# 2024 Annual Groundwater Monitoring Report Per EPA CCR Rule (CFR § 257.90-.98)

# Asbury Power Plant CCR Impoundment Jasper County, MO

January 2025

**Prepared For**: The Empire District Electric Company 602 S. Joplin Avenue Joplin, Missouri 64801





# **CERTIFICATE OF COMPLIANCE**

Annual Groundwater Monitoring Report for Existing CCR Surface Impoundments EPA CCR Rule Section 40 CFR 257.90 (e) Empire District Electric Company – Asbury Power Plant Asbury, Missouri

The following presents the Annual Groundwater Monitoring Report for the Empire District Electric Company's CCR Impoundment at the Asbury Power Plant. This serves as certification that the facility is in compliance with 40 CFR 257.90 (e) of the EPA CCR Rule.

# 40 CFR 257.90 (e) states:

(e) Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report.

# CERTIFICATION 257.90 (e)

The undersigned Professional Engineer (P.E.) is familiar with the requirements of 40 CFR Part 257. The above summarizes the status of the Groundwater Monitoring for the Empire District Electric Company's CCR Impoundment at the Asbury Power Plant. I hereby certify that the facility is in compliance with 40 CFR 257.90 (e) and all information has been placed in the Operating Record. Notification of availability of this document should be provided to the State Director as required in section 257.107(h).

Name:	Lindsey	R.	Henry
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Signature:

Date:

nielig

Registration Number: E-21592

State: Missouri

Seal:





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# **1.0 INTRODUCTION**

The EPA Coal Combustion Residual Regulations (40 CFR Part 257) (CCR Rule) require groundwater monitoring of CCR impoundments. This Asbury Power Plant CCR impoundment groundwater monitoring sampling report is in accordance with the EPA CCR Rule.

In accordance with the EPA CCR Rule (§ 257.90-.98) the status of the Groundwater Monitoring was placed on-line October 17, 2017, as required by the EPA CCR rule. Background data of Appendix III and Appendix IV was collected from January 2016 to August 2017. After review of the first semiannual groundwater sampling event analytical results completed in October 2017, the constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan in accordance with the EPA CCR Rule.

The Asbury Power Plant was retired on March 1, 2020. Residual fly ash, bottom ash, and other related wastes were placed in the impoundment area until April 1, 2021, as part of the decommissioning activities. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Construction Closure of the final cap of the CCR impoundment was completed on January 23, 2023.

On May 13, 14 & 15, 2024, and November 11 & 12, 2024 semi-annual detection monitoring sampling events was conducted per the EPA CCR Rule (§ 257.94). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR sampling began in May 2023. MW-5AR was installed in April 2023 in response to the Alternative Source Demonstration (ASD) which was completed in April 2021. The ASD was placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed baseline samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease. Based on the results of the 2024 statistical analysis, the site will continue with detection monitoring for the 2025 sampling events per the EPA CCR Rule (§ 257.94).

The EPA CCR Rule requires the annual groundwater report to be completed by January 31<sup>st</sup> of the following year. This report serves as the annual groundwater report for the 2024 sampling events that will be completed by January 31, 2025 and posted on-line within 30 days. This report was prepared in general accordance with the EPA CCR Rule for groundwater requirements. These regulations outline groundwater monitoring requirements and data evaluation methods. The Empire District will notify the MDNR "State Director" via e-mail when this document is posted on-line, as required in the CCR rule.



#### 2.0 BACKGROUND DATA

The purpose of the groundwater monitoring plan is to monitor the groundwater quality surrounding the facility and to evaluate potential impacts and/or releases from facility operations. The groundwater monitoring system for the site consists of the following monitoring wells:

- MW-1 Sidegradient (water level only)
- MW-2 Upgradient
- MW-3 Upgradient
- MW-4 Downgradient
- MW-5 Downgradient
- MW-5A Downgradient
- MW-5AR Downgradient (background sampling)
- MW-6 Downgradient
- MW-6A Downgradient
- MW-7 Sidegradient

Background groundwater data was collected from January 2016 to August 2017. After the background data plus the first semi-annual sampling events, a reduced sampling frequency replaced the quarterly events to semi-annual events. This lessened sampling frequency will be completed during the months of April/May/June and October/November/December. Statistical analysis for EPA Appendix III began after the first semi-annual sampling event was collected on October 4, 2017. MW-5AR baseline monitoring started in May 2023 and will be completed semi-annually until eight (8) rounds of background sampling data are obtained.



#### 3.0 MAY 2024 SAMPLING EVENT

On May 13, 14, & 15, 2024, a semi-annual sampling event was conducted per the EPA CCR Rule (§ 257.90-.98). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample at MW-5 was taken.

	Table 1 – Constituents During May 2024 Sampling Event										
Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW-5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	ug/L	NE	94	62	<60	290	2100	430	380	270	280
Calcium	mg/L	NE	28	100	220	89	430	130	270	180	490
Chloride	mg/L	NE	110	53	19	5.8	170	7.2	32	63	39
Fluoride	mg/L	4.0	0.15	0.14	0.11	0.30	0.21	0.24	0.22	0.16	0.12
рН	SU	NE	5.72	5.77	7.00	7.17	6.78	7.08	6.93	6.51	6.47
Sulfate	mg/L	NE	110	490	560	150	1900	420	1100	950	1800
Total Dissolved Solids	mg/L	NE	410	940	1300	570	3200	960	1900	1700	2800

NE = Not Established

<x = Less than reporting limit (nondetectable)</pre>

J = Trace value seen above minimum detection limit but below reporting limit (trace)

The May 2024 sampling results confirmed an interwell prediction exceedance for boron (MW-5A) and total dissolved solids (MW-5A) from the November 2023 sampling event. There are no current primary (health based) MCLs for boron or total dissolved solids. The facility will resample as part of the November 2024 sampling event.

There was one initial interwell prediction limit exceedance for chloride (MW-5A) in the listed monitoring well during November 2023 sampling event. The initial SSI for chloride was not confirmed during the May 2024 sampling event.

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, May 2023 sampling, November 2023, and May 2024 events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of



initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed background samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.



#### 4.0 NOVEMBER 2024 SAMPLING EVENT

On November 11 & 12, 2024, a semi-annual detection monitoring sampling event was conducted per the EPA CCR Rule (§ 257.94). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample at MW-5 was taken.

	Table 2 – Constituents During November 2024 Sampling Event										
Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW- 5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	ug/L	NE	93	<100	<100	270	2000	390	350	220	240
Calcium	mg/L	NE	23000	100000	240000	87000	450000	99000	280000	190000	570000
Chloride	mg/L	NE	110	52	16	5.9	180	8.1	45	81	49
Fluoride	mg/L	4.0	0.16	0.13	0.097	0.29	0.22	0.19	0.22	0.15	0.16
рН	SU	NE	5.67	5.80	6.79	7.25	6.71	7.72	7.01	6.16	6.30
Sulfate	mg/L	NE	92	520	500	150	1900	430	1100	1000	1800
Total Dissolved Solids	mg/L	NE	350	890	1300	570	3200	900	1800	1500	2800

NE = Not Established

<x = Less than reporting limit (nondetectable)

J = Trace value seen above minimum detection limit but below reporting limit (trace)

The November 2024 sampling results confirmed an interwell prediction exceedance for boron (MW-5A) and total dissolved solids (MW-5A) from the May 2024 sampling event. There are no current primary (health based) MCLs for boron or total dissolved solids. The facility will resample as part of the November 2024 sampling event.

There were two initial interwell prediction limit exceedance for pH in MW-5 and MW-6. These wells will be resampled in May 2025.

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, May 2023 sampling, November 2023, May 2024, and November 2024 events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of



initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed background samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

#### **5.0 EXCUTIVE SUMMARY**

This report is a summary of the 2024 sampling events and the findings of the statistical analysis of the results of the groundwater detection monitoring program at the Asbury Power Plant CCR Impoundment. Specific information about each sampling event can be obtained from the individual reports which are included as appendices and have been placed in the Asbury Operating Record. Statistical analysis will continue utilizing interwell prediction limits per EPA's request. The site continues with the detection monitoring program on a semi-annual basis per the EPA CCR Rule (§ 257.94).



**APPENDIX A** 

May 2024 Sampling Event

# Groundwater Monitoring, Sampling & Statistics Per EPA CCR Rule (CFR § 257.90-257.98)

May 2024 Sampling Event

# Asbury Power Plant CCR Impoundment Jasper County, MO

July 2024

Prepared For:

The Empire District Electric Company 602 S. Joplin Avenue Joplin, Missouri 64801





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# **1.0 INTRODUCTION**

The EPA Coal Combustion Residual Regulations (40 CFR Part 257) (CCR Rule) require groundwater monitoring of CCR impoundments. This Asbury Power Plant CCR impoundment groundwater monitoring sampling report is in accordance with the EPA CCR Rule. In accordance with the EPA CCR Rule (§ 257.90-.98) the status of the Groundwater Monitoring was placed on-line October 17, 2017, as required by the EPA CCR rule. Empire notified the Missouri Department of Natural Resources (MDNR) "State Director" via e-mail when this document was posted on-line, as required in the CCR rule.

The EPA CCR Rule requires the annual groundwater report to be prepared by January 31<sup>st</sup> of the following year. The first report was due January 31, 2018. This report was prepared in general accordance with the EPA CCR Rule for groundwater requirements. These regulations outline groundwater monitoring requirements and data evaluation methods. The annual groundwater report for the 2023 sampling events will be posted on-line within 30 days of placement in the operating record and the State Director will be notified.

A Site Characterization Workplan was submitted to the MDNR. On November 2, 2017, the facility received approval from MDNR that the site had been properly characterized and the facility could begin groundwater monitoring (included in **Appendix 1**).

The purpose of the groundwater monitoring system is to monitor the ground water quality surrounding the facility and to evaluate potential impacts and/or releases from facility operations. Eight rounds of background groundwater data were collected from January 2016 to August 2017. After the background data is obtained and after the first semi-annual sampling event, a reduced sampling frequency replaced the quarterly events to semi-annual events. This reduced sampling frequency will generally be completed during the months of May and November. Statistical analysis for EPA Appendix III results began after the first semi-annual sampling event which was collected on October 4, 2017. This analysis was to determine if a statistically significant increase (SSI) has occurred. If an SSI is verified, additional evaluation is required to determine if the SSI was caused by the CCR impoundment.

The Asbury Power Plant was retired on March 1, 2020. Residual fly ash, bottom ash, and other related wastes were placed in the impoundment area until April 1, 2021, as part of the decommissioning activities. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

On May 13, 14 and 15, 2024, a semi-annual sampling event was conducted per the EPA CCR Rule (§ 257.90-.98). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR sampling began in May 2023. MW-5AR was installed in April 2023 in response to the Alternative Source Demonstration (ASD) which was completed in April 2021. The ASD was placed in the operating record. After review of the first semi-annual groundwater sampling event analytical results completed in October 2017, the constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan in accordance with the EPA CCR Rule. For quality assurance and quality control



measures, a duplicate sample at MW-5 was taken. These samples were preserved and submitted directly to the laboratory.

This report is a summary of the May 2024 sampling event and the findings of the statistical analysis of the results of the groundwater monitoring program at the Asbury Power Plant CCR Impoundment. Specific information about each sampling event can be obtained from the individual report which is part of the Asbury Operating Record.



# 2.0 SITE LOCATION

The site occupies the north half of Section 17, Township 30 North, and Range 33 West on the Asbury 7.5-Minute Quadrangle Map as seen in **Figure 1**. The site is located approximately 5.5 miles north-northeast of Asbury, Missouri, about 14 miles north-northwest of Joplin, Missouri. A map showing the locations of the monitoring wells is in **Figure 2**.

# 2.1 History

In March 1996, five (5) groundwater monitoring wells, MW-1 through MW-5, were installed around the perimeter of the Asbury Power Plant CCR impoundment. Monitoring wells MW-1, MW-2 and MW-3 were installed to a total depth of between 27.0 to 28.5 feet below ground surface (bgs). Monitoring wells MW-4 and MW-5 were installed to a total depth of 48 feet bgs. Each of the five monitoring wells was equipped with 10.0-foot well screens. The five wells were then developed, purged, and sampled in 1996.

In 2003, two (2) additional groundwater monitoring wells were installed and identified as MW-6 and MW-7. Both wells had 2-inch diameter PVC well casings installed to an approximate total depth of 44 feet below ground surface. Both wells were installed with an above ground steel protective cover. No other construction details such as well screen lengths were available for these two (2) wells. In December 2015, two (2) additional groundwater monitoring wells were installed and identified as MW-5A and MW-6A.

In April 2023, monitoring well MW-5AR was installed as proposed in the Alternative Source Demonstration completed April 2021. As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports. MW-5A will not be removed until after the eight (8) background samples have been collected for MW-5AR.

All wells are registered with MDNR – Missouri Geological Survey Program.

The Asbury Power Plant was retired on March 1, 2020, but residual fly ash, bottom ash, and other related wastes were placed in the impoundment area as part of the decommissioning activities. The facility is now known as the Asbury Renewable Operations Center. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

#### 2.2 Site Geology

Drilling and subsurface investigation activities at the Site and as part of the MDNR approved CCR landfill Detailed Site Investigation (DSI) for the adjacent landfill area identified three (3) primary geologic units at the Site. These geologic units include the surficial soil layer, Warner Sandstone (uppermost aquifer), and Riverton Shale (confining unit). The information presented herein includes the primary elements of a site characterization work plan consistent with the MDNR guidance.



<u>Surficial Soil</u>. Soils at the site consist of a surficial unit of cohesive soils (e.g., CL, SC, ML, and CH) underlain by Pennsylvanian-age bedrock. Soil thickness at the Site ranges from approximately 15-25 feet.

<u>Warner Sandstone</u>. The Warner Sandstone (Sandstone) is the uppermost bedrock unit in the south portion of the Site. In the north area of the Site, the Sandstone is overlain by the Riverton Shale (Shale). Based on the DSI information, the Sandstone and Shale can occur as alternating layers. The Sandstone and Shale are gradational in places and transition from shaley sandstone to sandy shale. According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Warner Sandstone formation is described as follows: "Generally, the lower part is interbedded, very fine-grained sandstone and claystone. The upper part is largely medium bedded to massive channel fill sandstone. In places, the Warner consists primarily of shale and claystone, with only minor amounts of sandstone" and "ranges in thickness from 0 to 15m (49.2 ft.)."

The Sandstone is more than 25-30 feet thick in places and is generally medium hard and thin to medium bedded with occasional shale partings. The degree of induration of the Sandstone varies and generally increases with depth. Slug tests performed at selected DSI piezometers screened in the Sandstone exhibited hydraulic conductivities ranging from approximately 1.3x10-4 cm/sec to 5.9x10-6 cm/sec. The slug test results are consistent with values for sandstone and shaley sandstone. The groundwater gradient is towards the east and Blackberry Creek.

<u>Riverton Shale</u>. Layers of the Riverton Shale (Shale) exhibited thicknesses ranging from approximately one foot to more than 10 feet. The Shale is generally dark gray to light gray. The Shale is mainly thin bedded with hardness ranging from soft to hard. Six packer tests were performed during the DSI to assess the hydraulic conductivity of the Shale. The packer test results ranged from approximately  $3.2 \times 10^{-6}$  cm/sec to  $4.9 \times 10^{-8}$  cm/sec. The packer test data indicates that the Shale is an effective confining unit.

According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Riverton Shale formation is described as "dark gray to black, fine-grained, relatively brittle shale and contains as many as three coal beds, each of which is underlain by underclay" and "varies in thickness from a featheredge to more than 90 feet".

<u>Unnamed Coal</u>. The Shale includes coal seams in places that range in thickness from a few inches to approximately 1.5 feet. The coal is generally black to dark gray.

