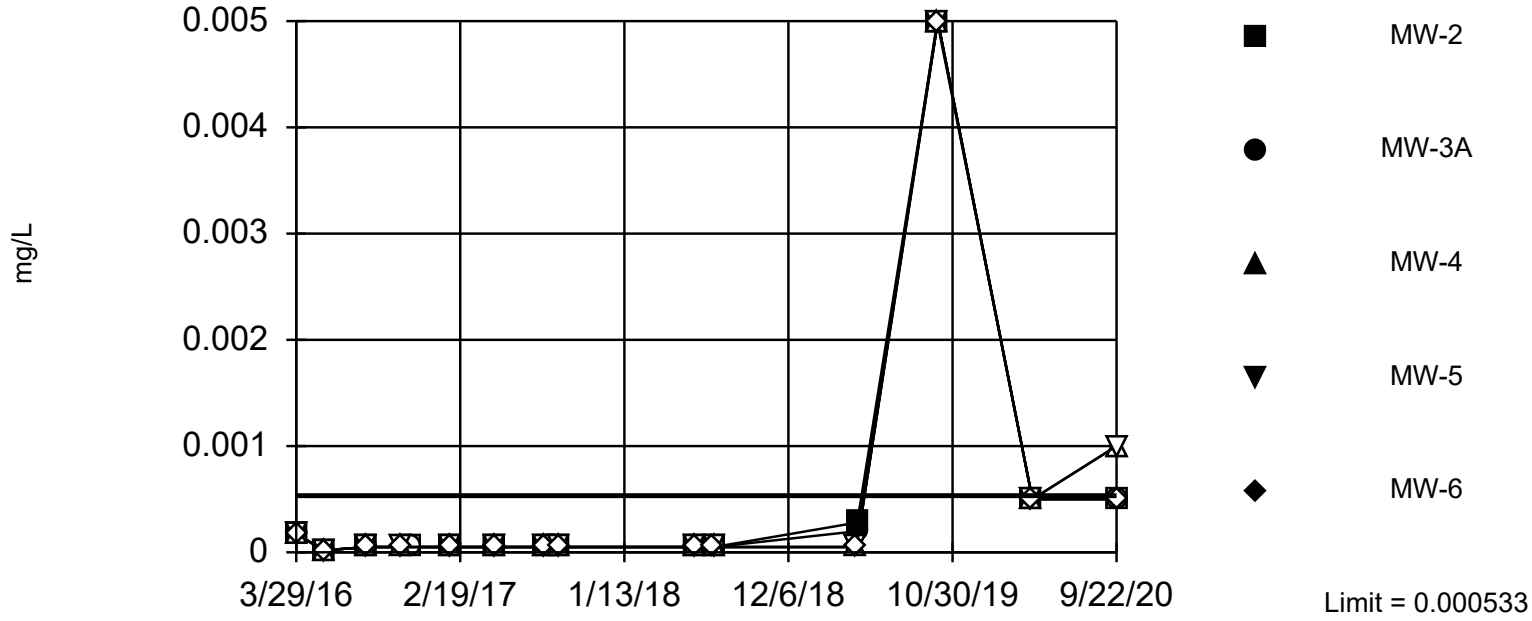
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 13 background values. 92.31% NDs. Report alpha = 0.2778. Individual comparison alpha = 0.06301. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. After outlier removal distribution was non-normal; user chose to continue. One background outlier was removed: <0.01 (9/30/2019).

Constituent: Beryllium Analysis Run 12/7/2020 2:42 PM

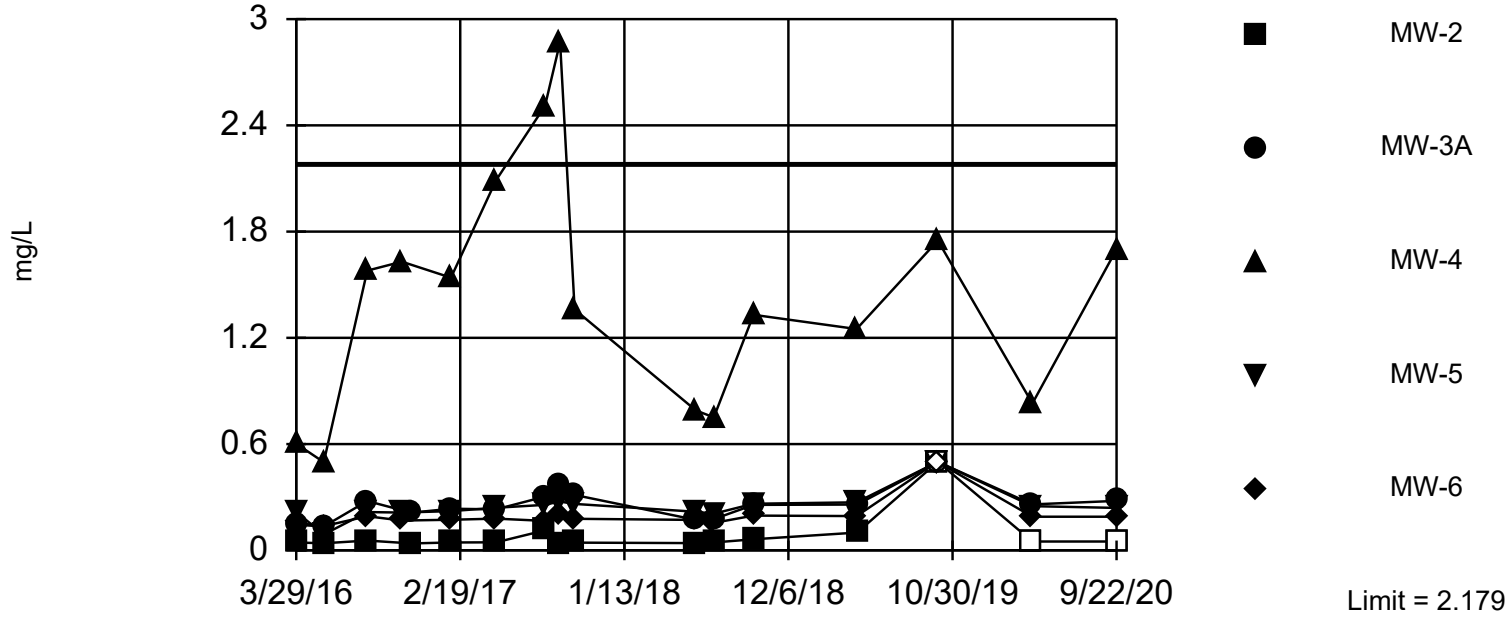
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1.749, Std. Dev.=0.1907, n=16. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Boron Analysis Run 12/7/2020 1:29 PM

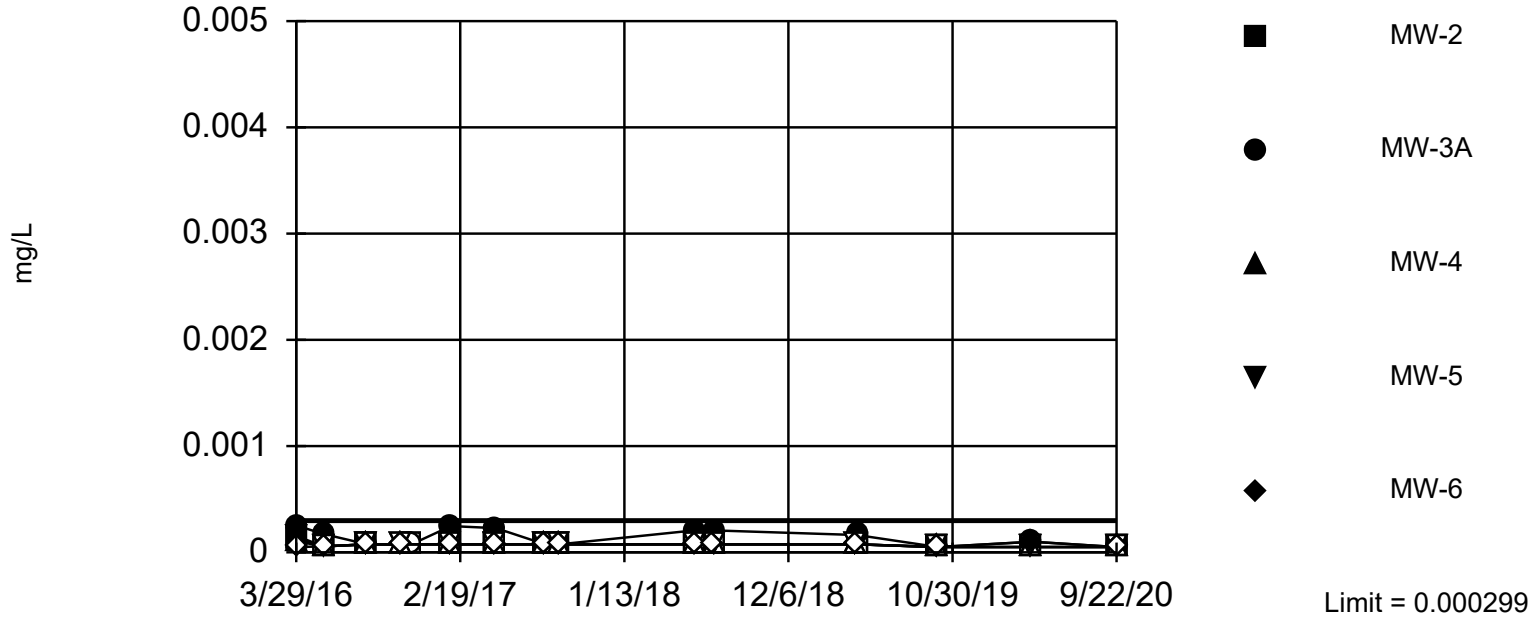
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 14 background values. 92.86% NDs. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit.

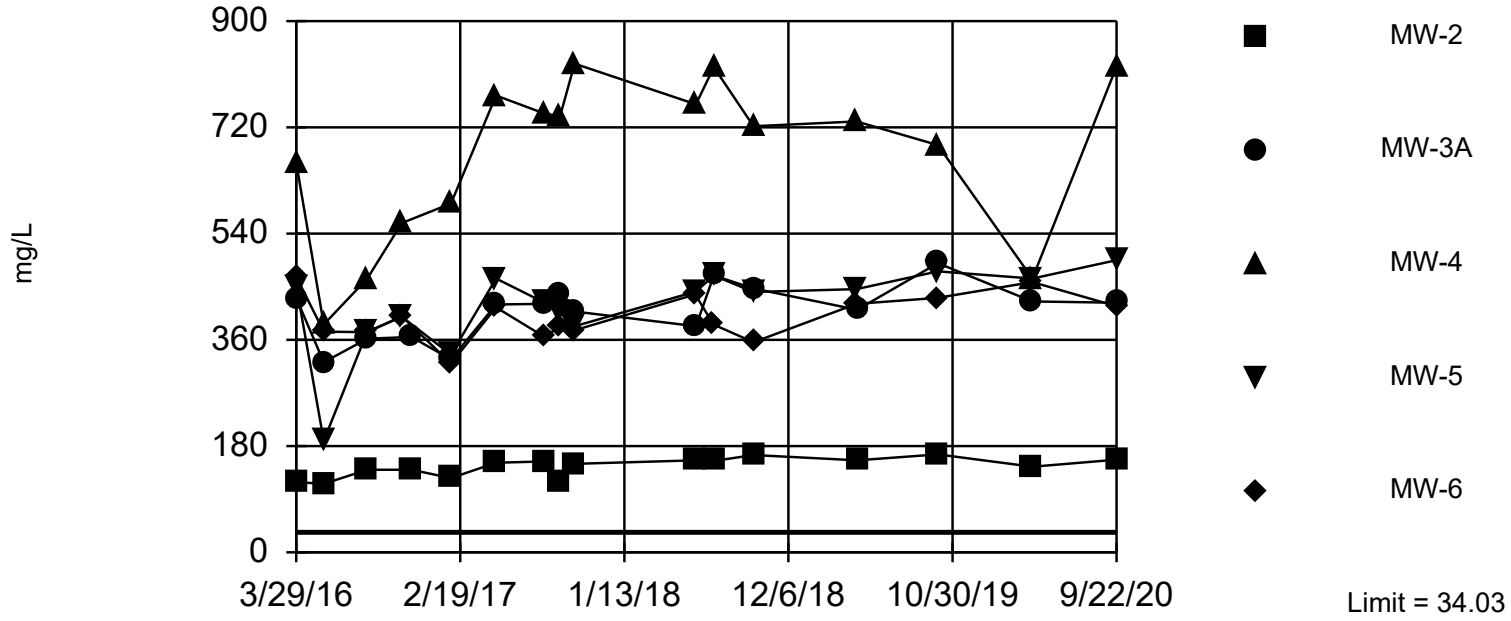
Constituent: Cadmium Analysis Run 12/7/2020 2:53 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=29.12, Std. Dev.=2.159, n=15. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 20.8 (2/1/2017).

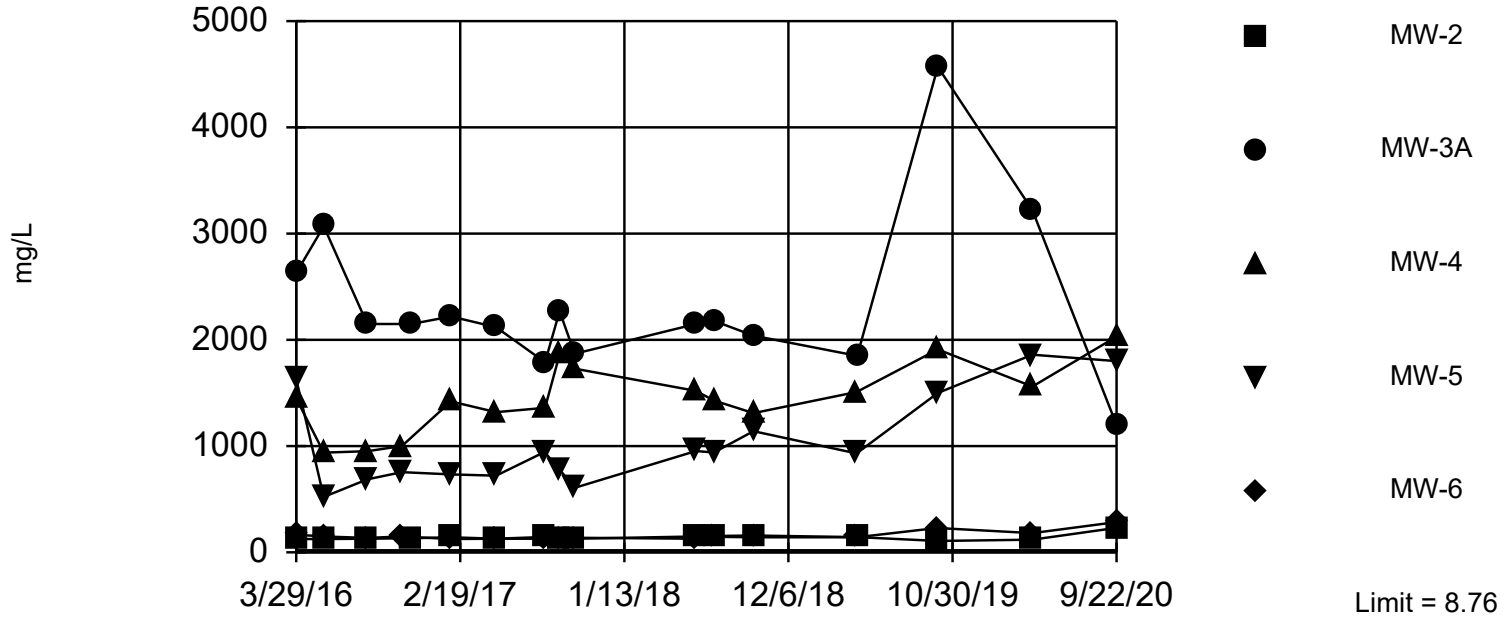
Constituent: Calcium Analysis Run 12/7/2020 1:32 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.129, Std. Dev.=1.156, n=15. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 0.501 (5/23/2016).

Constituent: Chloride Analysis Run 12/7/2020 1:46 PM

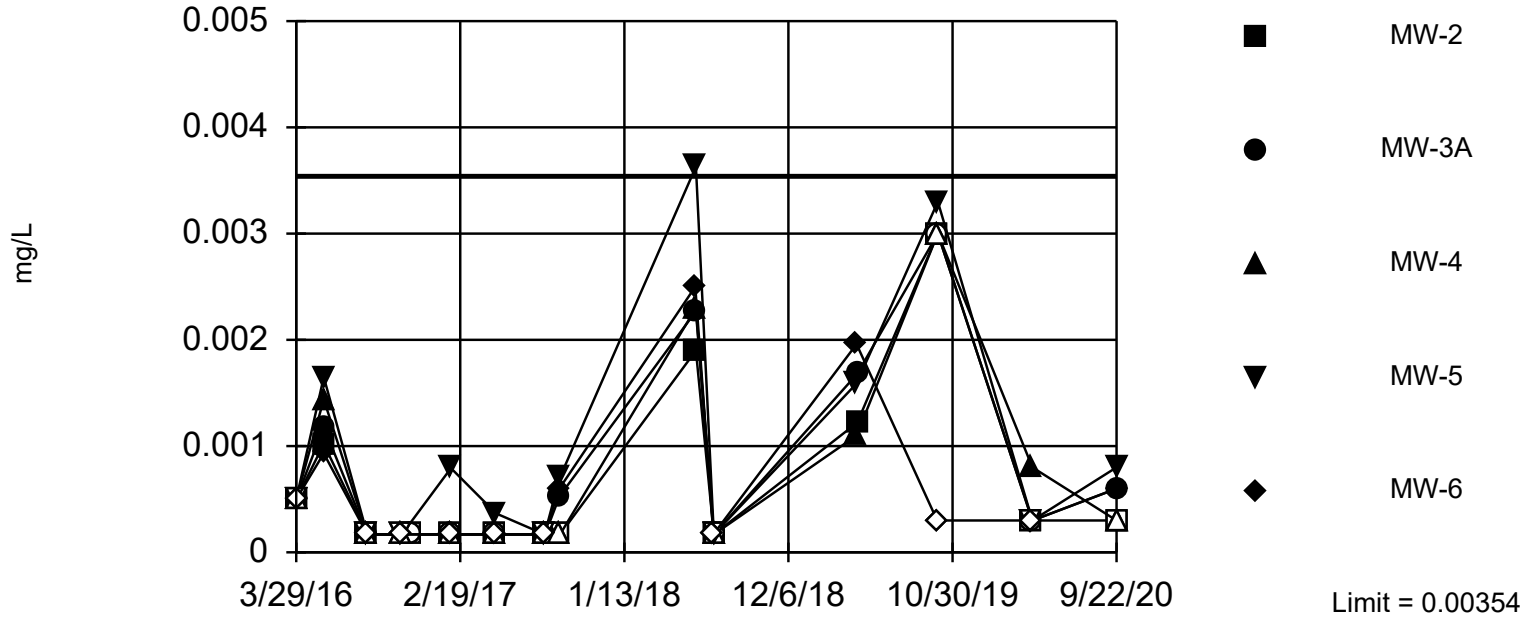
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 14 background values. 64.29% NDs. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit.

Constituent: Chromium Analysis Run 12/7/2020 2:55 PM

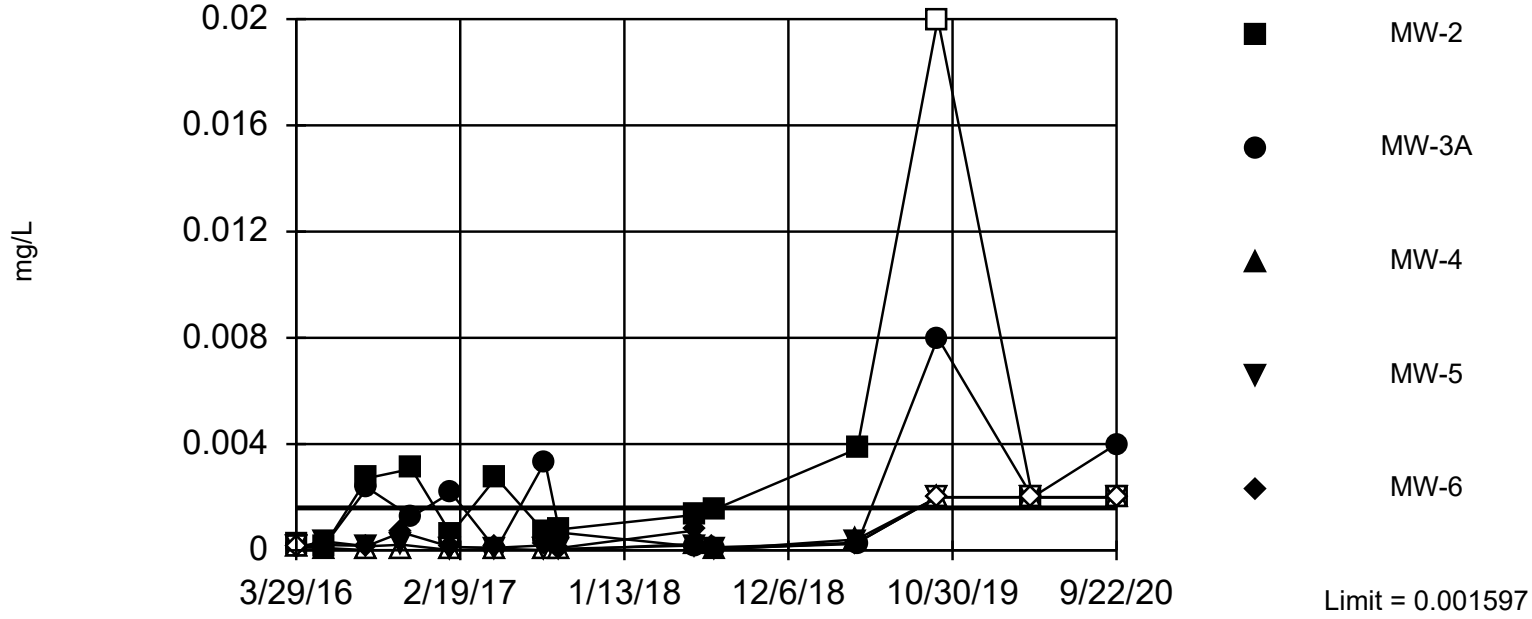
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-3A

Prediction Limit

Interwell Parametric



Background Data Summary (after Aitchison`s Adjustment): Mean=0.0005576, Std. Dev.=0.0004471, n=13, 23.08% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 4.4E-05 (7/10/2018).

Constituent: Cobalt Analysis Run 12/7/2020 2:57 PM

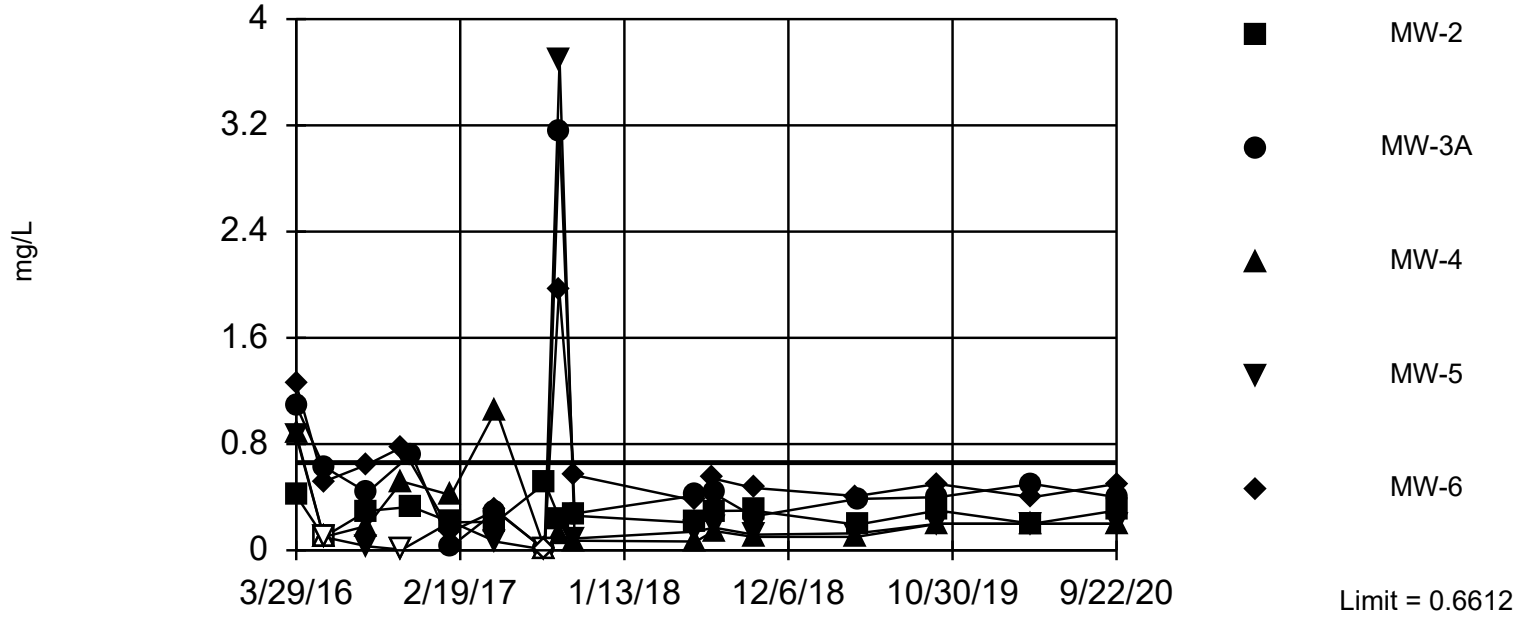
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.5519, Std. Dev.=0.04757, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. Two background outliers were removed: 0.888 (3/29/2016); 0.0204 (5/23/2016).

Constituent: Fluoride Analysis Run 12/7/2020 1:59 PM

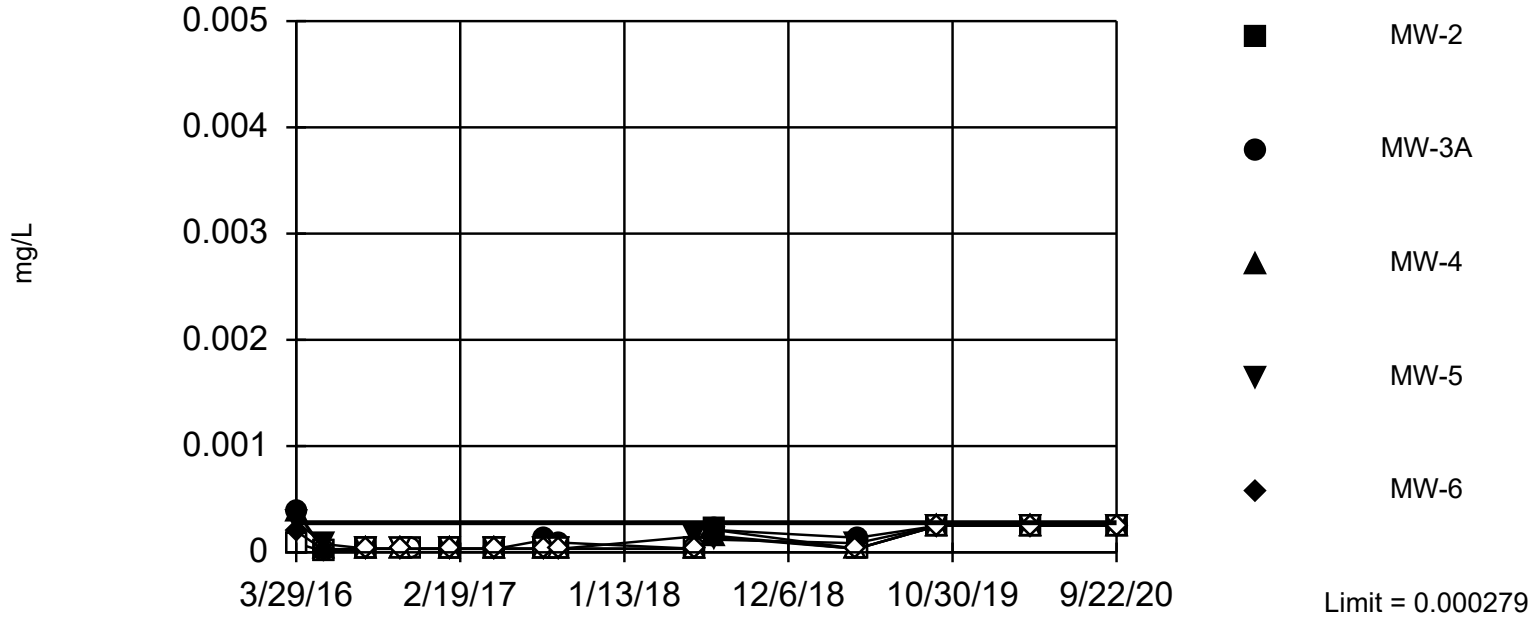
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 14 background values. 57.14% NDs. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

Constituent: Lead Analysis Run 12/7/2020 3:12 PM

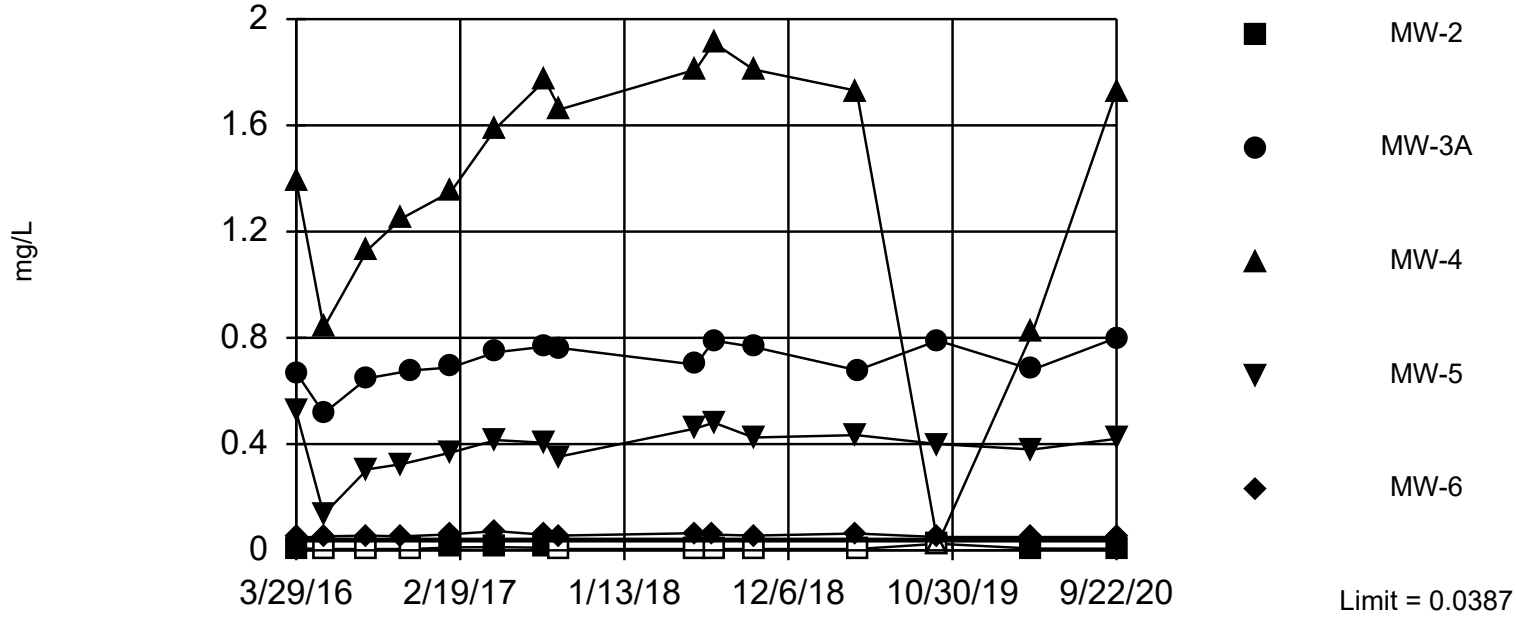
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.03053, Std. Dev.=0.003587, n=15, 13.33% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Lithium Analysis Run 12/7/2020 3:25 PM

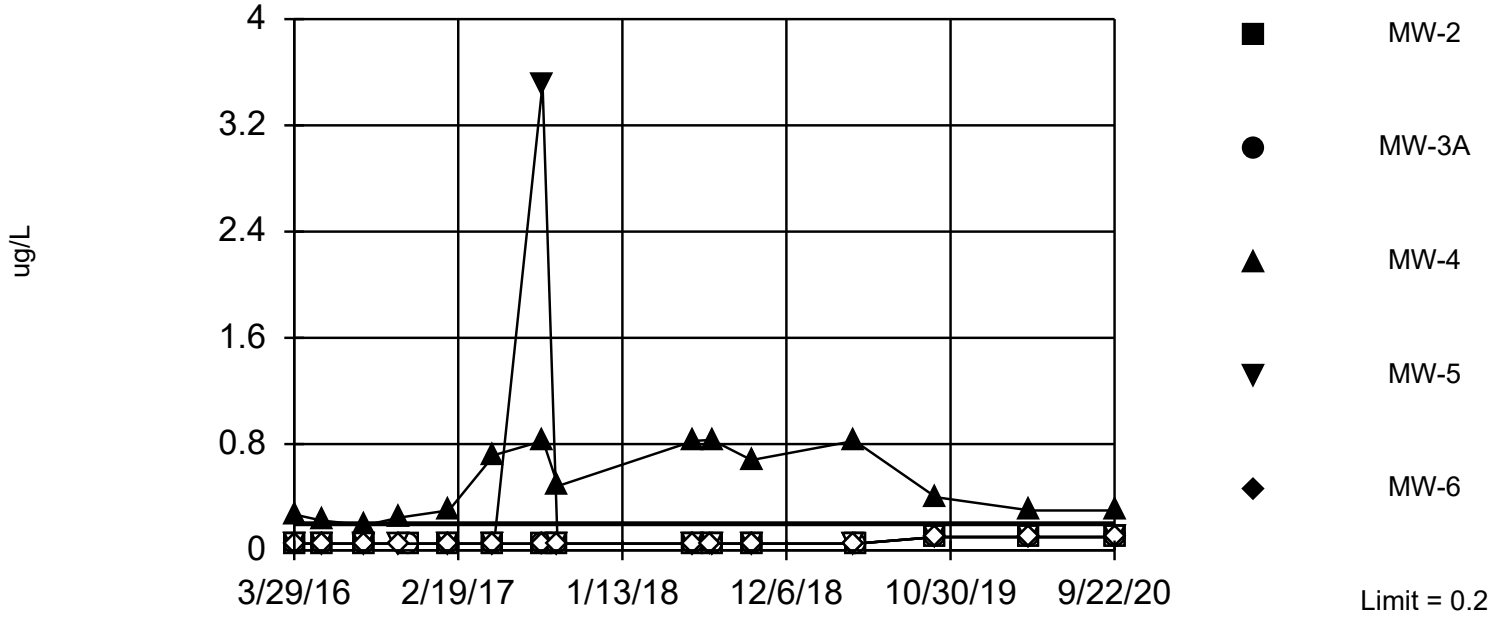
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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%. All background values (n = 15) were censored; limit is most recent reporting limit. Report alpha = 0.25. Individual comparison alpha = 0.05591. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

Constituent: Mercury Analysis Run 12/7/2020 3:21 PM

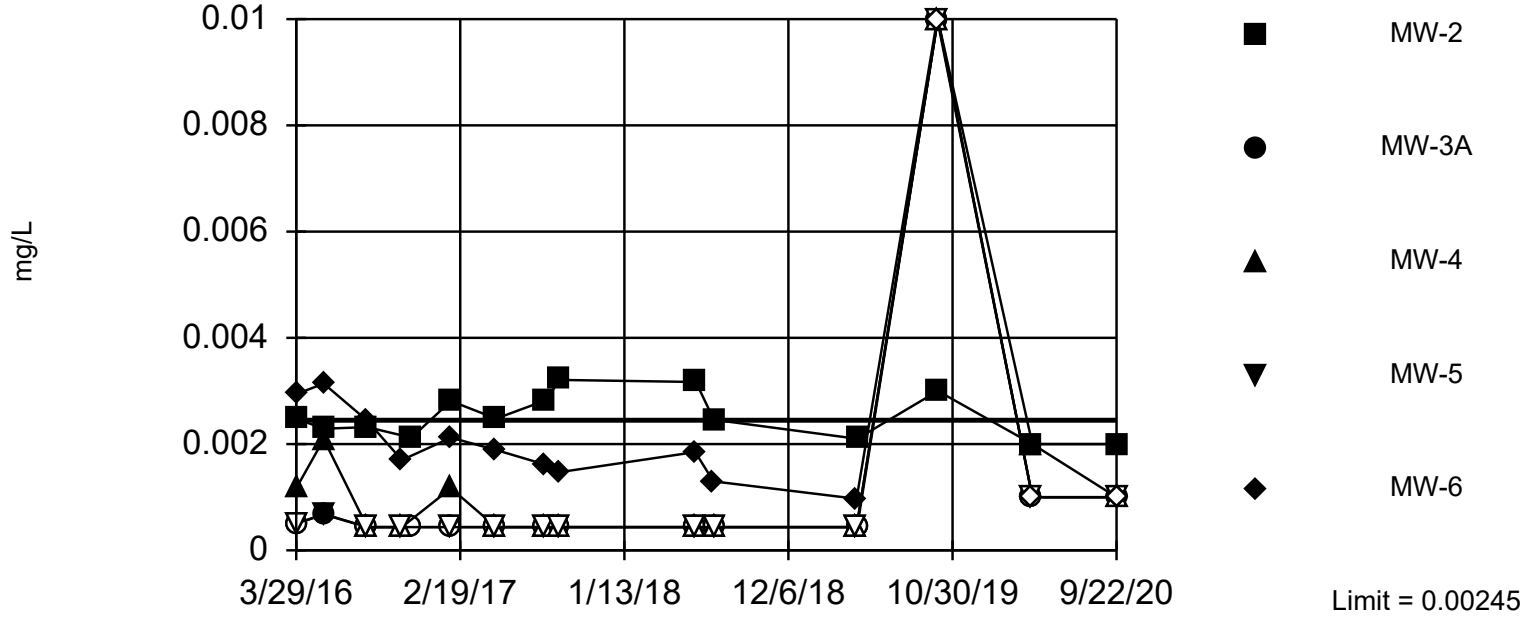
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Aitchison`s Adjustment): Mean=0.0008551, Std. Dev.=0.0006941, n=14, 35.71% NDs. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

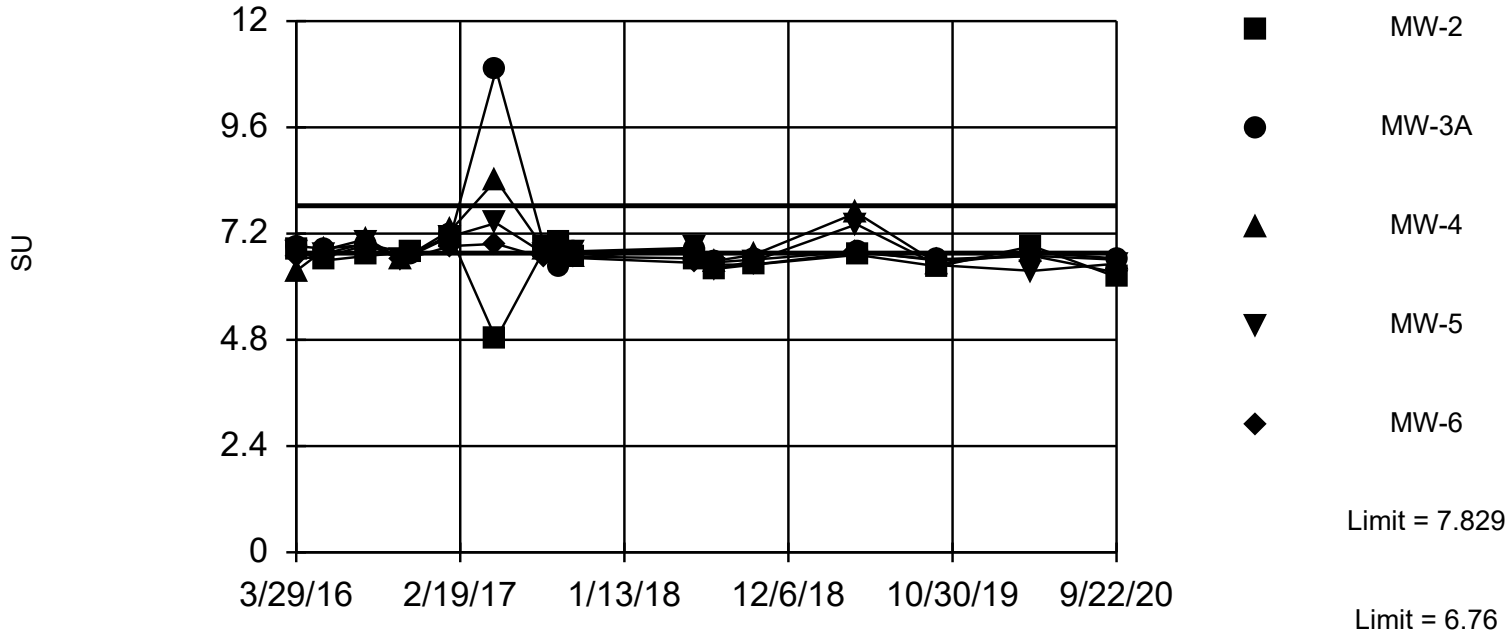
Constituent: Molybdenum Analysis Run 12/7/2020 3:40 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limits: MW-2, MW-3A, MW-4, MW -5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.295, Std. Dev.=0.2016, n=15. Report alpha = 0.1071. Individual comparison alpha = 0.0112. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 4.86 (5/2/2017).