#### 2.3 Groundwater Monitoring Network Design

The groundwater monitoring system for the CCR impoundment consists of nine (9) groundwater monitoring wells plus the recently installed MW-5AR. Two (2) wells are considered upgradient. Two (2) wells are considered sidegradient; one well is only monitored for groundwater elevation. The remaining five (5) wells are considered downgradient along with the recently installed MW-5AR.

The groundwater monitoring wells (MWs) at the Asbury Power Plant is equipped with individual dedicated poly tubing to be connected to a peristaltic pump/controller at the surface. Low-flow, micro-purge and sampling techniques and technology are utilized to collect groundwater samples from the subject wells. The groundwater sampling procedures are discussed in further detail below.



#### 2.4 Groundwater Monitoring Network

The locations of the monitoring wells are shown in **Figure 2**. The groundwater monitoring system for the site consists of the following monitoring wells:

- MW-1 Sidegradient (water level only)
- MW-2 Upgradient
- MW-3 Upgradient
- MW-4 Downgradient
- MW-5 Downgradient
- MW-5A Downgradient
- MW-5AR Downgradient (background sampling)
- MW-6 Downgradient
- MW-6A Downgradient
- MW-7 Sidegradient

#### **2.5 Seasonal Variation**

Historical groundwater elevation data has been limited. However, adequate lengths of well screen have been utilized during the construction of the wells to accommodate typical seasonal groundwater elevation variations seen in southwest Missouri.

#### 2.6 Groundwater Flow Direction

Historically, the seasonally high potentiometric surface indicated the groundwater flow direction to the east. **Figure 3** is a potentiometric map for this sampling event.

Originally MW-7 was thought to be a downgradient well but review of the potentiometric mapping from the eight background sampling events revealed that the well is a sidegradient well. Therefore, the designation for MW-7 has been changed from a downgradient to a sidegradient well for compliance monitoring.



#### 3.0 BACKGROUND GROUNDWATER DATA

In accordance with EPA CCR Rule § 257.94(b), the site initiated the detection monitoring program in January 2016 to include obtaining a minimum of eight (8) independent samples for each background and downgradient well. The eight (8) independent groundwater samples were obtained and analyzed as required by the CCR Rule per the groundwater monitoring plan. Background groundwater data was collected from January 2016 to August 2017.

Groundwater Monitoring Reports were completed for each sampling event and have been placed in the Operating Record. A listing of each background groundwater monitoring event is below:

- January 2016
- March 2016
- May 2016
- August 2016
- October 2016
- March 2017
- June 2017
- August 2017

Initial background monitoring was required at all monitoring wells. The sampling frequency was quarterly or more frequently for the first two (2) years. After the background data plus the first semi-annual sampling events, a reduced lower sampling frequency replaced the quarterly events to semi-annual events. This lessened sampling frequency will be completed during the months of April/May/June and October/November/December. MW-5AR background monitoring started in May 2023 and will be completed semi-annually until eight (8) rounds of background sampling data are obtained.

The initial two (2) years of background and the first semi-annual detection monitoring included parameters listed in Appendix III and Appendix IV of the EPA CCR Rule. The constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan after review of the first semi-annual groundwater sampling event analytical results in January 2018, according to the EPA CCR Rule.



#### **4.0 GROUNDWATER SAMPLING EVENT**

On May 13, 14 and 15, 2024, nine (9) groundwater monitoring wells were sampled by Midwest Environmental Consultants (MEC) for the EPA CCR Rule Appendix III parameters. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample was taken at MW-5. The sampling protocol and methodology was to be conducted in accordance with the facility's Sampling and Analysis Plan. **Table 1** provides a list of the analytical methods employed by the subcontracted laboratory.

Table 1 – Analytical Methods					
Method Description					
9056A	Anions, Ion Chromatography				
6020A	Metals (ICP/MS)				
SM 2540C	Solids, Total Dissolved (TDS)				
Field Sampling	Field Sampling				

**Appendix 2** includes Monitoring Well Field Inspection sheets and field notes. The physical integrity of the wells was good. During sample collection each of the wells was monitored for pump discharge and formation recharge. Initially, a static water level for each well was recorded (**Table 2**). To ensure sufficient recharge while sampling, static water levels were collected during pumping. Prior to sample collection, field parameters for each well were measured with a flow-through meter. When the field parameters stabilized, samples for analytical testing were collected and placed on ice for hand delivery to the laboratory. At the conclusion of sample collection from each well, a final static water level measurement was obtained. The samples were collected in the appropriately pre-preserved sample containers and placed on ice for delivery.

Table 2 - Groundwater Sampling Field Parameters Summary During May 2024 Sampling Event							
WELL	STATIC WA (ft-B		PURGE RATE	STABILIZED			
ID	Initial	Final	(mL/min)	рН			
MW-1*	6.54	6.54	NA	NA			
MW-2	3.41	7.07	200	5.72			
MW-3	0.5	0.6	200	5.77			
MW-4	7.57	13.59	200	7.00			
MW-5	1.74	11.97	200	7.17			
MW-5A	9.16	18.59	200	6.78			
MW-5AR	2.88	12.23	200	7.08			
MW-6	8.67	19.22	200	6.93			
MW-6A	7.69	17.94	200	6.51			
MW-7	3.26	2.55	200	6.47			
		2.55	4				

\* Water Level Only NA – Not Applicable

**Appendix 3** includes the analytical results for the sampling event. Included with this analytical report are sample information; chain of custody; wet chemistry data; and volatile data.



### 5.0 DATA VALIDATION PROCEDURES FOR GROUNDWATER MONITORING DATA

Midwest Environmental Consultants receives Data Packages from the analytical laboratory (Eurofins). The internal quality control/quality assurance case narratives and reported data are then reviewed. Generally, the data validation procedures established by the U.S. Environmental Protection Agency *Contract Laboratory Program Functional Guidelines for Organic Data Review* and *Functional Guidelines for Inorganic Data Review* is followed. These guidelines are used to assign data qualifiers to the data. A formal data validation report for the site is not prepared; however, any significant issues are noted in the groundwater monitoring report.

MEC evaluates the data set for precision, accuracy, representativeness, comparability, and completeness (PARCC).

#### 5.1 Precision

<u>Laboratory Precision</u>. Laboratory quality control procedures to measure precision consist of laboratory control sample (LCS) analysis and analysis of matrix spike/matrix spike duplicates (MS/MSD). These analyses are used to define analytical variability.

<u>Field Precision</u>. Analyses of duplicate samples are used to define the total variability (replicability) of the sampling/analytical system. Field replicates are collected at a rate of one per sampling event.

#### 5.2 Accuracy

Accuracy is determined by calculating the percent recoveries for analyses of surrogate compounds, LCSs, continuing calibration check standards, and matrix spike samples. Acceptable percent recoveries are established for SW-846 and EPA methods. Field and laboratory blank analysis are also used to address measurement bias.

<u>Field Blanks.</u> Field blanks consisted of a trip blank and a field blank. One trip blank per cooler accompanies samples for volatile organic analyses.

<u>Laboratory Blanks.</u> Method blanks, artificial, matrix-less samples, are analyzed to monitor the laboratory analysis system for interferences and contamination from glassware, reagents, etc. Method blanks are taken through the entire sample preparation process. They are included with each batch of extractions or digestion prepared, or with each 20 samples, whichever is more frequent.

#### **5.3 Representativeness**

Representativeness expresses the degree to which sample data accurately and precisely reflects site condition. Representativeness of the data is determined by comparing actual sampling procedures to those delineated in the field sampling plan, comparing results from field replicate samples, and reviewing the results of field blanks. Field notes are reviewed as part of our data validation process.

#### 5.4 Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured by using established and approved sample collection techniques and analytical methods, consistent basis of analysis, consistent reporting units, and analyzing standard reference materials.



# 5.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under controlled laboratory conditions. Completeness is defined as the valid data percentage of the total tests requested. Valid data are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form. Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria were met.



#### **6.0 GROUNDWATER ANALYSIS**

Groundwater samples were submitted to Eurofins Environmental Testing for analysis.

### 6.1 Sampling Results

The constituents with results above the laboratory reporting limits are included in **Table 3**. This table also includes the recently installed MW-5AR. The Eurofins laboratory analytical results are included in **Appendix 3**.

	Table 3 – Constituents During May 2024 Sampling Event										
Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW-5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)
Appendix III											
Boron	ug/L	NE	94	62	<60	290	2100	430	380	270	280
Calcium	mg/L	NE	28	100	220	89	430	130	270	180	490
Chloride	mg/L	NE	110	53	19	5.8	170	7.2	32	63	39
Fluoride	mg/L	4.0	0.15	0.14	0.11	0.30	0.21	0.24	0.22	0.16	0.12
рН	SU	NE	5.72	5.77	7.00	7.17	6.78	7.08	6.93	6.51	6.47
Sulfate	mg/L	NE	110	490	560	150	1900	420	1100	950	1800
Total Dissolved Solids	mg/L	NE	410	940	1300	570	3200	960	1900	1700	2800

NE = Not Established

<x = Less than reporting limit (nondetectable)</pre>

J = Trace value seen above minimum detection limit but below reporting limit (trace)

No constituents were detected above the Federal Safe Drinking Water maximum contaminant level (MCL) during the sampling event.

#### 6.2 Statistical Analysis Approach

Prediction interval analyses compare one or more observations to a limit set by background data. Interwell analyses compare observations from background wells, which include upgradient and sidegradient wells per EPA Unified Guidance definitions, and their relation to the observations for the downgradient wells. Due to varying geology in the state of Missouri, intrawell analyses had initially been deemed a more appropriate statistical method.

On January 21, 2020 MDNR forwarded an email from the USEPA that requested the site change the statistical evaluation methodology to interwell prediction limits. This correspondence is located in **Appendix 1.** The EPA review of the groundwater reports is summarized in **Table 4**.



Table 4 – EPA Review of Groundwater Reports							
Facility	Asbury Power Plant						
Location	Asbury, MO						
Owner	Empire District Electric Company						
Units	Upper Pond-unlined, South Pond-unlined, Lower Pond-unlined						
Geology	Surficial unit of clay, clayey sand, and silt approximately 15 to 25 feet thick underlain by Warner Sandstone approximately 25-30 feet thick in the southern portion of the site and the Riverton Shale in the northern area of the site						
Problematic Use of Intra Well Comparisons	Analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells. Consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra well analysis						
Problematic Alternate Source Determination							
Conclusions	While there are no boring logs in the documents to confirm that the wells are screened in the same geologic unit, consistency in the field parameters and the description of the geology suggest that the wells are screened in the sandstone. The analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells, consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra wells analyses						

#### 6.3 Statistical Analysis Results

Statistical analysis was completed by Jett Environmental Consultant. The results are included in **Appendix 4.** 

#### **Inorganics – Times Series & Trend Testing**

Time Series graphs were generated for each of the inorganic constituents. The time series graphs are included in **Appendix 4 Attachment 1**.

The inorganic constituents with results above the laboratory reporting limits were analyzed with Sanitas<sup>™</sup> to determine if statistically significant increasing or decreasing trends exist utilizing the Sen's Slope / Mann-Kendall trend test. Trends were based on a 98% confidence level (two tailed). The following constituents exhibited statistically significant increasing trends: boron (MW-5A), calcium (MW-5A, MW-6A), chloride (MW-5, MW-5A, MW-6), fluoride (MW-7), sulfate (MW-5A, MW-6A), and total dissolved solids (MW-5A, MW-6A). Of the increasing trends, only one instance was for an upgradient well (fluoride at MW-7); however, fluoride was reported as non-detect over the last eight rounds of background sampling. All other constituents were either not trending or had a statistically significant decreasing trend. The trending data have only been reviewed at this time. No trending data was removed before performing the inter-well prediction interval analysis. The trend testing results are included in **Appendix 4 Attachment 2**.



### **Inorganics – Inter-Well Prediction Limits**

Statistical Analysis was performed on the inorganic constituents and metals. Prediction interval analyses compare one or more observations to a limit set by background data. Background data consists of semi-annual groundwater tests from the upgradient wells (MW-2, MW-3, and MW-7) between January 2016 and May 2023 (20 events). Interwell analyses compare observations from upgradient background wells and their relation to the observations for the downgradient wells. Intra-well analyses compare background observations to current observations of the same well.

Sanitas<sup>™</sup> was used to perform the statistical analyses. For most constituents, non-parametric inter-well prediction intervals were performed due to non-detectable levels in more than 50 percent of the background samples or if data were not normally distributed. The Sanitas<sup>™</sup> interwell prediction limit outputs are included in **Appendix 4 Attachment 3**.

**Table 5** lists the parameters that exhibited a statistically significant increase (SSI) during the May 2024 sampling event, the associated monitoring wells, inter-well prediction limit, and the measured concentration. Also included on the table is a comparison to any established USEPA National Primary Drinking Water Standard – Maximum Contaminant Level (MCL).

Table 5								
SSI Observed During May 2024 Sampling Event								
Constituent (units)	Well Initial vs. Confirmed		Statistical Limit	Result	MCL			
Boron (mg/L)	MW-5A	Confirmed	0.9	2.1	NE			
Total Dissolved Solids (mg/L)	MW-5A	Confirmed	3100	3200	NE			

NE = Not Established.

MCL = USEPA National Primary Drinking Water Standard - Maximum Contaminant Level

#### **Statistical Power Curves**

A statistical power curve graph has been prepared to allow comparisons between the current monitoring program and USEPA-recommended standards. Under the USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (March 2009), inter-well prediction limits are constructed to have a site-wide false positive rate (SWFPR) of 10% annually, or 5% per event for a semi-annually sampled facility. **Appendix 4 Attachment 4** presents the power curves for the facility's monitoring program.

#### **Results Summary**

Boron (MW-5A) and total dissolved solids (MW-5A) exhibited confirmed SSIs during the May 2024 event.

No result exhibited an initial SSI during the May 2024 event.

Of the SSIs, none have an established MCL. During the November 2023 sampling event, an initial SSI was detected for chloride (MW-5A), which was not confirmed as an SSI during the May 2024 sampling event.



#### 6.4 Results Interpretation

The May 2024 sampling results confirmed an interwell prediction exceedance for boron (MW-5A) and total dissolved solids (MW-5A) from the November 2023 sampling event. There are no current primary (health based) MCLs for boron or total dissolved solids. The facility will resample as part of the November 2024 sampling event.

There was one initial interwell prediction limit exceedance for chloride (MW-5A) in the listed monitoring well during November 2023 sampling event. The initial SSI for chloride was not confirmed during the May 2024 sampling event.

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, May 2023 sampling, November 2023, and May 2024 events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed background samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

#### 6.5 Proposed Actions

Groundwater sampling and statistical analysis will continue to be completed with interwell prediction limits per EPA's request. The results of the May 2024 sampling event confirmed the exceedance for Boron (MW-5A) and Total Dissolved Solids (MW-5A). Monitoring well MW-5AR was installed in response to the ASD. Monitoring of both MW-5A and MW-5AR will continue until the eight needed background samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

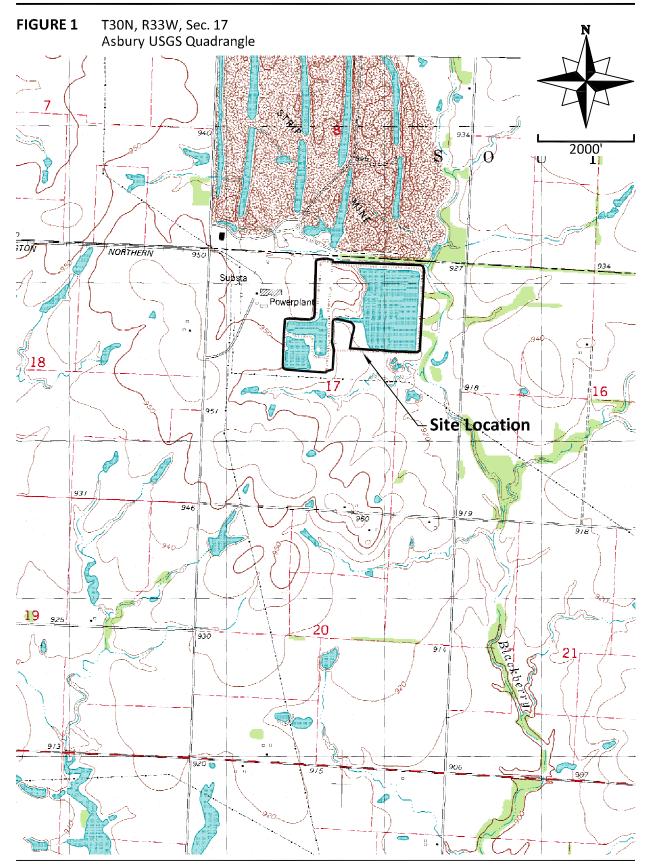
Based upon these findings the site does not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.



**FIGURES** 



**Asbury Generating Station CCR Impoundment** Groundwater Sampling Event - May 2024 Site Location Map



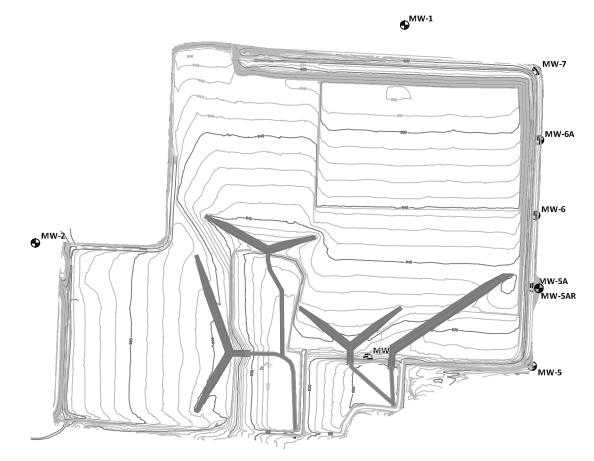
July 2024



**Asbury Generating Station CCR Impoundment** Groundwater Sampling Event - May 2024 Groundwater Monitoring System

### FIGURE 2





MW-3

Well ID	Northing	Easting
MW-1	435789.71	2765168.83
MW-2	434428.56	2762861.43
MW-3	432844.71	2762721.27
MW-4	433709.70	2764938.79
MW-5	433659.19	2765966.39
MW-5A	434150.39	2765969.77
MW-5AR	434145.71	2766008.17
MW-6	434600.94	2765988.47
MW-6A	435071.72	2766010.58
MW-7	435505.31	2765993.01

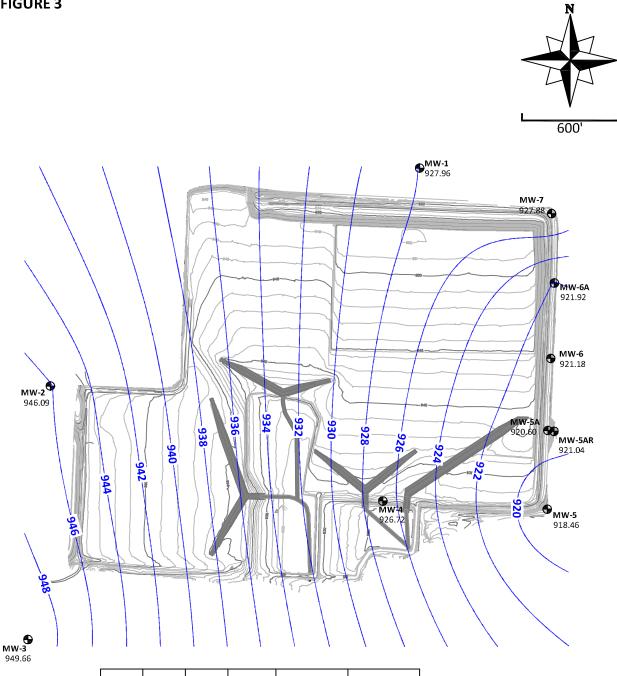
Legend

Monitoring Well



# **Asbury Generating Station CCR Impoundment** Groundwater Sampling Event - May 2024 Groundwater Piezometric Surface Map

#### FIGURE 3



Well ID	Northing	Easting	Top Of Casing	Static Water Level (BTOC)	Static Water Level
MW-1	435789.71	2765168.83	934.50	6.54	927.96
MW-2	434428.56	2762861.43	949.50	3.41	946.09
MW-3	432844.71	2762721.27	950.16	0.50	949.66
MW-4	433709.70	2764938.76	934.29	7.57	926.72
MW-5	433659.19	2765966.39	920.20	1.74	918.46
MW-5A	434150.39	2765969.77	929.76	9.16	920.60
MW-5AR	434145.71	2766008.17	923.92	2.88	921.04
MW-6	434600.94	2765988.47	929.85	8.67	921.18
MW-6A	435071.72	2766010.58	929.61	7.69	921.92
MW-7	435505.31	2765993.01	931.14	3.26	927.88

Legend

•

**Monitoring Well** 



**APPENDIX 1** 

**EPA/MDNR Correspondence** 



NOV 0 2 2017

Mr. Kavan Stull, Senior Environmental Coordinator Empire District 602 South Joplin Avenue Joplin, MO 64802

RE: Site Characterization Workplan

Dear Mr. Stull:

The Missouri Department of Natural Resources has reviewed the document "Site Characterization Workplan" dated May 16, 2017. The site has undergone extensive characterization regarding construction of a coal combustion residual (CCR) landfill near the CCR impoundments. The department's Water Protection Program has determined, through consulting with the Missouri Geological Survey, this characterization is sufficient and may be used in whole to complete the required monitoring of the sub-surface conditions at the site. Additional submittal of site characterization is not necessary, as the previous submittal meets the requirement for special condition 19(b) of the Missouri State Operating Permit MO-0095362. The facility may proceed with the next step laid out in the permit; special condition 19(c). Enclosed is the Missouri Geological Survey concurrence.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to 10 CSR 20 1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Contact information for the AHC is by mail at Administrative Hearing Commission, United States Post Office Building, Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102, by phone at 573-751-2422, by fax at 573-751-5018, and by website at <u>www.oa.mo.gov/ahc</u>.



Mr. Kavan Stull Page 2

If you have any questions, please do not hesitate to contact Ms. Pam Hackler by mail at Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176, by phone at 573-526-3386; or by email at <u>pam.hackler@dnr.mo.gov</u>. Thank you.

Sincerely,

WATER PROTECTION PROGRAM

lies

Michael J. Abbott, Chief Operating Permits Section

MJA/php

Enclosure

c: Mr. Randall Willoughby, Southwest Regional Office



#### MEMORANDUM

DATE:	October	18,	2017
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TO: Pam Hackler- WPP- Industrial Wastewater Unit

FROM: Fletcher N. Bone, Geologist, Environmental Geology Section, Geological Survey Program, MGS

Johen M. Bono

SUBJECT:

Site characterization for existing CCR impoundments Asbury Power Plant Site Characterization Work Plan- CCR 37 21 22.66 Latitude, -94 35 4.79 Longitude, Jasper County, Missouri



SWR18011 Jasper County

October 18, 2017

The Missouri Geological Survey (MGS) has reviewed the documents titled, 'NPDES Permit MO-0095362 Asbury Power Plant, Jasper County, Missouri, Site Characterization Work Plan', prepared by Empire District Electric Company, dated September 8, 2017 and 'Site Characterization Work Plan, Coal Combustion Residuals Impoundments, Empire Electric Facility - Permit MO-0095362, Jasper County, Missouri, Geotechnology Project No. J021738.03', prepared by Geotechnology Inc., dated May 16, 2017. The MGS offers the following comment.

General Comment:

The MGS agrees that the existing Coal Combustion Residuals (CCR) impoundments (site 1) do not need further site characterization, at this time. The site characterization performed, as described in the Detailed Site Investigation Report (DSI), dated January 21, 2015, at the proposed CCR impoundment (site 2) that is approximately 1,000 feet south of the existing CCR impoundments (site 1), coupled with the geologic and hydrologic data provided that pertains to the existing CCR impoundments (site 1) (1996 to present data), provides adequate characterization of the geology and hydrology of the site 1. The geologic and hydrologic settings of both sites are similar, with geologic boring logs and potentiometric data of both sites being compared. The hydraulic conductivity testing conducted at the proposed CCR site (site 2) has demonstrated that there is a low potential for groundwater contamination for this area.

If you are in need of further assistance from our office or have questions regarding this evaluation please feel free to contact me at (573) 368-2161.

# **Drew Landoll**

From:	Snellen, Greg <greg.snellen@dnr.mo.gov></greg.snellen@dnr.mo.gov>
Sent:	Tuesday, January 21, 2020 3:34 PM
То:	Drew Landoll
Cc:	aston.robert@epa.gov; Nagel, Chris; Snellen, Greg
Subject:	RE: EPA Request for Information regarding CCR Units

Good afternoon Drew,

The Environmental Protection Agency (EPA) has been working to verify data on facility specific CCR websites required by 40 CFR 257 at the national level. EPA headquarters provided a list of inquiries to the EPA regions and requested they work with the states to answer their questions. States were given a choice as to the amount of involvement they could have with the information gathering. Missouri elected to take the lead on contacting the facilities in the state, providing the information requested by the EPA and relaying the answers back.

For your company, the EPA has questions about facilities and units which may be seeking an extension under the alternate closure provisions in 2020 and what type of extension may be requested.

#### They provided the following list of units:

		Part A	Plant			Ор	Unit	NOI	NOI	Alterr
Region	State	Extension	Name	Unit Name	Unit Type	Status	Class	Туре	Date	NOI
					Surface					
7	MO		Asbury	Lower Pond	Impoundment	Active	Existing			
					Surface					
7	MO		Asbury	Upper Pond	Impoundment	Active	Existing			
					Surface					
7	MO		Asbury	South Pond	Impoundment	Active	Existing			

EPA has requested a response on extensions by February 14, 2020.

Additionally, the EPA has the following question related to groundwater monitoring:

Facility	Location	Owner	Units	Geology	Problematic Use of Intra Well Comparisons	Problematic Alternate Source Determinations	Conclusions
Asbury Power Plant	Asbury MO	Empire District Electric Company	Upper Pond- unlined South Pond- unlined Lower Pond- unlined	Surficial unit of clay, clayey sand, and silt approximately 15 to 25 feet thick underlain by Warner Sandstone approximately 25- 30 feet thick in the southern portion of the site and the Riverton Shale in the northern area of the site	Analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells. Consequently, inter well comparisons are feasible and would be preferable in the absence of compelling reasons to use intra well analysis		While there are no boring logs in the documents to confirm that the wells are screened in the same geologic unit, consistency in the field parameters and the description of the geology suggest that the wells are screened in the sandstone. The analytical results indicate consistent differences in contaminant concentrations

Facility	Location	Owner	Units	Geology	Problematic Use of Intra Well Comparisons	Problematic Alternate Source Determinations	Conclusions
							between upgradient and downgradient wells, consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra wells analyses

At this time, there is not a deadline for this request.

Please let the Department know if you have any questions. You can also direct inquires to Bob Aston with EPA Region 7 who is copied on this email.

Thank you

Greg Snellen Environmental Supervisor Waste Management Program 573-526-8779

We'd like your feedback on the service you received from the Missouri Department of Natural Resources. Please consider taking a few minutes to complete the department's Customer Satisfaction Survey at <a href="https://www.surveymonkey.com/r/MoDNRsurvey">https://www.surveymonkey.com/r/MoDNRsurvey</a>. Thank you.

From: Aston, Robert
Sent: Friday, January 10, 2020 7:48 AM
To: Nagel, Chris <<u>Christopher.Nagel@dnr.mo.gov</u>>; Snellen, Greg <<u>greg.snellen@dnr.mo.gov</u>>
Cc: Martin, Mike <<u>Martin.Mike@epa.gov</u>>; Kloeckner, Jane <<u>Kloeckner.Jane@epa.gov</u>>; Catlin, Kelley
<<u>Catlin.Kelley@epa.gov</u>>; Werner, Leslye <<u>Werner.Leslye@epa.gov</u>>; Hayworth, Brad <<u>Hayworth.Brad@epa.gov</u>>
Subject: CCR workload

Chris and Greg,

As a follow-up to our call on Wednesday

On Monday December 2, 2019 EPA published in the Federal Register a proposed rule for the Disposal of Coal Combustion Residuals From Electric Utilities: A Holistic Approach to Closure Part A: Deadline To Initiate Closure. The major elements of this proposed rule include:

- Definition of Lined Unit (removing a clay-lined unit from the definition),
- New initiation of Closure and Cease Receipt of Waste Deadline of August 31, 2020,
- New Alternate Closure Provisions for surface impoundment: Extensions to the initiation of closure

Nationally, EPA is gathering data to determine the number of facilities and units which may be seeking an extension under the alternate closure provisions in 2020 and is tasking the regions to work with our state partners and the facilities to determine the number of such facilities and units and what type of extension may be requested. Region 7 is seeking the state's assistance in gathering this information.

To be eligible for an extension the surface impoundment needs to be:

- An existing surface impoundment (eligible inactive surface impoundments should already be closing)
- An unlined or "clay-lined" surface impoundment
- Passed all location restrictions or only failed the uppermost aquifer restriction
  - Those that failed multiple location restrictions or did not post should have ceased receipt of waste in April 2019

This proposed rule offers facilities three options with regards to an extension

- 1.) Three month self-implementing extension (§ 257.103(e)(1)). Under this provision the surface impoundment must cease receipt of waste no later than November 30, 2020, and the facility must document certain conditions and certify "that the CCR and/or non-CCR waste streams must continue to be managed in that CCR surface impoundment to allow the facility to complete the measures necessary to provide alternative disposal capacity, either on-site or off-site of the facility" on its publicly available website no later than August 31, 2020.
- 2.) Site specific alternative to initiation of closure deadline due to lack of disposal capacity (§ 257.103(f)(1)). This provision allows facilities to submit demonstrations to EPA for approval for a specific amount of time to be able to continue to use their surface impoundment while developing alternate capacity for the CCR and non-CCR waste streams. This extension allows the facility to continue to use a unit (surface impoundment) for a maximum of 5 years, until October 15, 2023. Under this extension, facilities are required to submit their demonstrations to EPA no later than June 30, 2020.
- 3.) Site specific alternative to initiation of closure deadline due to Permanent Cessation of Coal Fired Boiler(s) by a Date Certain (§ 257.103(f)(2)): If a facility is ceasing generation of coal fired boiler(s) by a date certain, then the facility must complete closure by October 17, 2023 for surface impoundments less than 40 acres and by October 17, 2028 for surface impoundments larger than 40 acres. The facility is required to submit a demonstration to EPA for approval to continue to use their CCR surface impoundments. Under this extension, demonstrations are required to be submitted to EPA for approval no later than May 15, 2020.

As you can see above, the deadlines for requesting extensions are approaching quickly and will become effective when the proposed rule is final. EPA is requesting assistance from the regions, states, and facilities to estimate the number and types of extensions facility owners/operators may be requesting. EPA headquarters has developed a list (attached) of facilities which may be eligible for extensions by EPA Region and State. This list was developed by examining information included on individual facility web sites which are required as part of the CCR regulations. The list of potential sites in Missouri has been attached (attached Excel file) to this email. EPA headquarters has requested that individual regions reach out to their state counterparts to identify facility contacts and reach out to those contacts to determine which facilities and units may be requesting an extension and which type of extension may be requested. EPA headquarters has requested that this information be collected by February 14, 2020.