Constituent: pH [Field] Analysis Run 12/7/2020 1:22 PM

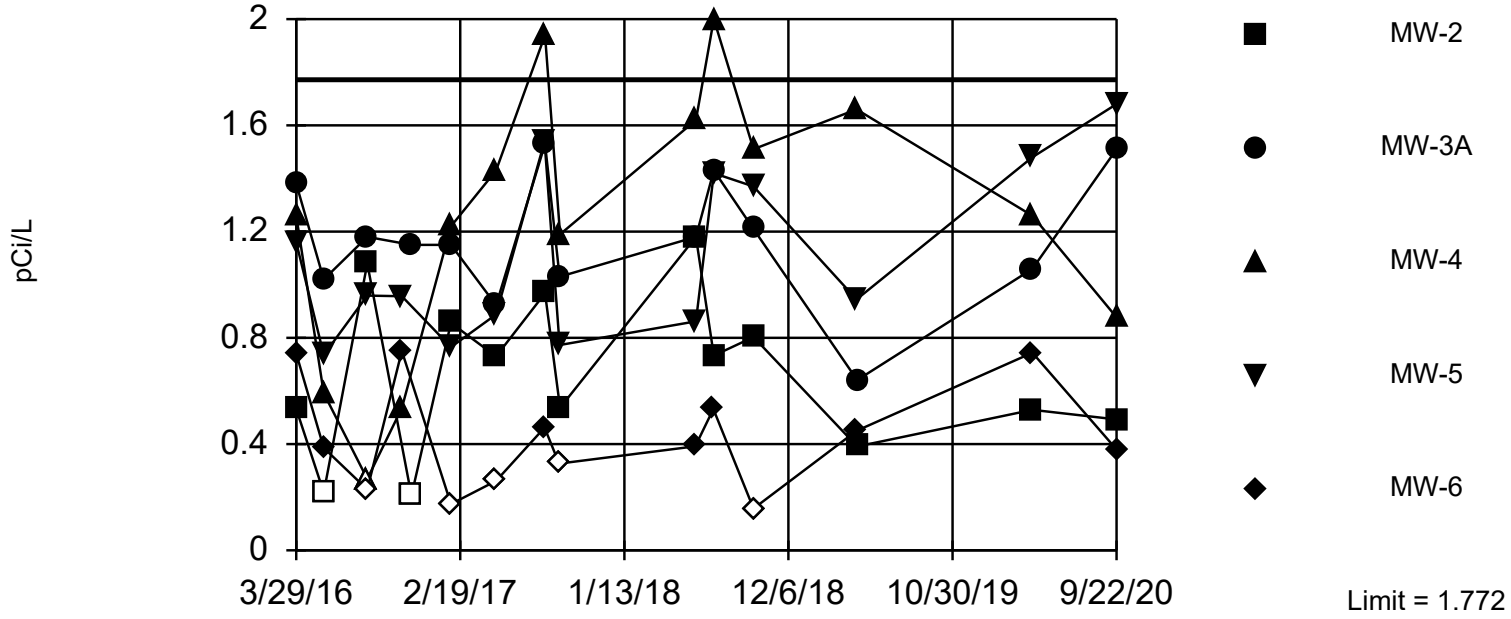
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.2162, Std. Dev.=0.343, n=14. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit.

Constituent: Radium 226 + 228 Analysis Run 12/9/2020 10:18 AM

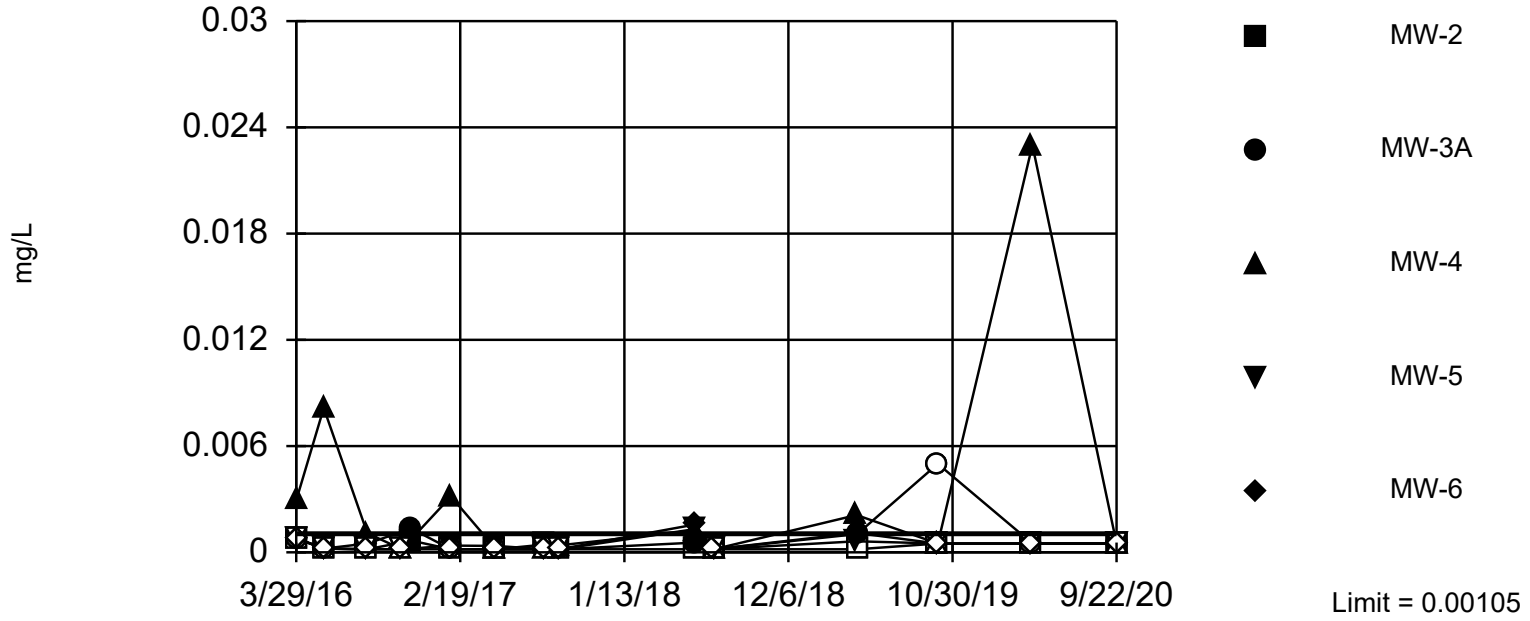
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
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 14 background values. 85.71% NDs. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

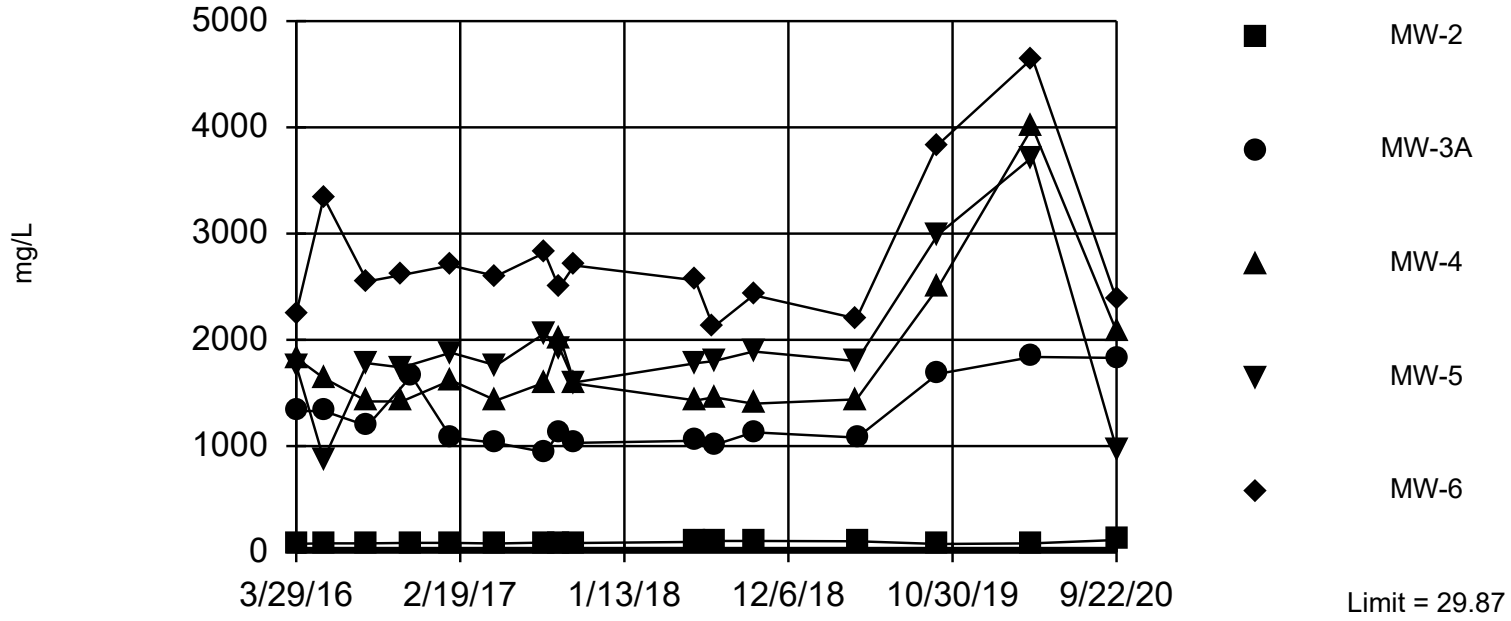
Constituent: Selenium Analysis Run 12/7/2020 3:50 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=23.79, Std. Dev.=2.673, n=15. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 35.1 (4/22/2019).

Constituent: Sulfate Analysis Run 12/7/2020 2:09 PM

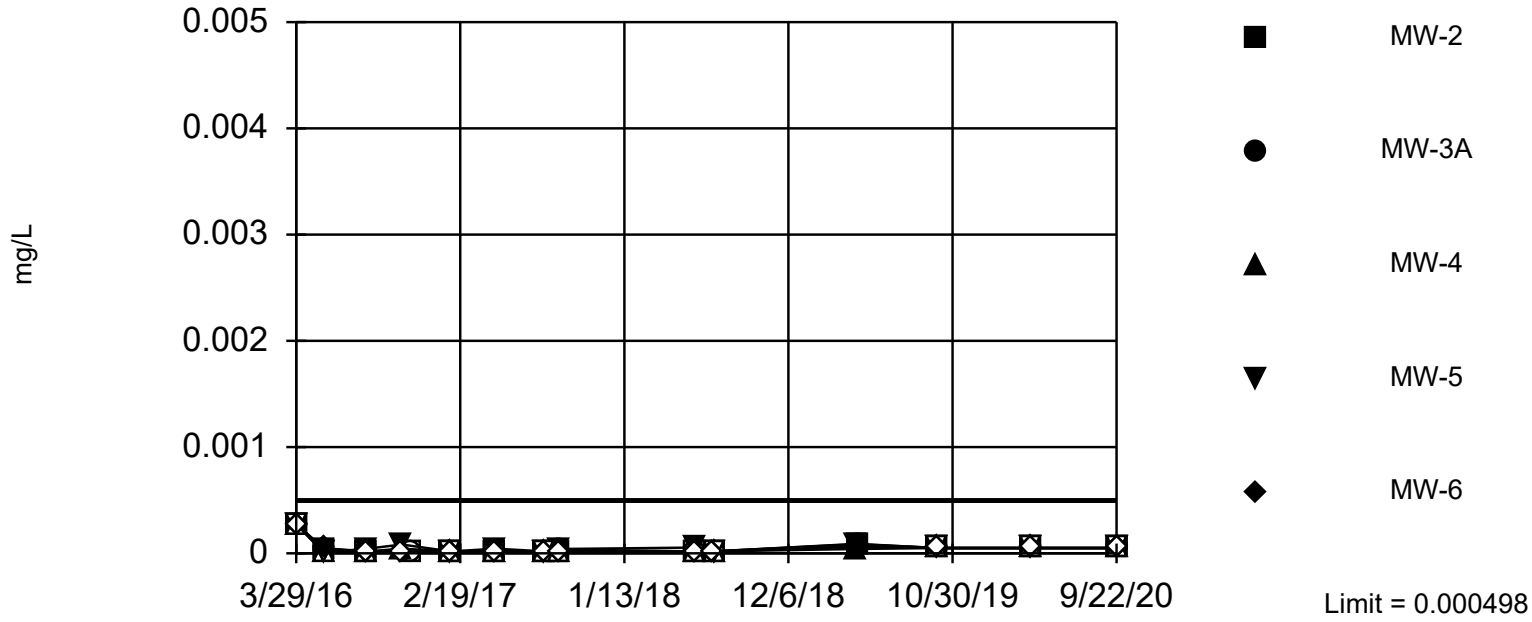
Facility: BREC Green LF Data File: Green LF All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 14 background values. 50% NDs. Report alpha = 0.2632. Individual comparison alpha = 0.05925. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated.

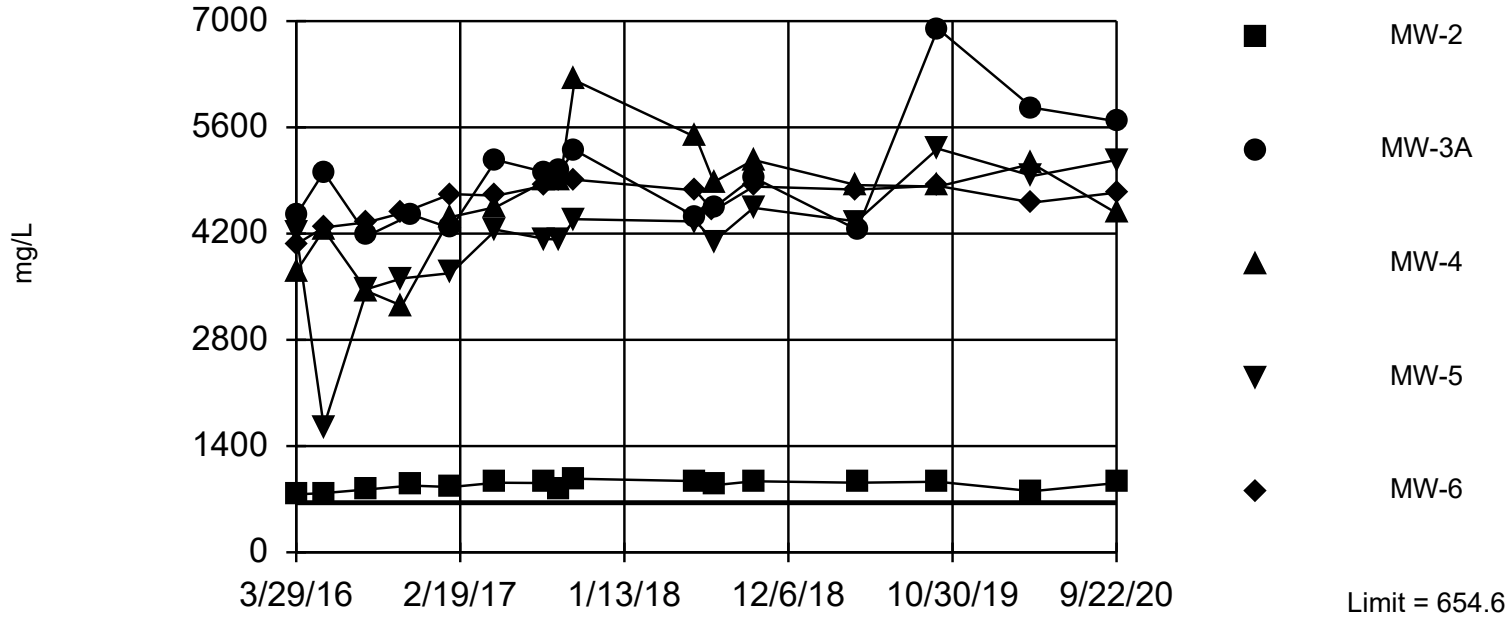
Constituent: Thallium Analysis Run 12/7/2020 3:54 PM

Facility: BREC Green LF Data File: Green LF All Data

Exceeds Limit: MW-2, MW-3A, MW-4, MW-5, MW-6

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=604.7, Std. Dev.=21.48, n=13. Report alpha = 0.1071. Individual comparison alpha = 0.0224. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. Three background outliers were removed: 444 (9/30/2019); 488 (4/6/2020); 388 (9/22/2020).

Constituent: Total Dissolved Solids Analysis Run 12/7/2020 2:19 PM

Facility: BREC Green LF Data File: Green LF All Data

Appendix H
Green Surface Impoundment Statistical Evaluations

GREEN SURFACE IMPOUNDMENT STATISTICAL ANALYSIS

2021 Annual Groundwater Monitoring Report

1.0 INTRODUCTION

The 40 CFR Part 257 Appendix III 2021 groundwater monitoring data at the Green Surface Impoundment were evaluated to determine the occurrence of any statistically significant increases over background (SSIs).

2.0 STATISTICAL ANALYSIS

A determination of whether SSIs have occurred is required by 40 CFR 257.93(h)(2) for each semiannual monitoring event. The occurrence of SSIs was evaluated using an *interwell* prediction limit approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at a background monitoring well. For the Green Surface Impoundment, monitoring well MW-11 is designated as the background well, whereas monitoring wells MW-12, MW-13, and MW-14 are designated downgradient detection monitoring wells.

The statistical analyses were performed in accordance with the U.S. Environmental Protection Agency's Final CCR Rule 40 CFR Parts 257.93(f), 257.93(g), and 257.93(h), the Groundwater Monitoring System and Statistical Methods Certification, and following guidance presented in ASTM D6312-17 *Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs,* and US EPA (2009) *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. The test procedures were designed to balance facility-wide false positive rate and statistical power.

Site data are maintained in a Sanitas™ statistical evaluation database that was used to conduct the analyses presented herein.

2.1 Prediction Limits

Appropriate statistical prediction limits (PLs) were developed for each of the seven Appendix III monitoring constituents, as outline below, and followed the following general procedures.

1. Analytical Data Review
2. Goodness-of-Fit Testing
3. Perform adjustments to data based on the frequency on non-detect values
4. Comparison to interstation background

The background data sets for the statistical analyses consisted of analytical measurements at MW-11 collected since April 2016 to present. The background utilized for the September 2021 analysis was updated to include the data from that event.

2.2 Analytical Data Review

Analytical data were reviewed for consistency with historic data prior to any statistical evaluation. Background data were checked for outliers, and high or low outliers were removed using Dixon's test following EPA (2009) procedures prior to statistical analysis. Outliers include some previous values with elevated detection limits.

2.2.1 Goodness-of-Fit Testing

Four types of background monitoring data sets.

1. Normally distributed (or transformed normal) data sets with the frequency of censored (non-detect) values less than 50 percent

2. Non-normal (or transformed non-normal) data sets with the frequency of censored values less than 50 percent
3. Data sets for which the population distribution is not known due to the frequency of censored values greater than 50 percent
4. Data consisting of 100 percent censored values

The appropriate statistical comparison depends on the type of data set under consideration. Parametric test procedures are utilized wherever possible to increase statistical power. In general, parametric tests are utilized where the data distribution may be assumed to be normal, or transformed normal (data set 1, above). Non-parametric procedures are used where data may not confidently be assumed to be normal (data set 2, above), or where the frequency of non-detect values precludes the testing of normality (data set 3, above). Finally, it is recognized that for 100 percent non-detect data (data set 4, above) no valid statistical comparison may be made, and comparisons must be made to fixed, arbitrary values, such as the analytical method detection or quantitation limit.

To determine the type of dataset, goodness-of-fit testing was performed on both the raw data and natural logarithm of the raw greater than detection limit values using the Shapiro-Wilk W-test as recommended by US EPA (1992) and Gilbert (1987). The tests were conducted at a 95 percent confidence level with outliers removed from the dataset.

Data sets that could not confidently be determined to be normally or log normally distributed were used to determine *nonparametric* prediction limits. Data that were normally or log normally distributed were considered as a basis for calculating *parametric* prediction limits, providing that the percentage of less than detection limit values was greater than 50 percent.

2.2.2 Adjustments to Data Based on the Frequency of Non-Detect Values

After goodness-of-fit testing was completed, the frequency of less than detection limit (left censored) values was be evaluated. If the degree of left-censoring was greater than 15%, the Kaplan-Meier adjustment was used to obtain adjusted estimates of the sample mean and standard deviation. These adjusted values were then used to calculate the upper prediction limit for those data determined to be normally or log normally distributed during goodness-of-fit testing. For the statistical analysis, non-detect values were represented as one-half the detection limit.

If the degree of censoring is 50% to 100%, no method exists to reasonably estimate the sample mean and standard deviation. In this case, non-parametric procedures are utilized. If the degree of censoring is 100% no estimates of statistics can be calculated. In this case, a simple comparison to method reporting limit (RL) of the individual analyte is employed as the initial statistical evaluation.

2.2.3 Comparison to Background

Based on the results for goodness-of-fit testing and the degree of censoring of the various data sets, comparisons to background were made using prediction limit procedures (US EPA, 2009). Parametric prediction limits were utilized where the data may be assumed to be normally or log normally distributed.

If the data are determined to be not normal or log normal, or the frequency of non-detect values is greater than 50%, nonparametric upper prediction limits were calculated, as recommended by US EPA (2009).

The prediction limit comparisons balance statistical power and false positive rate, as recommended by US EPA (1992, 2009) and ASTM D6312-17 using verification resampling as discussed below.

2.2.4 False Positive Rate Control

A groundwater monitoring event involves a large number of individual statistical comparisons. For normal prediction limits, if the significance level of an individual statistical comparison (test) is α (defined as the *per-test* false positive rate), the *annual* false positive rate (α^*) is given by (Gibbons 1994):

Equation 1

$$\alpha^* = 1 - (1-\alpha)^r$$

where,

r = the number of annual statistical comparisons to be made
(downgradient monitoring stations × analytes × events per year.

For a typical monitoring scenario, the per-test α is held to a value *no less* than 0.01 (40 CFR 257.93(g)(2). Limiting α to the minimum value of 0.01 guards against an excessive false negative rate, or Type II error, but may result in too large an *event-wide* false positive rate. For each of the 2021 monitoring events there are 7 parameters requiring statistical evaluation (Table H1, *c* =7). There are three downgradient monitoring wells in the evaluation (Table H1, *w* = 3). For a single evaluation event (n_E = 1), the number of annual statistical comparisons (*r*) is equal to *c* x *w* x n_E = 21. From Equation 1, the annual false positive rate for the two sampling events is 0.19 Table H1, Row 1. Thus, for each sampling event there would be about a 19 percent probability that a statistically significant result would be obtained even though no real statistical exceedance occurred.

To limit the annual false positive rate to 0.1, as suggested by EPA (2009) (or to a corresponding event-wide false positive rate of 0.05 for semiannual sampling per 40 CFR 257.93(g)(2)), Equation 1 indicates that individual tests would have to be conducted at a significance levels of about 0.0024 (Table H1, Row 2). Very large statistical limits would have to be employed, and the individual *false negative* rate would be unacceptably high at this significance level.

Alternatively, a *verification resampling* strategy is employed to limit the annual-wide false positive rate while maintaining adequate statistical power (EPA 1992, 2009; Gibbons 1994; ASTM 2017). *A statistically significant increase is not declared until both the original sample and some number of verification resamples fail the statistical test procedures*. For the case of one or two verification resampling events, and assuming independence of measurements, α^* may be calculated as (EPA 2009):

Equation 2

$$\alpha^* = 1 - (1-\alpha^m)^r$$

where,

m = the sum of the original sample and number of retest verification samples (1 or 2).

Passing any resample passes the statistical evaluation procedure.

Table H1 Row 3 illustrate a single resample strategy with the resample required to pass. Table H1 Row 4 Row 4 illustrate the case of two verification resamples with one of the two required to pass.

EPA (2009) and 40 CFR 257.93(g)(2) defines two criteria applicable to statistical analysis of groundwater monitoring data:

1. The per-event false positive rate (α^*) shall be no less than 0.05 per evert, or 0.1 annually, and,
2. The per-test false positive rate (α) shall be no less than 0.01.

These criteria were deemed by EPA to provide acceptable balance between false positive rate control and statistical power and are used for this project. The single verification sample resampling strategy (Table H1, Row 3) fits the EPA criteria and minimizes sampling and analytical cost. A single verification resampling strategy (referred to as "Pass 1 of 2") using a per-test significance level of 0.0494 was therefore used for this statistical analysis. An SSI does not occur unless the original sample and the verification resample both fail the statistical testing.

3.0 RESULTS

Prediction limit results for the two 2021 sampling events are provided in Tables H2 and H3. Time series plots showing prediction limit results are provided for each downgradient well / parameter in Attachment 1 (April 23, 2021 event) and Attachment 2 (September 24 event). Plots in the attachments are arranged in the constituent order listed in Tables H2 and H3.

There were no exceedances of background for any of the seven 40 CFR Part 257 Appendix III monitoring parameters for either 2021 monitoring event. These results are consistent with the previous 2018, 2019, and 2020 monitoring results. Based on this analysis assessment monitoring for 40 CFR Part 257 Appendix IV parameters is not required for the next 2022 sampling event.

4.0 REFERENCES

American Society for Testing and Materials (ASTM), 2017, *Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities*. Designation D 6312-17.

Gibbons, R.D. 1994. *Statistical Methods in Ground-Water Monitoring*. John Wiley & Sons.

Gilbert, R.O., 1987, Statistical Methods for Environmental Pollution Monitoring: Van Nostrand Reinhold, New York, 320p.

US EPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*. Office of Solid Waste Management Division, US EPA, Washington, DC.

-------, 1992, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities: Addendum to Interim Final Guidance,* Office of Solid Waste, Permits and State Programs Division, July.

-------, 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* Office of Resource Conservation and Recovery, Program Implementation and Information Division, March.

Tables

Table H1
2021 Annual Monitoring Report
BREC Green SI
Calculation of False Positive Rates

Row Number	*Number of Downgradient Stations (w)*	*Number of Constituents (c)*	*Number of Evaluations (n_E)*	*Number of Comparisons ($r = w \times c \times n_E$)*	*Target False Positive Rate (α^*)*	*Retest Strategy (1 of m)*	*Individual Comparison False Positive Rate (α)*
1	3	7	1	21	0.19	1	0.0100
2	3	7	1	21	0.05	1	0.0024
3	3	7	1	21	0.05	2	0.0494
4	3	7	1	21	0.05	3	0.1346

Table H2: 2021 Annual Report, BREC Green Suface Impoundment, April 2021 Prediction Limit Results

Constituent Name	Well	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Wells	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Boron (mg/L)	MW-12	0.9389	n/a	4/23/2021	0.31	No	16	MW-11	0.7314	0.1144	12.5	None	No	0.0494	Param Inter
Boron (mg/L)	MW-13	0.9389	n/a	4/23/2021	0.05ND	No	16	MW-11	0.7314	0.1144	12.5	None	No	0.0494	Param Inter
Boron (mg/L)	MW-14	0.9389	n/a	4/23/2021	0.17	No	16	MW-11	0.7314	0.1144	12.5	None	No	0.0494	Param Inter
Calcium (mg/L)	MW-12	374.1	n/a	4/23/2021	91.5	No	15	MW-11	324.2	27.32	0	None	No	0.0494	Param Inter
Calcium (mg/L)	MW-13	374.1	n/a	4/23/2021	90.1	No	15	MW-11	324.2	27.32	0	None	No	0.0494	Param Inter
Calcium (mg/L)	MW-14	374.1	n/a	4/23/2021	199	No	15	MW-11	324.2	27.32	0	None	No	0.0494	Param Inter
Chloride (mg/L)	MW-12	3468	n/a	4/23/2021	14.7	No	16	MW-11	7.622	0.2919	0	None	ln(x)	0.0494	Param Inter
Chloride (mg/L)	MW-13	3468	n/a	4/23/2021	26.4	No	16	MW-11	7.622	0.2919	0	None	ln(x)	0.0494	Param Inter
Chloride (mg/L)	MW-14	3468	n/a	4/23/2021	117	No	16	MW-11	7.622	0.2919	0	None	ln(x)	0.0494	Param Inter
Fluoride (mg/L)	MW-12	0.891	n/a	4/23/2021	0.4	No	16	MW-11	n/a	n/a	12.5	n/a	n/a	0.05567	NP Inter
Fluoride (mg/L)	MW-13	0.891	n/a	4/23/2021	0.2	No	16	MW-11	n/a	n/a	12.5	n/a	n/a	0.05567	NP Inter
Fluoride (mg/L)	MW-14	0.891	n/a	4/23/2021	0.2	No	16	MW-11	n/a	n/a	12.5	n/a	n/a	0.05567	NP Inter
pH [Field] (SU)	MW-12	7.43	6.56	4/23/2021	7.33	No	16	MW-11	6.995	0.1976	0	None	No	0.0247	Param Inter
pH [Field] (SU)	MW-13	7.43	6.56	4/23/2021	6.77	No	16	MW-11	6.995	0.1976	0	None	No	0.0247	Param Inter
pH [Field] (SU)	MW-14	7.43	6.56	4/23/2021	6.88	No	16	MW-11	6.995	0.1976	0	None	No	0.0247	Param Inter
Sulfate (mg/L)	MW-12	1510	n/a	4/23/2021	14	No	16	MW-11	1144	201.6	0	None	No	0.0494	Param Inter
Sulfate (mg/L)	MW-13	1510	n/a	4/23/2021	82	No	16	MW-11	1144	201.6	0	None	No	0.0494	Param Inter
Sulfate (mg/L)	MW-14	1510	n/a	4/23/2021	180	No	16	MW-11	1144	201.6	0	None	No	0.0494	Param Inter
Total Dissolved Solids (mg/L)	MW-12	5262	n/a	4/23/2021	576	No	14	MW-11	4859	218.8	0	None	No	0.0494	Param Inter
Total Dissolved Solids (mg/L)	MW-13	5262	n/a	4/23/2021	706	No	14	MW-11	4859	218.8	0	None	No	0.0494	Param Inter
Total Dissolved Solids (mg/L)	MW-14	5262	n/a	4/23/2021	1040	No	14	MW-11	4859	218.8	0	None	No	0.0494	Param Inter

Notes:

Concentration units are as specified in Column 1.

mg/L - milligram per liter

SU - standard units

n/a - not applicable

ND - Compound not detected, preceding number is one-half the detection limit.

NP Inter - Non-parametric interstation prediction limit.

Param Inter - Parametric interstation prediction limit.