As part of the effort to determine what type of an extension a facility may need, EPA would also like the state's assistance in obtaining input regarding an estimate of the length of the extension that may be requested by the facility owners/operators. As part of the discussions, we need an estimate regarding the length of the extension. For example, EPA needs to estimate the following:

- Facilities that will not need an extension
- Facilities that will only need till November 2020 (short term extension)
- Longer than November need about 6 months more
- Longer than November need about 1 year
- Longer than November need longer than 18 months

EPA is collecting this data in order to estimate the potential workload which could be associated with reviewing the above mentioned extension requests.

In addition, EPA headquarters routinely reviews the information posted on individual facility web sites. As part of that review EPA headquarters has identified sites in each region where specific facility information which is required to be posted is either missing, incomplete or technical questions exist. As part of this review EPA has developed two lists. See attached. One list deals with compliance issues related to documents which are, or in some cases are not, posted on the specific facility websites. The second list deals with groundwater questions related to Alternate Source Demonstrations and Intrawell analyses. With regards to the list dealing with compliance issues related to documents, EPA headquarters has requested that the regions work with their state counterparts to identify the appropriate facility contact. The plan is that EPA Headquarters would take the lead in coordination with the regions and states to contact the facilities to discuss and remedy the identified issues. With regards to the second list dealing with Alternate Source Demonstrations, EPA headquarters has requested that the regions work with their state counterparts to identify the appropriate facility contact. The plan is that EPA Headquarters would take the lead in coordination with the regions and states to contact the facilities to discuss and remedy the identified issues. With regards to the second list dealing with Alternate Source Demonstrations, EPA headquarters has requested that the regions work with their state counterparts to identify the appropriate facility contacts. The regions and or the states would then take the lead to address any identified issues. No specific timeframe has been established to address the questions related to either of the above lists. Region 7 anticipates working closely with the state in addressing these issues.

It should be noted that EPA headquarters routinely reviews CCR facility websites and could identify additional questions. If that should occur Region 7 would again reach out to the states.

At your convenience I would like to follow-up with you on the above issues sometime next week to discuss Missouri's perspective and any comments you may have. If you have any questions please do not hesitate to call or email me.

Thanks

Bob Aston USEPA Region 7 (913)551-7392



#### **APPENDIX 2**

Monitoring Well Field Inspection Sheets and Field Notes

# 2024

## -2023 Field Sampling Log

Facility	Ashury	CCR (Permit #		Υ.		Manifestine - 1		2			
r aoincy.	ASDUT y	con fremin #			-	Monitoring		W )			_
Purge In	formation:					Sample	Blind	Duplicate	Field	Blank	
-		e: Peristaltic Pu	umo witi	h 3/8 - inch	Diamo	tor Tubing	l l				
				11 37 0 - Iniçi	Diame	ter rubing					
		Actual Pur	ge Volun	ne Remove	d:	mL pc	ost pump cali	bration .			
Date / Ti	ime Initiated:	5 14 -24	@		D	ate / Time Con	npleted: <u>5</u> -	14	-24		
Well Pur	ged To Dryne	ss?: Y / A	$\mathcal{D}$	Ga	as Detec	ted? Y	2				
Purge Da	ata:										
Time	Purge Rate (mL/min)	Cumulative Volume ( mL )	Tem (°C)			Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP	Turb	idity	Other (Color, Clarity, Odor)
8:37	200		15,					(MV)		1	
39					1	0.799	0.93	132,		10	clear
			19.4			0.799	0.43	141.9		15	/
:41			15.4		72	0.800	0,30	144	8 1.8	5	
:43			15.0	2 57	a	0,799	0,20	146.2	$p = \overline{q}$	35	V
						Field Inspec	ction	Goo	d <u>Fair</u>	Po	or
		An				Access		IG	F		
Time sam	npled	8:45				Pad Conditi	on	G	F	F	
						Casing Cond	dition	G	F	F	>
		N	1.	DOF.		Locking Cap	& Lock	G	F		Р
Weather	Conditions	Cloudy	, 60			Riser Condit	tion	(G)	F		Р
		(	/			Field Inspec	tion	Ye	s N	<u>lo</u>	<u>N/A</u>
144-1 1	1.00	3.41'				Well ID Visil	ole	(ð	2 1	N	N/A
water Le	vel Start	111				Standing Wa		C	2 1	N	N/A
						Clear of We	eds	C	2 1	N	N/A
Wator Lo	vel Finish	7.07	7 /			Measuring F		C		5	N/A
vvalei Le			_				with MDNR	Y	Q	K	N/A
							e Performed		$\gamma$	N.	N/A
Name (M	FC Field Samn	ler): <u>Ryan Ortba</u>	als and P	ick Elain			ation Norma		$\langle \cdot \rangle$	N	N/A
		A			-	Redevelopm	Calibration N	-	L	Ň	N/A
	1	1 /	KA L	7			ons from SAP	Y	()		N/A
Sampler S	Signature/	an 1	A	/			lickness Che		1/1		N/A N/A
									0		N/A
Historical	Data: Averag	e of sampling ev		ote: MW-5-	AB first	sampled May	2023				
Constitue	ent		nits	MW-1 /	MW-	2 MW-3	MW-4	MW-5	MW-5A	MW-	5-AR
pH			.U.	NO TEST	5.83	5.08	6.30	6.83	6.82		
	Conductance		os/cm	GW	0.78	5 1.132	2.083	0.841	1.769		
Total We			ft	Level							
	GW Depth		ft	Only	1.24	0.4	5.39	1.32	6.92		
AVARAGA	GW Drop		Fe I								

DON'T

SAMPLE

mL

800

800

800

800

800

2 System Volumes

(Min Purged Amount)

			2	024					
			2	023 Field	d Sampling	Log			
Purge In	formation:	<u>CCR (Permit #</u> e: Peristaltic Put		)	Monitoring Samp	g Well ID: <u>MV</u> Ble Blind I	V- <u>3</u> Duplicate	Field Blank	<u> </u> .
		Actual Purg	e Volume R	emoved:	mL p	oost numn calib	ration		
Date / Ti	me Initiated:	5-14							
		ss?: Y/0		Gas De	tected? Y				
Purge Da	ita:						1		1
Time	Purge Rate (mL/min)	Cumulative Volume ( ml )	Temp. (°C)	рН (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity ( )	Other (Color, Clarity, Odor)
2:09	200		16.3	5.77	1.456	1.61	41.5	11866	Effet Clow
0:11			16.7	5.77	1.451	0.67	36.3	208.6	
13			16.3	5.77	1,449	0.44	36.0	366.87	1
5	J		16.1	5.7.7	1.448	0.33	34.9	98.80	
			/				- 1, 1	10:00	
Weather Water Lev	-	2:15 Partly 1 0.51	Noudy,	700	Field Insp Access Pad Condi Casing Co Locking Ca Riser Cond Field Insp Well ID Vis Standing V Clear of W Measuring	ition ndition ap & Lock dition ection sible Water /eeds g Point	Good G G G Yes	F F F F NO N Z	P P P P <u>N/A</u> N/A N/A N/A
Water Lev Name (MI		oler): <u>Ryan Ortba</u>	ls and Rick	Elgin	Maintenar Decontam Equipmen Redevelop	le with MDNR nce Performed ination Normal t Calibration Normal ment Needed		Z	N/A N/A N/A N/A
Sampler S		Myn (	XU	_		tions from SAP Thickness Checl	Y ked Y	(N)	N/A N/A
stituent	Data: Averag	e of sampling ev Units	ents MW-6	MW- 6	A MW-7				
		S.U.	6.72	6.87	6.12				ten.
cific Condu		umhos/cm		1.601					
Well Dep		ft	3.00						
age GW D age GW D		ftft	7.86	7.28	3.04				
stem Volu									
		mL	800	800	800				

(Min Purged Amount)

## 2024 2023 Field Sampling Log

Facility:	Asbury	CCR (Pei	rmit #		)		Monitoring	Well ID: M	w- 4		_	
	formation: of Well Purge	e: Perist	altic Pu	mp wit	h 3/8 - inc	h Diam		e 🔀 Blind	Duplicate	Field I	Blank	••
		Acti	ual Purg	e Volur	ne Remov	ed:	mL pc	ost pump cal	ibration .			
Date / Ti	me Initiated:	5 10	[-24	0		_, (	Date / Time Con	npleted: <u>5</u> -	- 14	-24		
Well Pur	ged To Dryne	ss?: Y	D		G	ias Dete	ected? Y / N	2				
Purge Da	ata:							, 				
Time	Purge Rate (mL/min)	Cumul Volu ( mL		Tem (°C			Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbi (	dity )	Other (Color, Clarity, Odor)
9:16	200			15.	9 7.0	00	1.958	4.73	101.6	5 8,	27	
:18				15.9	7,0	20	1.961	4.52			36	
:20				16,0	2 7.0	20	1.961	4.41	95.6		39	
:22	V			15.			1.962	4.34	93,0	2 7.8		
							Field Inspec	tion	Good		<u>P</u> (	oor
Time sam	pled	9:a	5				Access Pad Conditi	on	G	F F	C	P
							Casing Conc	lition	G	F		P
Weather	Conditions	Nou	du	\$00	7F		Locking Cap Riser Condit		G	F F		P P
			11		1		Field Inspec				0	P <u>N/A</u>
Water Le	al Start	73	$\mathcal{D}^{\prime}$				Well ID Visit	ole	Ye	) 1		N/A
Water Lev	verstant	/1/	/	_			Standing Wa Clear of We		Ŷ	(A	B	N/A
		13	~n	(			Measuring P		Ř			N/A N/A
Water Lev	/el Finish	17	59				Split sample				5	N/A
							Maintenanc			, K	D	N/A
Name (MI	EC Field Samp	ler): Rva	n Orthal	s and R	ick Elgin		Decontamin				1	N/A
, ···		0	in on tour	A			Equipment ( Redevelopm					N/A N/A
Sampler S	ignature	hpm	1	M	$\sim$		Any deviatio Sediment Th	ns from SAP	Y	N		N/A N/A
Historical	Data: Average	e of same	oling eve	ents M	10. VV/12	-AP fire	t sampled May 2	2022			-	
Constitue	ent		Un		MW-1	MW		MW-4	MW-5	MW-5A	B/14/	-5-AR
рН			S.U		NO TEST	5.8		6.30	6.83	6.82	IVI VV	-J-A-C-
	onductance		umhos	s/cm	GW	0.78		2.083	0.841	1.769		
Total We			ft		Level							
Average (			ft		Only	1.2	4 0.4	5.39	1.32	6.92		
Average (	W Drop		ft									

mL

DON'T

SAMPLE

800

800

800

800

800

2 System Volumes

(Min Purged Amount)

# 2024

## -2023 Field Sampling Log

		CCR (Permit #		)		Monitoring Sampl			e 🚺 Field	Blank	<b>[</b> ]
	of Well Purg	e: Peristaltic Pu	mp with 3/	8 - inc	h Diamete		7	• • •	-A		L!•
		Actual Purg	e Volume R	emove	ed:	mL p	ost pump ca	libration .			
Date / Ti	ime Initiated:	5 14 -24	@		Dat	e / Time Cor	moleted: 5	-14	24		
Moll Pur	and To Drugo	$\sim 10^{-10}$				1	0	. /	-24		
wein run	ged to Dryne	ess?: Y / N		G	as Detecte	ed? Y					
Purge Da	ata:					P					
Time	Purge Rate (mL/min)	Cumulative Volume ( mL )	Temp. (°C)	рН (SU	l Cor	Specific nductivity mS/cm)	Dissolved Oxygen ( mg/L )	I ORI (M)		pidity	Other (Color, Clarity, Odor)
9:57	200		16.0	7,6	20 1	01 2	1123			)	
54						<u>06 a</u>		111	a 1/1	29	aran
			157	7,1		060	0.70	85.4	5 51	44	
10:01			16.4	7,19	3 1.	052	0,43	80,	0 7.	37	
:03	V		16.0	7.1		060	0.3-	-	2		
			100.00			000	01/9	7516	2 9.	51	J.
L				n al.	_	P1.1.1.					
		10:05	l			Field Inspect Access Pad Conditi Casing Cond Locking Cap	on dition	Go	F F F	<u> </u>	oor P P P
Weather (	Conditions	Nouth	65°F			Riser Condit		G	1		P P
		171	11			Field Inspec		(y	/	lo	Р <u>N/A</u>
Water Lev	el Start	1017				Well ID Visit		e		N	N/A
						Standing Wa Clear of We		- Q	$\mathcal{D}$	N	N/A
		11 01	71			Measuring P		6			N/A
Water Leve	el Finish		l			Split sample		, C	Y A	N N	N/A N/A
					I	Maintenanco	e Performed	۱ ۱		N)	N/A
Name (ME	C Field Sampl	ler): <u>Ryan Ortbals</u>	and Rick Fl	ain		Decontamin			2 7	N	N/A
		1	///.			Equipment C Redevelopm				N	N/A
Commission Ct	. V	MA A S	1-11	1		Any deviatio					N/A N/A
Sampler Sig	gnature	you C	×4	/	5	ediment Th	ickness Che	cked Y	( (N		N/A
Historical E	Data: Average	of sampling eve	nts Noto N	A\\/ E	AD first som					24	
Constituer	nt	Unit	s MV	V-1	MW-2	MW-3			)		
pН		S.U		TEST	5.83	5.08	<b>MW-4</b> 6.30	MW-5	MW-5A	MW-	-5-AR
	nductance	umhos,		W	0.786	1.132	2.083	0.841	6.82 1.769		
Total Well		ft	Lev	vel				0.071	1.705		
Average G		ft	Or	ily	1.24	0.4	5.39	1.32	6.92		
2 System V		ft									
	d Amount)	mL	DO		800	800	800	800	800		

## 2023 Field Sampling Log

Purge In	Asbury			וף with 3	) /8 - inch			Well ID: <u>N</u> Blind	W- 51 Duplicate	Field	Blank	<u> </u> .
					Remove	a:	mL po	ost pump cal	ibration .			
Date / Ti	ime Initiated:	5 1	4 -24	@		Da	te / Time Cor	npleted: <u>5</u> -	-	-24		
Well Pur	ime Initiated: ged To Dryne	ess?: Y	N		Ga	as Detect	ed? Y / N	2				
Purge Da	ata:	1										
Time	Purge Rate (mL/min)	Cumu Volu ( mL		Temp. (°C)	pH (SU		Specific inductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)		oidity	Other (Color, Clarity, Odor)
10:55	200			16,2	6.7	8 4	629	1.70			91	Clago
:57	1			16.1	6.7		637					Chagn
:59					1			0,96	84.9		63	
1	-1			16.1	6,7		633	0.45		2 11.	18	
11:01	V			lbij	6.7	8 4.	635	0,30	80.	2 19	2.06	
							Field Inspe	ction	Goo		<u>Pr</u>	oor
Time sam	opled Conditions vel Start	All	7: 11.	:05			Access Bod Conditi		G	E		Р
		- type					Pad Conditi Casing Cond		G	) F		P
		PI	1	1.00	F		Locking Cap		G	F F		P P
Weather	Conditions	lloul	ly,	651	F		Riser Condi		G	F		P
			/ /				Field Inspec		Ye		No	<u>N/A</u>
		ai	11				Well ID Visil	ble	K		N	N/A
water Lev	vel Start	1.16	2				Standing Wa	ater	14	2	N	N/A
		1	0 4	(R')			Clear of We		4		$\overline{\mathbb{N}}$	N/A
Water Lev	el Finish	1	2,3	7			Measuring		Ċ	2 ]	Ň	N/A
THUEF LES							Split sample			Ć	A Contraction	N/A
							Maintenanc Decontamin			2 C	N	N/A
Name (ME	EC Field Samp	ler): Rya	n Ortbals	and Rick	Flgin		Equipment (			ก่	N	N/A
				NA			Redevelopm		ormai (r	1	N	N/A
	. ä	h	A				Any deviatio		Y	Tr		N/A N/A
Sampler Si	ignature	ym.	-0	$\bigvee$			Sediment Th				1/	N/A
Historical	Data: Averag	e of sami	oling ever	its. Note:	MW-5-	AR first c	ampled May	2022		$\sim$		
Constitue	ent		Unit		W-1	MW-2		MW-4	MW-5	MW-5A	Datar	E AD
рН			S.U.		TEST	5.83	5.08	6.30	6.83	6.82	IVIW-	-5-AR
Specific C	onductance		umboc/		CIAL	0.700	1.400	0.00	0.00	0.82		

constituent	Units	MW-1	MW-2	MW-3	MW-4	MW-5 /	MW-5A MW-5-AR
pН	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769
Total Well Depth	ft	Level		1.102	2.005	0.041	1.709
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92
Average GW Drop	ft			0.1	5.55	1.52	0.92
2 System Volumes	mL	DON'T	800	800	800	800	800
(Min Purged Amount)		SAMPLE	800				

					20	029							
								mpling	Log				
	Asbury	CCR (P	ermit #			)		Monitoring		MW- 54	PR E		<b></b>
Method	n <b>formation</b> : I of Well Purg	e: <b>Peri</b>	staltic Pu	imp w	ith 3/8	- inch D	iamete		×	ia saprico:		IU DIdIIK	Lŀ
		Ac	tual Pur	ge Volu	ume Rei	moved:		mL p	ost pump c	alibration			
Date / T	ime Initiated:	<u>5</u>	H -24	@				e / Time Co			24		
	rged To Dryne		11					ed? Y / M	0		24		
Purge Da	ata:							C					
Time	Purge Rate (mL/min)		ulative lume L )	Ten (°(		pH (SU)	Cor	Specific nductivity mS/cm)	Dissolved Oxygen ( mg/L )	ORI		rbidity	Other (Color, Clarity, Odor)
11:27	200			16,	6	7.08	1,0	575	2.04			P.18	
:29			_	16.0	4	7.07		551	1.11	130	,	34.97	
:31				16.		1.08		547	0.77			3,30	
:33	V			16.1	6	7.08		550	0.60			303	
											- 0	10 3	
Time sam	pled	[]:	35	*)			_	Field Inspect Access Pad Conditi	on	God G	F	2 -	<mark>oor</mark> P P
Weather (	Conditions	Clou	dy,	6	50	F	27	Casing Conc Locking Cap Riser Condit Field Inspec	& Lock tion	G G			P P P
Water Lev	el Start	2.	88				-	Well ID Visik Standing Wa	ole ater	Č	9	No N	<u>N/A</u> N/A N/A
Water Lev	el Finish 🔜	-	12.0	23				Measuring F Split sample	oint with MDNF		b		N/A N/A N/A
Name (ME	C Field Sampl	er): <u>Rya</u> 1	n Ortbal	s and F	Rick Elgi	n		Vaintenanco Decontamina Equipment C Redevelopm	ation Norma Calibration N	al Iormal			N/A N/A N/A N/A
Sampler Si		zm	6	A	D		A S	ny deviatio ediment Th	ns from SAP ickness Che	γ γ	1	NN	N/A N/A
Historical [	Data: Average	of sam	pling eve	nts. No	ote: MV	V-5-AR f	irst san	npled Mav 2	2023		_		
constitue	nt		Uni	ts	MW-		IW-2	MW-3	MW-4	MW-5	MW-54	MW-	5. AP
pH			S.U		NO TE	ST 5	5.83	5.08	6.30	6.83	6.82		3-AR
	nductance		umhos,		GW		.786	1.132	2.083	0.841	1.769		
Total Well			ft		Leve	1					2.705	+	
Average G			ft		Only	1	24	0.4	5.39	1.32	6.92	1	
Average G	vv Drop		ft								0.02		

mL

DON'T

SAMPLE

800

800

800

800

800

2 System Volumes

(Min Purged Amount)

					2	02							
					20	<b>23</b> Fi	eld Sa	mpling L	og				<b>*</b> )
	Asbury	CCR (Per	mit #			)			Well ID: <b>N</b> e Blind	<u>IW-</u> d Duplicate	Field	Blank	)
	of Well Purge	e: <b>Perist</b>	altic Pu	ımp wi	th 3/8	- inch [	Diameter	Tubing					~1
		Actu	ial Purg	ge Volu	me Rei	moved:		ml n	ost pump ca	libration			
Data / T	inn m fusiki ska al												
Date / I	ime Initiated:	5 [-	-24				Date	e / Time Cor	npleted: <u>5</u>	- 19	-24		
Well Pur	ged To Dryne	ess?: Y	IN	$\geq$		Gas	Detected	YTN	2				
Purge Da	ata:		Y										
			/		T		T					-	1
	Purge	Cumul	ative				s	pecific	Dissolved				Other (Celer
_	Rate	Volu	me	Tem	· .	рН		ductivity	Dissolved Oxygen	ORP	Turb	idity	(Color, Clarity,
Time	(mL/min)	( mL	)	(°C	)	(SU)	(n	nS/cm)	( mg/L )	(MV)		)	Odor)
12:10	200			16.	d	6.90	2.	706	1.62	106,	1 26.	15	Clean
:13				15.9	3	6.97		700	1.01	107.4			7
:14				15.9		6.93		698	0.55	96.		23	
:16	./			IER	1	60	2 2	Inc	0.36		1/4.	13	
1.02				120			3/an K	61)	0,70	91.6	11-4	76	
					F	s. lal 1	31.1	Field Inspec	tion	600	d Fatu		
		1.	- 2 -	1		7 -	10n K	Access	cuon	<u>Goo</u> G	<u>u Fair</u>	ン <sup>ピ</sup>	P P
Time sam	pled	19	$\alpha O$	/	1d:	50		Pad Conditi		10	F		P
		N		/ ·		~		Casing Cond		1 G	) F		Р
Weather	Conditions	(10	40	. 6	50,	1-		Locking Cap Riser Condit		G			P P
		0	/	-				Field Inspec		Ly e		lo	N/A
Water Lev	(ol Start	81	67	C			,	Well ID Visit		Ċ	~ ) ~	N	N/A
Water Lev		2,0						Standing Wa		Ö		N	N/A
		. 0	201	N				Clear of We Measuring P		X	20	Y	N/A
Water Lev	el Finish	19.	22						with MDNR	C		2	N/A N/A
									e Performed	l Y	Q		N/A
Name (M	C Field Comm	luch D	<b>.</b>		8.				ation Norma	al 🖉	2 7	V	N/A
Name (IVI	EC Field Samp	Aler): <u>Ryar</u>	Ortba	is and F	lick Elg	<u>in</u>			Calibration N		بر ر	×	N/A
		1	n /	( ))		1			ent Needed		11	4)	N/A
Sampler Si	ignature 🧾	<u>YN </u>	E	1	1				ickness Che			/	N/A N/A
Historical	Data: Average	/ e of same	ling ou	onto M	Z.						0	8	
Constitue	Data: Average		Un	ite	MW	W-5-AF							
рН			S.(		NO TI		<b>MW-2</b> 5.83	MW-3	MW-4	MW-5	MW-5A	MW	-5-AR
	onductance		umho		GW		0.786	5.08 1.132	6.30 2.083	6.83	6.82		
Total Wel			fl		Leve		5.,00	1.1.32	2.003	0.841	1.769		
Average G			fi		Onl		1.24	0.4	5.39	1.32	6.92		
Average G			ft	:						-102	0.52		
2 System	Volumes			. 1	DON	Т	000	800	800	800	800		

SAMPLE

mL

(Min Purged Amount)

800

800

800

800

20.	2	4
	- /	

## -2023 Field Sampling Log

		CCR (Permit #		)	Monitoring Sample	Well ID <u>· M\</u> e <u>Blind</u> I	N- 6A Duplicate	Field Blank	<b></b> .
	formation: of Well Purge	: Peristaltic Pun	np with 3/8	- inch Dian		(			
		Actual Purge	Volume Re	emoved:	mL po	ost pump calik	oration.		
Date / Ti	me Initiated:	5-14 -2	24 @		Date / Time Cor	mpleted: <u>5 –</u>	14 -24		
Well Purg	ged To Drynes	55?: Y / A		Gas Det	ected? Y	)			
Purge Da	ta:								
Time	Purge Rate (mL/min)	Cumulative Volume ( ml )	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity ( )	Other (Color, Clarity, Odor)
12:46	200		16.1	6.49	9.354	3.53	137.8	40.00	Clagr
0 :48			15.9	6.49	2.349	3.34	140,1	34.36	1
:50			15,7	6.50	Q.348	321	139.9		
:52				6.51	7.346	3,12		29.00	V
Weather ( Water Lev	Conditions rel Start	12:55 Noudy 7.69	, <i>65°</i>	°F	Access Pad Conditi Casing Condi Locking Cap Riser Condi <b>Field Inspe</b> Well ID Visi Standing W Clear of We Measuring	dition 5 & Lock tion ction ble 'ater eeds	Good G G G G G G G Yes	Fair F F F F No N	P P P P N/A N/A N/A N/A
Water Lev Name (ME Sampler Si	C Field Samp	ler): <u>Ryan Ortbals</u>			Maintenano Decontamir Equipment Redevelopn Any deviatio	e with MDNR ce Performed nation Normal Calibration Nor nent Needed ons from SAP nickness Chec	Y Y Dormal Y Y		N/A N/A N/A N/A N/A N/A
Historical stituent	Data: Average	e of sampling eve	1			1			
succent		Units S.U.	MW-6	MW- 6A	1				
cific Condu	ctance	umhos/cm	6.72	6.87	6.12 2.699				
al Well Dep		ft		1.001	2.033				
rage GW D	epth	ft	7.86	7.28	3.04				
rage GW D		ft							
stem Volui	nes								

800

800

800

mL

(Min Purged Amount)

			2	024								
			-	023 Fiel	d Sampling L	.og						
Facility:	Asbury	CCR (Permit #		F	-	Well ID: MV						
	formation: of Well Purge	e: Peristaltic Pu	Imp with 3	/8 - inch Dia	-	Blind I	Duplicate	Field Blank				
	-				mL p	ost pump calib	pration.					
Date / Ti	me Initiated:				Date / Time Cor							
Well Pur	Il Purged To Dryness?: V/N Gas Detected? Y/N											
Purge Da	ata:											
Time	Purge Rate (mL/min)	Cumulative Volume ( ml )	Temp. (°C)	рН (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity	Other (Color, Clarity, Odor)			
1:27	200		16.4	6.47	3.424	4,62	129.4	6.23	1601			
0;09			16.0	6.47	3.425	4,29	127.2	7,22	/			
:31			15.9	6.47	3.419	4.10	123,2	7.02				
:73	V		19,9	6,47	3,417	4,05	121.0	6.53	V			
Time sam	pled	1:3=	5		Field Inspe Access Pad Conditi		Good G	Fair F	P P P			

Weather Conditions , d Water Level Start

Water Level Finish

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

Sampler Signature

Casing Condition Ρ (G F Locking Cap & Lock G F Ρ **Riser Condition** Ρ F **Field Inspection** <u>N/A</u> <u>No</u> Well ID Visible Ν N/A Standing Water N/A Clear of Weeds N/A Measuring Point N/A Split sample with MDNR Y N/A Maintenance Performed N/A Decontamination Normal N/A **Equipment Calibration Normal** N N/A Redevelopment Needed N N/A Any deviations from SAP Y N N/A Sediment Thickness Checked Y

N

N/A

Constituent	Units	MW-6	MW-6A	MW-7	$\checkmark$			
рН	S.U.	6.72	6.87	6.12		 		
Specific Conductance	umhos/cm	1.900	1.601	2.699			_	
Total Well Depth	ft					 		
Average GW Depth	ft	7.86	7.28	3.04		 		
Average GW Drop	ft			0.01		-		
2 System Volumes (Min Purged Amount)	mL	800	800	800				



**APPENDIX 3** 

**Analytical Results** 



**Environment Testing** 

# **ANALYTICAL REPORT**

## PREPARED FOR

5 6

Attn: Mr. Rick Elgin Midwest Environmental Consultants 2009 East McCarty Street Suite 2 Jefferson City, Missouri 65101 Generated 6/18/2024 6:56:11 PM

## JOB DESCRIPTION

Asbury Pond CCR

## **JOB NUMBER**

180-174054-2

Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh PA 15238



See page two for job notes and contact information.



## **Eurofins Pittsburgh**

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

PA Lab ID: 02-00416

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Pittsburgh Project Manager.

#### Authorization

Andy Johnson, Senior Project Manager Andy.Johnson@et.eurofinsus.com

Authorized for release by

(615)818-9567

Generated 6/18/2024 6:56:11 PM 5 6 7

6/18/2024 6:56:11 P

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#### Job ID: 180-174054-2

#### **Eurofins Pittsburgh**

## Job Narrative 180-174054-2

#### Receipt

The samples were received on 5/15/2024 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 5 coolers at receipt time were 1.5° C, 1.6° C, 2.0° C, 4.3° C and 5.5° C.

#### GC Semi VOA

Method 9056A: The following samples were diluted due to the nature of the sample matrix: MW-2 (180-174054-1), MW-3 (180-174054-2), MW-4 (180-174054-3), MW-5 (180-174054-4), MW-5A (180-174054-5), MW-5AR (180-174054-6), MW-6 (180-174054-7), MW-6A (180-174054-8), (180-174054-K-1 MS), (180-174054-K-1 MSD). MW-7 (180-174054-9), (180-174063-D-7), (180-174063-D-7 MS) and (180-174063-D-7 MSD). Elevated reporting limits (RLs) are provided.

Method 9056A: The following samples reported chloride and fluoride above the reporting limit (RL). These samples were reanalyzed and the results were confirmed. FIELD BLANK (180-174054-11)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### RAD

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method 6020B: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-5A (180-174054-5) and MW-6A (180-174054-8). Elevated reporting limits (RLs) are provided.