Table H3: 2021 Annual Report, BREC Green Suface Impoundment, September 2021 Prediction Limit Results

Constituent Name	Well	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Wells	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Boron (mg/L)	MW-12	0.8952	n/a	9/24/2021	0.5ND	No	17	MW-11	0.7555	0.07749	17.65	Kaplan-Meier	No	0.0494	Param Inter
Boron (mg/L)	MW-13	0.8952	n/a	9/24/2021	0.5ND	No	17	MW-11	0.7555	0.07749	17.65	Kaplan-Meier	No	0.0494	Param Inter
Boron (mg/L)	MW-14	0.8952	n/a	9/24/2021	0.5ND	No	17	MW-11	0.7555	0.07749	17.65	Kaplan-Meier	No	0.0494	Param Inter
Calcium (mg/L)	MW-12	380.2	n/a	9/24/2021	91.8	No	17	MW-11	320.8	32.94	0	None	No	0.0494	Param Inter
Calcium (mg/L)	MW-13	380.2	n/a	9/24/2021	87.9	No	17	MW-11	320.8	32.94	0	None	No	0.0494	Param Inter
Calcium (mg/L)	MW-14	380.2	n/a	9/24/2021	212	No	17	MW-11	320.8	32.94	0	None	No	0.0494	Param Inter
Chloride (mg/L)	MW-12	3399	n/a	9/24/2021	16.2	No	17	MW-11	7.622	0.2826	0	None	ln(x)	0.0494	NP Inter
Chloride (mg/L)	MW-13	3399	n/a	9/24/2021	32.3	No	17	MW-11	7.622	0.2826	0	None	ln(x)	0.0494	NP Inter
Chloride (mg/L)	MW-14	3399	n/a	9/24/2021	186	No	17	MW-11	7.622	0.2826	0	None	ln(x)	0.0494	NP Inter
Fluoride (mg/L)	MW-12	0.891	n/a	9/24/2021	0.4	No	17	MW-11	n/a	n/a	11.76	n/a	n/a	0.05273	Param Inter
Fluoride (mg/L)	MW-13	0.891	n/a	9/24/2021	0.2	No	17	MW-11	n/a	n/a	11.76	n/a	n/a	0.05273	Param Inter
Fluoride (mg/L)	MW-14	0.891	n/a	9/24/2021	0.3	No	17	MW-11	n/a	n/a	11.76	n/a	n/a	0.05273	Param Inter
pH [Field] (SU)	MW-12	7.445	6.495	9/24/2021	6.52	No	17	MW-11	6.97	0.2173	0	None	No	0.0247	Param Inter
pH [Field] (SU)	MW-13	7.445	6.495	9/24/2021	6.51	No	17	MW-11	6.97	0.2173	0	None	No	0.0247	Param Inter
pH [Field] (SU)	MW-14	7.445	6.495	9/24/2021	6.52	No	17	MW-11	6.97	0.2173	0	None	No	0.0247	Param Inter
Sulfate (mg/L)	MW-12	1721	n/a	9/24/2021	31	No	17	MW-11	7.061	0.2159	0	None	ln(x)	0.0494	Param Inter
Sulfate (mg/L)	MW-13	1721	n/a	9/24/2021	121	No	17	MW-11	7.061	0.2159	0	None	ln(x)	0.0494	Param Inter
Sulfate (mg/L)	MW-14	1721	n/a	9/24/2021	324	No	17	MW-11	7.061	0.2159	0	None	ln(x)	0.0494	Param Inter
Total Dissolved Solids (mg/L)	MW-12	5264	n/a	9/24/2021	622	No	15	MW-11	4871	215.4	0	None	No	0.0494	Param Inter
Total Dissolved Solids (mg/L)	MW-13	5264	n/a	9/24/2021	754	No	15	MW-11	4871	215.4	0	None	No	0.0494	Param Inter
Total Dissolved Solids (mg/L)	MW-14	5264	n/a	9/24/2021	1050	No	15	MW-11	4871	215.4	0	None	No	0.0494	Param Inter

Notes:

Concentration units are as specified in Column 1.

mg/L - milligram per liter

SU - standard units

n/a - not applicable

ND - Compound not detected, preceding number is one-half the detection limit.

NP Inter - Non-parametric interstation prediction limit.

Param Inter - Parametric interstation prediction limit.

Attachment 1

April 2021 Time Series Plots

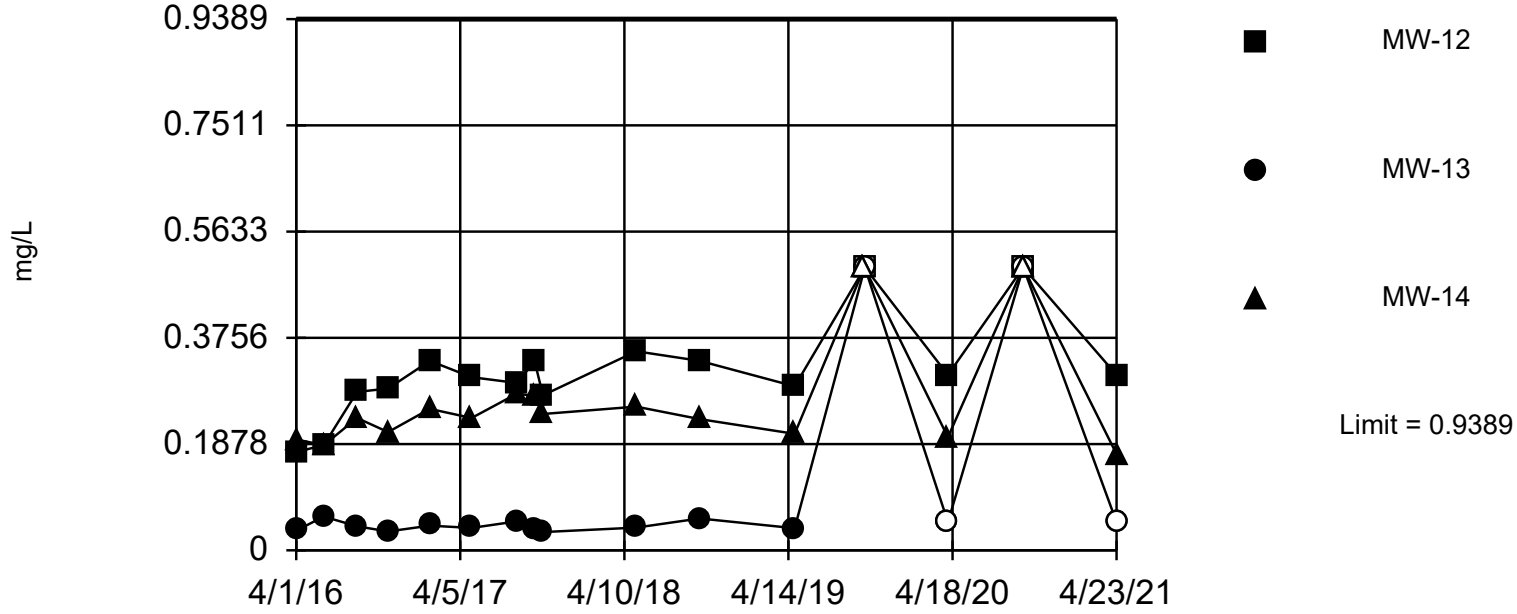
And Prediction Limit Results

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.7314, Std. Dev.=0.1144, n=16, 12.5% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

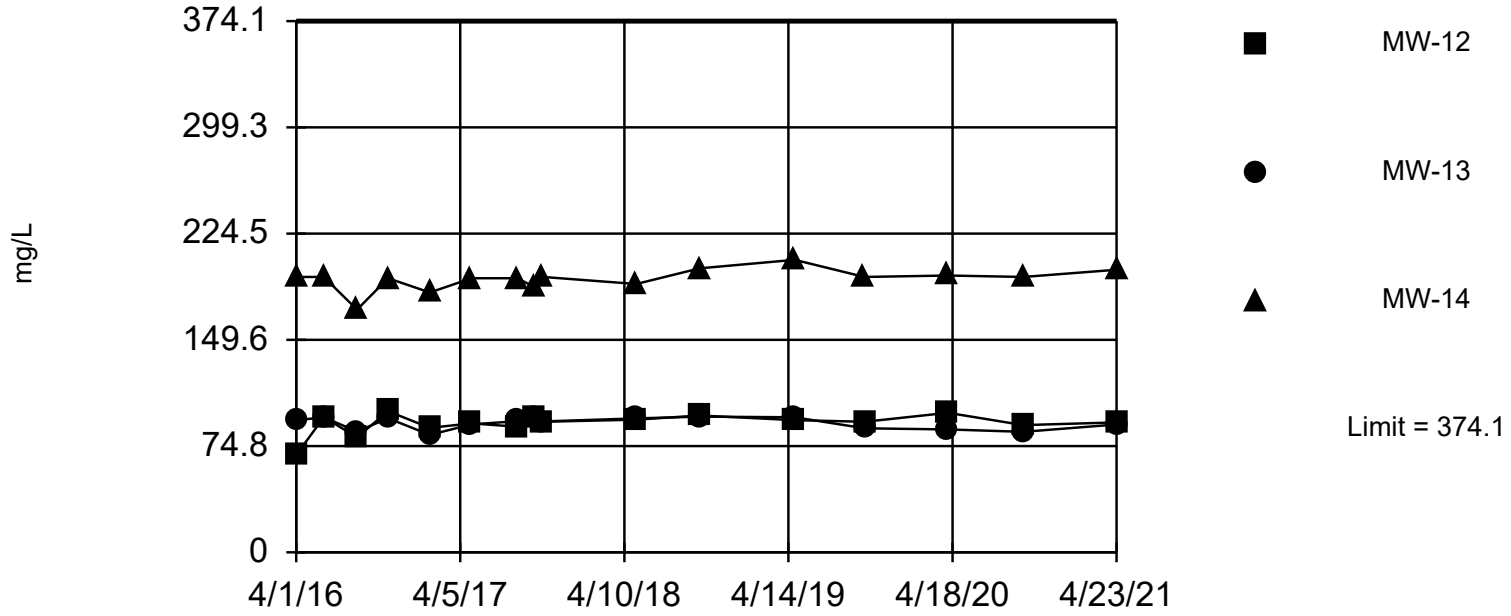
Constituent: Boron Analysis Run 5/10/2021 9:51 AM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=324.2, Std. Dev.=27.32, n=15. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. One background outlier was removed: 243 (8/16/2016).

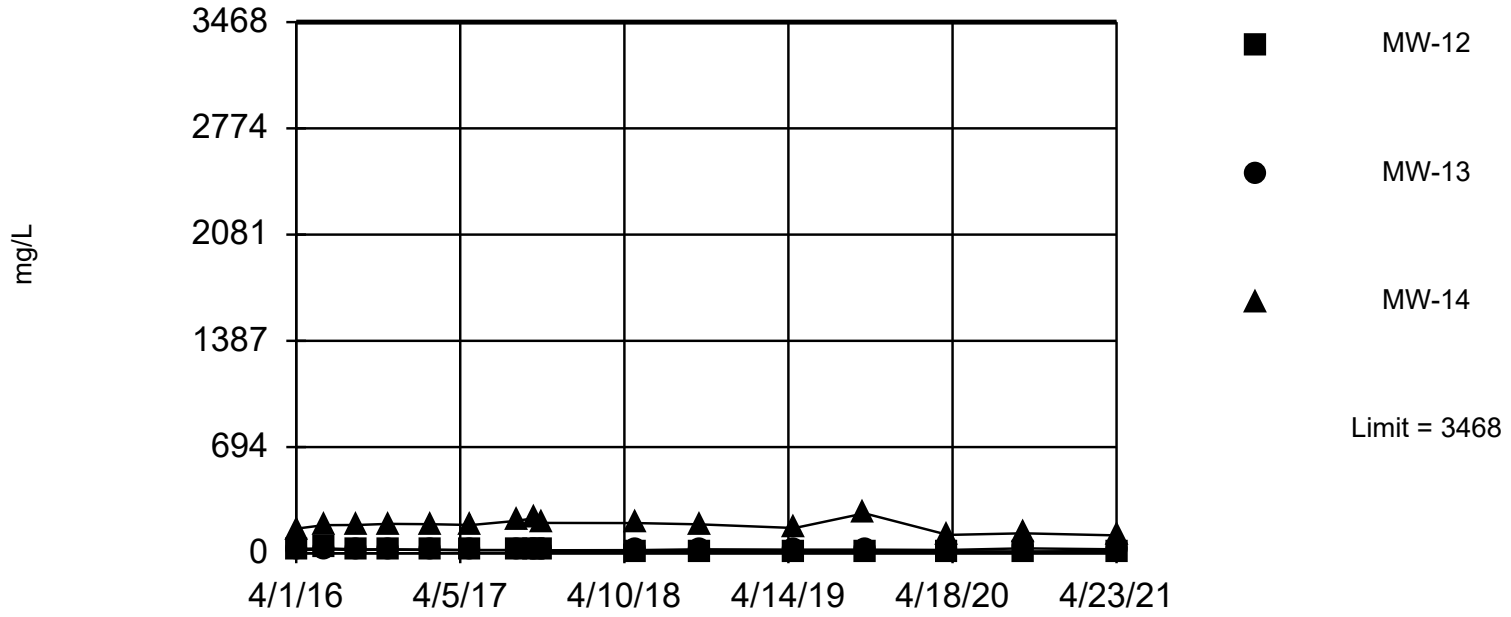
Constituent: Calcium Analysis Run 5/10/2021 9:53 AM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=7.622, Std. Dev.=0.2919, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

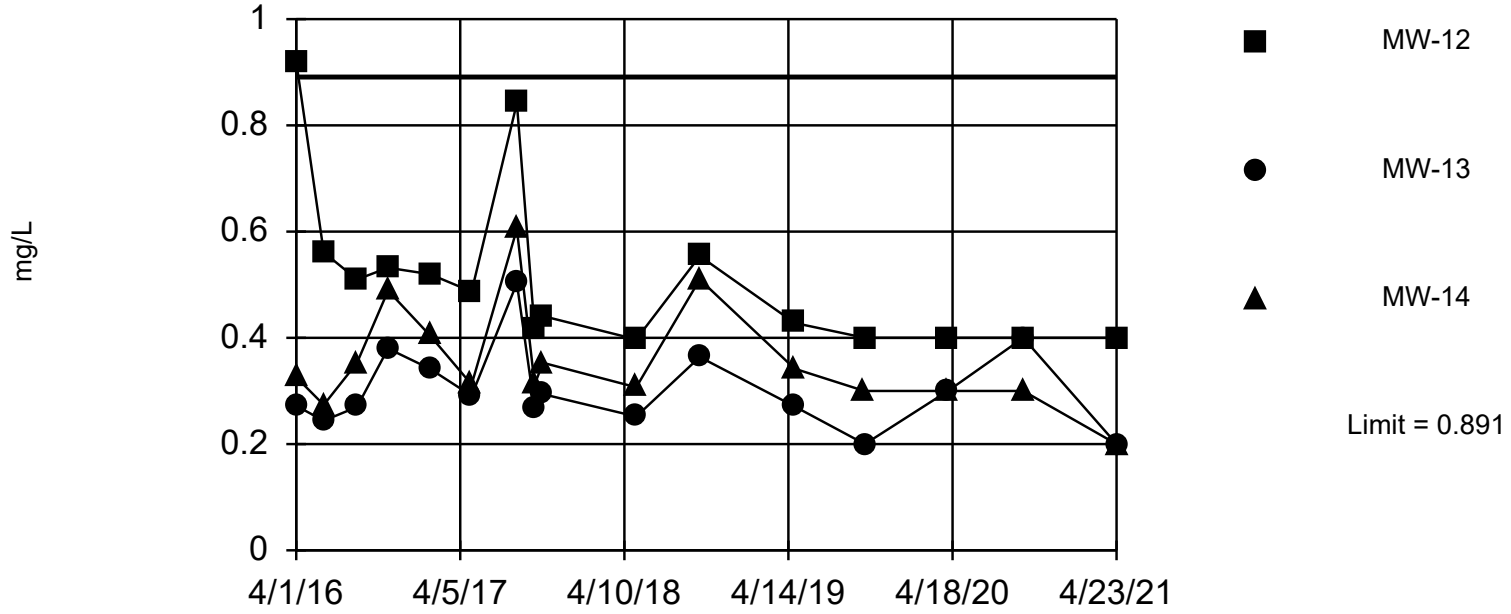
Constituent: Chloride Analysis Run 5/10/2021 9:55 AM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 16 background values. 12.5% NDs. Report alpha = 0.1579. Individual comparison alpha = 0.05567. Most recent point for each compliance well compared to limit. After outlier removal all values were the same, so outlier results were invalidated. Insufficient data to test for seasonality; data will not be deseasonalized.

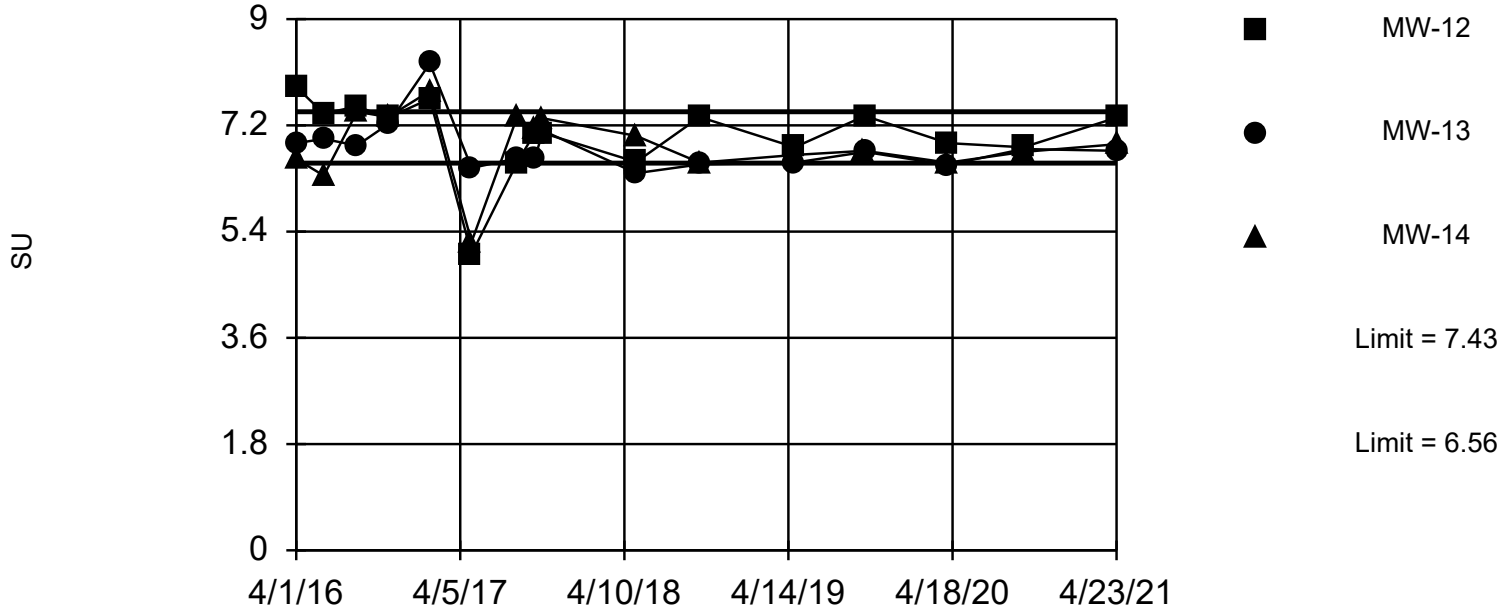
Constituent: Fluoride Analysis Run 5/10/2021 9:50 AM

Facility: BREC Green SI Data File: Green SI All Data

Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.995, Std. Dev.=0.1976, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0247. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

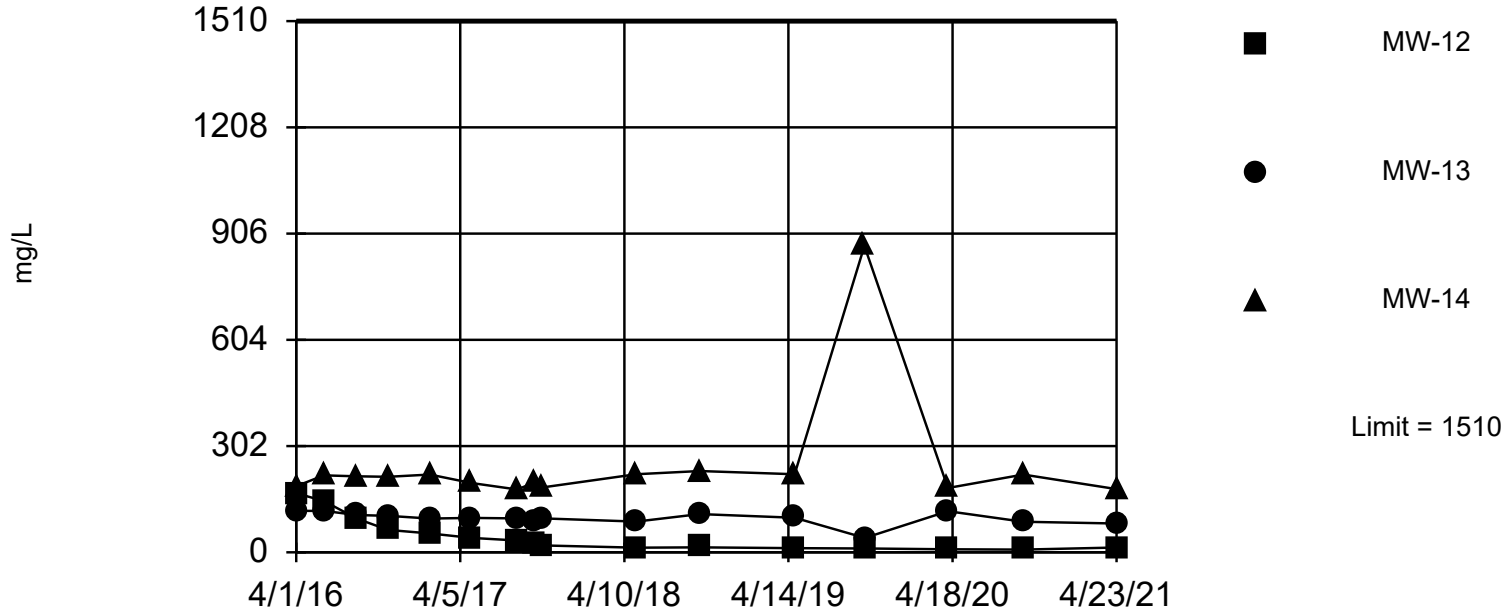
Constituent: pH [Field] Analysis Run 5/10/2021 9:57 AM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=1144, Std. Dev.=201.6, n=16. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

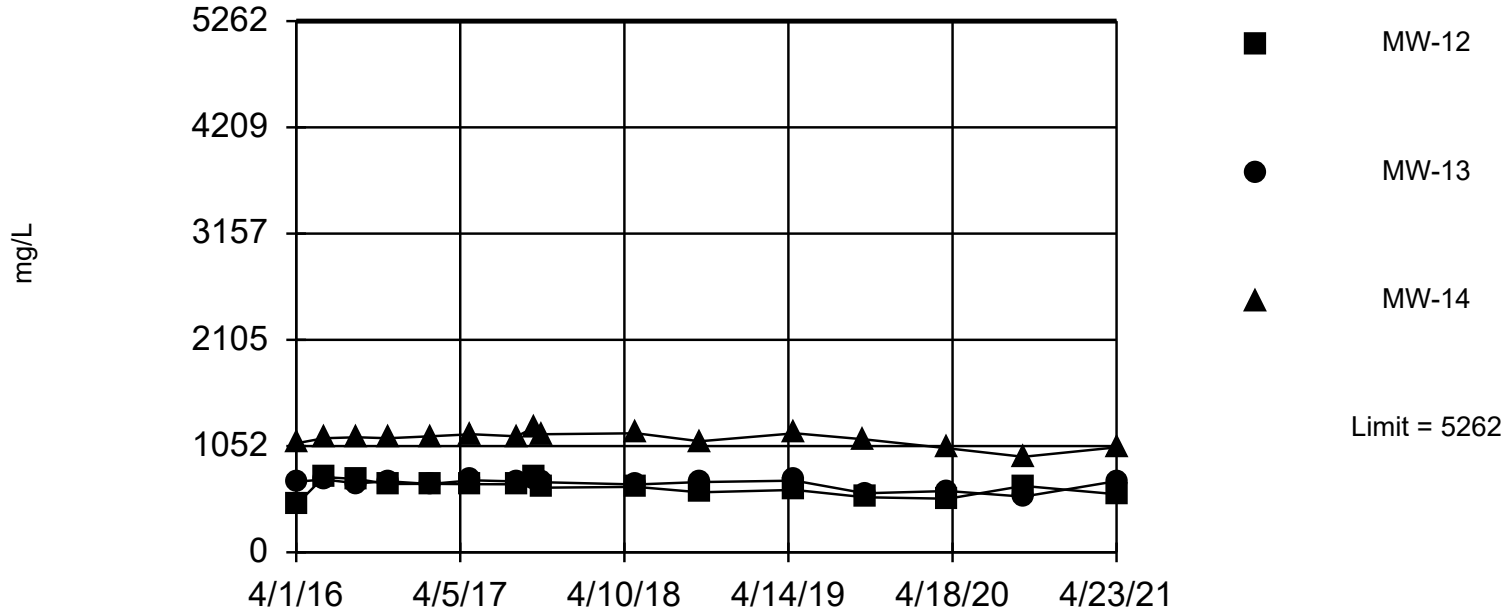
Constituent: Sulfate Analysis Run 5/10/2021 10:03 AM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=4859, Std. Dev.=218.8, n=14. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. Two background outliers were removed: 3920 (4/1/2016); 682 (10/3/2019).

Constituent: Total Dissolved Solids Analysis Run 5/10/2021 10:06 AM

Facility: BREC Green SI Data File: Green SI All Data

Attachment 2

September 2021 Time Series Plots

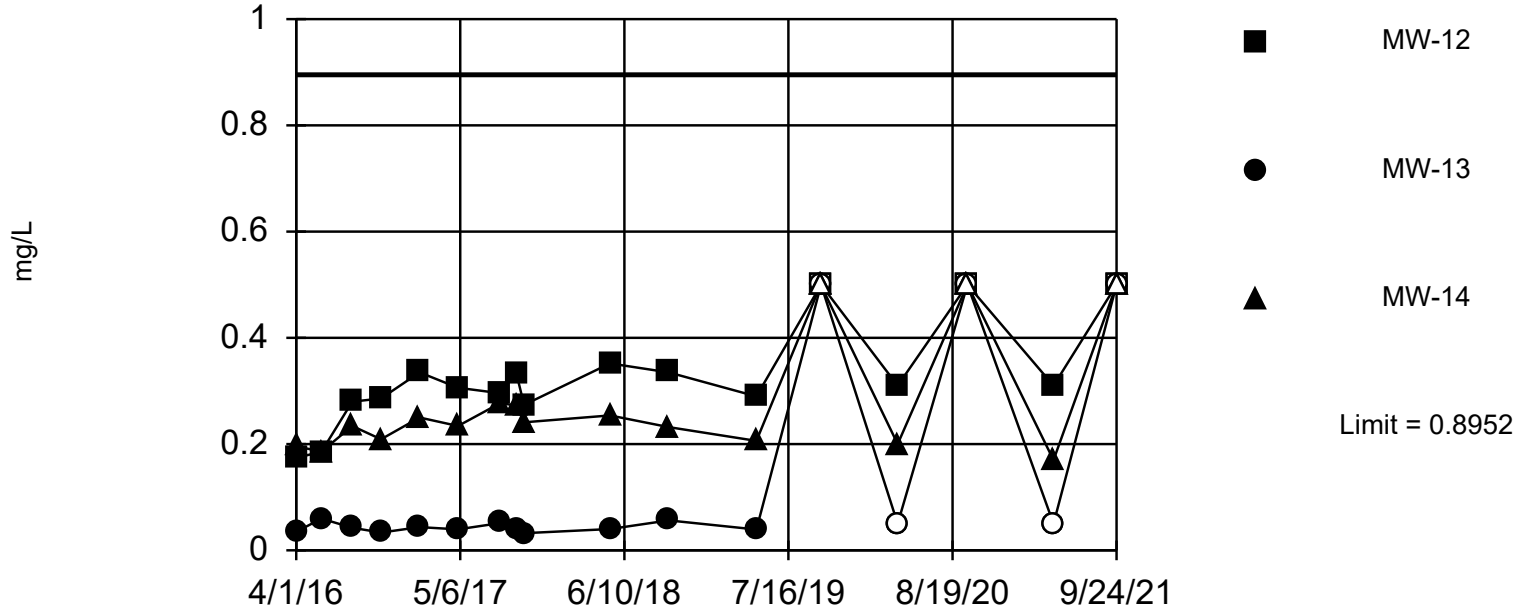
And Prediction Limit Results

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.7555, Std. Dev.=0.07749, n=17, 17.65% NDs. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

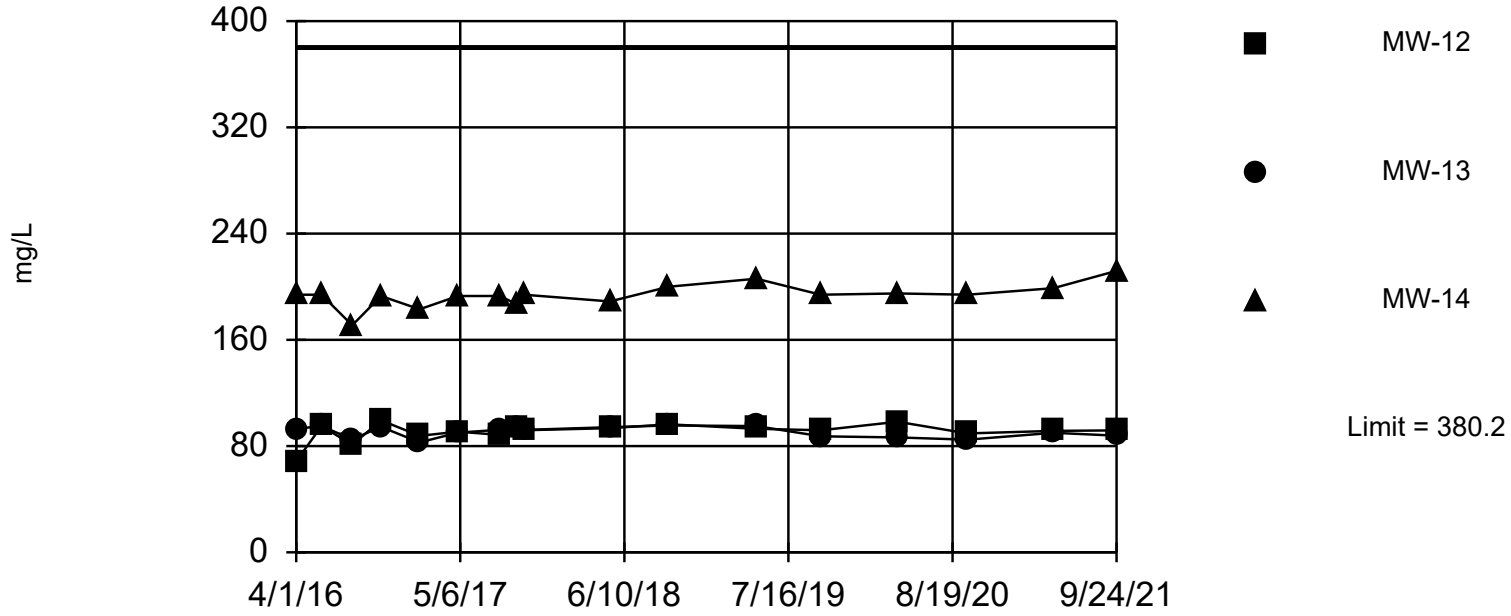
Constituent: Boron Analysis Run 11/22/2021 1:38 PM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=320.8, Std. Dev.=32.94, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. No background outliers were found.

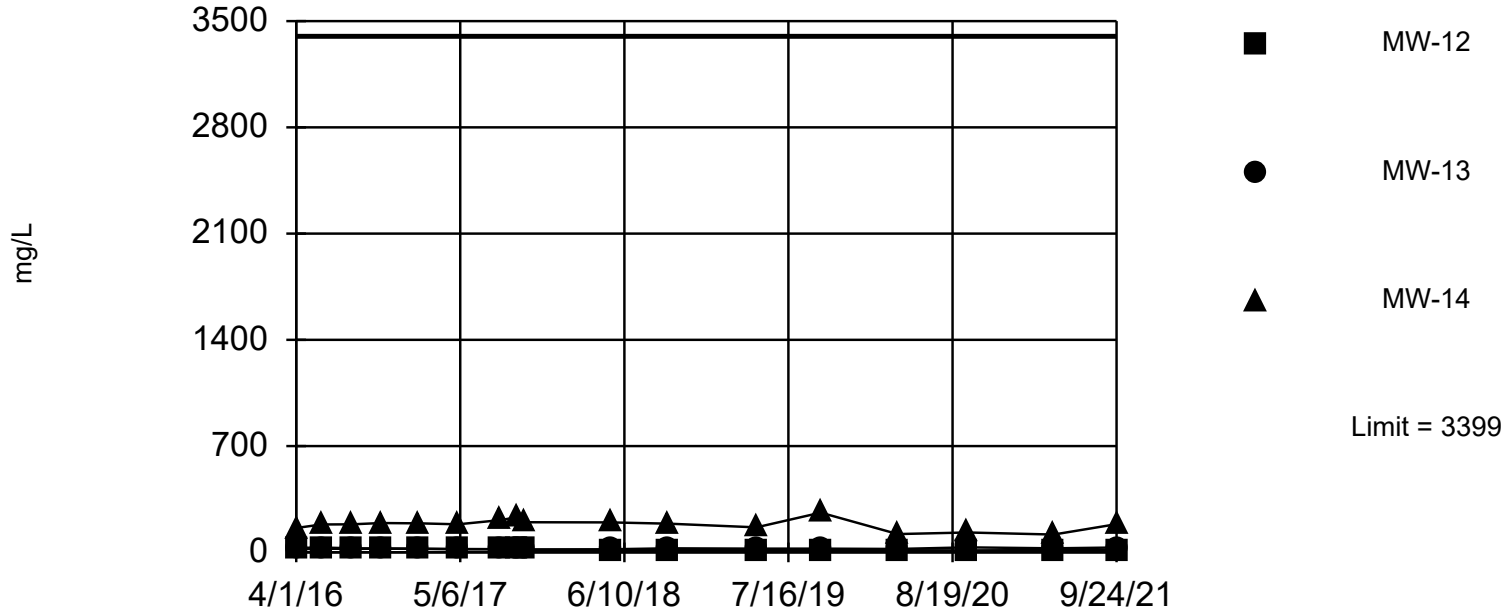
Constituent: Calcium Analysis Run 11/22/2021 1:41 PM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=7.622, Std. Dev.=0.2826, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

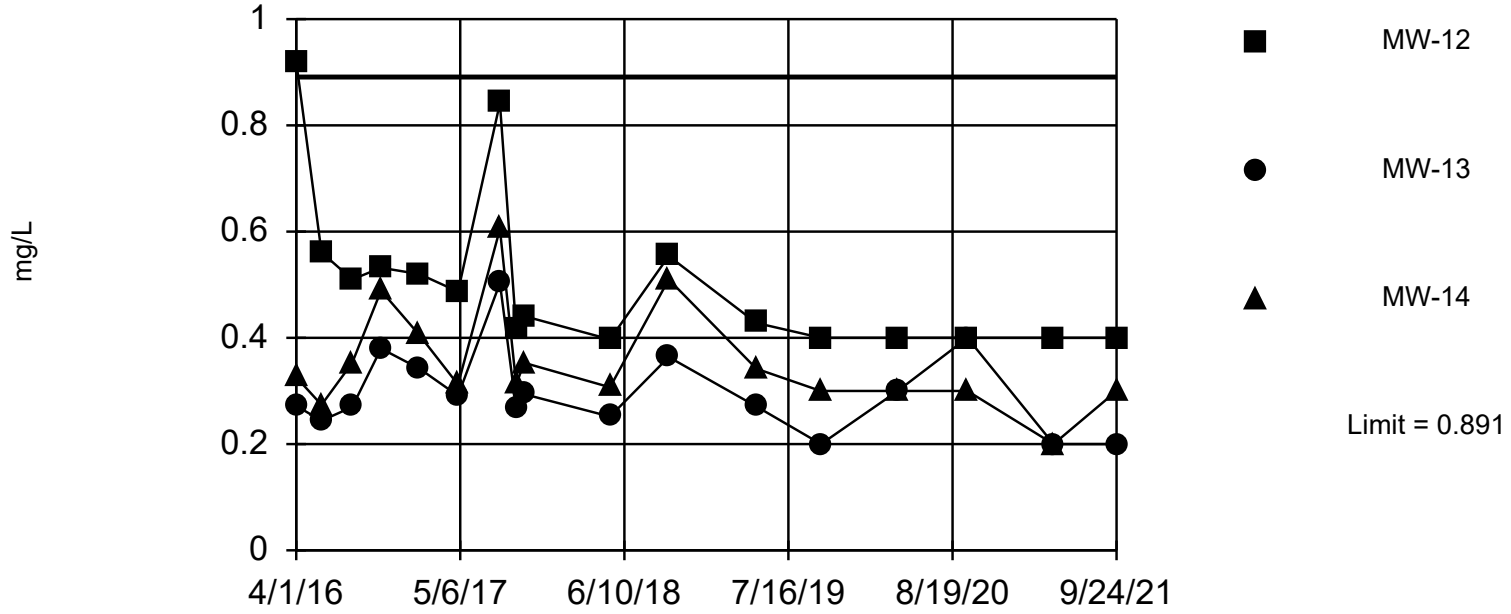
Constituent: Chloride Analysis Run 11/22/2021 1:54 PM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 17 background values. 11.76% NDs. Report alpha = 0.15. Individual comparison alpha = 0.05273. 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.