Method 6020B: The following sample was analyzed at a dilution to bring the concentration of boron to within the instrument's linear range: MW-5A (180-174054-5). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Field Service / Mobile Lab

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### **General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Qualifiers

Quaimers		3
Metals Qualifier	Qualifier Description	4
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	
Rad		5
Qualifier	Qualifier Description	•
U	Result is less than the sample detection limit.	6
Glossary		7
Abbreviation	These commonly used abbreviations may or may not be present in this report.	
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	
%R	Percent Recovery	0
CFL	Contains Free Liquid	0
CFU	Colony Forming Unit	9
CNF	Contains No Free Liquid	
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	
DL	Detection Limit (DoD/DOE)	
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	
LOD	Limit of Detection (DoD/DOE)	13
LOQ	Limit of Quantitation (DoD/DOE)	
MCL	EPA recommended "Maximum Contaminant Level"	
MDA	Minimum Detectable Activity (Radiochemistry)	
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDL	Method Detection Limit	
ML	Minimum Level (Dioxin)	
MPN	Most Probable Number	
MQL	Method Quantitation Limit	
NC	Not Calculated	
ND	Not Detected at the reporting limit (or MDL or EDL if shown)	
NEG	Negative / Absent	
POS	Positive / Present	
PQL	Practical Quantitation Limit	
PRES	Presumptive	
QC	Quality Control	
RER	Relative Error Ratio (Radiochemistry)	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	

- Relative Percent Difference, a measure of the relative difference between two points RPD
- Toxicity Equivalent Factor (Dioxin) TEF
- TEQ Toxicity Equivalent Quotient (Dioxin)
- TNTC Too Numerous To Count

#### Accreditation/Certification Summary

Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR Job ID: 180-174054-2

5

#### Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-24
California	State	2891	04-30-24 *
Connecticut	State	PH-0688	09-30-24
Florida	NELAP	E871008	06-30-24
Georgia	State	PA 02-00416	04-30-25
Illinois	NELAP	004375	07-31-25
Kansas	NELAP	E-10350	01-31-25
Kentucky (UST)	State	162013	04-30-23 *
Kentucky (WW)	State	KY98043	12-31-24
Louisiana	NELAP	04041	06-30-22 *
₋ouisiana (All)	NELAP	04041	06-30-24
Maine	State	PA00164	03-06-26
Vinnesota	NELAP	042-999-482	12-31-24
New Hampshire	NELAP	2030	04-04-24 *
New Jersey	NELAP	PA005	06-30-24
New York	NELAP	11182	04-01-25
North Carolina (WW/SW)	State	434	12-31-24
North Dakota	State	R-227	04-30-24 *
Dregon	NELAP	PA-2151	02-06-25
<sup>o</sup> ennsylvania	NELAP	02-00416	04-30-25
Rhode Island	State	LAO00362	01-01-25
South Carolina	State	89014	04-30-25
Texas	NELAP	T104704528	03-31-25
US Fish & Wildlife	US Federal Programs	058448	03-31-24 *
JSDA	US Federal Programs	P330-16-00211	04-11-26
Utah	NELAP	PA001462019-8	05-31-24
∕irginia	NELAP	10043	07-14-24
West Virginia DEP	State	142	01-31-25
Wisconsin	State	998027800	08-31-24

#### Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Illinois	NELAP	200023	11-30-24
lowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

#### Accreditation/Certification Summary

**Identification Number** 

04080

04080

LA011

M-MO054

MO00054

MO00054

MO002

11616

29700

R-207

9997

4157

68-00540

85002001

058448

MO00054

460230

C592

381

T104704193

P330-17-00028

310

9005

780

**Expiration Date** 

06-30-22

06-30-24 12-31-24

09-30-24

06-30-24

06-30-24

06-30-25

07-31-24

06-30-24

06-30-24

03-31-25

07-31-24

06-30-24

08-31-24

09-01-24

02-28-25

06-30-24

07-31-24

07-31-24

05-18-26

07-31-24

06-14-25 08-30-24

10-31-24

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Program

NELAP

NELAP

State

State

State

State

State

State

State

State

State

NELAP

NELAP

NELAP

NELAP

NELAP

NELAP

State

State

**US Federal Programs** 

**US Federal Programs** 

State

NELAP

NELAP

Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR

Authority

Louisiana

Maryland

Missouri

Nevada

New Jersey

New Mexico

North Dakota

Pennsylvania

South Carolina

US Fish & Wildlife

West Virginia DEP

Oklahoma

Oregon

Texas

USDA

Virginia

Washington

Utah

North Carolina (DW)

New York

Louisiana (All)

Louisiana (DW)

Massachusetts

**MI - RadChem Recognition** 

Laboratory: Eurofins St. Louis (Continued)

#### Job ID: 180-174054-2

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

### Sample Summary

#### Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR

Job ID: 180-174054-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-174054-1	MW-2	Water	05/14/24 08:45	05/15/24 09:35
180-174054-2	MW-3	Water	05/14/24 02:15	05/15/24 09:35
180-174054-3	MW-4	Water	05/14/24 09:25	05/15/24 09:35
180-174054-4	MW-5	Water	05/14/24 10:05	05/15/24 09:35
180-174054-5	MW-5A	Water	05/14/24 11:05	05/15/24 09:35
180-174054-6	MW-5AR	Water	05/14/24 11:35	05/15/24 09:35
180-174054-7	MW-6	Water	05/14/24 12:20	05/15/24 09:35
180-174054-8	MW-6A	Water	05/14/24 12:55	05/15/24 09:35
180-174054-9	MW-7	Water	05/14/24 01:35	05/15/24 09:35
180-174054-10	DUPLICATE (AT MW-5)	Water	05/14/24 10:15	05/15/24 09:35
180-174054-11	FIELD BLANK	Water	05/14/24 12:30	05/15/24 09:35

#### **Method Summary**

#### Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	EET PIT
EPA 6020B	Metals (ICP/MS)	SW846	EET PIT
EPA 7470A	Mercury (CVAA)	SW846	EET PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET PIT
9315	Radium-226 (GFPC)	SW846	EET SL
9320	Radium-228 (GFPC)	SW846	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
Field Sampling	Field Sampling	EPA	EET PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET PIT
7470A	Preparation, Mercury	SW846	EET PIT
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

#### **Protocol References:**

EPA = US Environmental Protection Agency

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 180-174054-2

#### **Client Sample ID: MW-2** Date Collected: 05/14/24 08:45 Date Received: 05/15/24 09:35

# Lab Sample ID: 180-174054-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		1.0	0.71	mg/L			05/19/24 13:43	1
Fluoride	0.15		0.10	0.026	mg/L			05/19/24 13:43	1
Sulfate	110		1.0	0.76	mg/L			05/19/24 13:43	1
Method: SW846 EPA 6020B - M	etals (ICP/	MS) - Total F	Recoverabl	е					
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron	94		80	60	ug/L		05/17/24 07:45	05/21/24 14:21	1
Calcium	28000		500	130	ug/L		05/17/24 07:45	05/21/24 14:21	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	410		10	10	mg/L			05/17/24 18:22	1
Method: EPA Field Sampling - F	Field Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.72				SU			05/14/24 09:45	1

Job ID: 180-174054-2

#### Client Sample ID: MW-3 Date Collected: 05/14/24 02:15 Date Received: 05/15/24 09:35

# Lab Sample ID: 180-174054-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chloride	53		1.0	0.71	mg/L			05/19/24 14:42	
Fluoride	0.14		0.10	0.026	mg/L			05/19/24 14:42	
Sulfate	490		5.0	3.8	mg/L			05/19/24 14:57	:
Method: SW846 EPA 6020B - Me	tals (ICP/	'MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Boron	62	J	80	60	ug/L		05/17/24 07:45	05/21/24 14:30	
Calcium	100000		500	130	ug/L		05/17/24 07:45	05/21/24 14:30	
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Total Dissolved Solids (SM 2540C)	940		10	10	mg/L			05/17/24 18:22	
Method: EPA Field Sampling - F	ield Samr	olina							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fa
pH	5.77				SU			05/14/24 03:15	

Job ID: 180-174054-2

#### Client Sample ID: MW-4 Date Collected: 05/14/24 09:25 Date Received: 05/15/24 09:35

# Lab Sample ID: 180-174054-3

Matrix: Water

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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19		1.0	0.71	mg/L			05/19/24 15:12	1
Fluoride	0.11		0.10	0.026	mg/L			05/19/24 15:12	1
Sulfate	560		10	7.6	mg/L			05/19/24 15:27	10
Method: SW846 EPA 6020B - Me	tals (ICP/	'MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		80	60	ug/L		05/17/24 07:45	05/21/24 14:33	1
Calcium	220000		500	130	ug/L		05/17/24 07:45	05/21/24 14:33	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1300		10	10	mg/L			05/17/24 18:22	1
Method: EPA Field Sampling - F	ield Sam	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.00				SU			05/14/24 10:25	

#### Job ID: 180-174054-2

#### Client Sample ID: MW-5 Date Collected: 05/14/24 10:05 Date Received: 05/15/24 09:35

#### Lab Sample ID: 180-174054-4 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.8		1.0	0.71	mg/L			05/19/24 16:11	1
Fluoride	0.30		0.10	0.026	mg/L			05/19/24 16:11	1
Sulfate	150		1.0	0.76	mg/L			05/19/24 16:11	1
Method: SW846 EPA 6020B - Me	tals (ICP/	MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	290		80	60	ug/L		05/17/24 07:45	05/21/24 14:35	1
Calcium	89000		500	130	ug/L		05/17/24 07:45	05/21/24 14:35	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	570		10	10	mg/L			05/17/24 18:38	1
Method: EPA Field Sampling - F	ield Samp	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.17				SU			05/14/24 11:05	1

9

Job ID: 180-174054-2

#### **Client Sample ID: MW-5A** Date Collected: 05/14/24 11:05 Date Received: 05/15/24 09:35

# Lab Sample ID: 180-174054-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	170		2.0	1.4	mg/L			05/19/24 16:41	2
Fluoride	0.21		0.20	0.052	mg/L			05/19/24 16:41	2
Sulfate	1900		20	15	mg/L			05/19/24 16:56	20
Method: SW846 EPA 6020B - M Analyte	•	MS) - Total F Qualifier	Recoverabl RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron	2100		400	300	ug/L		05/17/24 07:45	05/22/24 16:55	5
Calcium	430000		500	130	ug/L		05/17/24 07:45	05/21/24 14:38	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	3200		40	40	mg/L			05/17/24 18:38	1
Method: EPA Field Sampling -	Field Samp	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
					SU			05/14/24 12:05	

#### Job ID: 180-174054-2

#### Lab Sample ID: 180-174054-6 Matrix: Water

Date Collected: 05/14/24 11:35 Date Received: 05/15/24 09:35

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Client Sample ID: MW-5AR

Method: SW846 EPA 9056A - Anions, Ion Chromatography										
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Chloride	7.2		1.0	0.71	mg/L			05/19/24 17:10	1
	Fluoride	0.24		0.10	0.026	mg/L			05/19/24 17:10	1
	Sulfate	420		5.0	3.8	mg/L			05/19/24 17:25	5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Antimony	ND		2.0	0.97	ug/L		05/17/24 07:45	05/21/24 14:41	1	9
Arsenic	0.62	J	1.0	0.56	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Barium	16		10	3.1	ug/L		05/17/24 07:45	05/21/24 14:41	1	9
Beryllium	ND		0.0010	0.00027	mg/L		05/17/24 07:45	05/21/24 14:41	1	
Boron	430		80	60	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Cadmium	ND		1.0	0.22	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Calcium	130		0.50	0.13	mg/L		05/17/24 07:45	05/21/24 14:41	1	
Chromium	ND		2.0	1.5	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Cobalt	ND		0.50	0.26	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Lead	ND		1.0	0.38	ug/L		05/17/24 07:45	05/21/24 14:41	1	_
Lithium	130		5.0	1.3	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Molybdenum	ND		5.0	0.61	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Selenium	ND		5.0	1.5	ug/L		05/17/24 07:45	05/21/24 14:41	1	
Thallium	ND		1.0	0.47	ug/L		05/17/24 07:45	05/21/24 14:41	1	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00013	mg/L		05/18/24 10:45	05/20/24 12:55	1
General Chemistry									

Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	960	10	10 mg/L			05/17/24 18:38	1

#### Method: SW846 9315 - Radium-226 (GFPC)

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2 <b>σ</b> +/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.718		0.268	0.275	1.00	0.279	pCi/L	05/20/24 08:17	06/12/24 23:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.8		30 - 110					05/20/24 08:17	06/12/24 23:50	1

#### Method: SW846 9320 - Radium-228 (GFPC)

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.38		0.440	0.458	1.00	0.488	pCi/L	05/20/24 08:22	06/12/24 12:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.8		30 - 110					05/20/24 08:22	06/12/24 12:36	1
Y Carrier	83.7		30 - 110					05/20/24 08:22	06/12/24 12:36	1

**Eurofins Pittsburgh** 

Job ID: 180-174054-2

#### Client Sample ID: MW-5AR Date Collected: 05/14/24 11:35 Date Received: 05/15/24 09:35

#### Lab Sample ID: 180-174054-6 Matrix: Water

Watrix: water

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			Count Uncert.	Total Uncert.								
Analyte	Result	Qualifier	(2 <b>σ</b> +/-)	(2 <b>σ+/-</b> )	RL	Μ	IDC	Unit		Prepared	Analyzed	Dil Fa
Combined Radium	2.10		0.515	0.534	5.00	0.	488	pCi/L			06/17/24 15:12	
226 + 228												
Method: EPA Field	Sampling	- Field Samp	oling									
Analyte		Result	Qualifier	F	RL N	ONE	Unit		D	Prepared	Analyzed	Dil Fa
рН		7.08					SU				05/14/24 12:35	

Job ID: 180-174054-2

#### **Client Sample ID: MW-6** Date Collected: 05/14/24 12:20 Date Received: 05/15/24 09:35

#### Lab Sample ID: 180-174054-7 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	32		1.0	0.71	mg/L			05/19/24 17:40	1
Fluoride	0.22		0.10	0.026	mg/L			05/19/24 17:40	1
Sulfate	1100		10	7.6	mg/L			05/19/24 17:55	10
Method: SW846 EPA 6020B - Me	tals (ICP/	MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	380		80	60	ug/L		05/17/24 07:45	05/21/24 14:49	1
Calcium	270000		500	130	ug/L		05/17/24 07:45	05/21/24 14:49	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1900		10	10	mg/L			05/17/24 18:38	1
Method: EPA Field Sampling - F	ield Samp	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.93				SU			05/14/24 13:20	1

Job ID: 180-174054-2

#### **Client Sample ID: MW-6A** Date Collected: 05/14/24 12:55 Date Received: 05/15/24 09:35

# Lab Sample ID: 180-174054-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	63		1.0	0.71	mg/L			05/19/24 18:10	1
Fluoride	0.16		0.10	0.026	mg/L			05/19/24 18:10	1
Sulfate	950		10	7.6	mg/L			05/19/24 18:24	10
Method: SW846 EPA 6020B - Me	tals (ICP/	MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	270		80	60	ug/L		05/17/24 07:45	05/21/24 14:52	1
Calcium	180000		500	130	ug/L		05/17/24 07:45	05/21/24 14:52	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1700		10	10	mg/L			05/17/24 18:38	1
Method: EPA Field Sampling - Fi	ield Samp	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.51				SU			05/14/24 13:55	1

Job ID: 180-174054-2

#### Client Sample ID: MW-7 Date Collected: 05/14/24 01:35 Date Received: 05/15/24 09:35

# Lab Sample ID: 180-174054-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39		1.0	0.71	mg/L			05/20/24 17:15	1
Fluoride	0.12		0.10	0.026	mg/L			05/20/24 17:15	1
Sulfate	1800		10	7.6	mg/L			05/20/24 17:30	10
Method: SW846 EPA 6020B - N	letals (ICP/	MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	280		80	60	ug/L		05/17/24 07:45	05/21/24 14:55	1
Calcium	490000		500	130	ug/L		05/17/24 07:45	05/21/24 14:55	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	2800		20	20	mg/L			05/17/24 18:38	1
Method: EPA Field Sampling -	Field Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.47				SU			05/14/24 02:35	1

#### Client Sample ID: DUPLICATE (AT MW-5) Date Collected: 05/14/24 10:15 Date Received: 05/15/24 09:35

#### Job ID: 180-174054-2

#### Lab Sample ID: 180-174054-10 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.8		1.0	0.71	mg/L			05/20/24 15:46	1
Fluoride	0.29		0.10	0.026	mg/L			05/20/24 15:46	1
Sulfate	150		1.0	0.76	mg/L			05/20/24 15:46	1
Method: SW846 EPA 6020B - Me	tals (ICP/	MS) - Total F	Recoverabl	е					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	300		80	60	ug/L		05/17/24 07:45	05/21/24 14:58	1
Calcium	91000		500	130	ug/L		05/17/24 07:45	05/21/24 14:58	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	580		10	10	mg/L			05/17/24 18:38	1
Method: EPA Field Sampling - Fi	eld Sam	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.17				SU			05/14/24 11:15	1