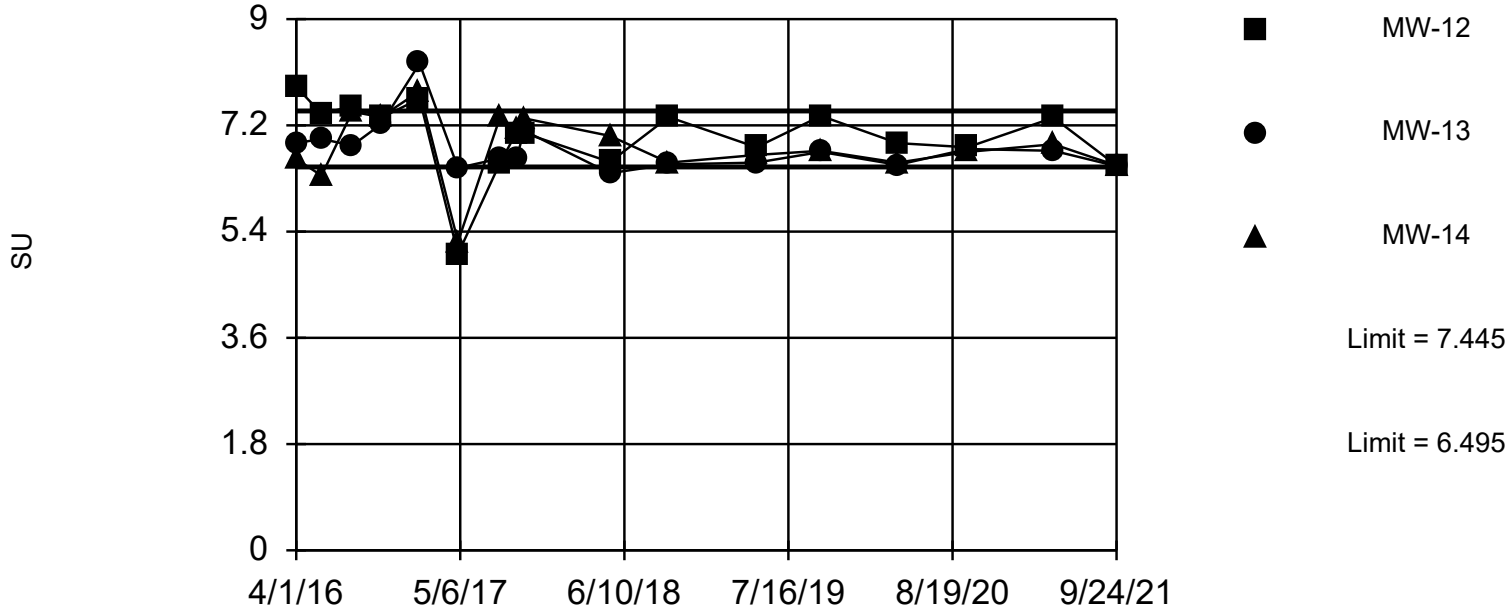
Constituent: Fluoride Analysis Run 11/22/2021 1:52 PM

Facility: BREC Green SI Data File: Green SI All Data

Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.97, Std. Dev.=0.2173, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0247. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

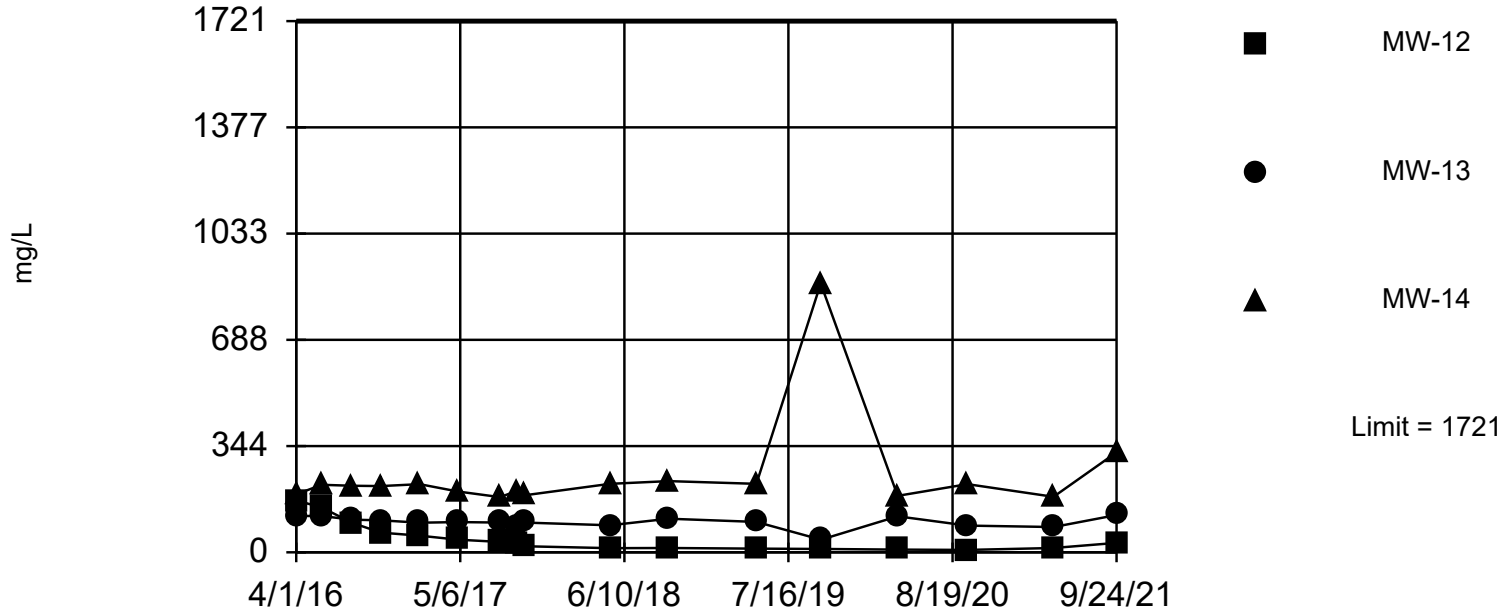
Constituent: pH [Field] Analysis Run 11/22/2021 1:58 PM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=7.061, Std. Dev.=0.2159, n=17. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

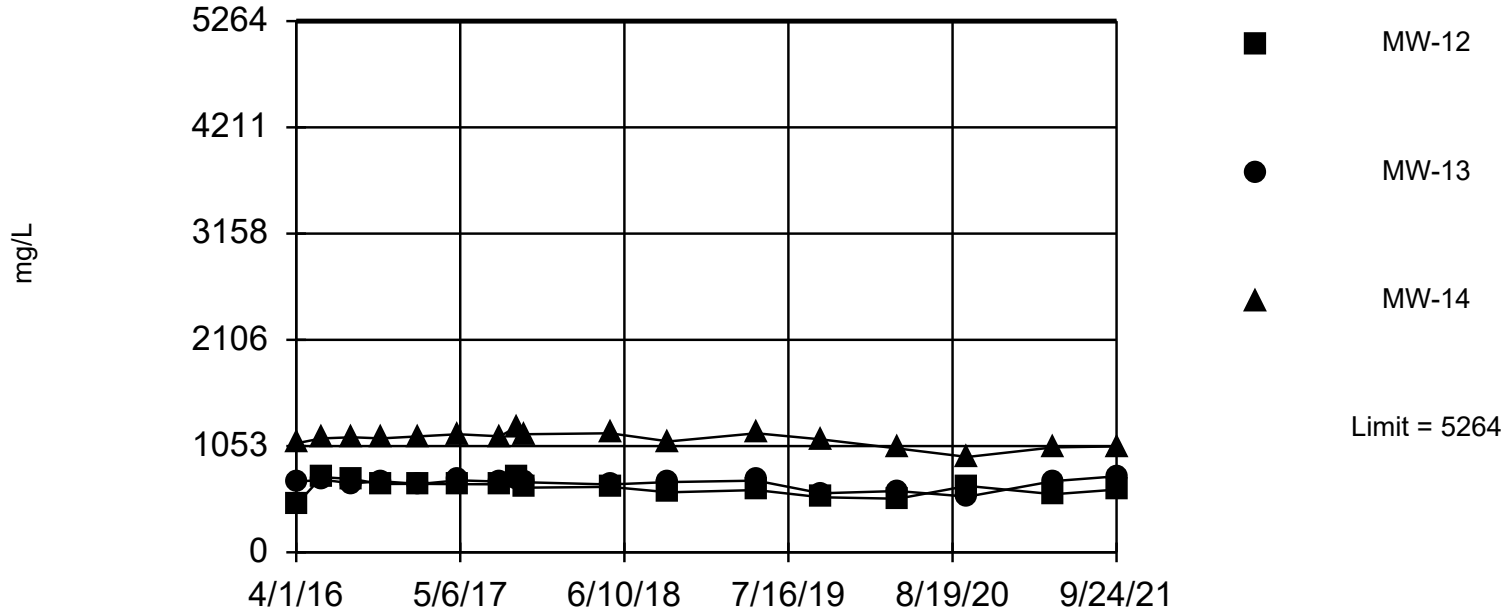
Constituent: Sulfate Analysis Run 11/22/2021 2:01 PM

Facility: BREC Green SI Data File: Green SI All Data

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=4871, Std. Dev.=215.4, n=15. Insufficient data to test for seasonality; data will not be deseasonalized. Report alpha = 0.141. Individual comparison alpha = 0.0494. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. Two background outliers were removed: 3920 (4/1/2016); 682 (10/3/2019).

Constituent: Total Dissolved Solids Analysis Run 11/22/2021 2:51 PM

Facility: BREC Green SI Data File: Green SI All Data

Appendix I
Reid/HMP&L Surface Impoundment Statistical Evaluations

REID SURFACE IMPOUNDMENT STATISTICAL ANALYSIS

2021 Annual Groundwater Monitoring Report

1.0 INTRODUCTION

Previous statistical analysis has indicated that certain 40 CFR Part 257 Appendix III constituents at downgradient monitoring wells MW-8, MW-9, and MW-10 occur at statistically significant higher concentrations than in background monitoring well MW-7. Based on these results, assessment monitoring is conducted for both 40 CFR Part 257 Appendix III and IV parameters at the Reid Surface Impoundment.

The 40 CFR Part 257 Appendix III and IV 2021 groundwater monitoring data at the Reid Surface Impoundment were evaluated to determine the occurrence of any statistically significant increases over background (SSIs) and whether or not any of the SSIs occurred at a statistically significant level (SSL) above the groundwater protection standard as defined at 40 CFR.95(h).

2.0 STATISTICAL ANALYSIS

A determination of whether SSIs have occurred is required by 40 CFR 257.93(h)(2) for each semiannual monitoring event. The occurrence of SSIs was evaluated using an *interwell* prediction limit approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at a background monitoring well. For the Reid Surface Impoundment, monitoring well MW-7 is designated as the background well, whereas monitoring wells MW-8, MW-9, and MW-10 are designated downgradient detection monitoring wells. In addition, the facility has a characterization well (MW-110) that is not part of the detection monitoring network.

The statistical analyses were performed in accordance with the U.S. Environmental Protection Agency's Final CCR Rule 40 CFR Parts 257.93(f), 257.93(g), and 257.93(h), the Groundwater Monitoring System and Statistical Methods Certification, and following guidance presented in ASTM D6312-17 *Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs,* and US EPA (2009) *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. The test procedures were designed to balance facility-wide false positive rate and statistical power.

Site data are maintained in a Sanitas™ statistical evaluation database that was used to conduct the analyses presented herein.

2.1 Prediction Limits

Appropriate statistical prediction limits (PLs) were developed for each of the 21 Appendix III and Appendix IV monitoring constituents, as outline below, and followed the following general procedures.

1. Analytical Data Review
2. Goodness-of-Fit Testing
3. Perform adjustments to data based on the frequency on non-detect values
4. Comparison to interstation background

The background data sets for the statistical analyses consisted of analytical measurements at MW-7 from March 2016 to present. The background utilized for the September 2021 analysis was updated to include the data from that event.

2.2 Analytical Data Review

Analytical data were reviewed for consistency with historic data prior to any statistical evaluation. Background data were checked for outliers, and high or low outliers were removed using Dixon's test and

following EPA (2009) procedures prior to statistical analysis. Outliers include some previous non-detect values with elevated detection limits.

2.2.1 Goodness-of-Fit Testing

Four types of background monitoring data sets.

1. Normally distributed (or transformed normal) data sets with the frequency of censored (non-detect) values less than 50 percent
2. Non-normal (or transformed non-normal) data sets with the frequency of censored values less than 50 percent
3. Data sets for which the population distribution is not known due to the frequency of censored values greater than 50 percent
4. Data consisting of 100 percent censored values

The appropriate statistical comparison depends on the type of data set under consideration. Parametric test procedures are utilized wherever possible to increase statistical power. In general, parametric tests are utilized where the data distribution may be assumed to be normal, or transformed normal (data set 1, above). Non-parametric procedures are used where data may not confidently be assumed to be normal (data set 2, above), or where the frequency of non-detect values precludes the testing of normality (data set 3, above). Finally, it is recognized that for 100 percent non-detect data (data set 4, above) no valid statistical comparison may be made, and comparisons must be made to fixed, arbitrary values, such as the analytical method detection or quantitation limit.

To determine the type of dataset, goodness-of-fit testing was performed on both the raw data and natural logarithm of the raw greater than detection limit values using the Shapiro-Wilk W-test as recommended by US EPA (1992) and Gilbert (1987). The tests were conducted at a 95 percent confidence level with outliers removed from the dataset.

Data sets that could not confidently be determined to be normally or log normally distributed were used to determine *nonparametric* prediction limits. Data that were normally or log normally distributed were considered as a basis for calculating *parametric* prediction limits, providing that the percentage of less than detection limit values was greater than 50 percent.

2.2.2 Adjustments to Data Based on the Frequency of Non-Detect Values

After goodness-of-fit testing was completed, the frequency of less than detection limit (left censored) values was be evaluated. If the degree of left-censoring was greater than 15%, the Kaplan-Meier adjustment was used to obtain adjusted estimates of the sample mean and standard deviation. These adjusted values were then used to calculate the upper prediction limit for those data determined to be normally or log normally distributed during goodness-of-fit testing. For the statistical analysis, non-detect values were represented as one-half the detection limit.

If the degree of censoring is 50% to 100%, no method exists to reasonably estimate the sample mean and standard deviation. In this case, non-parametric procedures are utilized. If the degree of censoring is 100%, as is commonly the case with volatile organic compounds, no estimates of statistics can be calculated. In this case, a simple comparison to method reporting limit (RL) of the individual analyte is employed as the initial statistical evaluation.

2.2.3 Comparison to Background

Based on the results for goodness-of-fit testing and the degree of censoring of the various data sets, comparisons to background were made using prediction limit procedures (US EPA, 2009). Parametric prediction limits were utilized where the data may be assumed to be normally or log normally distributed.

If the data are determined to be not normal or log normal, or the frequency of non-detect values is greater than 50%, nonparametric upper prediction limits were calculated, as recommended by US EPA (2009).

The prediction limit comparisons balance statistical power and false positive rate, as recommended by US EPA (1992, 2009) and ASTM D6312-17 using verification resampling as discussed below.

2.2.4 False Positive Rate Control

A groundwater monitoring event involves a large number of individual statistical comparisons. For normal prediction limits, if the significance level of an individual statistical comparison (test) is α (defined as the *per-test* false positive rate), the *annual* false positive rate (α^*) is given by (Gibbons 1994):

Equation 1

$$\alpha^* = 1 - (1-\alpha)^r$$

where,

r = the number of annual statistical comparisons to be made
(downgradient monitoring stations × analytes × events per year.

For a typical monitoring scenario, the per-test α is held to a value *no less* than 0.01 (40 CFR 257.93(g)(2). Limiting α to the minimum value of 0.01 guards against an excessive false negative rate, or Type II error, but may result in too large an *event-wide* false positive rate. For each of the 2021 monitoring events there are 21 parameters requiring statistical evaluation (Table I1, *c* =21). There are three downgradient monitoring wells in the evaluation (Table I1, *w* = 3). Assuming two annual statistical evaluations, one associated with each sample event (n_E = 2), the number of annual statistical comparisons (*r*) is equal to *c* x *w* x n_E = 126. From Equation 1, the annual false positive rate for the two sampling events is 0.72 (Table I1, Row 1). Thus, during each sampling year there would be about a 72 percent probability that a statistically significant result would be obtained even though no real statistical exceedance occurred.

To limit the annual false positive rate to 0.1, as suggested by EPA (2009) (or to a corresponding event-wide false positive rate of 0.05 for semiannual sampling per 40 CFR 257.93(g)(2)), Equation 1 indicates that individual tests would have to be conducted at a significance levels of about 0.00084 (Table I1, Row 2). Very large statistical limits would have to be employed, and the individual *false negative* rate would be unacceptably high at this significance level.

Alternatively, a *verification resampling* strategy is employed to limit the annual-wide false positive rate while maintaining adequate statistical power (EPA 1992, 2009; Gibbons 1994; ASTM 2017). *A statistically significant increase is not declared until both the original sample and some number of verification resamples fail the statistical test procedures*. For the case of one or two verification resampling events, and assuming independence of measurements, α^* may be calculated as (EPA 2009):

Equation 2

$$\alpha^* = 1 - (1-\alpha^m)^r$$

where,

m = the sum of the original sample and number of retest verification samples (1 or 2).

Passing any resample passes the statistical evaluation procedure.

Table I1 Row 3 illustrate a single resample strategy with the resample required to pass. Table I1 Row 4 Row 4 illustrate the case of two verification resamples with one of the two required to pass.

EPA (2009) and 40 CFR 257.93(g)(2) defines two criteria applicable to statistical analysis of groundwater monitoring data:

1. The per-event false positive rate (α^*) shall be no less than 0.05 per evert, or 0.1 annually, and,
2. The per-test false positive rate (α) shall be no less than 0.01.

These criteria were deemed by EPA to provide acceptable balance between false positive rate control and statistical power and are used for this project. The single verification sample resampling strategy (Table I1, Row 3) fits the EPA criteria and minimizes sampling and analytical cost. A single verification

resampling strategy (referred to as “Pass 1 of 2”) using a per-test significance level of 0.02891 was therefore used for this statistical analysis. An SSI does not occur unless the original sample and the verification resample both fail the statistical testing.

2.3 Comparison to Groundwater Protection Standard

Appendix IV well / constituents with SSIs indicated by the PL analysis were further evaluated to determine whether they are present at statistically significant levels (SSLs) over the groundwater protection standards (GWPSs). This evaluation was conducted by calculating the parametric or non-parametric 95% confidence limits for each well / constituent identified as an SSI using the baseline, detection, and assessment monitoring results collected to date. For a constituent to be present at an SSL over the GWPS, its 95% lower confidence limit must be greater than the GWPS.

3.0 RESULTS

Prediction limit results for the two 2021 sampling events are provided in Tables I2 and I3. Time series plots showing prediction limit results are provided for each downgradient well / parameter in Attachment 1 (April 21, 2021 event) and Attachment 2 (September 29 event). Plots in the attachments are arranged in the constituent order listed in the tables.

Comparison to groundwater protection standard results are provided in Tables I4 and I5.

3.1 Exceedances of Background

Prediction limit test results for the April 21 and September 29, 2021 monitoring events are provided in Tables I2 and I3. Interwell exceedances of the relevant PL values are highlighted. The following SSIs were noted for the April event. Appendix IV constituents are highlighted in bold.

MW-8	boron, calcium, chloride, **lithium**, sulfate, total dissolved solids
MW-9	**barium**, calcium, chloride, **lithium**, **radium 226+228**, total dissolved solids
MW-10	boron, chloride, **fluoride**, **lithium**, **mercury**, pH (field), sulfate, total dissolved solids

Similar results were noted for the September event with exceedances for the following.

MW-8	boron, calcium, chloride, pH (field), **radium 226+228**, sulfate, total dissolved solids
MW-9	**barium**, calcium, pH (field)
MW-10	**barium**, boron, chloride, **fluoride**, **lithium**, **mercury**, pH (field), sulfate, total dissolved solids

Results for exceedances of background were generally consistent between the two events and consistent with the 2019 and 2020 results. The only exceedances in 2021 that did not occur in 2020 were for were for pH (field) at MW-8 and MW-9 and for radium 226+228 at MW-8. Appendix IV SSIs in April occurred for barium at MW-9, fluoride at MW-10, lithium at MW-8, MW-9, and MW-10, mercury at MW-10, and radium 226+228 at MW-9. Appendix IV SSIs in September occurred for barium at MW-9 and MW-10, fluoride at MW-10, lithium at MW-10, mercury at MW-10, and radium 226+228 at MW-8.

3.2 Comparison to Groundwater Protection Standards

Pursuant to 40 CFR 257.95(f) Appendix IV well / parameters with SSIs were further evaluated to determine whether they are present at a statistically significant level over the groundwater protection standard. This analysis was conducted by calculating the parametric or nonparametric 95 percent lower confidence limit (95% LCL) for each well / parameter identified as an SSI for each 2021 event.

The seven Appendix IV statistical SSIs occurring in April are listed in Table I4 showing the 95% LCL computation results compared to the relevant GWPS. The six Appendix IV statistical SSIs occurring in

September are similarly listed in Table I5. The only exceedance of a GWPS for either 2021 sampling event is for lithium at MW-10. These results are consistent with the 2019 and 2020 analyses.

There were no GWPS exceedances for the MW-110 characterization well in 2021.

4.0 REFERENCES

American Society for Testing and Materials (ASTM), 2017, *Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities*. Designation D 6312-17.

Gibbons, R.D. 1994. *Statistical Methods in Ground-Water Monitoring*. John Wiley & Sons.

Gilbert, R.O., 1987, Statistical Methods for Environmental Pollution Monitoring: Van Nostrand Reinhold, New York, 320p.

US EPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*. Office of Solid Waste Management Division, US EPA, Washington, DC.

-------, 1992, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities: Addendum to Interim Final Guidance,* Office of Solid Waste, Permits and State Programs Division, July.

-------, 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* Office of Resource Conservation and Recovery, Program Implementation and Information Division, March.

Tables

Table I1
2021 Annual Monitoring Report
BREC Reid SI
Calculation of False Positive Rates

Row Number	*Number of Downgradient Stations (w)*	*Number of Constituents (c)*	*Number of Annual Evaluations (n_E)*	*Number of Annual Comparisons ($r = w \times c \times n_E$)*	*Target Annual False Positive Rate (α^*)*	*Retest Strategy (1 of m)*	*Individual Comparison False Positive Rate (α)*
1	3	21	2	126	0.72	1	0.01005
2	3	21	2	126	0.1	1	0.00084
3	3	21	2	126	0.1	2	0.02891
4	3	21	2	126	0.1	3	0.09420

Table I2: 2021 Annual Monitoring Report, BREC Reid Surface Impoundmentl, April 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Antimony (mg/L)	MW-8	0.0008951	n/a	4/21/2021	0.001ND	No	15	MW-7	0.00034	0.0002601	46.67	Kaplan-Meier	No	0.02891	Param Inter
Antimony (mg/L)	MW-9	0.0008951	n/a	4/21/2021	0.001ND	No	15	MW-7	0.00034	0.0002601	46.67	Kaplan-Meier	No	0.02891	Param Inter
Antimony (mg/L)	MW-10	0.0008951	n/a	4/21/2021	0.001ND	No	15	MW-7	0.00034	0.0002601	46.67	Kaplan-Meier	No	0.02891	Param Inter
Arsenic (mg/L)	MW-8	0.003938	n/a	4/21/2021	0.0002ND	No	15	MW-7	-6.653	0.5227	6.667	None	ln(x)	0.02891	Param Inter
Arsenic (mg/L)	MW-9	0.003938	n/a	4/21/2021	0.0002ND	No	15	MW-7	-6.653	0.5227	6.667	None	ln(x)	0.02891	Param Inter
Arsenic (mg/L)	MW-10	0.003938	n/a	4/21/2021	0.0018	No	15	MW-7	-6.653	0.5227	6.667	None	ln(x)	0.02891	Param Inter
Barium (mg/L)	MW-8	0.0908	n/a	4/21/2021	0.018	No	16	MW-7	0.06771	0.01091	0	None	No	0.02891	Param Inter
Barium (mg/L)	**MW-9**	**0.0908**	**n/a**	**4/21/2021**	**0.782**	**Yes**	**16**	**MW-7**	**0.06771**	**0.01091**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Barium (mg/L)	MW-10	0.0908	n/a	4/21/2021	0.089	No	16	MW-7	0.06771	0.01091	0	None	No	0.02891	Param Inter
Beryllium (mg/L)	MW-8	0.0005	n/a	4/21/2021	0.0005ND	No	14	MW-7	n/a	n/a	100	n/a	n/a	0.06267	NP Inter (NDs)
Beryllium (mg/L)	MW-9	0.0005	n/a	4/21/2021	0.0005ND	No	14	MW-7	n/a	n/a	100	n/a	n/a	0.06267	NP Inter (NDs)
Beryllium (mg/L)	MW-10	0.0005	n/a	4/21/2021	0.0005ND	No	14	MW-7	n/a	n/a	100	n/a	n/a	0.06267	NP Inter (NDs)
Boron (mg/L)	**MW-8**	**0.3676**	**n/a**	**4/21/2021**	**1.47**	**Yes**	**15**	**MW-7**	**0.2919**	**0.03547**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Boron (mg/L)	MW-9	0.3676	n/a	4/21/2021	0.23	No	15	MW-7	0.2919	0.03547	0	None	No	0.02891	Param Inter
Boron (mg/L)	**MW-10**	**0.3676**	**n/a**	**4/21/2021**	**0.54**	**Yes**	**15**	**MW-7**	**0.2919**	**0.03547**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Cadmium (mg/L)	MW-8	0.000076	n/a	4/21/2021	0.00005ND	No	14	MW-7	n/a	n/a	100	n/a	n/a	0.06267	NP Inter (NDs)
Cadmium (mg/L)	MW-9	0.000076	n/a	4/21/2021	0.00005ND	No	14	MW-7	n/a	n/a	100	n/a	n/a	0.06267	NP Inter (NDs)
Cadmium (mg/L)	MW-10	0.000076	n/a	4/21/2021	0.00005ND	No	14	MW-7	n/a	n/a	100	n/a	n/a	0.06267	NP Inter (NDs)
Calcium (mg/L)	**MW-8**	**48.11**	**n/a**	**4/21/2021**	**280**	**Yes**	**16**	**MW-7**	**43.3**	**2.273**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Calcium (mg/L)	**MW-9**	**48.11**	**n/a**	**4/21/2021**	**66.9**	**Yes**	**16**	**MW-7**	**43.3**	**2.273**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Calcium (mg/L)	MW-10	48.11	n/a	4/21/2021	7.95	No	16	MW-7	43.3	2.273	0	None	No	0.02891	Param Inter
Chloride (mg/L)	**MW-8**	**6.95**	**n/a**	**4/21/2021**	**54.55**	**Yes**	**16**	**MW-7**	**4.316**	**1.244**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Chloride (mg/L)	**MW-9**	**6.95**	**n/a**	**4/21/2021**	**22.5**	**Yes**	**16**	**MW-7**	**4.316**	**1.244**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Chloride (mg/L)	**MW-10**	**6.95**	**n/a**	**4/21/2021**	**21.4**	**Yes**	**16**	**MW-7**	**4.316**	**1.244**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Chromium (mg/L)	MW-8	0.00171	n/a	4/21/2021	0.0003ND	No	15	MW-7	n/a	n/a	73.33	n/a	n/a	0.05896	NP Inter (NDs)
Chromium (mg/L)	MW-9	0.00171	n/a	4/21/2021	0.0003ND	No	15	MW-7	n/a	n/a	73.33	n/a	n/a	0.05896	NP Inter (NDs)
Chromium (mg/L)	MW-10	0.00171	n/a	4/21/2021	0.0007	No	15	MW-7	n/a	n/a	73.33	n/a	n/a	0.05896	NP Inter (NDs)
Cobalt (mg/L)	MW-8	0.00239	n/a	4/21/2021	0.002ND	No	15	MW-7	n/a	n/a	26.67	n/a	n/a	0.05896	NP Inter
Cobalt (mg/L)	MW-9	0.00239	n/a	4/21/2021	0.002ND	No	15	MW-7	n/a	n/a	26.67	n/a	n/a	0.05896	NP Inter
Cobalt (mg/L)	MW-10	0.00239	n/a	4/21/2021	0.002ND	No	15	MW-7	n/a	n/a	26.67	n/a	n/a	0.05896	NP Inter
Fluoride (mg/L)	MW-8	0.3622	n/a	4/21/2021	0.3	No	17	MW-7	0.2829	0.03774	0	None	No	0.02891	Param Inter
Fluoride (mg/L)	MW-9	0.3622	n/a	4/21/2021	0.2	No	17	MW-7	0.2829	0.03774	0	None	No	0.02891	Param Inter
Fluoride (mg/L)	**MW-10**	**0.3622**	**n/a**	**4/21/2021**	**0.5**	**Yes**	**17**	**MW-7**	**0.2829**	**0.03774**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Lead (mg/L)	MW-8	0.00064	n/a	4/21/2021	0.00025ND	No	15	MW-7	n/a	n/a	73.33	n/a	n/a	0.05896	NP Inter (NDs)
Lead (mg/L)	MW-9	0.00064	n/a	4/21/2021	0.00025ND	No	15	MW-7	n/a	n/a	73.33	n/a	n/a	0.05896	NP Inter (NDs)
Lead (mg/L)	MW-10	0.00064	n/a	4/21/2021	0.00025ND	No	15	MW-7	n/a	n/a	73.33	n/a	n/a	0.05896	NP Inter (NDs)
Lithium (mg/L)	**MW-8**	**0.00994**	**n/a**	**4/21/2021**	**0.03**	**Yes**	**16**	**MW-7**	**n/a**	**n/a**	**62.5**	**n/a**	**n/a**	**0.05567**	**NP Inter (NDs)**
Lithium (mg/L)	**MW-9**	**0.00994**	**n/a**	**4/21/2021**	**0.01**	**Yes**	**16**	**MW-7**	**n/a**	**n/a**	**62.5**	**n/a**	**n/a**	**0.05567**	**NP Inter (NDs)**
Lithium (mg/L)	**MW-10**	**0.00994**	**n/a**	**4/21/2021**	**0.57**	**Yes**	**16**	**MW-7**	**n/a**	**n/a**	**62.5**	**n/a**	**n/a**	**0.05567**	**NP Inter (NDs)**
Mercury (ug/L)	MW-8	0.135	n/a	4/21/2021	0.1ND	No	14	MW-7	n/a	n/a	92.86	n/a	n/a	0.06267	NP Inter (NDs)
Mercury (ug/L)	MW-9	0.135	n/a	4/21/2021	0.1ND	No	14	MW-7	n/a	n/a	92.86	n/a	n/a	0.06267	NP Inter (NDs)
Mercury (ug/L)	**MW-10**	**0.135**	**n/a**	**4/21/2021**	**0.3**	**Yes**	**14**	**MW-7**	**n/a**	**n/a**	**92.86**	**n/a**	**n/a**	**0.06267**	**NP Inter (NDs)**
Molybdenum (mg/L)	MW-8	0.01745	n/a	4/21/2021	0.01	No	16	MW-7	0.008679	0.004142	0	None	No	0.02891	Param Inter
Molybdenum (mg/L)	MW-9	0.01745	n/a	4/21/2021	0.001ND	No	16	MW-7	0.008679	0.004142	0	None	No	0.02891	Param Inter
Molybdenum (mg/L)	MW-10	0.01745	n/a	4/21/2021	0.007	No	16	MW-7	0.008679	0.004142	0	None	No	0.02891	Param Inter

Table I2: 2021 Annual Monitoring Report, BREC Reid Surface Impoundmentl, April 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
pH [Field] (SU)	MW-8	8.034	6.483	4/21/2021	6.64	No	17	MW-7	7.258	0.314	0	None	No	0.01446	Param Inter
pH [Field] (SU)	MW-9	8.034	6.483	4/21/2021	7.12	No	17	MW-7	7.258	0.314	0	None	No	0.01446	Param Inter
pH [Field] (SU)	**MW-10**	**8.034**	**6.483**	**4/21/2021**	**9.88**	**Yes**	**17**	**MW-7**	**7.258**	**0.314**	**0**	**None**	**No**	**0.01446**	**Param Inter**
Radium 226 + 228 (pCi/L)	MW-8	1.844	n/a	4/21/2021	1.73	No	15	MW-7	-0.304	0.4291	6.667	None	ln(x)	0.02891	Param Inter
Radium 226 + 228 (pCi/L)	**MW-9**	**1.844**	**n/a**	**4/21/2021**	**3.99**	**Yes**	**15**	**MW-7**	**-0.304**	**0.4291**	**6.667**	**None**	**ln(x)**	**0.02891**	**Param Inter**
Radium 226 + 228 (pCi/L)	MW-10	1.844	n/a	4/21/2021	0.769	No	15	MW-7	-0.304	0.4291	6.667	None	ln(x)	0.02891	Param Inter
Selenium (mg/L)	MW-8	0.00066	n/a	4/21/2021	0.0005ND	No	13	MW-7	n/a	n/a	92.31	n/a	n/a	0.06687	NP Inter (NDs)
Selenium (mg/L)	MW-9	0.00066	n/a	4/21/2021	0.0005ND	No	13	MW-7	n/a	n/a	92.31	n/a	n/a	0.06687	NP Inter (NDs)
Selenium (mg/L)	MW-10	0.00066	n/a	4/21/2021	0.0005ND	No	13	MW-7	n/a	n/a	92.31	n/a	n/a	0.06687	NP Inter (NDs)
Sulfate (mg/L)	**MW-8**	**26.59**	**n/a**	**4/21/2021**	**1095**	**Yes**	**16**	**MW-7**	**17.69**	**4.205**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Sulfate (mg/L)	MW-9	26.59	n/a	4/21/2021	0.25ND	No	16	MW-7	17.69	4.205	0	None	No	0.02891	Param Inter
Sulfate (mg/L)	**MW-10**	**26.59**	**n/a**	**4/21/2021**	**52**	**Yes**	**16**	**MW-7**	**17.69**	**4.205**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Thallium (mg/L)	MW-8	0.000058	n/a	4/21/2021	0.00005ND	No	13	MW-7	n/a	n/a	84.62	n/a	n/a	0.06687	NP Inter (NDs)
Thallium (mg/L)	MW-9	0.000058	n/a	4/21/2021	0.00005ND	No	13	MW-7	n/a	n/a	84.62	n/a	n/a	0.06687	NP Inter (NDs)
Thallium (mg/L)	MW-10	0.000058	n/a	4/21/2021	0.00005ND	No	13	MW-7	n/a	n/a	84.62	n/a	n/a	0.06687	NP Inter (NDs)
Total Dissolved Solids (mg/L)	**MW-8**	**310.7**	**n/a**	**4/21/2021**	**2120**	**Yes**	**14**	**MW-7**	**263.2**	**22.06**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-9**	**310.7**	**n/a**	**4/21/2021**	**422**	**Yes**	**14**	**MW-7**	**263.2**	**22.06**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Total Dissolved Solids (mg/L)	**MW-10**	**310.7**	**n/a**	**4/21/2021**	**530**	**Yes**	**14**	**MW-7**	**263.2**	**22.06**	**0**	**None**	**No**	**0.02891**	**Param Inter**

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
Inter - Parametric interstation prediction limit
n/a - not applicable
ND - Compound not detected, preceding number is one-half the reporting limit.
NP Inter - Non-parametric interstation prediction limit. Text in parenthesis indicates reason for non-parametric determination, as follows.
NDs - background data contain too high a percentage of non-detect values.
Param - Parametric Prediction Limit