5 6 9

Job ID: 180-174054-2

#### **Client Sample ID: FIELD BLANK** Date Collected: 05/14/24 12:30 Date Received: 05/15/24 09:35

#### Lab Sample ID: 180-174054-11 Matrix: Water

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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23		1.0	0.71	mg/L			05/20/24 18:44	1
Fluoride	0.73		0.10	0.026	mg/L			05/20/24 18:44	1
Sulfate	ND		1.0	0.76	mg/L			05/20/24 18:44	1
Method: SW846 EPA 6020B - Me Analyte	Result	MS) - Total F Qualifier	RL	MDL		<u>D</u>	Prepared	Analyzed	Dil Fac
	•			MDL	Unit ug/L	D	Prepared 05/17/24 07:45		Dil Fac
Analyte	Result		RL	<b>MDL</b> 60		<u>D</u>		05/21/24 15:00	Dil Fac
Analyte Boron Calcium	Result ND		RL 80	<b>MDL</b> 60	ug/L	<u>D</u>	05/17/24 07:45	05/21/24 15:00	Dil Fac 1 1
Analyte	Result ND 22000		RL 80	MDL 60 130	ug/L	<u>D</u> 	05/17/24 07:45	05/21/24 15:00	Dil Fac 1 1 Dil Fac

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301 Alpha Drive RIDC Park Pittsburgh, PA 15238

# **Chain of Custody Record**

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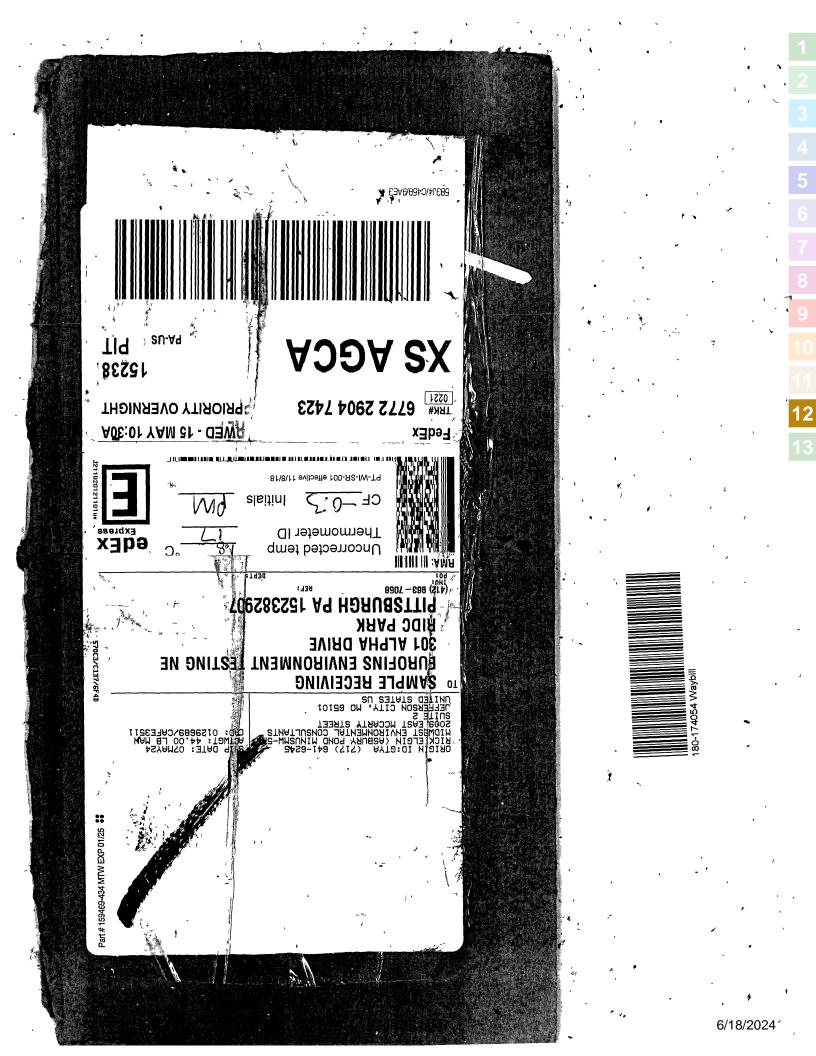
Prittsburgh, PA 15238 Phone (412) 963-7058 Phone (412) 963-2468			3			Environment Testing	
Client Information	Sampler Ryan Ortbals and Rick Elgin	Lab PM. Johnson, Andy	dy	Carrier Tracking No(s):	COC No 180-91658-16873	1	_
Client Contact: Ryan Ortbals	Phone 573-636-9454	E-Mail Andy.Johnso	E-Mail Andy.Johnson@et.eurofinsus com	State of Origin Missouri	Page: Page 1 of 2		
Company Midwest Environmental Consultants	-OISM4		sis	Requested	Job # 4676.04 (MEC)		
Address 2009 East McCarty Street Suite 2	Due Date Requested:				Preservation Codes	ss: M - Hexane	
City Jefferson City	TAT Requested (days): Standard		etstiuS		A - FICL B - NaOH C - Zn Acetate	N - None O - AsNaO2 P - Na2O4S	(pojsr
State, Zp MO, 65101	Compliance Project: 🛆 Yes 🛆 No		& ebi			Q - Na2SO3 R - Na2S2O3	of Cu
Phone 573-636-9454(Tel)	Po #: Purchase Order not required		ioula, (e		P	S - H2SO4 T - TSP Dodecahydrate II - Acetorie	o ujeq
Email <u>rortbals@mecpc com</u>	WO #	100 C	piloidt		I - Ice J - DI Water K - EDTA	V - MCAA W - pH 4-5	05 C
Project Name. Asbury Pond - CCR	Project #: 18023389				L-EDA	Y - Trizma Z - other (specify)	
Site	SSOW#:		(muiole		of con		P21-0
		Matrix (w=water, S=solid, FIIE6red S			) Mumber		180
Sample Identification	Sample Date Time G=grab)	Fleid	90209			Special Instructions/Note:	
	X	X			$\left  \right  $		
					Field pH	Spec Cond	
MW-2	5- 14-24 8:45 GRAB	Water	XXX		3,73	0.299	
MW-3	5- 14-24 2115 GRAB	Water	XXX		5.7.7	Q. 448	
MW-4	5-14 -24 0 : 25 GRAB	Water	X X X		7,00	1.963	
MW-5	5- 14 -24 10:05 GRAB	Water	XXX		7,17	1,060	
MW-5A	5-14 -24 11:05 GRAB	Water	X X X		6.78	4.635	
MW-5AR	5-14 -24 11:35 GRAB	Water	X X X		7.08	11,550	
Possible Hazard Identification		San	Sample Disposal ( A fee may be assessed if Return To Client	V, be assessed if samples are reta	samples are retained longer than 1 month, Lab	month) Months	
V, Other (specify)		Spe	Requ	nts			
Empty Kit Relinquished by	Date.	Time:		Method of Shipment:			
Relinquished by Relind 15	Date/Time: 5-14-24 /4:00	Company MEC MK	Received by Fendry X	Date/Time 5-14-24	14:00	Company FedibX	
Relinquished by	-	Company	Received by Catter	Date/Time CS/15/24	4 0935	CEPT: HINC	
Relinquished by	Date/Time <sup>.</sup>	Company	Received by	Date/Time		Company	
Custody Seals Intact: Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks	emarks		-	
						Ver: 01/16/2019	1

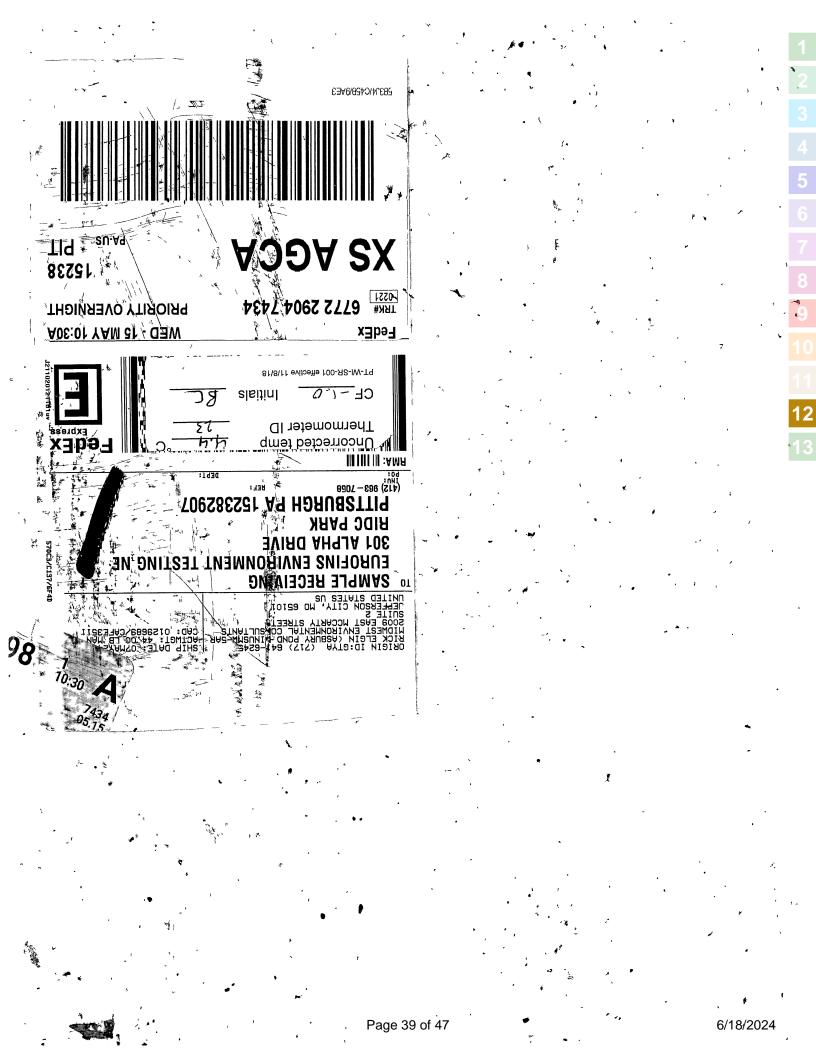
Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pttsburgh, PA 15238

**Chain of Custody Record** 

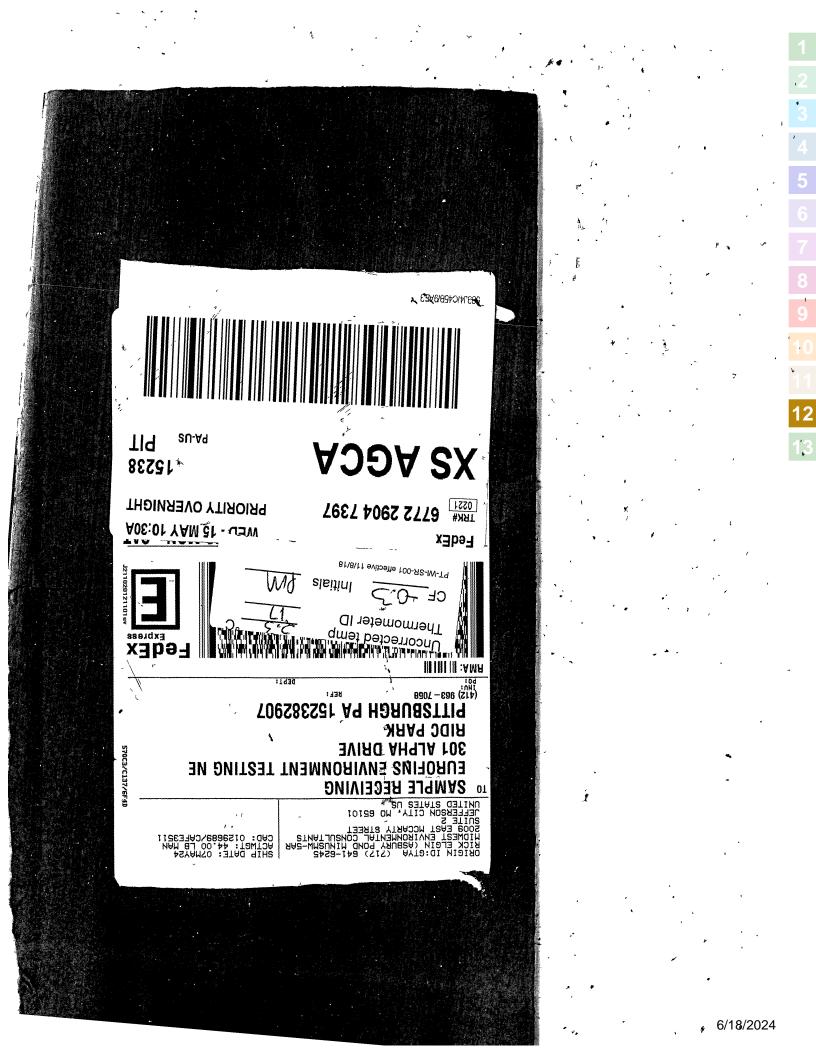
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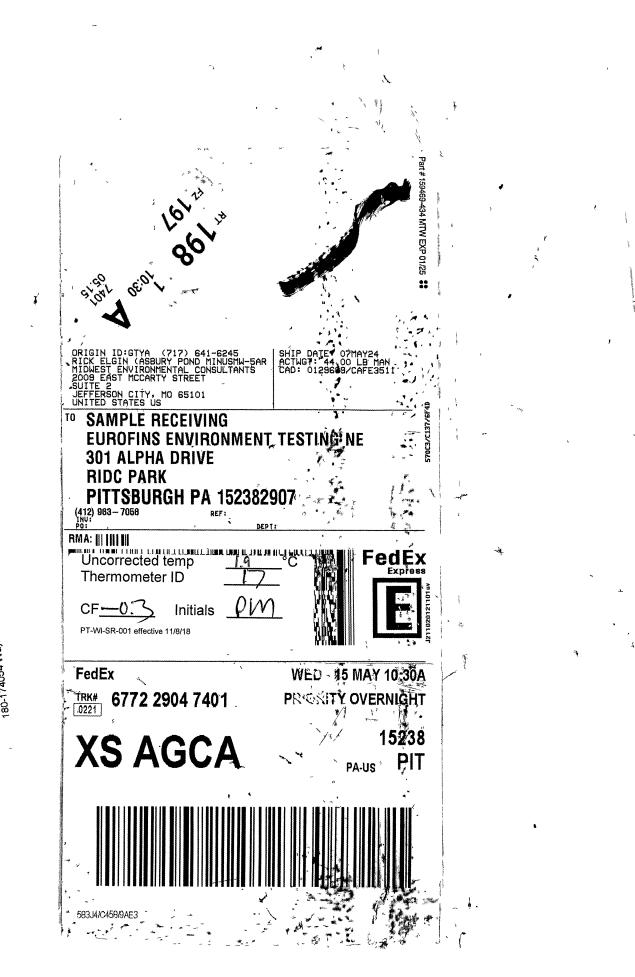
Prittsburgh, PA 15238 Phone (412) 963-7058 Phone (412) 963-2468			, , , , , , , , , , , , , , , , , , ,		5							Environment Testing
Client Information	Sampler Ryan Ortbals and Rick Elgin	ick Elgin		Lab PM: Johnson, Andy	dy M			Carrier T	Carrier Tracking No(s) <sup>.</sup>		COC № 180-91658-16873.1	73.1
Client Contact: Ryan Ortbals	Phone: 573-636-9454			E-Mail Andy.Johnson@et.eurofinsus.com	on@et.e	eurofinsu	s.com	State of Origin Missouri	Drigin ri		Page: Page 2 of 2	
Company Midwest Environmental Consultants		Md	PWSID				Analysis	Requested	_		Job #: 4676.04 (MEC)	
Address 2009 East McCarty Street Suite 2	Due Date Requested:										Preservation Codes: M	des: M - Hevene
City Jefferson City	TAT Requested (days):	Standard		1	etstiu2						A - HCL B - NaOH C - Zn Acetate	N - None O - AsNaO2 D No2045
State, Zp MO, 65101	Compliance Project:	Δ Yes Δ No		T	3 & ebi						D - Nitric Acid E - NaHSO4	r - Na2045 Q - Na2SO3 R - Na2S2O3
Phone 573-636-9454(Tel)	Po #: Purchase Order not required	required		• 	ioulii ,e						F - MeUH G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate
Email rortbals@mecpc com	WO#: 4				phold							U - AUGUIE V - MCAA W - pH 4-5
Project Name: Asbury Pond - CCR	Project #: 18023389									19nle)		Y - Trizma Z - other (specify)
Site	SSOW#:									005 30	Other:	
	Ŭ.	Samole (C. S.	Sample Matrix Type (W=water, C=Comm	orm MS/M: d Filtered 5 orm MS/M:	AJORGFM sO/noto8) 8	N) - bolsO_O				ıl Number (		
Sample Identification	Sample Date 1		G=grab) BT=Tissue, A=Air	Fiel						ioT		Special Instructions/Note:
	Ň	Ň	Preservation Code:	de: XX			S					
											Field pH	Spec Cond
MW-6	5-14-24 13:26	77	<b>GRAB</b> Water	ter	× ×	×					6.93	2.695
MW-6A	5-14 -24 13:55		<b>GRAB</b> Water	ter	××	×					6.51	a. 346
MW-7	5- 1H -24 1:35	1	<b>GRAB</b> Water	ter	× ×	×					647	3.417
Duplicate (at MW- 5 )	5-14 -24 10:15		<b>GRAB</b> Water	ter	× ×	×					GUNG 7.17	
Field Blank	5-14-24 B	OEIEI	NA Water	ter	× ×	×					AN	AN NA
Possible Hazard Identification	son B	Radiological	ological	Sa	nple Di: □Retu	sposal (. n To Cliè	A fee ma int	Disposal	<b>d if samples</b> By Lab	are retair	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) — Return To Client P Disposal By Lab — Archive For Moni	' <b>month)</b> Months
<ul><li>V, Other (specify)</li></ul>		1		Š	ecial Inst	ructions/	Special Instructions/QC Requirements	rements				
Empty Kit Relinquished by	Date	e,		Time				Me	Method of Shipment:	ţ		
Relinquished by Ridan Orthog 6	S-14-34 14	4.00		JAN	Received by	PY-	XZ		Date/Time らイイ	きょうみ	14:00	Company Ecc/EX
Relinquished by	Date/Time:		Company		Received by	by	(AT		Date/Time	151	24 C935	COMPANY NC
Relinquished by	Date/Time:		Company		Received by	þ.			Date/Time	ŀ		Company
Custody Seals Intact: Custody Seal No.:					Cooler Te	mperature	s) °C and O	Cooler Temperature(s) °C and Other Remarks				
												Ver: 01/16/2019