Table I3: 2021 Annual Monitoring Report, BREC Reid Surface Impoundment, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Antimony (mg/L)	MW-8	0.001	n/a	9/29/2021	0.001ND	No	16	MW-7	n/a	n/a	50	n/a	n/a	0.05567	NP Inter
Antimony (mg/L)	MW-9	0.001	n/a	9/29/2021	0.001ND	No	16	MW-7	n/a	n/a	50	n/a	n/a	0.05567	NP Inter
Antimony (mg/L)	MW-10	0.001	n/a	9/29/2021	0.001ND	No	16	MW-7	n/a	n/a	50	n/a	n/a	0.05567	NP Inter
Arsenic (mg/L)	MW-8	0.003161	n/a	9/29/2021	0.0002ND	No	16	MW-7	0.00139	0.0008364	12.5	None	No	0.02891	Param Inter
Arsenic (mg/L)	MW-9	0.003161	n/a	9/29/2021	0.0002ND	No	16	MW-7	0.00139	0.0008364	12.5	None	No	0.02891	Param Inter
Arsenic (mg/L)	MW-10	0.003161	n/a	9/29/2021	0.0017	No	16	MW-7	0.00139	0.0008364	12.5	None	No	0.02891	Param Inter
Barium (mg/L)	MW-8	0.09051	n/a	9/29/2021	0.0175	No	17	MW-7	0.06808	0.01067	0	None	No	0.02891	Param Inter
Barium (mg/L)	**MW-9**	**0.09051**	**n/a**	**9/29/2021**	**0.248**	**Yes**	**17**	**MW-7**	**0.06808**	**0.01067**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Barium (mg/L)	**MW-10**	**0.09051**	**n/a**	**9/29/2021**	**0.096**	**Yes**	**17**	**MW-7**	**0.06808**	**0.01067**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Beryllium (mg/L)	MW-8	0.0005	n/a	9/29/2021	0.0005ND	No	15	MW-7	n/a	n/a	100	n/a	n/a	0.05896	NP Inter
Beryllium (mg/L)	MW-9	0.0005	n/a	9/29/2021	0.0005ND	No	15	MW-7	n/a	n/a	100	n/a	n/a	0.05896	NP Inter
Beryllium (mg/L)	MW-10	0.0005	n/a	9/29/2021	0.0005ND	No	15	MW-7	n/a	n/a	100	n/a	n/a	0.05896	NP Inter
Boron (mg/L)	**MW-8**	**0.3676**	**n/a**	**9/29/2021**	**1.49**	**Yes**	**15**	**MW-7**	**0.2919**	**0.03547**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Boron (mg/L)	MW-9	0.3676	n/a	9/29/2021	0.05ND	No	15	MW-7	0.2919	0.03547	0	None	No	0.02891	Param Inter
Boron (mg/L)	**MW-10**	**0.3676**	**n/a**	**9/29/2021**	**0.54**	**Yes**	**15**	**MW-7**	**0.2919**	**0.03547**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Cadmium (mg/L)	MW-8	0.000076	n/a	9/29/2021	0.00005ND	No	15	MW-7	n/a	n/a	100	n/a	n/a	0.05896	NP Inter (NDs)
Cadmium (mg/L)	MW-9	0.000076	n/a	9/29/2021	0.00005ND	No	15	MW-7	n/a	n/a	100	n/a	n/a	0.05896	NP Inter (NDs)
Cadmium (mg/L)	MW-10	0.000076	n/a	9/29/2021	0.00005ND	No	15	MW-7	n/a	n/a	100	n/a	n/a	0.05896	NP Inter (NDs)
Calcium (mg/L)	**MW-8**	**48.11**	**n/a**	**9/29/2021**	**266.5**	**Yes**	**16**	**MW-7**	**43.3**	**2.273**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Calcium (mg/L)	**MW-9**	**48.11**	**n/a**	**9/29/2021**	**59.4**	**Yes**	**16**	**MW-7**	**43.3**	**2.273**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Calcium (mg/L)	MW-10	48.11	n/a	9/29/2021	8.25	No	16	MW-7	43.3	2.273	0	None	No	0.02891	Param Inter
Chloride (mg/L)	**MW-8**	**7.211**	**n/a**	**9/29/2021**	**63.85**	**Yes**	**17**	**MW-7**	**4.445**	**1.316**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Chloride (mg/L)	MW-9	7.211	n/a	9/29/2021	7.2	No	17	MW-7	4.445	1.316	0	None	No	0.02891	Param Inter
Chloride (mg/L)	**MW-10**	**7.211**	**n/a**	**9/29/2021**	**20.7**	**Yes**	**17**	**MW-7**	**4.445**	**1.316**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Chromium (mg/L)	MW-8	0.00171	n/a	9/29/2021	0.0003ND	No	16	MW-7	n/a	n/a	75	n/a	n/a	0.05567	NP Inter (NDs)
Chromium (mg/L)	MW-9	0.00171	n/a	9/29/2021	0.0003ND	No	16	MW-7	n/a	n/a	75	n/a	n/a	0.05567	NP Inter (NDs)
Chromium (mg/L)	MW-10	0.00171	n/a	9/29/2021	0.0006	No	16	MW-7	n/a	n/a	75	n/a	n/a	0.05567	NP Inter (NDs)
Cobalt (mg/L)	MW-8	0.00239	n/a	9/29/2021	0.002ND	No	16	MW-7	n/a	n/a	31.25	n/a	n/a	0.05567	NP Inter
Cobalt (mg/L)	MW-9	0.00239	n/a	9/29/2021	0.002ND	No	16	MW-7	n/a	n/a	31.25	n/a	n/a	0.05567	NP Inter
Cobalt (mg/L)	MW-10	0.00239	n/a	9/29/2021	0.002ND	No	16	MW-7	n/a	n/a	31.25	n/a	n/a	0.05567	NP Inter
Fluoride (mg/L)	MW-8	0.4321	n/a	9/29/2021	0.4	No	18	MW-7	-1.239	0.1915	0	None	ln(x)	0.02891	Param Inter
Fluoride (mg/L)	MW-9	0.4321	n/a	9/29/2021	0.2	No	18	MW-7	-1.239	0.1915	0	None	ln(x)	0.02891	Param Inter
Fluoride (mg/L)	**MW-10**	**0.4321**	**n/a**	**9/29/2021**	**0.5**	**Yes**	**18**	**MW-7**	**-1.239**	**0.1915**	**0**	**None**	**ln(x)**	**0.02891**	**Param Inter**
Lead (mg/L)	MW-8	0.00064	n/a	9/29/2021	0.00025ND	No	16	MW-7	n/a	n/a	75	n/a	n/a	0.05567	NP Inter (NDs)
Lead (mg/L)	MW-9	0.00064	n/a	9/29/2021	0.00025ND	No	16	MW-7	n/a	n/a	75	n/a	n/a	0.05567	NP Inter (NDs)
Lead (mg/L)	MW-10	0.00064	n/a	9/29/2021	0.00025ND	No	16	MW-7	n/a	n/a	75	n/a	n/a	0.05567	NP Inter (NDs)
Lithium (mg/L)	MW-8	0.03	n/a	9/29/2021	0.03	No	17	MW-7	n/a	n/a	58.82	n/a	n/a	0.05273	NP Inter (NDs)
Lithium (mg/L)	MW-9	0.03	n/a	9/29/2021	0.005	No	17	MW-7	n/a	n/a	58.82	n/a	n/a	0.05273	NP Inter (NDs)
Lithium (mg/L)	**MW-10**	**0.03**	**n/a**	**9/29/2021**	**0.49**	**Yes**	**17**	**MW-7**	**n/a**	**n/a**	**58.82**	**n/a**	**n/a**	**0.05273**	**NP Inter (NDs)**
Mercury (ug/L)	MW-8	0.135	n/a	9/29/2021	0.1ND	No	15	MW-7	n/a	n/a	93.33	n/a	n/a	0.05896	NP Inter (NDs)
Mercury (ug/L)	MW-9	0.135	n/a	9/29/2021	0.1ND	No	15	MW-7	n/a	n/a	93.33	n/a	n/a	0.05896	NP Inter (NDs)
Mercury (ug/L)	**MW-10**	**0.135**	**n/a**	**9/29/2021**	**0.2**	**Yes**	**15**	**MW-7**	**n/a**	**n/a**	**93.33**	**n/a**	**n/a**	**0.05896**	**NP Inter (NDs)**
Molybdenum (mg/L)	MW-8	0.01753	n/a	9/29/2021	0.01	No	17	MW-7	0.008227	0.004422	5.882	None	No	0.02891	Param Inter
Molybdenum (mg/L)	MW-9	0.01753	n/a	9/29/2021	0.001ND	No	17	MW-7	0.008227	0.004422	5.882	None	No	0.02891	Param Inter
Molybdenum (mg/L)	MW-10	0.01753	n/a	9/29/2021	0.007	No	17	MW-7	0.008227	0.004422	5.882	None	No	0.02891	Param Inter

Table I3: 2021 Annual Monitoring Report, BREC Reid Surface Impoundment, September 2021 Prediction Limit Results

Constituent Name	Station	Upper Limit	Lower Limit	Date	Observation	Exceeds	Background N	Background Stations	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
pH [Field] (SU)	**MW-8**	**8.002**	**6.495**	**9/29/2021**	**6.12**	**Yes**	**18**	**MW-7**	**7.248**	**0.3075**	**0**	**None**	**No**	**0.01446**	**Param Inter**
pH [Field] (SU)	**MW-9**	**8.002**	**6.495**	**9/29/2021**	**6.23**	**Yes**	**18**	**MW-7**	**7.248**	**0.3075**	**0**	**None**	**No**	**0.01446**	**Param Inter**
pH [Field] (SU)	**MW-10**	**8.002**	**6.495**	**9/29/2021**	**8.26**	**Yes**	**18**	**MW-7**	**7.248**	**0.3075**	**0**	**None**	**No**	**0.01446**	**Param Inter**
Radium 226 + 228 (pCi/L)	**MW-8**	**1.811**	**n/a**	**9/29/2021**	**1.855**	**Yes**	**16**	**MW-7**	**-0.2907**	**0.4179**	**6.25**	**None**	**ln(x)**	**0.02891**	**Param Inter**
Radium 226 + 228 (pCi/L)	MW-9	1.811	n/a	9/29/2021	1.13	No	16	MW-7	-0.2907	0.4179	6.25	None	ln(x)	0.02891	Param Inter
Radium 226 + 228 (pCi/L)	MW-10	1.811	n/a	9/29/2021	0.692	No	16	MW-7	-0.2907	0.4179	6.25	None	ln(x)	0.02891	Param Inter
Selenium (mg/L)	MW-8	0.00066	n/a	9/29/2021	0.0005ND	No	14	MW-7	n/a	n/a	92.86	n/a	n/a	0.06267	NP Inter (NDs)
Selenium (mg/L)	MW-9	0.00066	n/a	9/29/2021	0.0005ND	No	14	MW-7	n/a	n/a	92.86	n/a	n/a	0.06267	NP Inter (NDs)
Selenium (mg/L)	MW-10	0.00066	n/a	9/29/2021	0.0005ND	No	14	MW-7	n/a	n/a	92.86	n/a	n/a	0.06267	NP Inter (NDs)
Sulfate (mg/L)	**MW-8**	**30.58**	**n/a**	**9/29/2021**	**2250**	**Yes**	**17**	**MW-7**	**18.65**	**5.677**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Sulfate (mg/L)	MW-9	30.58	n/a	9/29/2021	0.25ND	No	17	MW-7	18.65	5.677	0	None	No	0.02891	Param Inter
Sulfate (mg/L)	**MW-10**	**30.58**	**n/a**	**9/29/2021**	**61**	**Yes**	**17**	**MW-7**	**18.65**	**5.677**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Thallium (mg/L)	MW-8	0.000058	n/a	9/29/2021	0.00005ND	No	14	MW-7	n/a	n/a	85.71	n/a	n/a	0.06267	NP Inter (NDs)
Thallium (mg/L)	MW-9	0.000058	n/a	9/29/2021	0.00005ND	No	14	MW-7	n/a	n/a	85.71	n/a	n/a	0.06267	NP Inter (NDs)
Thallium (mg/L)	MW-10	0.000058	n/a	9/29/2021	0.00005ND	No	14	MW-7	n/a	n/a	85.71	n/a	n/a	0.06267	NP Inter (NDs)
Total Dissolved Solids (mg/L)	**MW-8**	**310.7**	**n/a**	**9/29/2021**	**2145**	**Yes**	**14**	**MW-7**	**263.2**	**22.06**	**0**	**None**	**No**	**0.02891**	**Param Inter**
Total Dissolved Solids (mg/L)	MW-9	310.7	n/a	9/29/2021	264	No	14	MW-7	263.2	22.06	0	None	No	0.02891	Param Inter
Total Dissolved Solids (mg/L)	**MW-10**	**310.7**	**n/a**	**9/29/2021**	**514**	**Yes**	**14**	**MW-7**	**263.2**	**22.06**	**0**	**None**	**No**	**0.02891**	**Param Inter**

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
Normal and field duplicate samples averaged, where applicable
Inter - Parametric interstation prediction limit
n/a - not applicable
ND - Compound not detected, preceding number is one-half the reporting limit.
NP Inter - Non-parametric interstation prediction limit. Text in parenthesis indicates reason for non-parametric determination, as follows.
NDs - background data contain too high a percentage of non-detect values.
Param - Parametric Prediction Limit

Table I4: 2021 Annual Monitoring Report, BREC Reid Surface Impoundment, April 2021 Comparison of 95% LCL to GWPS

Constituent Name	Well	Upper Limit	Lower Limit	GWPS	Exceeds	N	Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transform	Alpha	Method
Barium (mg/L)	MW-9	0.967	0.73	2	No	16	0.7619	0.2831	0	None	No	0.05	NP (selected)
Fluoride (mg/L)	MW-10	0.5655	0.4891	4	No	17	0.5273	0.09011	0	None	No	0.05	Param.
Lithium (mg/L)	MW-8	0.03586	0.03275	0.04	No	16	0.03431	0.003546	0	None	No	0.05	Param.
Lithium (mg/L)	MW-9	0.01206	0.009963	0.04	No	16	0.01029	0.003504	18.75	Kaplan-Meier	No	0.05	Param.
Lithium (mg/L)	**MW-10**	**0.5232**	**0.36**	**0.04**	**Yes**	**16**	**0.4416**	**0.1862**	**0**	**None**	**No**	**0.05**	**Param.**
Mercury (ug/L)	MW-10	0.2	0.05	2	No	14	0.1039	0.08537	64.29	None	No	0.05	NP (NDs)
Radium 226 + 228 (pCi/L)	MW-9	2.718	1.953	5	No	15	2.335	0.8406	0	None	No	0.05	Param.

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
NP - Non-parametric Confidence Limit
Param - Parametric Confidence Limit

Table I5: 2021 Annual Monitoring Report, BREC Reid Surface Impoundment, September 2021 Comparison of 95% LCL to GWPS

Constituent Name	Well	Upper Limit	Lower Limit	GWPS	Exceeds	N	Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transform	Alpha	Method
Barium (mg/L)	MW-9	0.967	0.635	2	No	17	0.7317	0.3011	0	None	No	0.05	NP (selected)
Barium (mg/L)	MW-10	0.08653	0.06728	2	No	17	0.07691	0.02273	0	None	No	0.05	Param.
Fluoride (mg/L)	MW-10	0.5617	0.4898	4	No	18	0.5258	0.08766	0	None	No	0.05	Param.
Lithium (mg/L)	**MW-10**	**0.5209**	**0.368**	**0.04**	**Yes**	**17**	**0.4444**	**0.1806**	**0**	**None**	**No**	**0.05**	**Param.**
Mercury (ug/L)	MW-10	0.2	0.05	2	No	15	0.1103	0.08593	60	None	No	0.05	NP (NDs)
Radium 226 + 228 (pCi/L)	MW-8	1.73	1.32	5	No	16	1.475	0.3944	0	None	No	0.05	NP (selected)

Notes:
Concentration units are as specified in Column 1.
mg/L - milligram per liter
ug/L - microgram per liter
Normal and field duplicate samples averaged, where applicable
NP - Non-parametric Confidence Limit
ND - Frequency of non-detect values exceeds 50%
Param - Parametric Confidence Limit

Attachment 1

April 2021 Time Series Plots

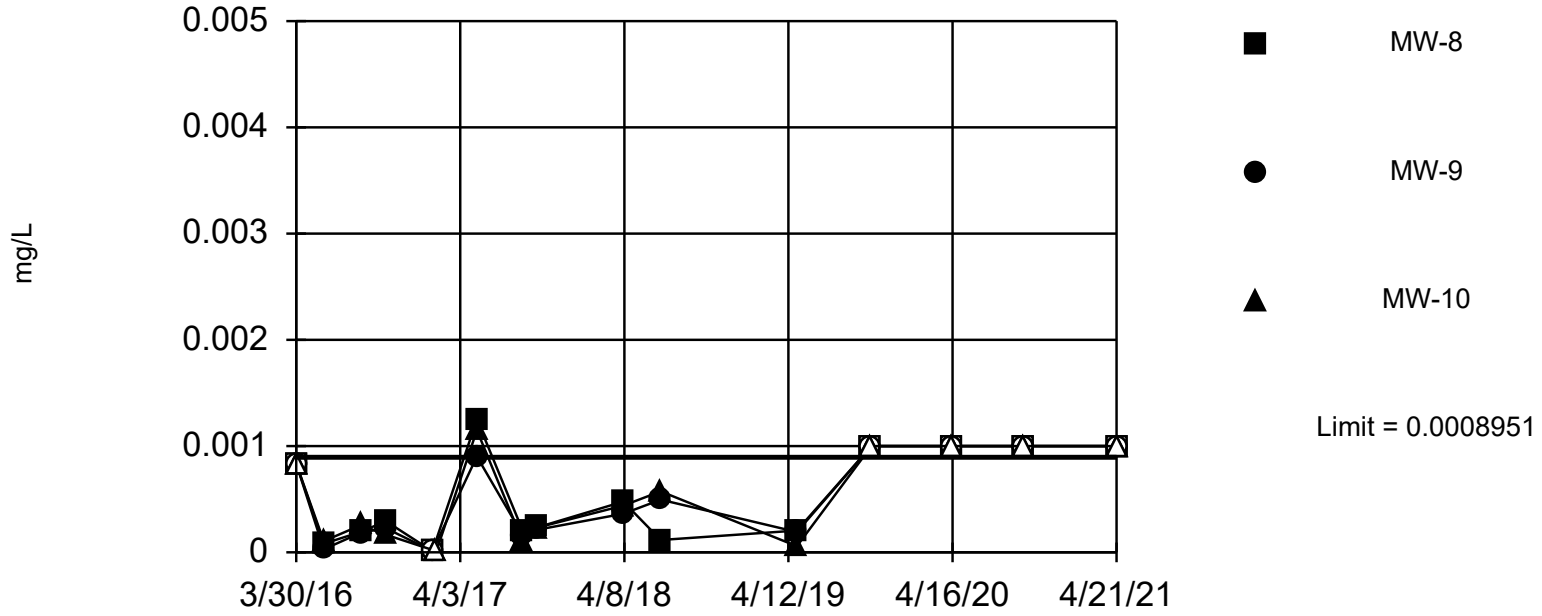
And Prediction Limit Results

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.00034, Std. Dev.=0.0002601, n=15, 46.67% NDs. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Antimony Analysis Run 6/7/2021 2:21 PM

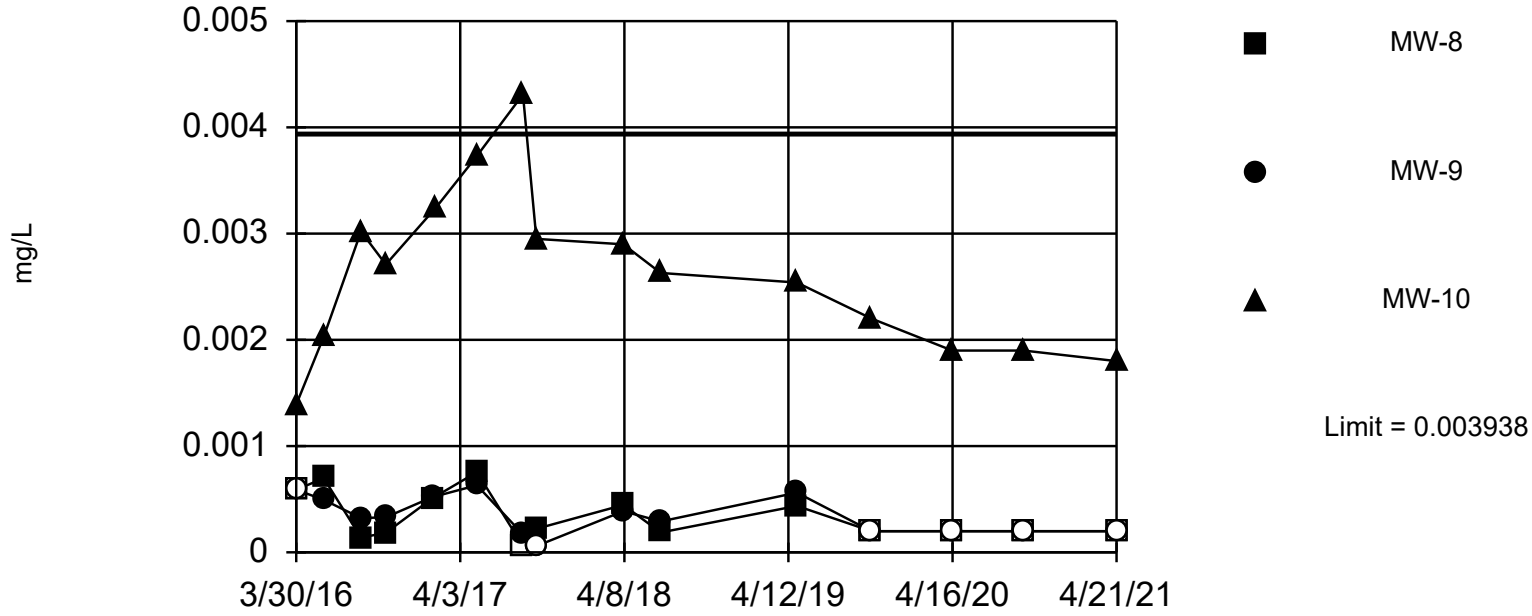
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-6.653, Std. Dev.=0.5227, n=15, 6.667% NDs. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

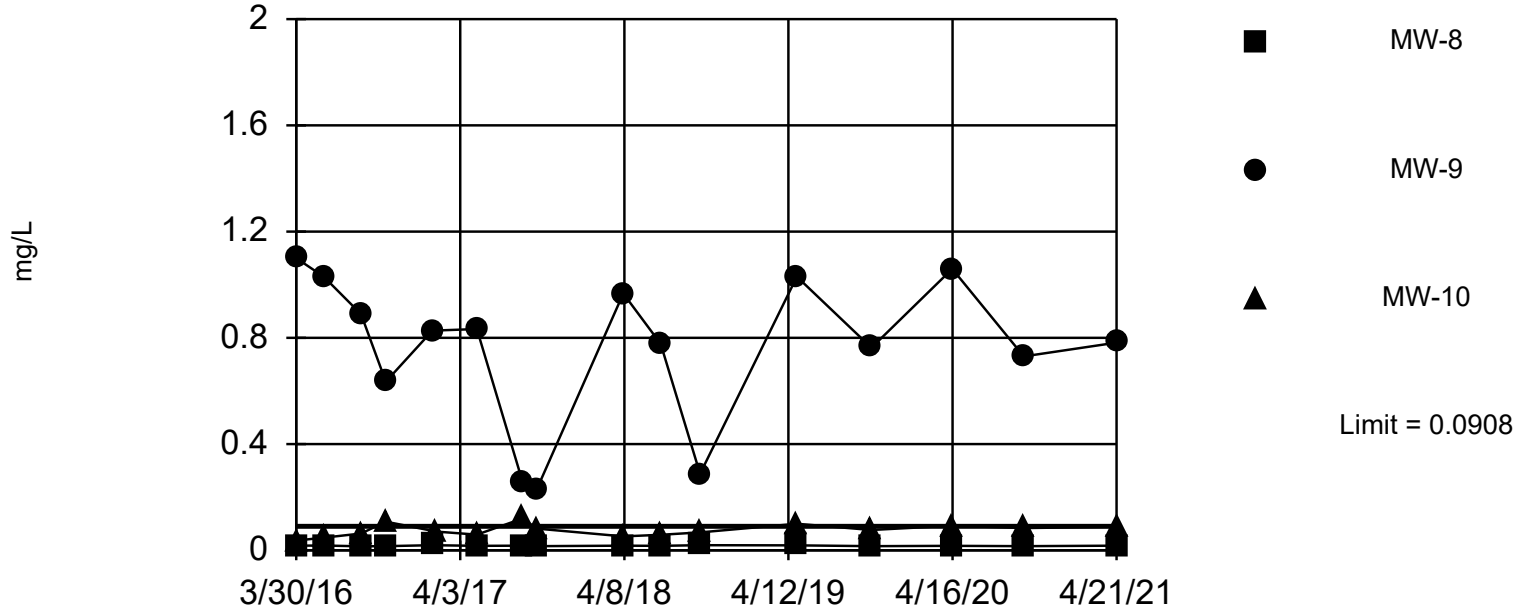
Constituent: Arsenic Analysis Run 6/7/2021 2:26 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-9

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.06771, Std. Dev.=0.01091, n=16. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Barium Analysis Run 6/7/2021 2:36 PM

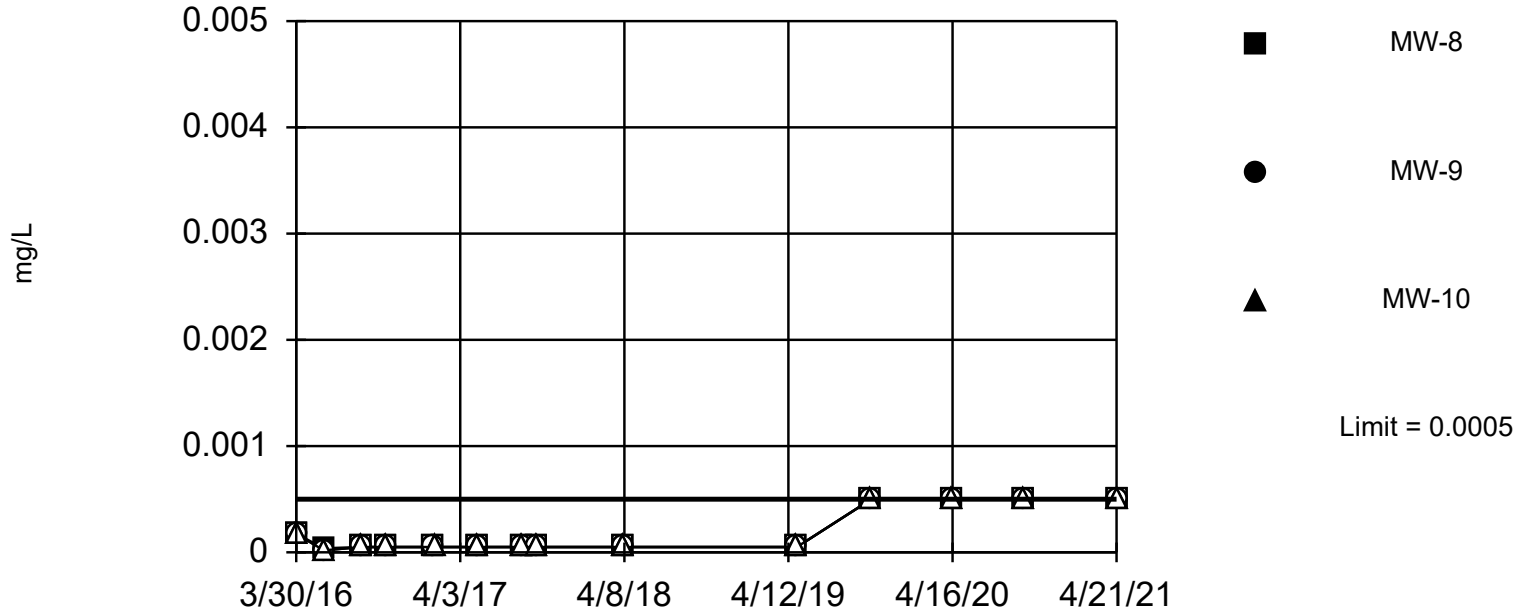
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 14 background values. 100% NDs. Report alpha = 0.1765. Individual comparison alpha = 0.06267. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Beryllium Analysis Run 6/7/2021 2:40 PM

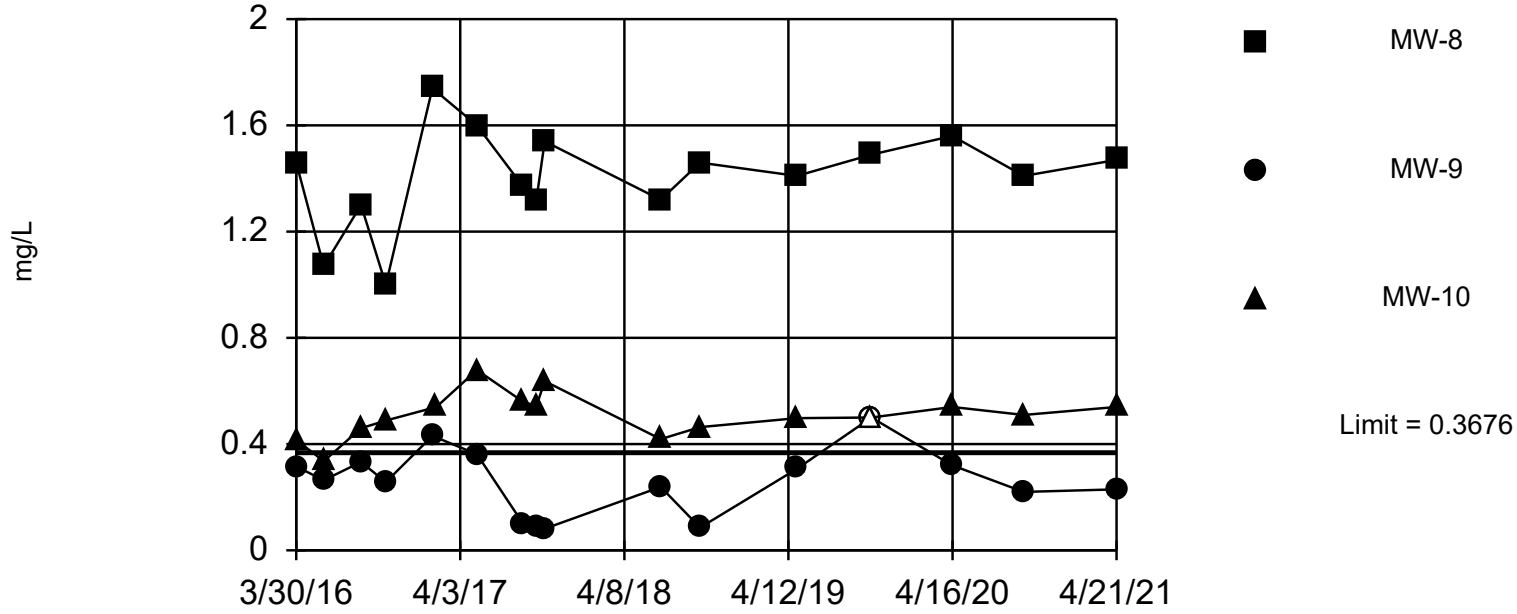
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-8, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.2919, Std. Dev.=0.03547, n=15. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: <1 (10/16/2019).

Constituent: Boron Analysis Run 6/7/2021 2:02 PM

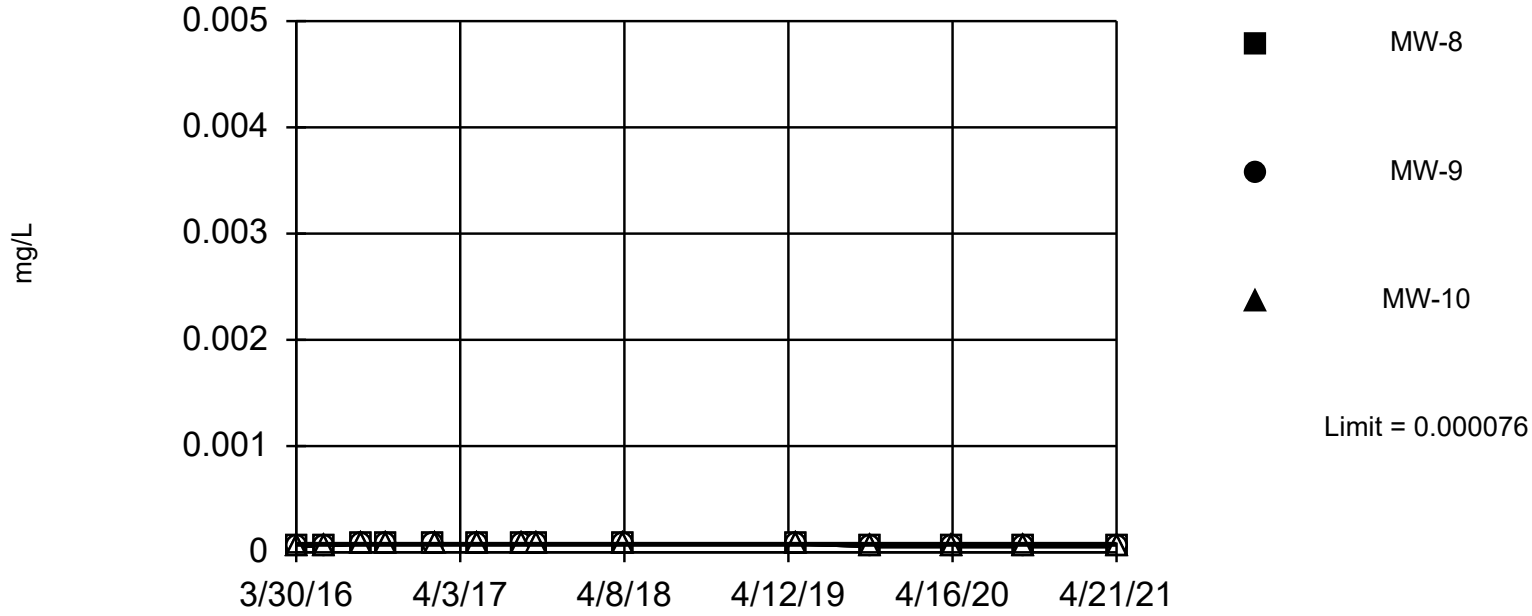
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 14 background values. 100% NDs. Report alpha = 0.1765. Individual comparison alpha = 0.06267. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

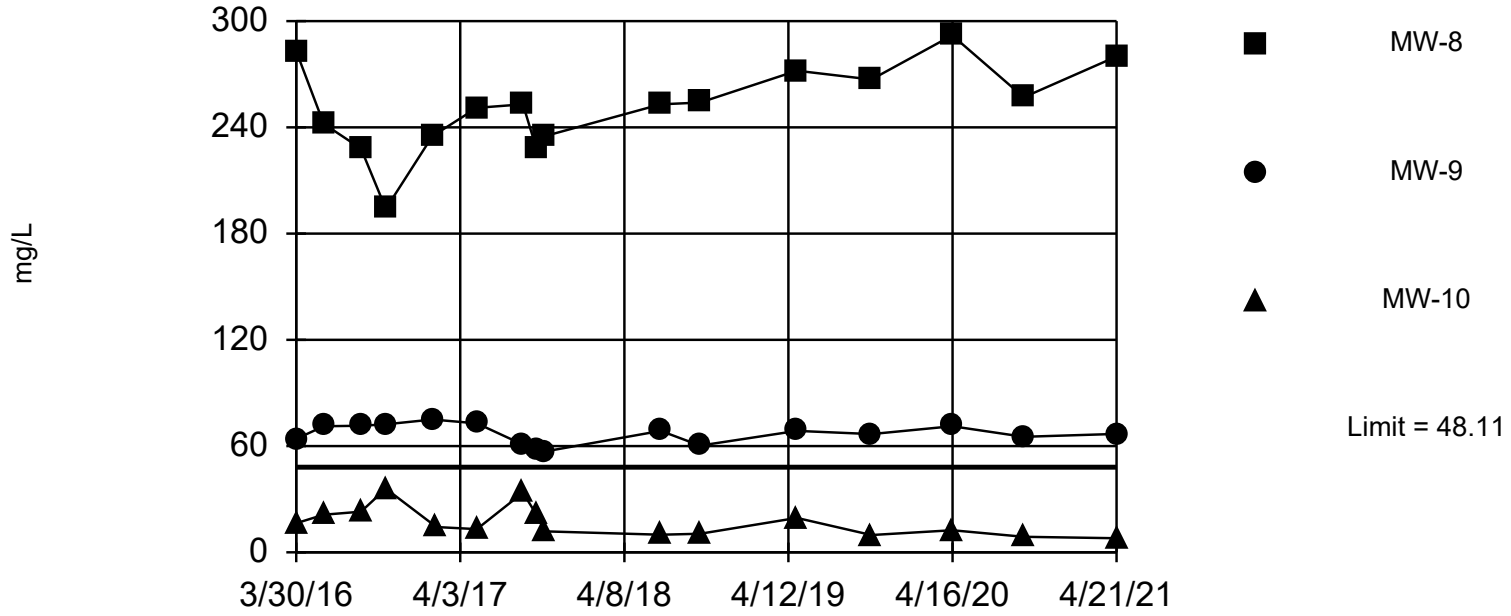
Constituent: Cadmium Analysis Run 6/7/2021 2:42 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-8, MW-9

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=43.3, Std. Dev.=2.273, n=16. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

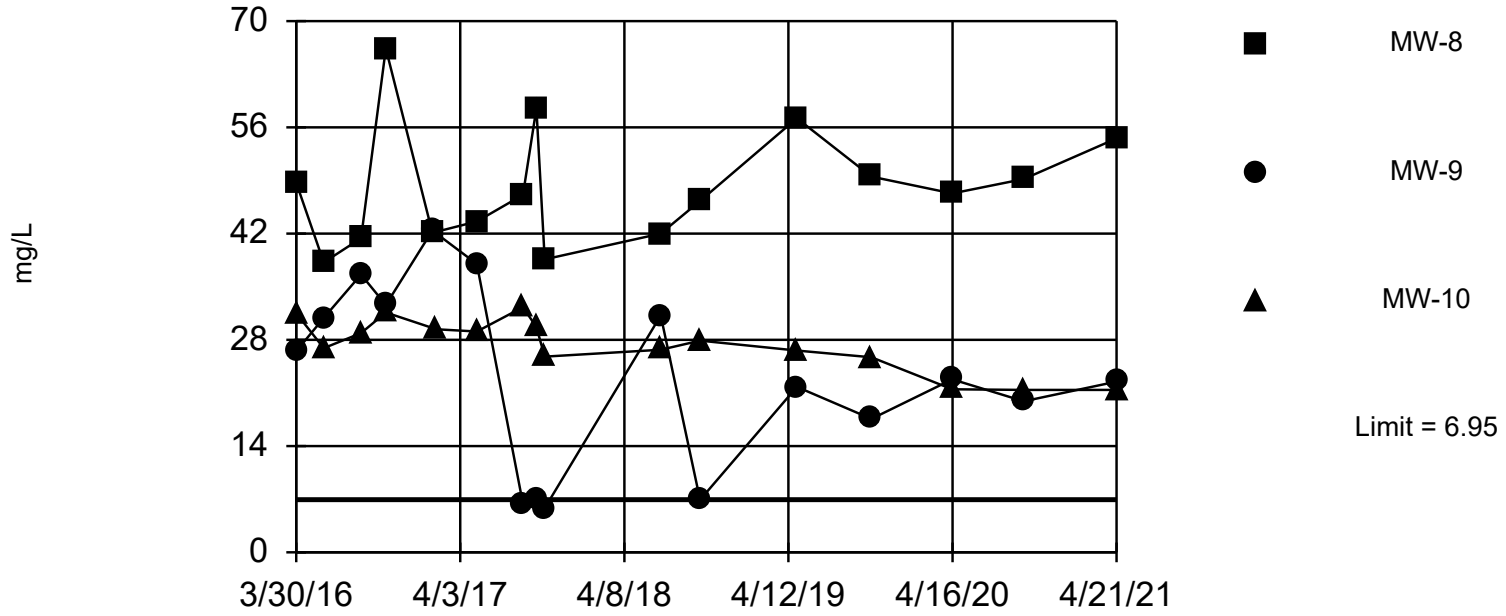
Constituent: Calcium Analysis Run 6/7/2021 2:05 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-8, MW-9, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=4.316, Std. Dev.=1.244, n=16. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Chloride Analysis Run 6/7/2021 2:07 PM

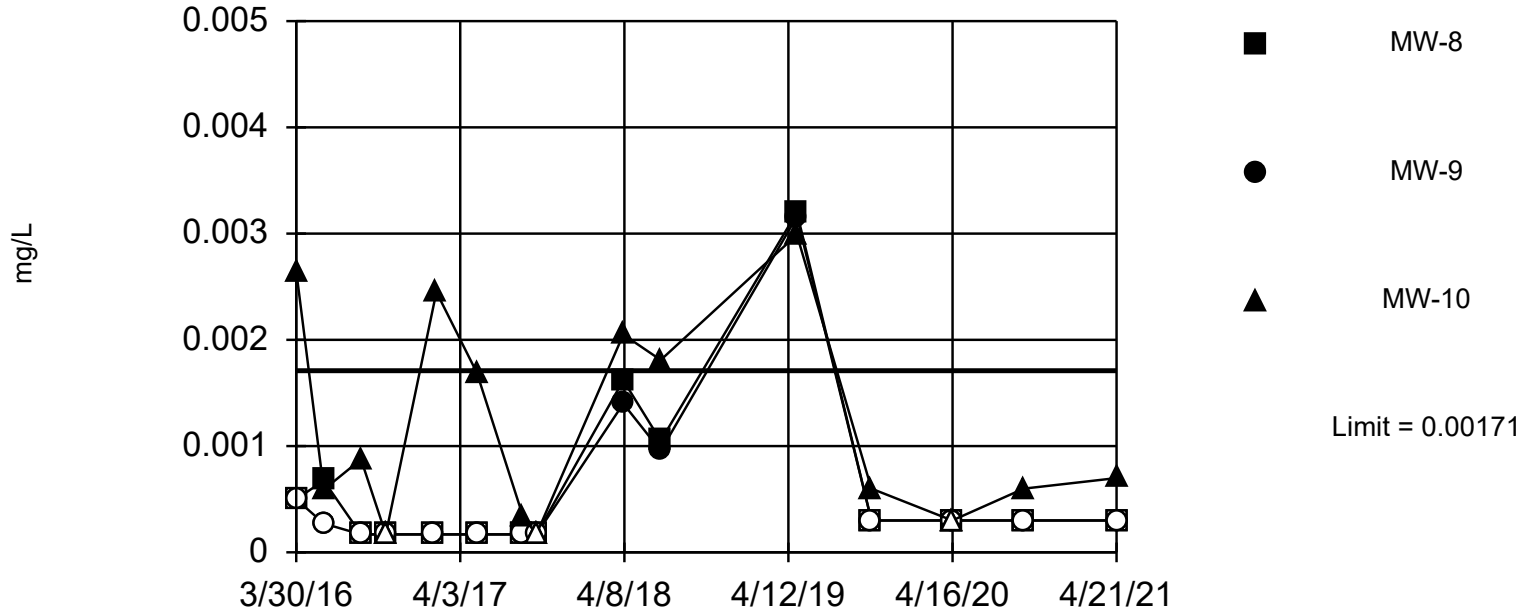
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 15 background values. 73.33% NDs. Report alpha = 0.1667. Individual comparison alpha = 0.05896. 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 6/7/2021 2:46 PM

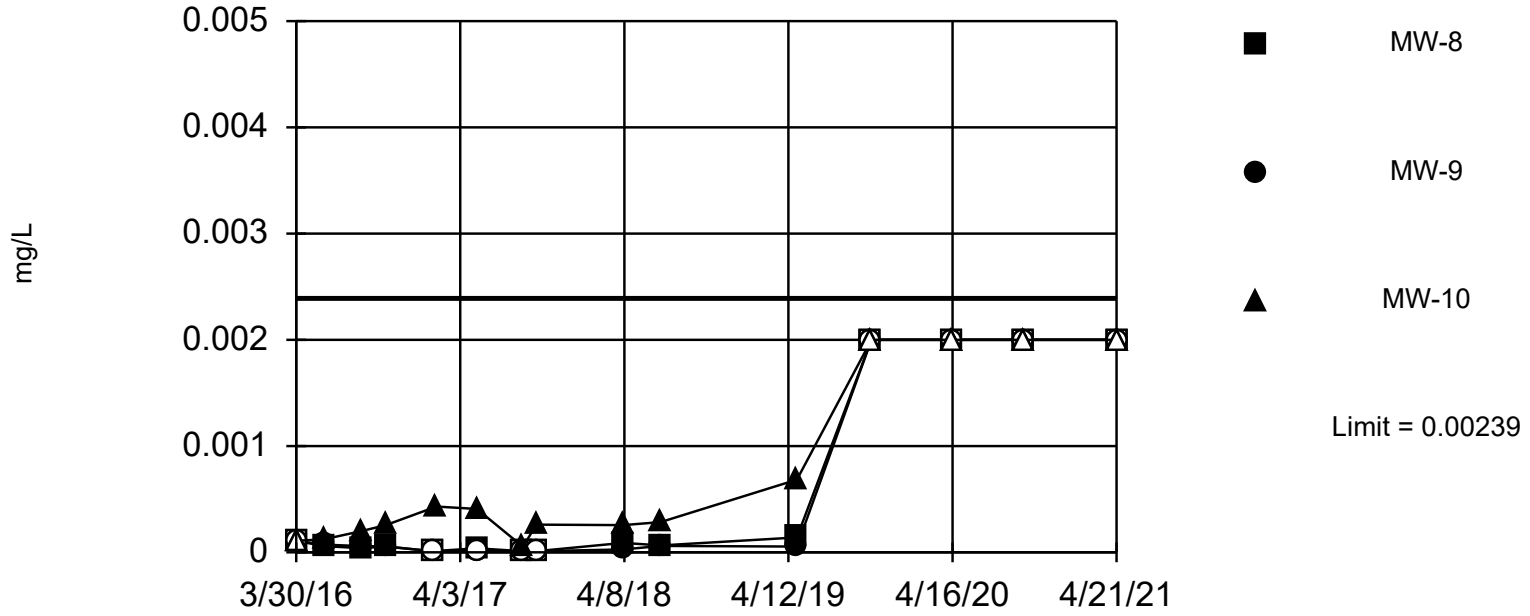
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 15 background values. 26.67% NDs. Report alpha = 0.1667. Individual comparison alpha = 0.05896. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

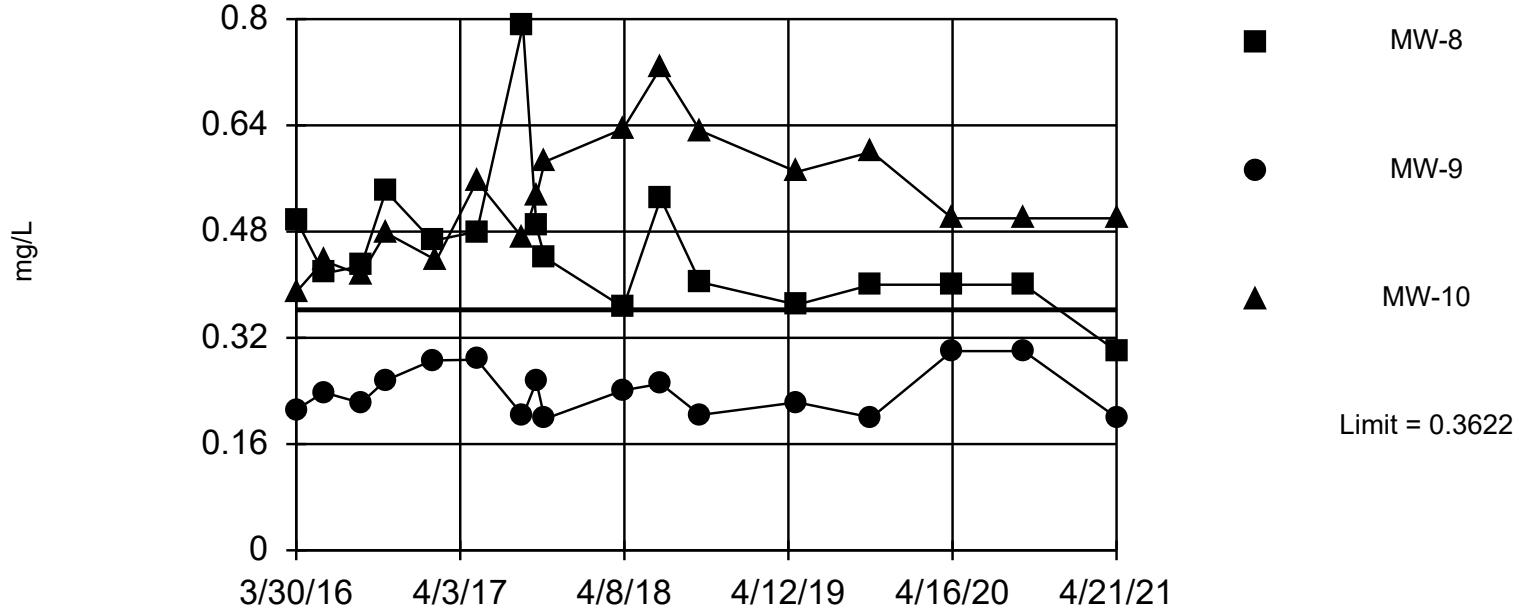
Constituent: Cobalt Analysis Run 6/7/2021 2:47 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.2829, Std. Dev.=0.03774, n=17. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Fluoride Analysis Run 6/7/2021 2:09 PM

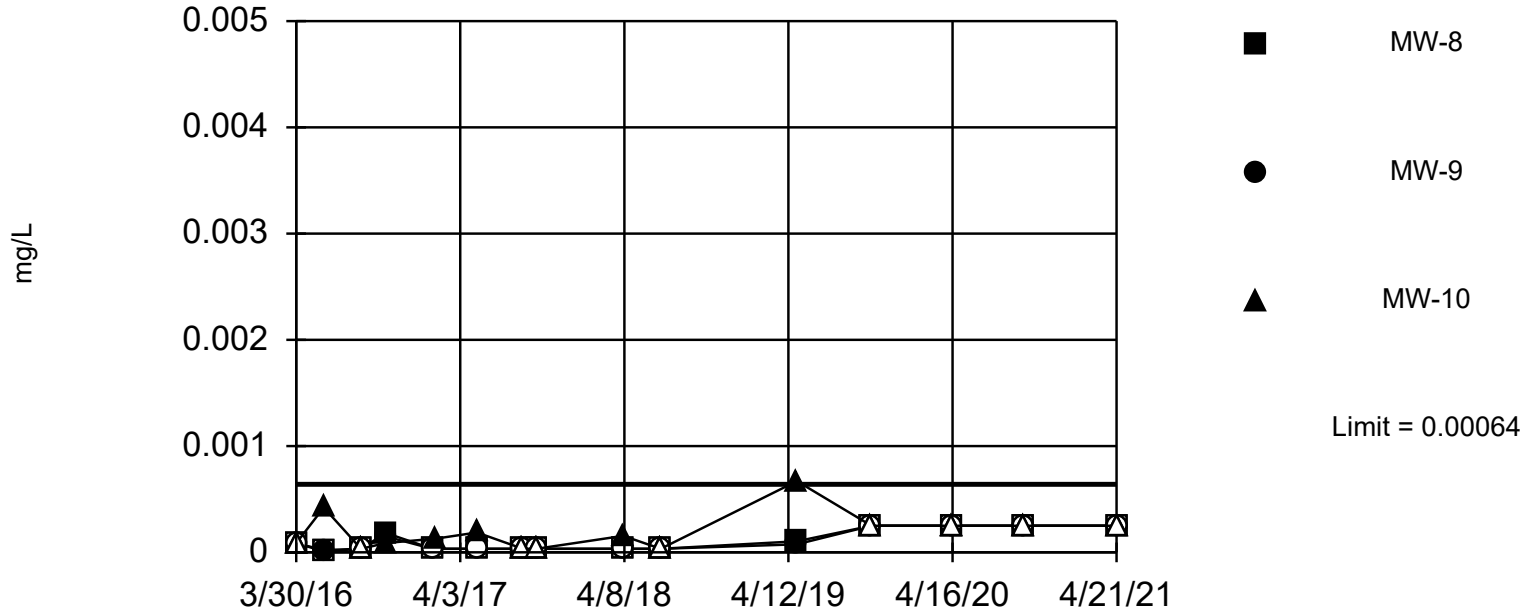
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 15 background values. 73.33% NDs. Report alpha = 0.1667. Individual comparison alpha = 0.05896. 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 6/7/2021 2:49 PM

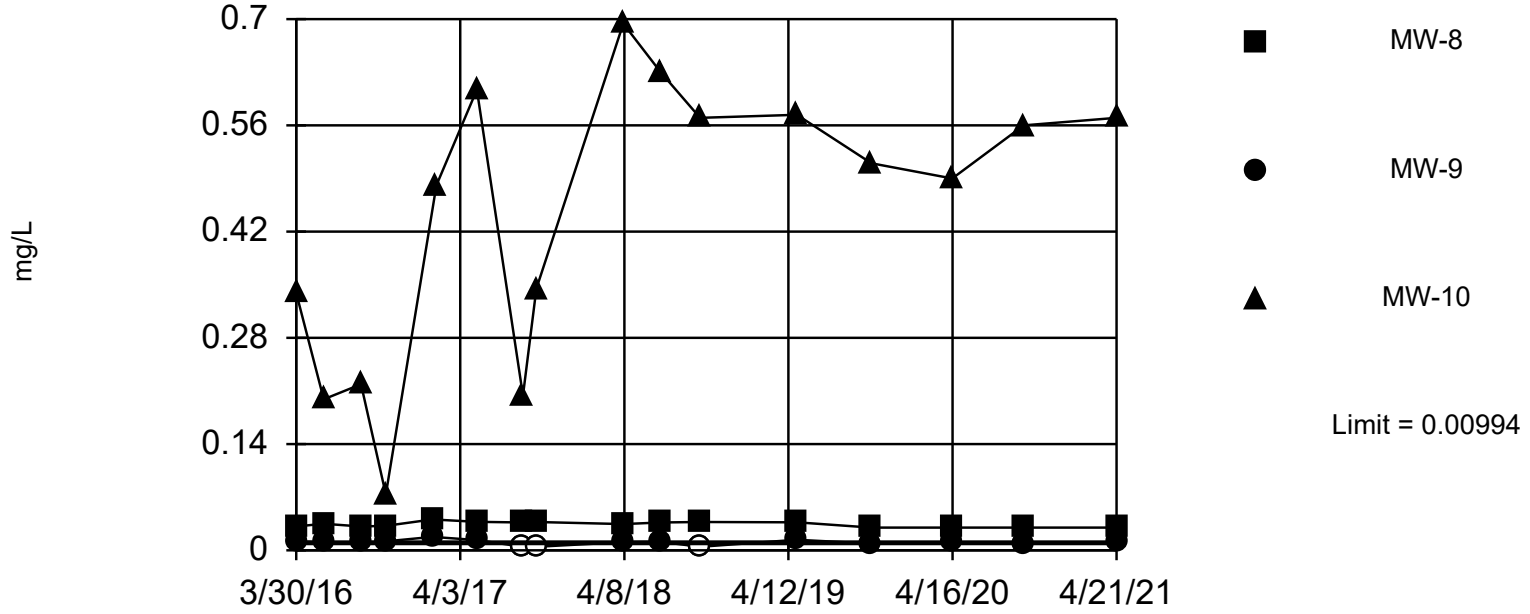
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-8, MW-9, MW-10

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 62.5% NDs. Report alpha = 0.1579. Individual comparison alpha = 0.05567. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Lithium Analysis Run 6/7/2021 2:50 PM

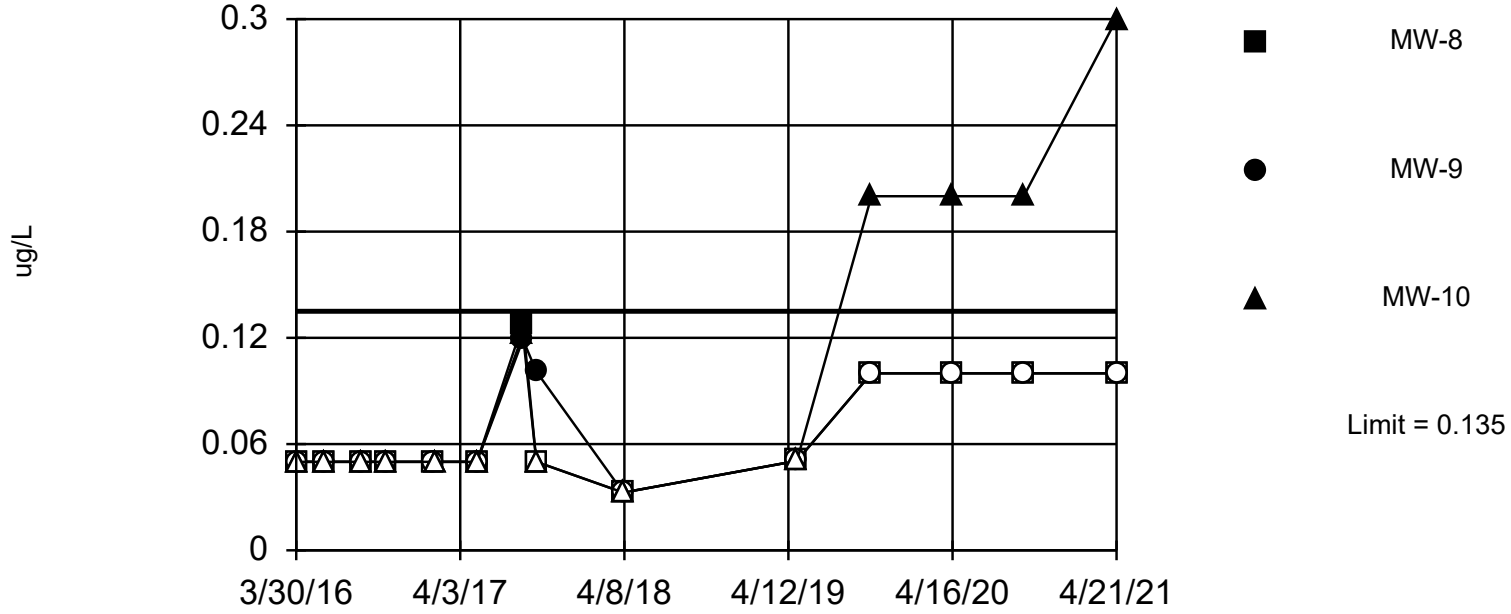
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-10

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Report alpha = 0.1765. Individual comparison alpha = 0.06267. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Mercury Analysis Run 6/7/2021 2:53 PM

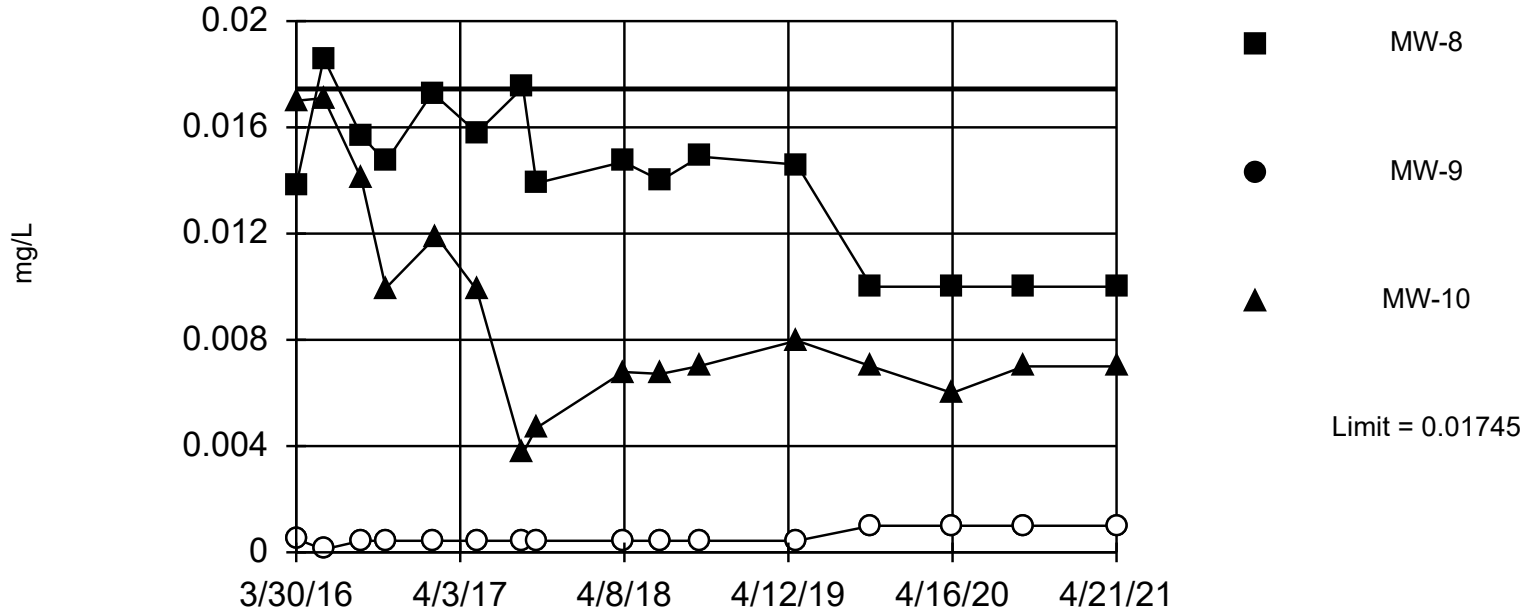
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.008679, Std. Dev.=0.004142, n=16. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

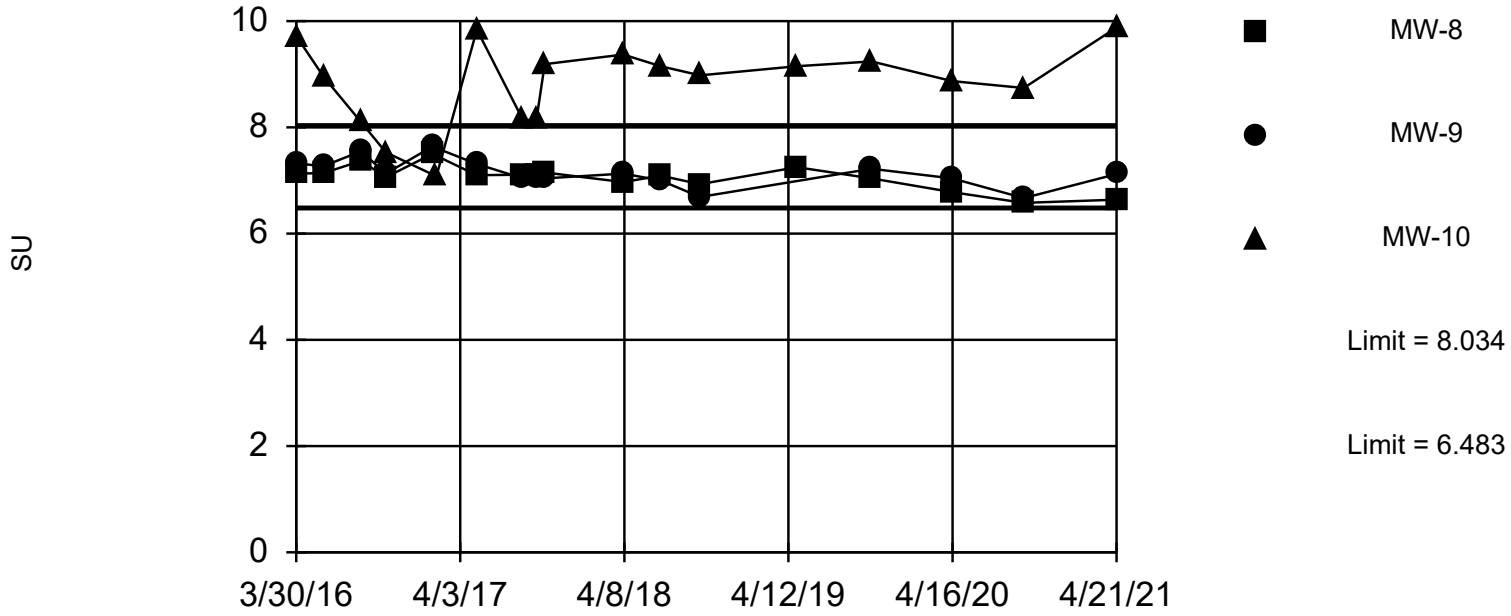
Constituent: Molybdenum Analysis Run 6/7/2021 2:55 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limits: MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.258, Std. Dev.=0.314, n=17. Report alpha = 0.08425. Individual comparison alpha = 0.01446. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: pH [Field] Analysis Run 6/7/2021 2:11 PM

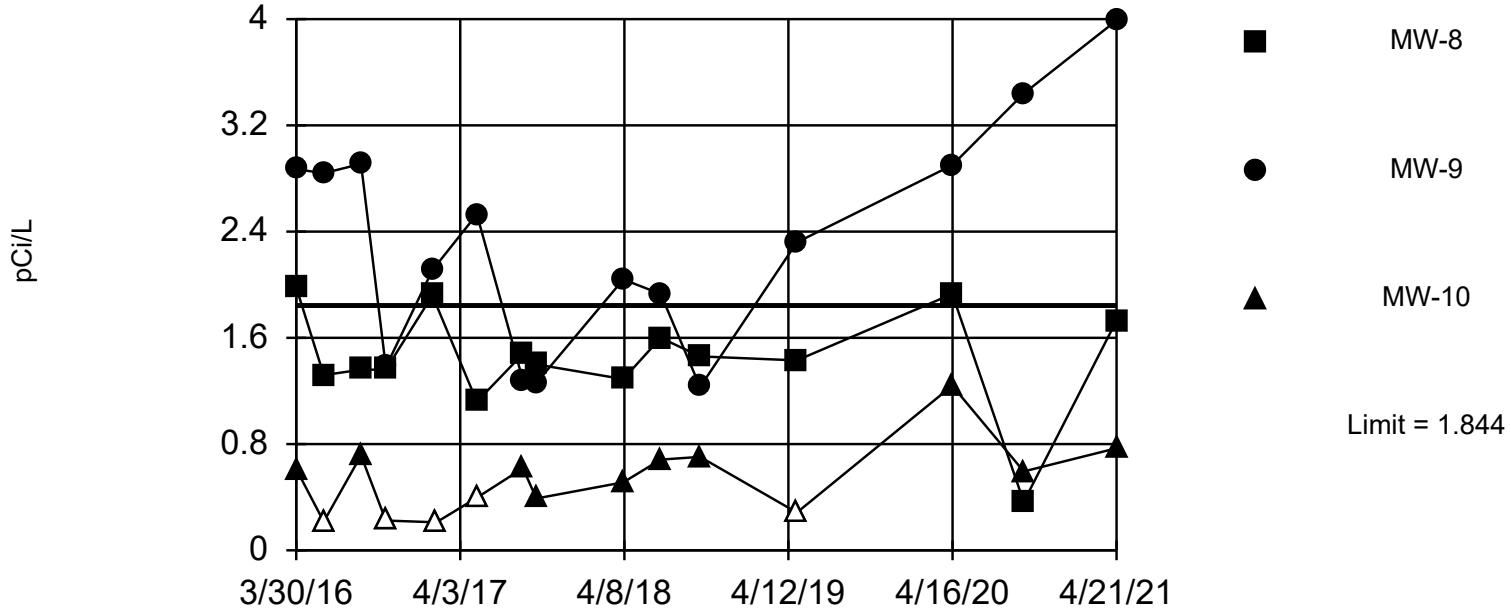
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-9

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.304, Std. Dev.=0.4291, n=15, 6.667% NDs. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit.

Constituent: Radium 226 + 228 Analysis Run 6/14/2021 10:22 AM

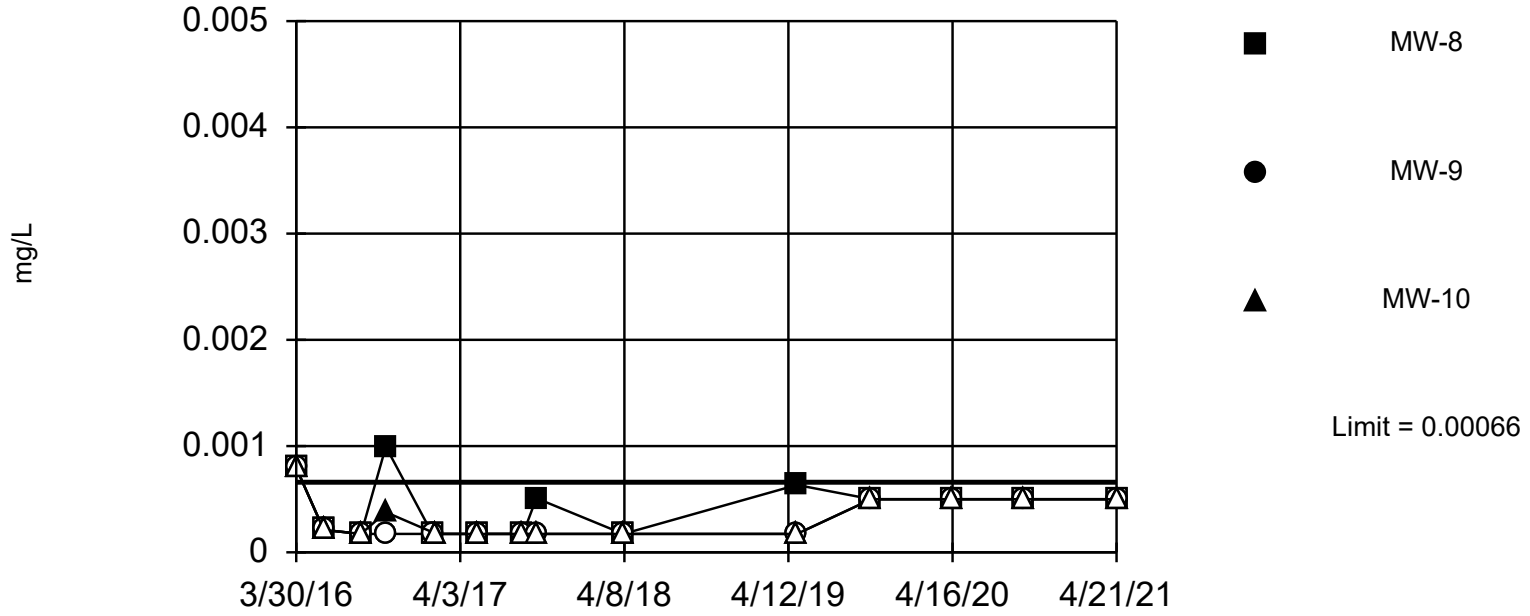
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 13 background values. 92.31% NDs. Report alpha = 0.1875. Individual comparison alpha = 0.06687. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Selenium Analysis Run 6/7/2021 3:03 PM

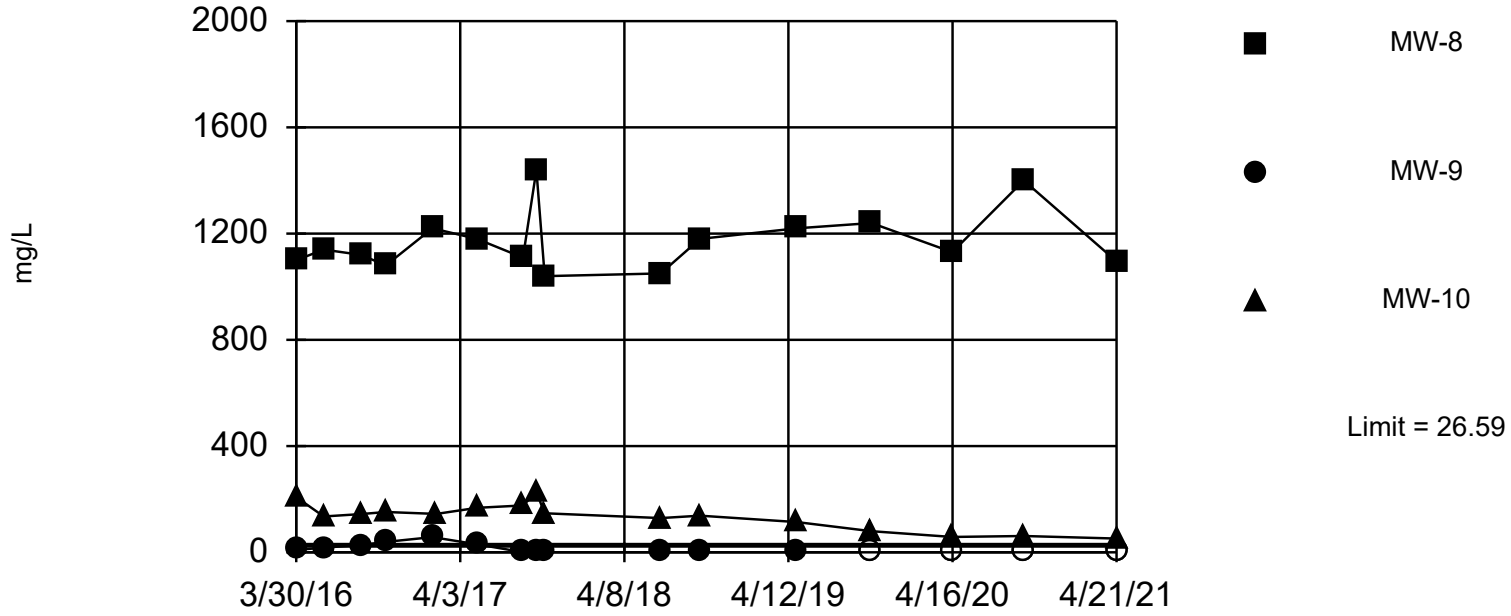
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-8, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=17.69, Std. Dev.=4.205, n=16. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Sulfate Analysis Run 6/7/2021 2:13 PM

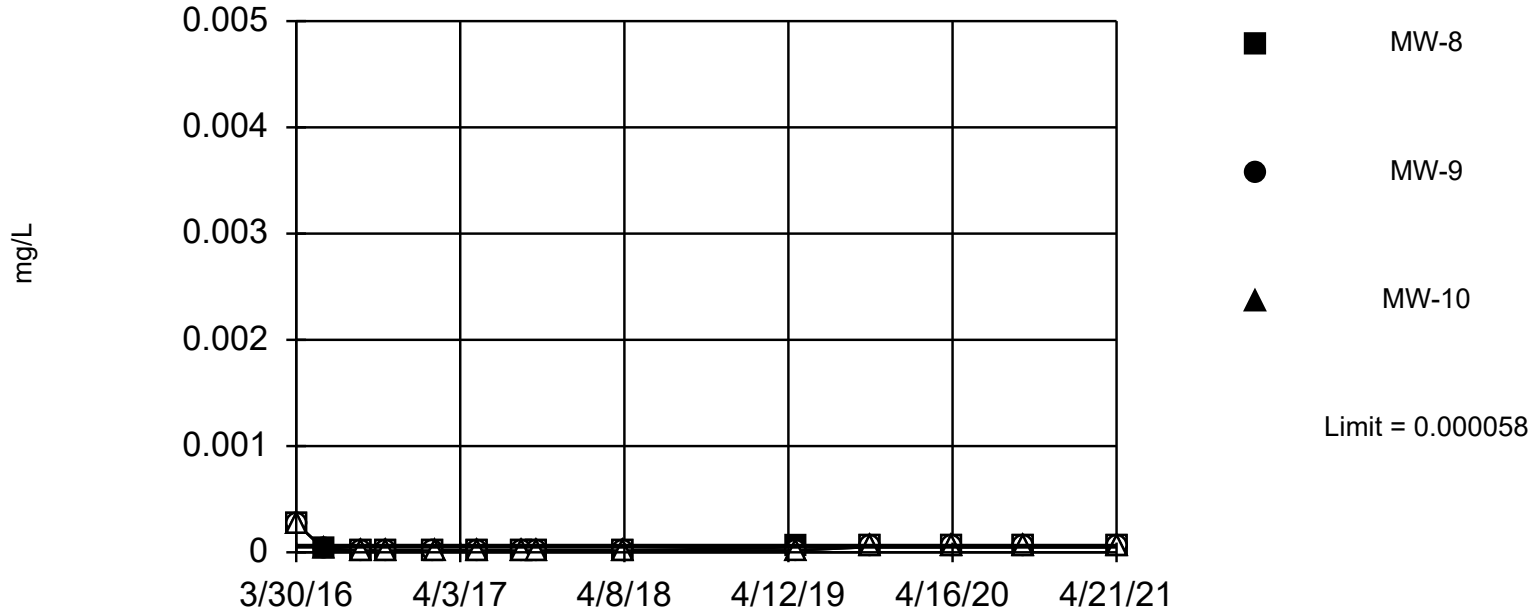
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 13 background values. 84.62% NDs. Report alpha = 0.1875. Individual comparison alpha = 0.06687. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

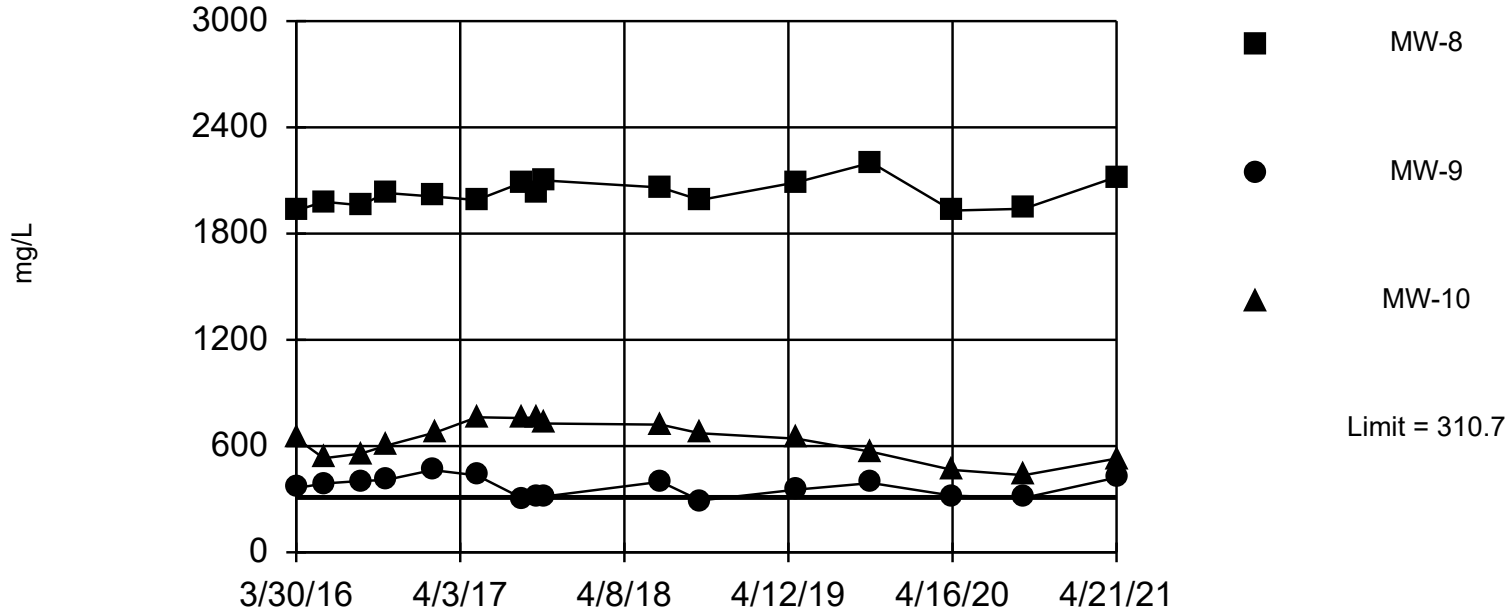
Constituent: Thallium Analysis Run 6/7/2021 3:04 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-8, MW-9, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=263.2, Std. Dev.=22.06, n=14. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. Two background outliers were removed: 148 (4/16/2020); 114 (9/24/2020).

Constituent: Total Dissolved Solids Analysis Run 6/7/2021 2:16 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Attachment 2

September 2021 Time Series Plots

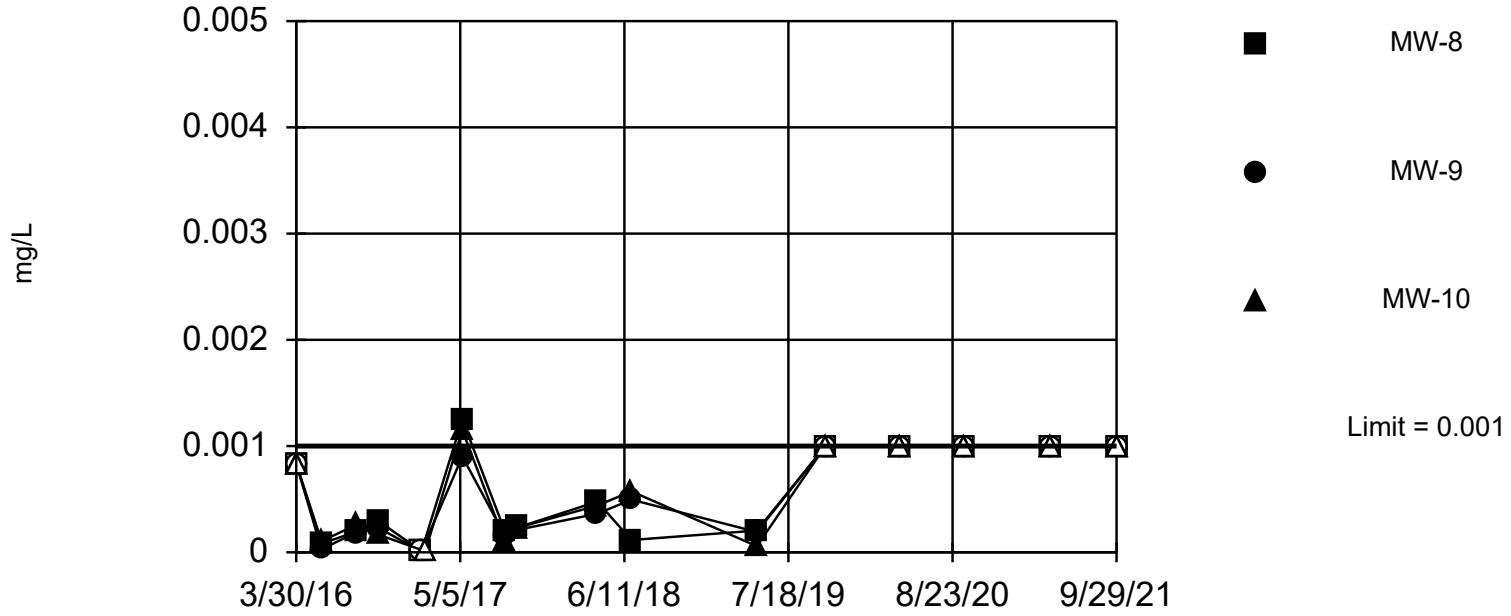
And Prediction Limit Results

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 16 background values. 50% NDs. Report alpha = 0.1579. Individual comparison alpha = 0.05567. Most recent point for each compliance well compared to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

Constituent: Antimony Analysis Run 11/29/2021 3:15 PM

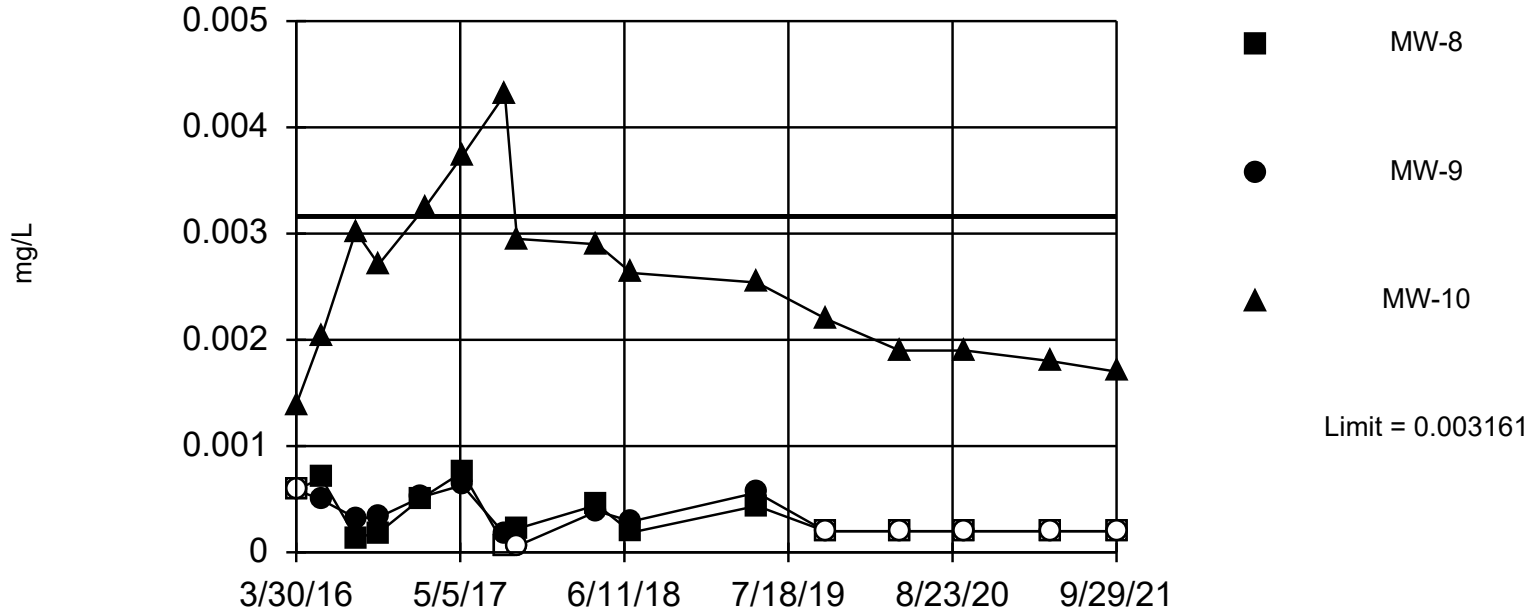
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.00139, Std. Dev.=0.0008364, n=16, 12.5% NDs. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. No background outliers were found.

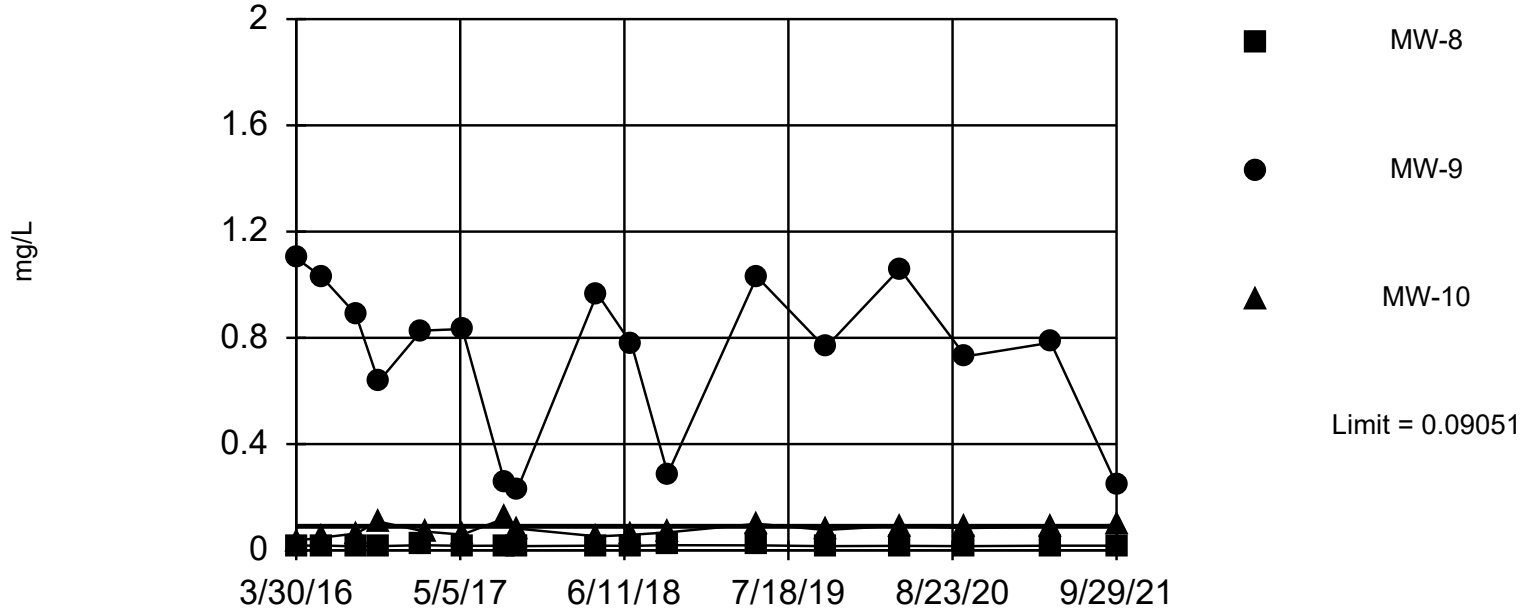
Constituent: Arsenic Analysis Run 11/29/2021 3:17 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-9, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.06808, Std. Dev.=0.01067, n=17. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Barium Analysis Run 11/30/2021 12:23 PM

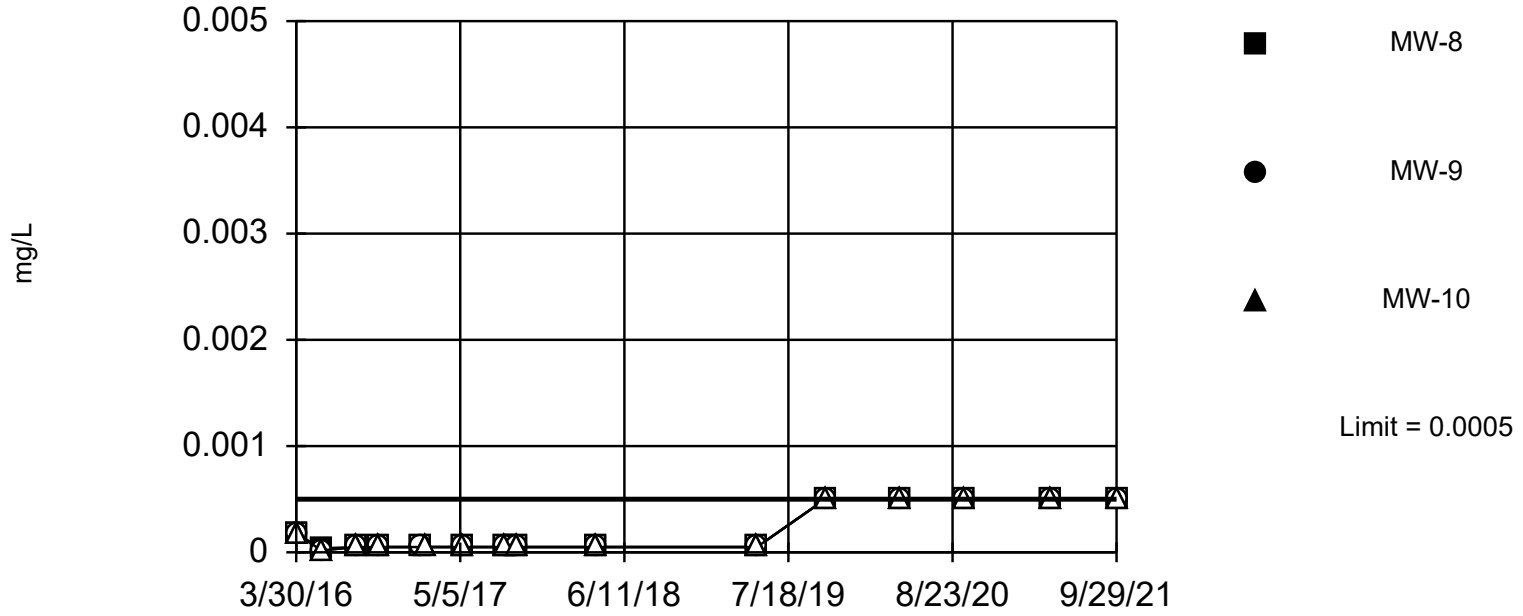
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 15 background values. 100% NDs. Report alpha = 0.1667. Individual comparison alpha = 0.05896. Most recent point for each compliance well compared to limit.

Constituent: Beryllium Analysis Run 11/30/2021 12:27 PM

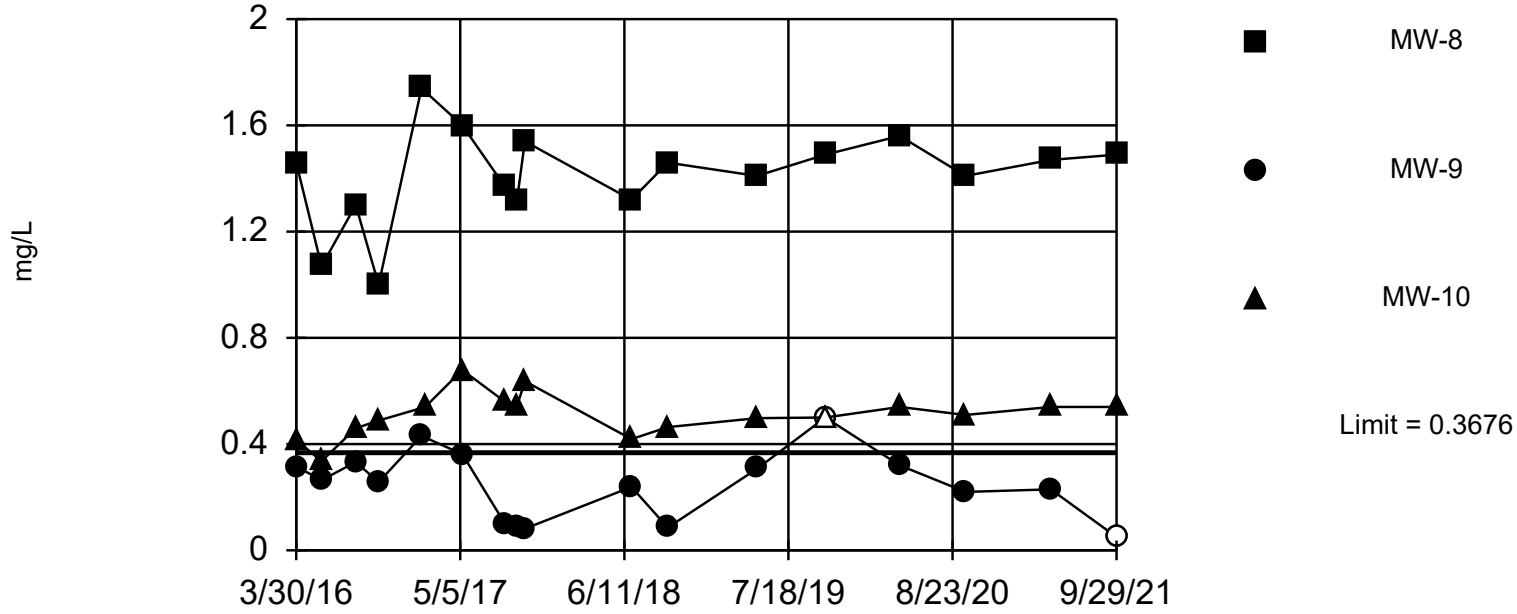
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-8, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.2919, Std. Dev.=0.03547, n=15. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. Two background outliers were removed: <1 (10/16/2019); 1.77 (9/29/2021).

Constituent: Boron Analysis Run 11/29/2021 2:54 PM

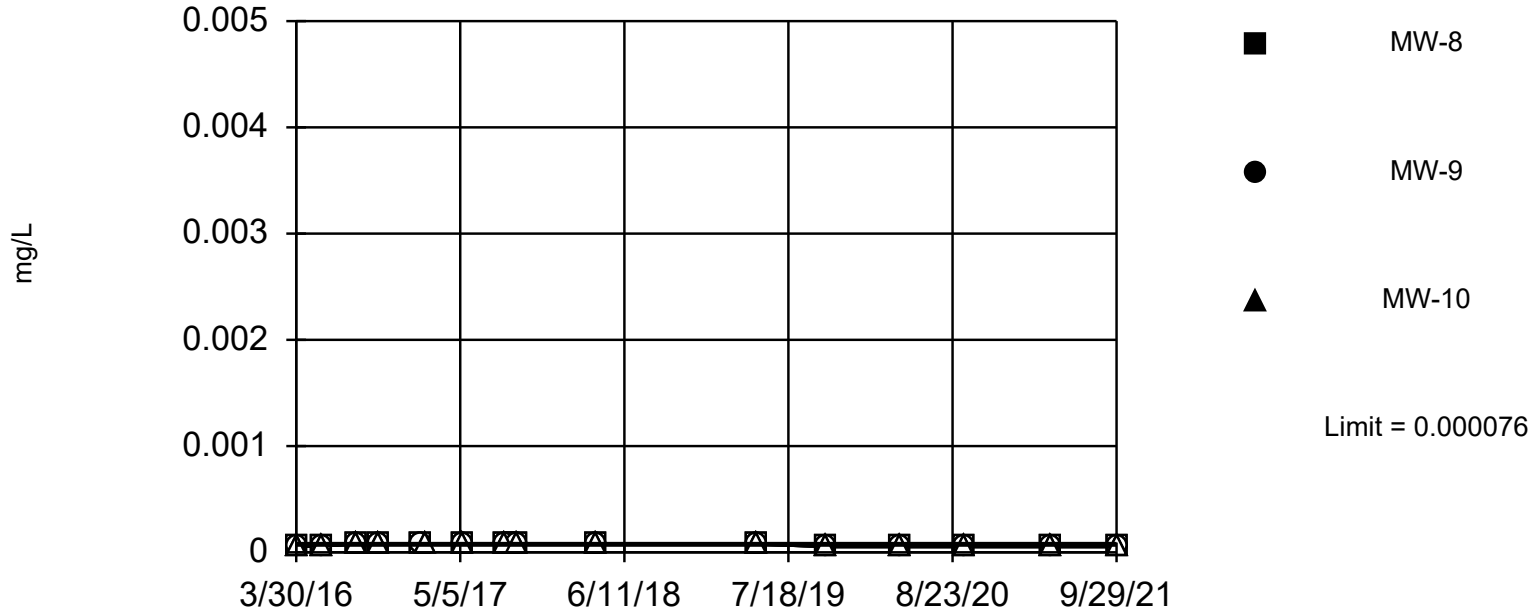
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 15 background values. 100% NDs. Report alpha = 0.1667. Individual comparison alpha = 0.05896. Most recent point for each compliance well compared to limit.

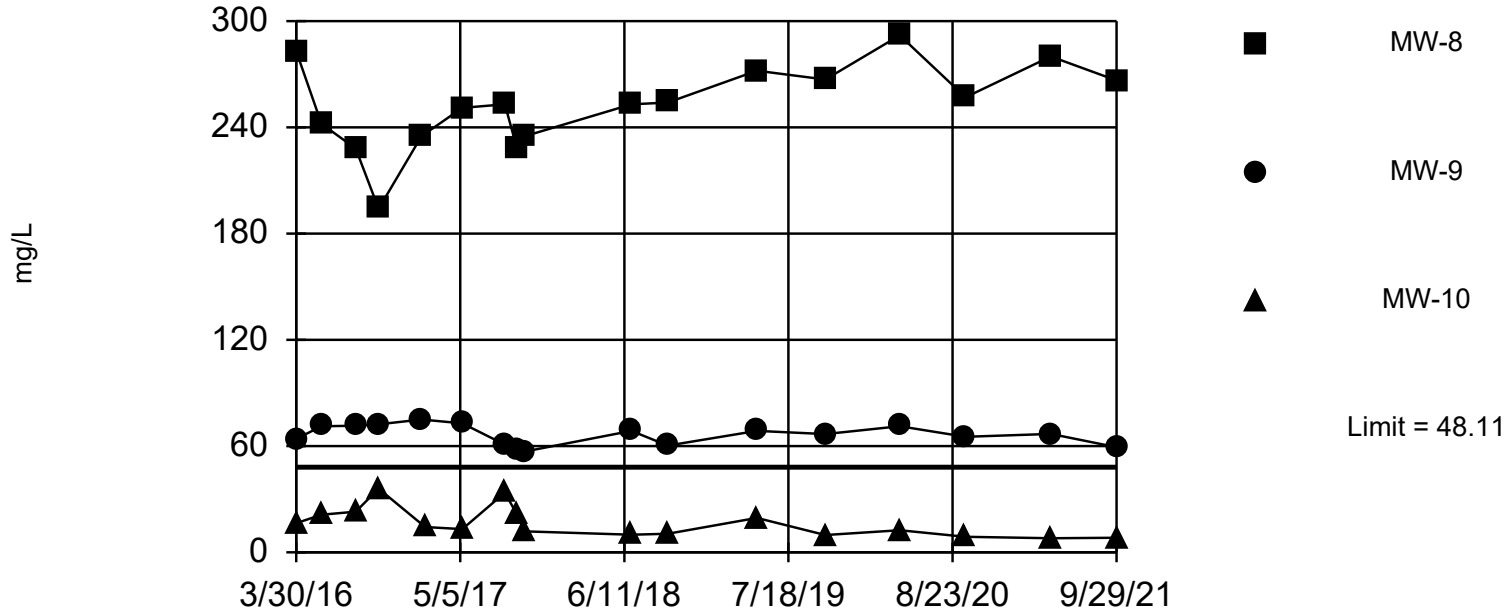
Constituent: Cadmium Analysis Run 11/30/2021 12:29 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-8, MW-9

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=43.3, Std. Dev.=2.273, n=16. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. One background outlier was removed: 27 (9/29/2021).

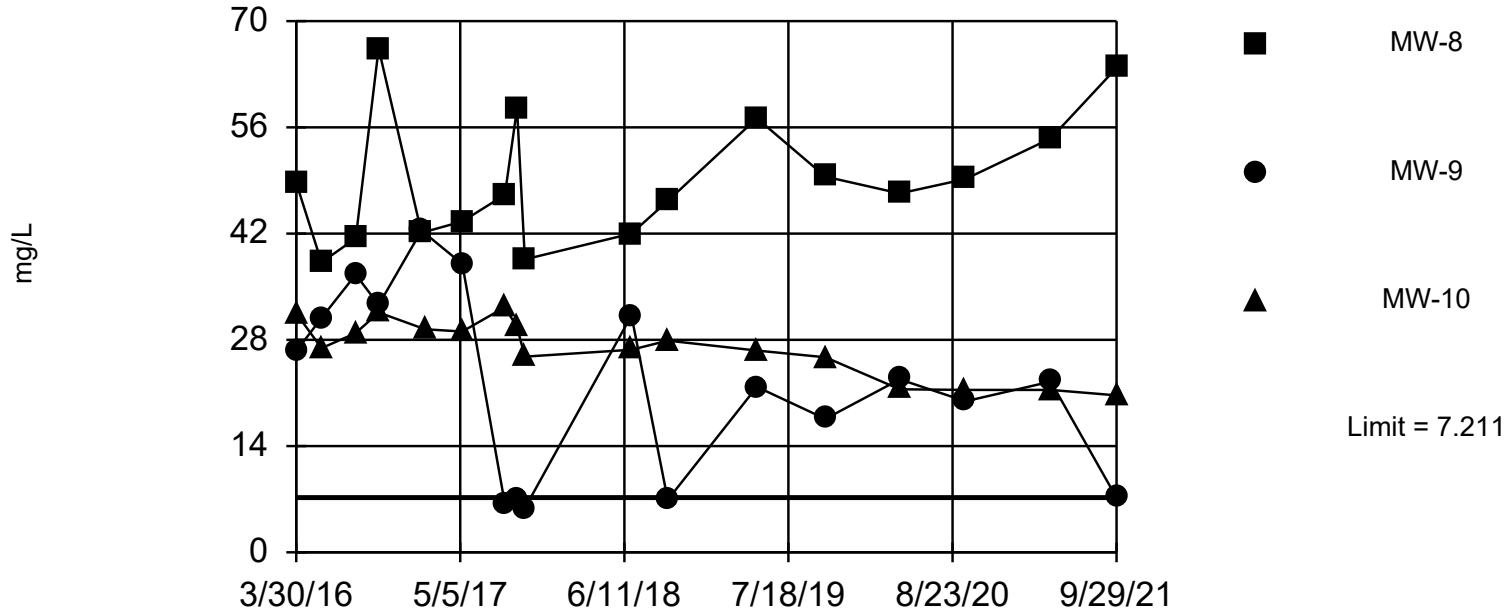
Constituent: Calcium Analysis Run 11/29/2021 2:58 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-8, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=4.445, Std. Dev.=1.316, n=17. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Chloride Analysis Run 11/29/2021 3:00 PM

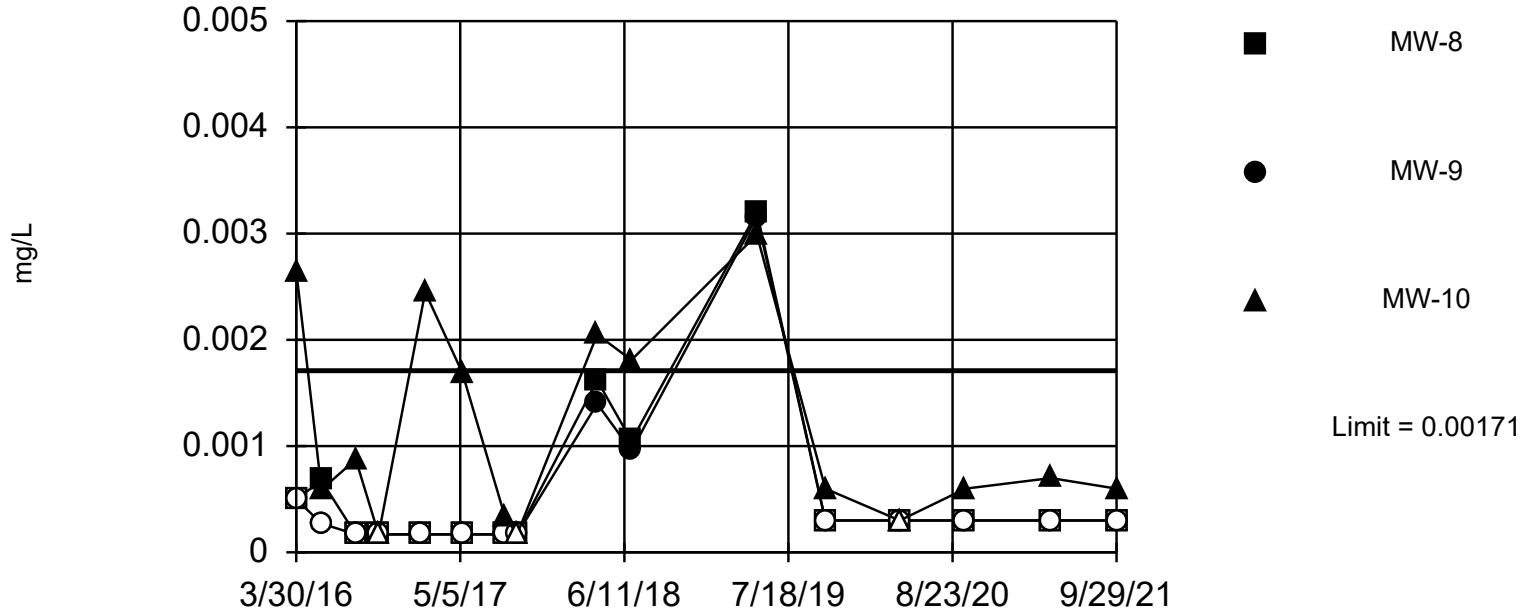
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 16 background values. 75% NDs. Report alpha = 0.1579. Individual comparison alpha = 0.05567. Most recent point for each compliance well compared to limit.

Constituent: Chromium Analysis Run 11/30/2021 12:30 PM

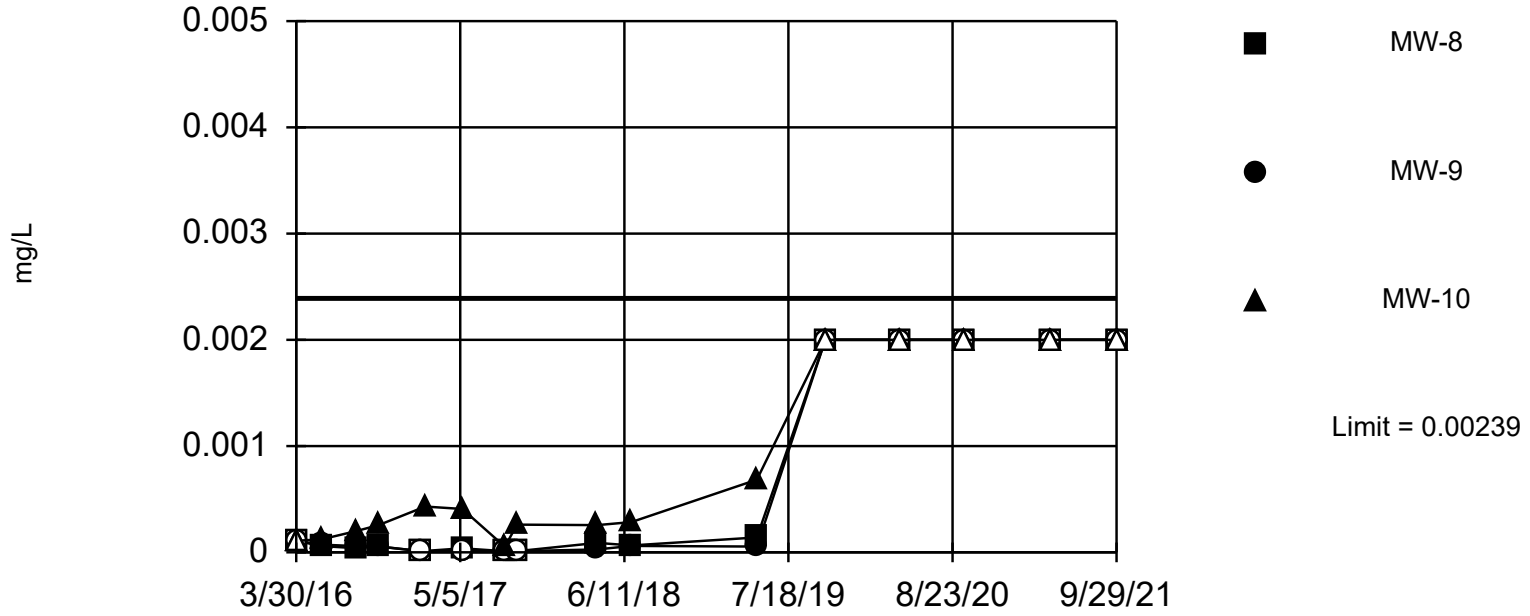
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



NP test selected by user. Limit is highest of 16 background values. 31.25% NDs. Report alpha = 0.1579. Individual comparison alpha = 0.05567. Most recent point for each compliance well compared to limit.

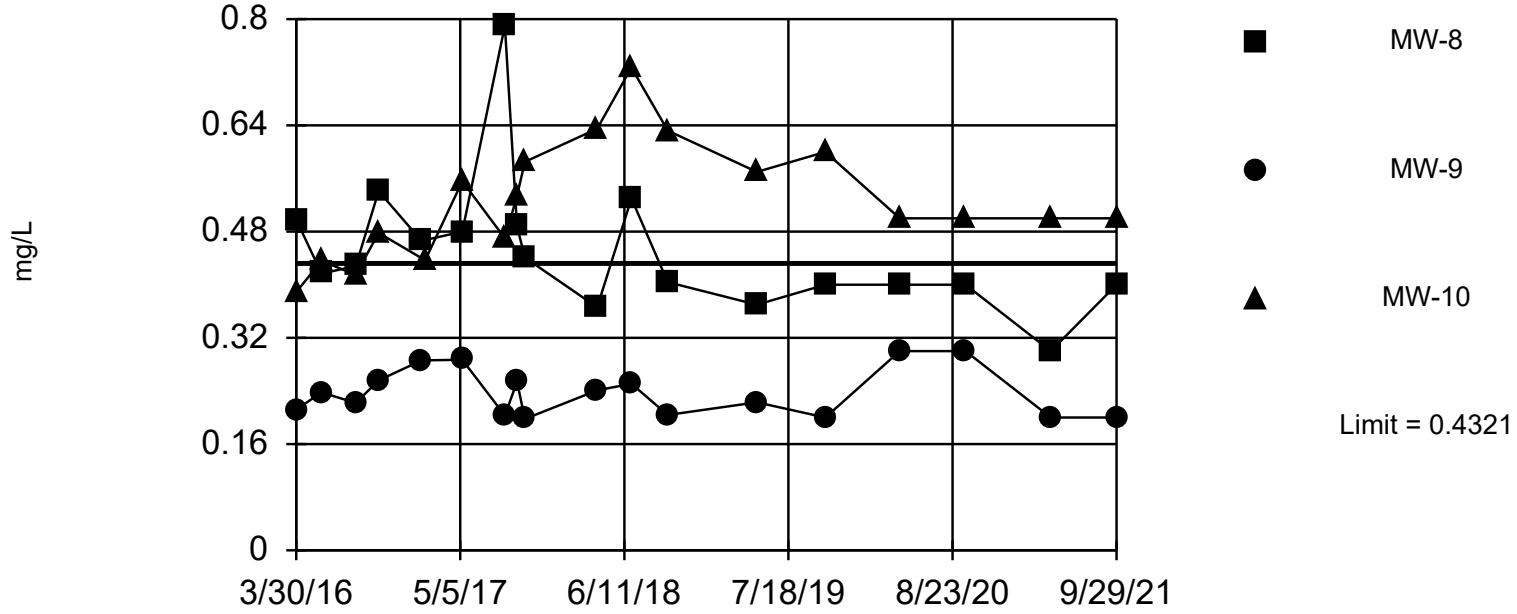
Constituent: Cobalt Analysis Run 11/30/2021 12:36 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-10

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-1.239, Std. Dev.=0.1915, n=18. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit.

Constituent: Fluoride Analysis Run 11/29/2021 3:03 PM

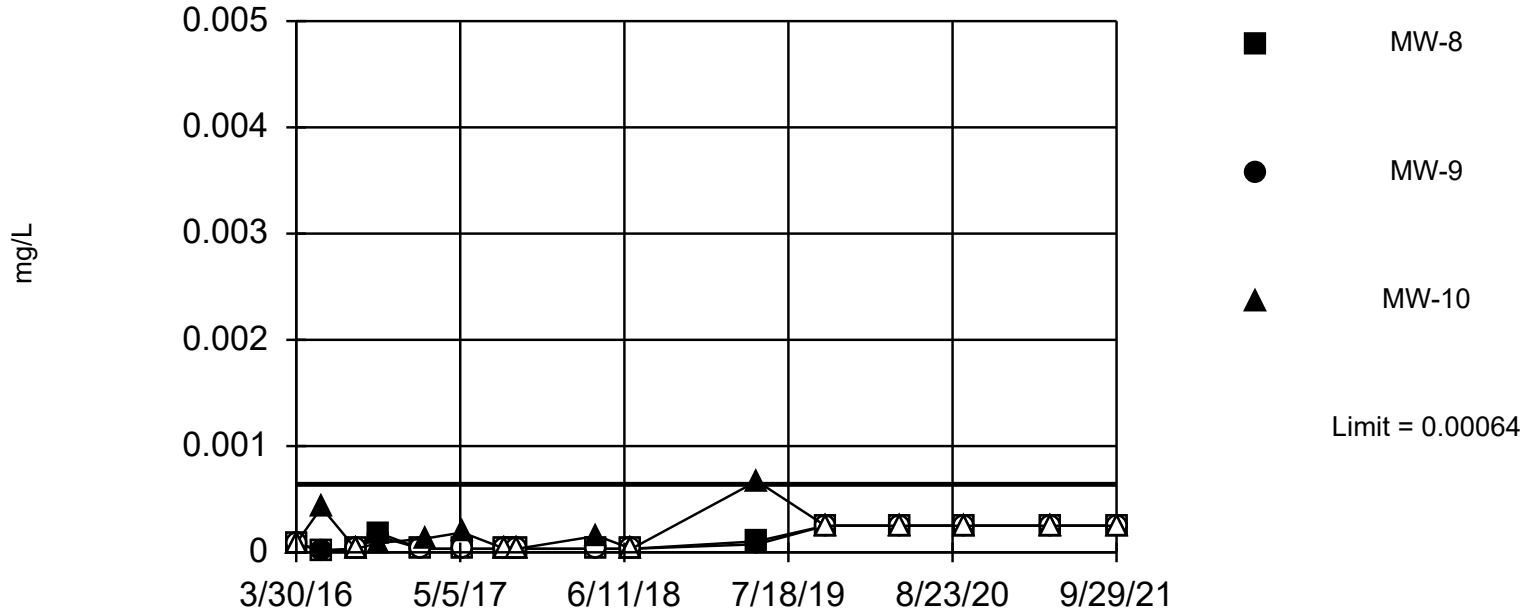
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 16 background values. 75% NDs. Report alpha = 0.1579. Individual comparison alpha = 0.05567. Most recent point for each compliance well compared to limit.

Constituent: Lead Analysis Run 11/30/2021 12:38 PM

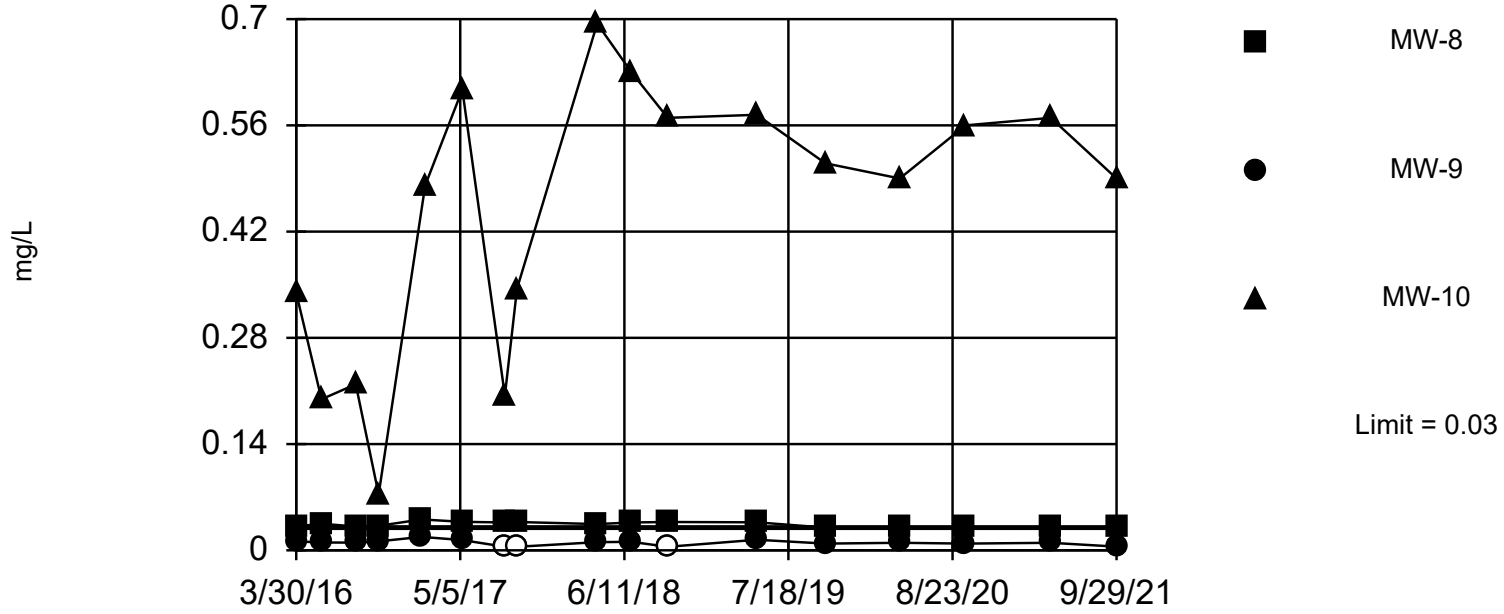
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-10

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 17 background values. 58.82% NDs. Report alpha = 0.15. Individual comparison alpha = 0.05273. Most recent point for each compliance well compared to limit.

Constituent: Lithium Analysis Run 11/30/2021 12:43 PM

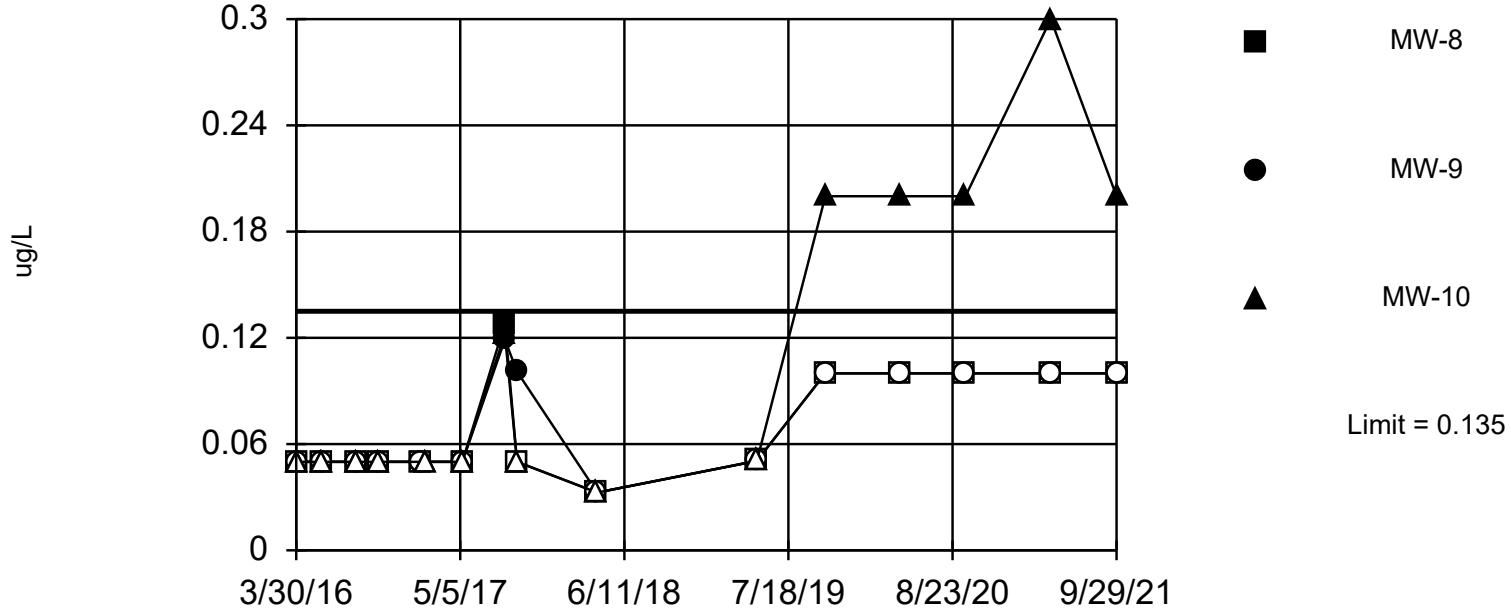
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-10

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 93.33% NDs. Report alpha = 0.1667. Individual comparison alpha = 0.05896. Most recent point for each compliance well compared to limit.

Constituent: Mercury Analysis Run 11/30/2021 12:47 PM

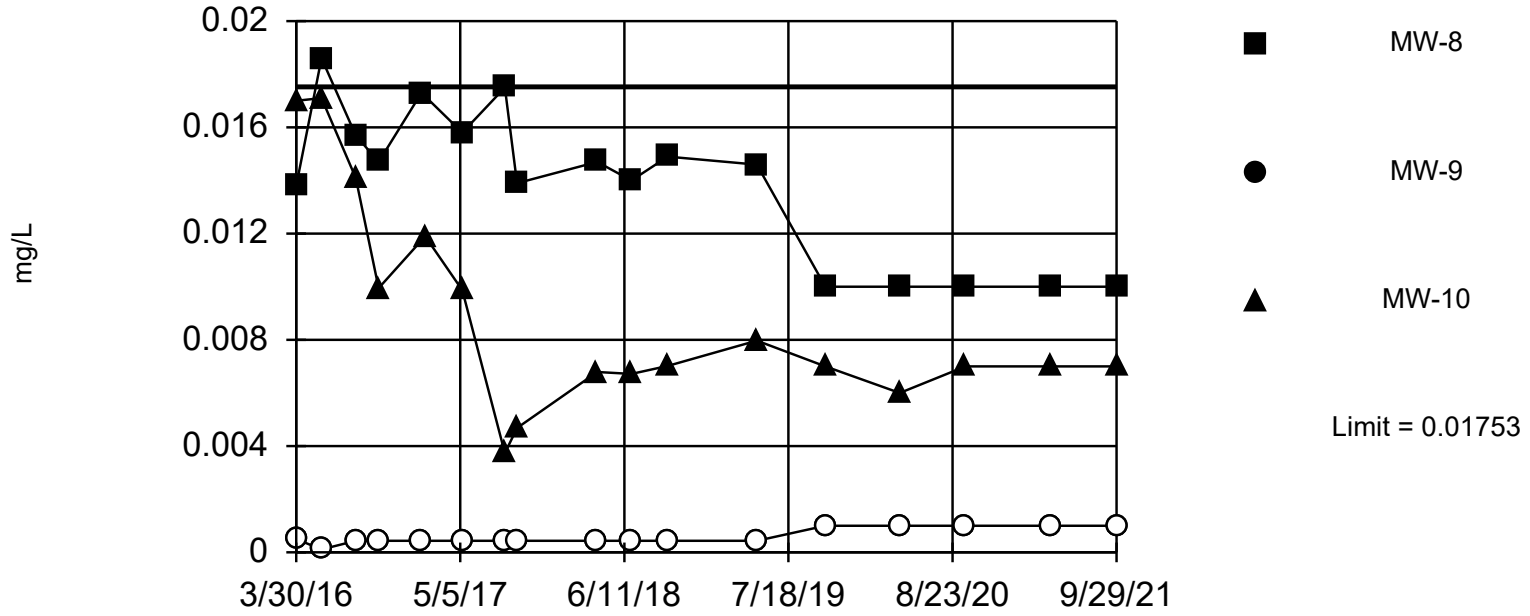
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.008227, Std. Dev.=0.004422, n=17, 5.882% NDs. Report alpha = 0.08425.
Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit.

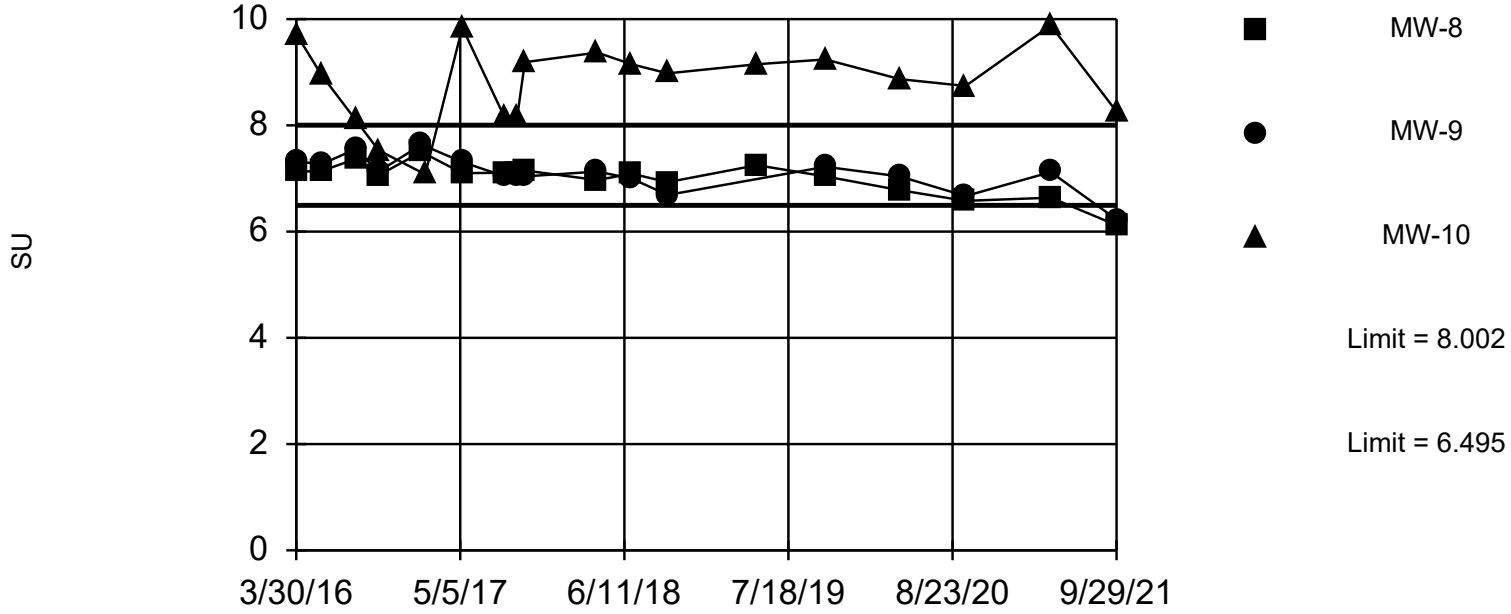
Constituent: Molybdenum Analysis Run 11/30/2021 12:50 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limits: MW-8, MW-9, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.248, Std. Dev.=0.3075, n=18. Report alpha = 0.08425. Individual comparison alpha = 0.01446. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: pH [Field] Analysis Run 11/29/2021 3:06 PM

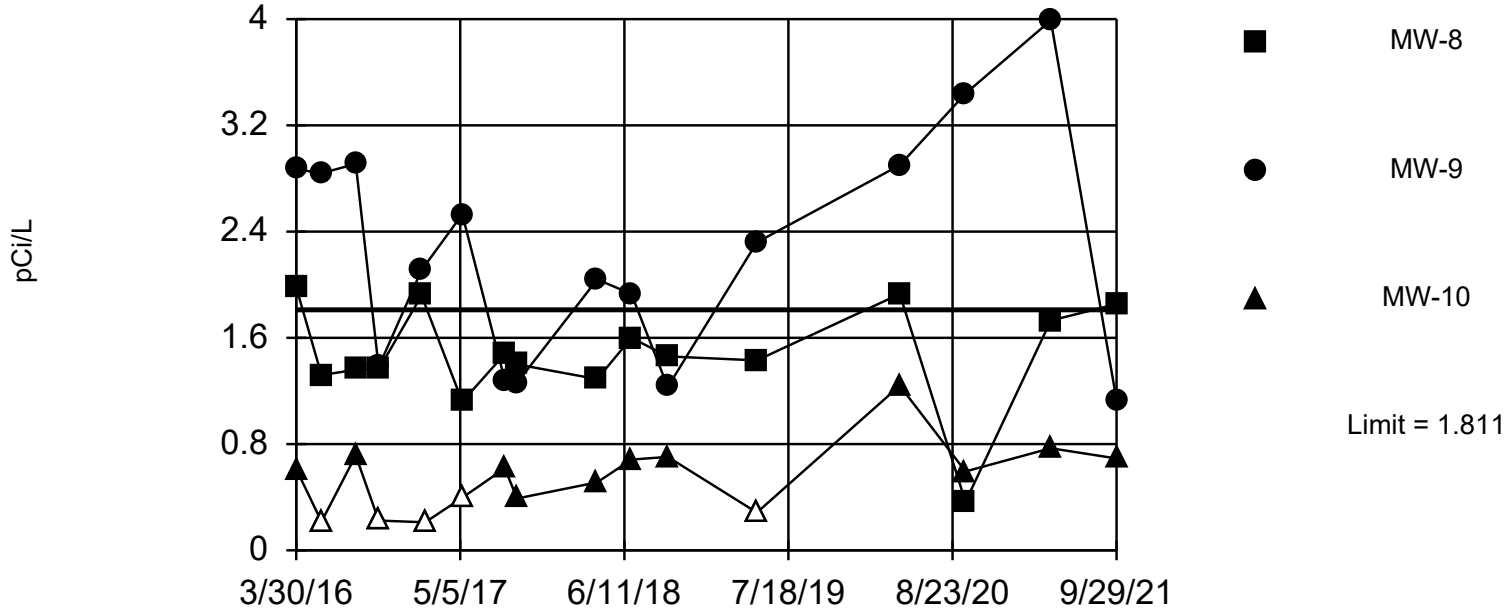
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-8

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.2907, Std. Dev.=0.4179, n=16, 6.25% NDs. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit.

Constituent: Radium 226 + 228 Analysis Run 11/30/2021 12:53 PM

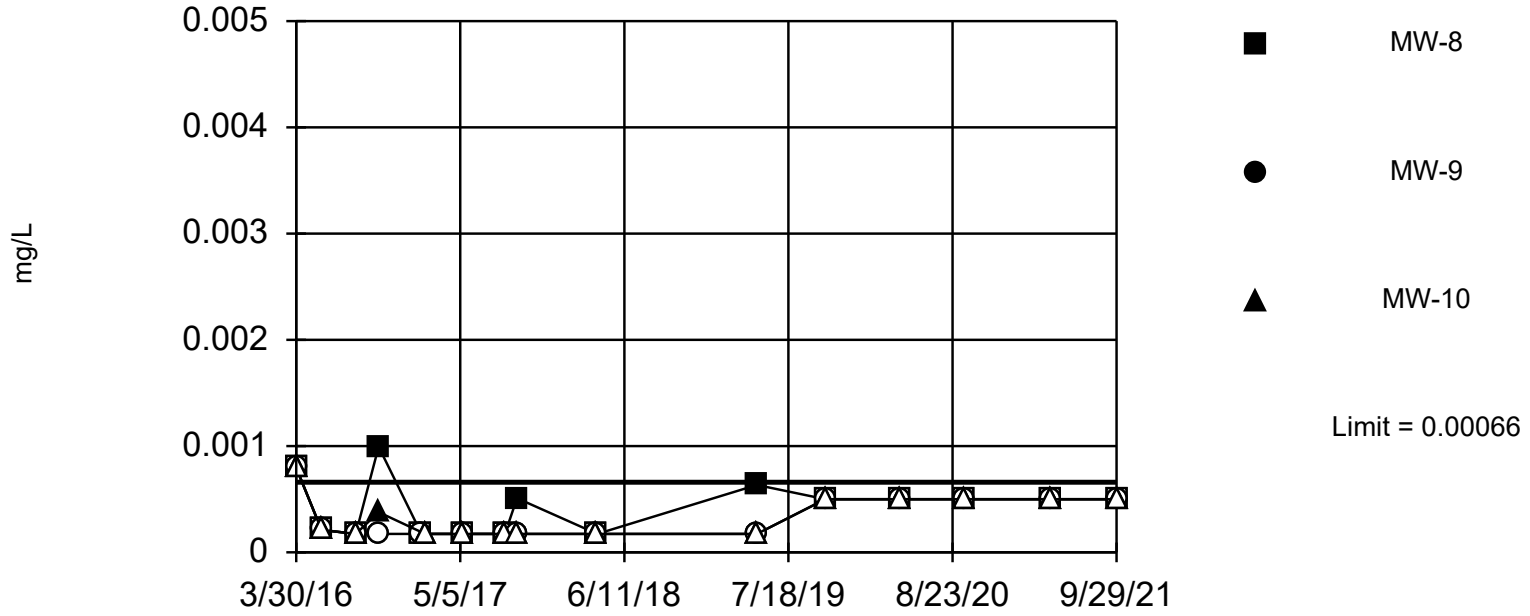
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 14 background values. 92.86% NDs. Report alpha = 0.1765. Individual comparison alpha = 0.06267. Most recent point for each compliance well compared to limit.

Constituent: Selenium Analysis Run 11/30/2021 1:08 PM

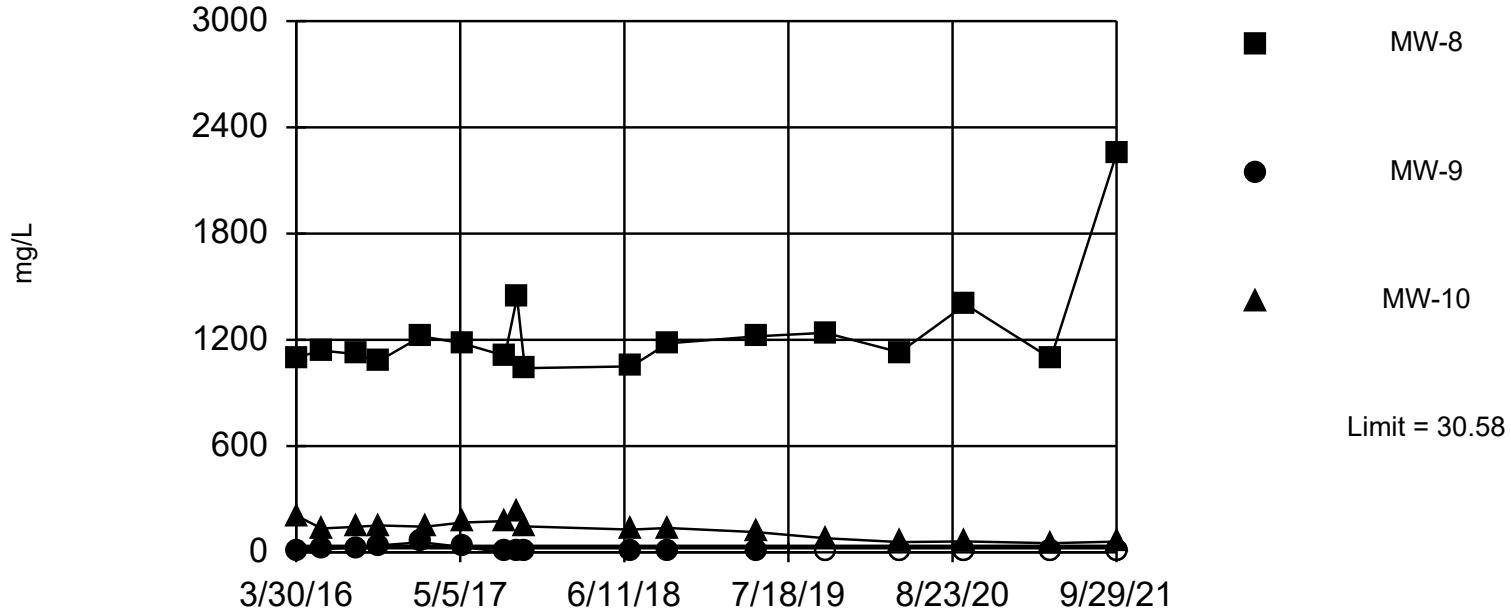
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
Hollow symbols indicate censored values.

Exceeds Limit: MW-8, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=18.65, Std. Dev.=5.677, n=17. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. The EPA 1989 Outlier Test was performed on the background data. No background outliers were found.

Constituent: Sulfate Analysis Run 11/29/2021 3:08 PM

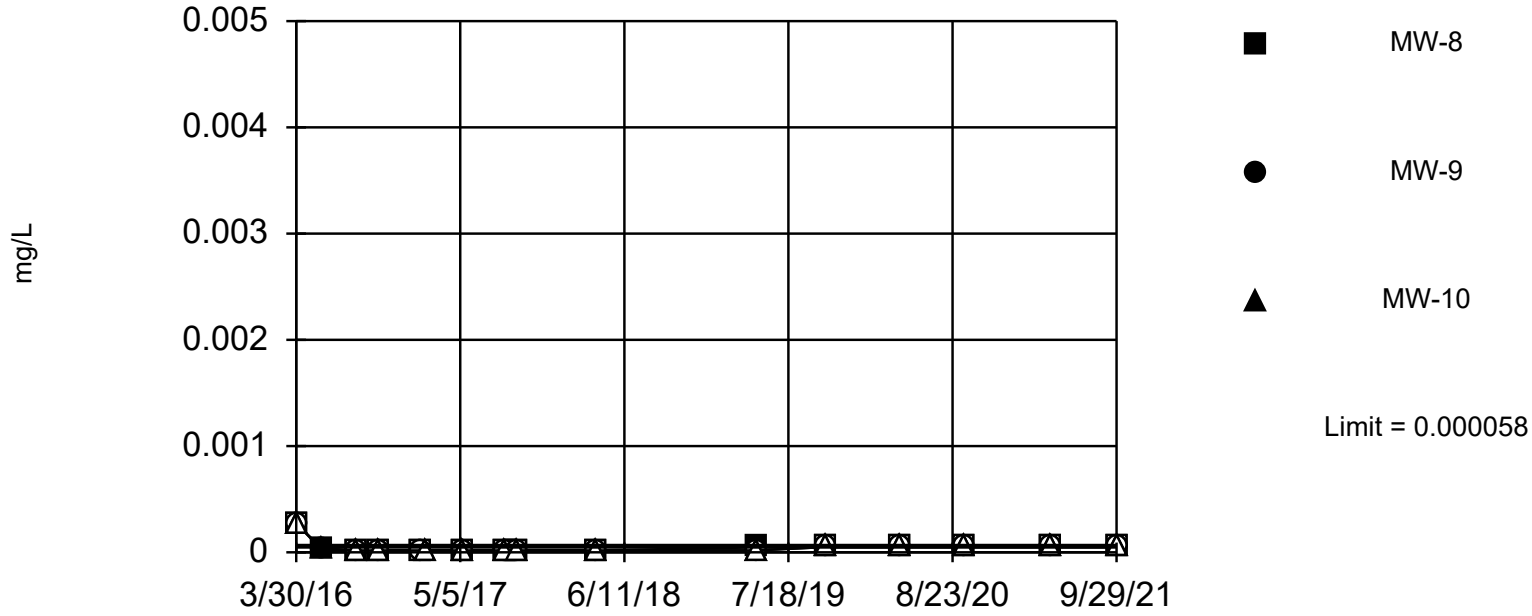
Facility: BREC Reid SI Data File: Reid SI All Data

WQStat Plus™ v.9.4.32
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 14 background values. 85.71% NDs. Report alpha = 0.1765. Individual comparison alpha = 0.06267. Most recent point for each compliance well compared to limit.

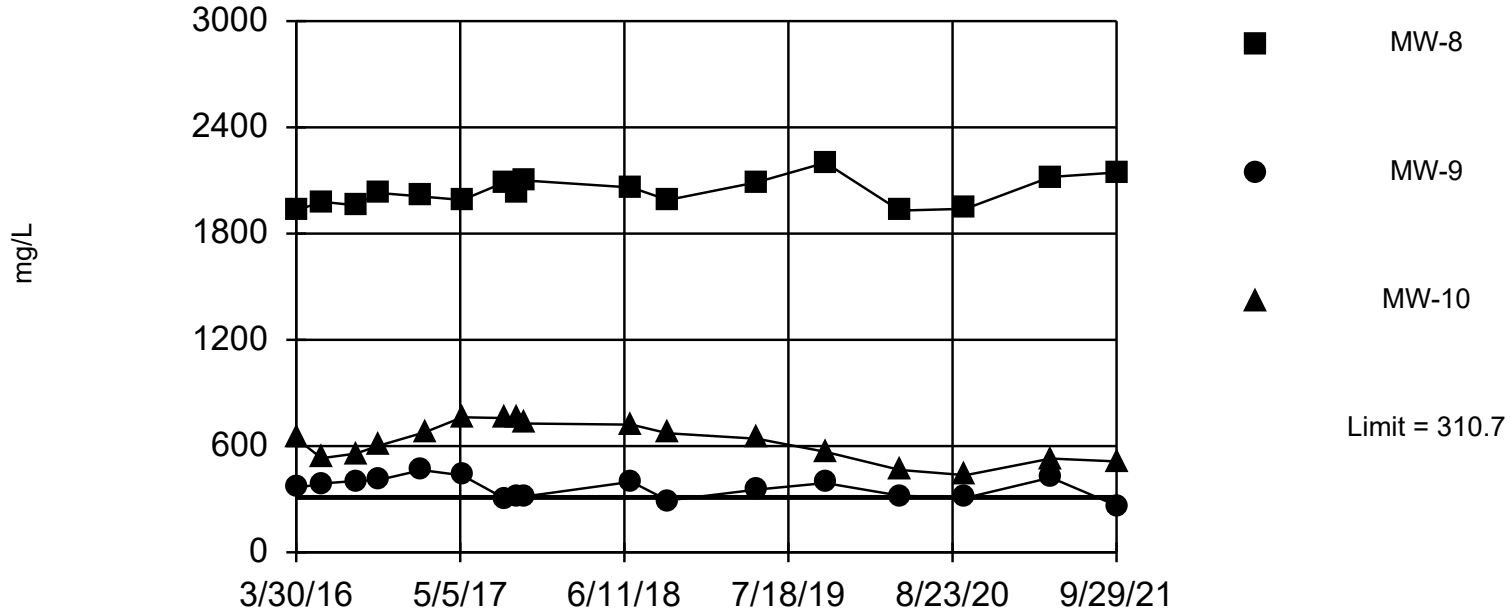
Constituent: Thallium Analysis Run 11/30/2021 1:10 PM

Facility: BREC Reid SI Data File: Reid SI All Data

Exceeds Limit: MW-8, MW-10

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=263.2, Std. Dev.=22.06, n=14. Report alpha = 0.08425. Individual comparison alpha = 0.02891. Most recent point for each compliance well compared to limit. Dixon's Outlier Test was performed on the background data. Three background outliers were removed: 148 (4/16/2020); 114 (9/24/2020); 610 (9/29/2021).

Constituent: Total Dissolved Solids Analysis Run 11/29/2021 3:11 PM

Facility: BREC Reid SI Data File: Reid SI All Data

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