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Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468	Ch	ain of Custody Record	corc	-			38.44 J				🔅 eurofins		Environment Testing
Client Information (Sub Contract Lab)	Sampler:	Johnso	on, Andy				Ca	Carrier Tracking No(s)	ng No(s):		COC No: 180-514836.	6.1	
Client Contact: Shipping/Receiving	Phone	E-Mail: Andy.Johi	E-Mail: Andy.Johnson@et.eurofinsus.com	@et.eu	rofinsu	s.com	Ste W	State of Origin. Missouri			Page: Page 1 of 1		
Company TestAmerica Laboratories, Inc.		A.	Accreditations Required (See note)	ns Requi	red (See	note):					Job # 180-1740	C-4	
Address 13715 Rider Trail North,	Due Date Requested: 6/17/2024					Analys	Analysis Requested	sted			Preservation Codes	n Codes:	
City Earth City State, Zip	TAT Requested (days):		1	<u> </u>		·							
mC, p3043 Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #		1										
Email:	#OM		(0)										
Project Name Asbury Pond CCR	Project #: 18023389	say) a	sa ol N							erenist			
Site	SSOW#	dues	v) as		Dd:					oo ja	Other:		
Sample Identification - Client ID (Lab ID)	Sample Date Time G≡	Sample Matrix ee Type (wrwater C=comp, creater G=grab) BTTTermenter()	Perform MS/M 9315_Ra226/Pre	9320_Ra228/Pre	49526Ra228_GF					otal Number		in the second	
	X	ation Code:	X							1			-alon
MW-5AR (180-174054-6)	5/14/24 11:35 Central	Water	×	×	×					4	_	Historical Review required, Run once,	n once,
							-						
				_		-							
				$\square$									
Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/leets/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.	In the ownership of method, analyte 8, a places the ownership of method, analyte 8, it is being analyzed; the samples must be ship the signed Chain of Custody attesting to said	accreditation compliance up bed back to the Eurofins Pit	on our sul tsburgh tat ttsburgh.	ocontrac	t laborate	Th Dries. Th Instruction	s sample ship	ment is fon ded. Any c	warded under c	hain-of-c	ustody. If the I status should I	aboratory does not cr	irrently 5 Pittsburgh
Possible Hazard Identification			Sample	e Disp	osal (	A fee m	ay be asse	ssed if :	amples ar	e retain	ed longer t	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	
Deliverable Requested: I, II, IV, Other (specify)	Primary Deliverable Rank: 2		Special	(eturn Instru	Keturn 10 Client	DC Rec	Special Instructions/QC Requirements:	Disposal By Lab ents:	ab	Arc	Archive For	Months	T
Empty Kit Relinquished by:	Date:	<u>L</u>	Time:					Method o	Method of Shipment:				T
Reinodstochby	Daymer 6-34 170.	12		Recover by		S ø	Jethington	gta C	Pate/Time:	2	2024 0	OF SA COMPANY	رے
removes the second s	Uale/Time Date/Time	Company Company	Rec	Received by: Received by:				,	Date/Time:			Company	
			Cool	er Temp	erature(s	) °C and	Cooler Temperature(s) <sup>o</sup> C and Other Remarks					Company	
Δ Yes Δ No			-										
				13	40	12	10 11	9	8	7	5 6	Ver: 06/08/202	2021

Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468	C	hain of	hain of Custody Record	Reco	rd				🐝 eurofins	<b>fins</b> Environment Testing
Client Information (Sub Contract Lab)	Sampter:		La	Lab PM: Johnson, Andy	hpu		Carrier Tracking No(s)	king No(s):	COC No. 180-514836.1	<b>1</b> .1
Client Contact Shipping/Receiving	Phone:		E-I Ar	E-Mail: Andy.Johns	on@et	E-Mail: Andy.Johnson@et.eurofinsus.com	State of Origin Missouri	jin:	Page: 1 of	2
Company: TestAmerica Laboratories, Inc.				Accredit	ations Re	Accreditations Required (See note)			Job # 180-174054-1	1-1
Address 13715 Rider Trail North,	Due Date Requested: 6/17/2024					Ana	Analvsis Reguested		Preservation Codes	on Codes:
City: Earth City	TAT Requested (days):	÷								
State. Zip. MO, 63045										
Phone 314-298-8566(Tel) 314-298-8757(Fax)	PO #			(0		7 108				
Email	# OM								5	
Project Name Asbury Pond NPDES	Project #: 18023389								nenist	
Site:	SSOW#								Other:	
Samola Idontification . Cliant ID /I ab ID)				erform MS/M	315_Ra226/Pre 320_Ra228/Pre	\$226K\$228_GF			o redmuN listo	
			Preservation Code:	Þ	+	-				Special Instructions/Note:
MW-2 (180-174054-1)	5/14/24	-	Water		×	×××			4 Historical Re	Historical Review required; Run once,
MW-3 (180-174054-2)	5/14/24	02:15 Central	Water	-	×	×			4 Historical Re	upidau twice Historical Review required; Run once,
MW-4 (180-174054-3)	5/14/24	09:25 Central	Water		×	×××			4 Historical Re	Historical Review required; Run once,
MW-5 (180-174054-4)	5/14/24	10:05 Central	Water		×	×××			4 Historical Re	Historical Review required; Run once, minoral twice
MW-5A (180-174054-5)	5/14/24	11:05 Central	Water		××	×			4 Historical Re	Historical Review required; Run once, unload twice
MW-5AR (180-174054-6)	5/14/24	11:35 Central	Water		×	×			4 Historical Re	Historical Review required; Run once, unload twice
MW-6 (180-174054-7)	5/14/24	12:20 Central	Water		×	×			4 Historical Re unload twice	Historical Review required; Run once, unload twice
MW-6A (180-174054-8)	5/14/24	12:55 Central	Water		×	×			4 Historical Re	Historical Review required; Run once, unload twice
MW-7 (180-174054-9)	5/14/24	01:35 Central	Water		×	×			4 Historical Re upload twice	Historical Review required, Run once, unload twice
Note Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/leststramatix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.	h places the ownership of rr rix being analyzed, the samp r the signed Chain of Custor	iethod, analyte & oles must be ship dy attesting to sai	accreditation compliar oed back to the Eurofi d compliance to Eurof	ce upon ou is Pittsburg ns Pittsburg	r subcon h laborat	tract laboratories.	This sample shipment is fu	rvarded under chair changes to accredit	-of-custody. If the Is ation status should t	aboratory does not currently be brought to Eurofins Pittsburgh
Possible Hazard Identification				San	nple Di	sposal ( A fee	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	samples are re	tained longer th	han 1 month)
Unconfirmed Deliverable Bennested: 1-11-11/ Other (cnarifit)	Drimon, Dolinovih		1		Retu	Return To Client	Disposal By Lab	Lab	Archive For	Months
Deriver and treducated. I, III, IV, Other (specify)	FIIIIIaiy Deliverable Kank.	e Kank: ∠		spe	cial Ins	special Instructions/QC Requirements	(equirements:			
Empty Kit Relinquished by:		Date:		Time:			Method	Method of Shipment:		
Relinquished by:	Date/Time:	1201 M	Company	NE	Received by:	17	Wedningter	PART Pate/Time:	7 2024 O&	Company Company
Reinquished by:	Date/Time:		Company		Received by	by:		Date/Time:		Company
Custody Seals Intact: Custody Seal No∷ ∆ Yes ∆ No					Cooler Te	amperature(s) °C	Cooler Temperature(s) °C and Other Remarks.			
						<b>1</b> 2	9 1 1 1	8	6	Ver: 06/08/2021
						2	0	3		

**Eurofins Pittsburgh** 

1

Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468	Ch	ain of Custody Record	score	T							el Second	🔅 eurofins	Environment Testing	sting
Client Information (Sub Contract Lab)	Sampler:	Lab PM Johnso	on, And					Carrier Tr	Carrier Tracking No(s)		COC N 180-6	COC No: 180-514836.2		
Client Contact. Shipping/Receiving	Phone:	E-Mail: Andy	E-Mail: Andy Johnson@et.eurofinsus.com	@et.el	urofins	us.con		State of Origin: Missouri	irigin: i		Page	Page Page 2 of 2		Τ
Company TestAmerica Laboratories, Inc.		4	Accreditations Required (See note)	ons Requ	lired (Se	te note)					Job #	Job #: 180-174054-1		Τ
Address: 13715 Rider Trail North,	Due Date Requested: 6/17/2024					Anal	/sis R	Analysis Requested			Prese	Preservation Codes	des:	Τ
City Earth City State, Zin MO 63045	TAT Requested (days):			<b> </b>										
Phone 314-298-8566(Tel) 314-298-8757(Fax)	# 04	Ì												
Email	WO #:		(0)								-			
Project Name Asbury Pond NPDES	Project #: 18023389		N 10 SE								รางกเธ			
Site	#MOSS		er) as		Эd						other:			
Sample Identification - Client ID (Lab ID)	Sample Sample Cacomp Sample Date Time Gacraby	Matrix (w-water, s=solid, O=waste/ol, BT=Tlatue A-arr)	Field Filtered S Perform M/SM M/SM m S15_Ra226/Pre	9320_Ra228/Pre	10_8226Ra228_GF						otal Number o	Spacial Is	Crossis I Instructional Mater	
	X	ation Code:	X	+										
DUPLICATE (AT MW-5) (180-174054-10)	5/14/24 10:15 Central	Water	×	×	×	-					4 Histor	ical Review	Historical Review required, Run once,	
FIELD BLANK (180-174054-11)	5/14/24 12:30 Central	Water	×	×	×						4 Histor	Historical Review	Historical Review required; Run once,	
									_					
Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/feats/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.	places the ownership of method, analyte & accre theng analyzed, the samples must be shipped b the signed Chain of Custody attesting to said con	ditation compliance u ack to the Eurofins Pi ipliance to Eurofins P	pon our su ttsburgh la ittsburgh.	ubcontra iboratory	ct labora / or othe	itories.	This samplions will b	e shipment is s provided. <i>F</i>	forwardec	under cha	in-of-custody.	If the laborato hould be brou	ory does not currently ight to Eurofins Pittsbu	Чб
Possible Hazard Identification Unconfirmed			Samp	le Disp	le Disposal ( A I	A fee	may be	assessed	if samp	les are I	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	ger than 1	month)	1
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2		Specia	I Instru	Ictions	/QC R	Special Instructions/QC Requirements	<u>Disposal by Lab</u> ents:	sy Lab		Archive For		Months	Т
Empty Kit Relinquished by:	Date:		Time:					Meth	Method of Shipment	nent:				Т
Relingers of by Relinquisheadby	Devertime Jy 1700	Company H	Rec	Received by:	led by:		The second	Werdhingte	2	Date/Time:	7 2024	0280	Company	ТТ
Relinquished by:	Date/Time:	Company	Rec	Received by:				>	Dat	Date/Time:			Company Company	Т
Custody Seals Intact: Custody Seal No. A Yes A No			Š	oler Tem	perature	(s) °C al	Cooler Temperature(s) <sup>o</sup> C and Other Remarks	emarks						
					13	12	11	10	9	8	6	5	Ver: 06/08/2021	

### Login Sample Receipt Checklist

### Client: Midwest Environmental Consultants

### Login Number: 174054 List Number: 1 Creator: Abernathy, Eric L

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

List Source: Eurofins Pittsburgh

### Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

### Login Number: 174054 List Number: 2 Creator: Worthington, Sierra M

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 180-174054-2

List Source: Eurofins St. Louis

List Creation: 05/17/24 02:07 PM



**APPENDIX 4** 

**Statistical Analysis** 



July 9, 2024

Submitted via Email

Mr. Lindsey R. Henry, PE Midwest Environmental Consultants 2009 E. McCarty St., Suite 2 Jefferson City, MO 65101

### Re: Groundwater Statistical Analysis Results Asbury Power Plant – Coal Combustion Residuals (CCR) Impoundment United States Environmental Protection Agency Program

Dear Mr. Henry:

Jett Environmental Consulting is providing the results of the groundwater statistical analysis for the May 2024 event at the Asbury Power Plant – CCR Impoundment.

If you have any questions or comments, please contact me at steve.jett@jettenviro.com or 314-496-4654.

Sincerely,

Steve Jett, P.G. Owner

Attachments:

- Table 1 SSIs Observed During May 2024 Sampling Event 1 - Time Series Graphs – Inorganics
- Time Series Graphs Inorga
   Trend Testing Inorganics
- 3 Inter-Well Prediction Limits
- 4 Statistical Power Curves

MITES Don

Travis Doll Senior Geologist

#### Inorganics – Times Series & Trend Testing

Time Series graphs were generated for each of the inorganic constituents. The time series graphs are included in **Attachment 1**.

The inorganic constituents with results above the laboratory reporting limits were analyzed with Sanitas<sup>™</sup> to determine if statistically significant increasing or decreasing trends exist utilizing the Sen's Slope / Mann-Kendall trend test. Trends were based on a 98% confidence level (two tailed). The following constituents exhibited statistically significant increasing trends: boron (MW-5A), calcium (MW-5A, MW-6A), chloride (MW-5, MW-5A, MW-6), fluoride (MW-7), sulfate (MW-5A, MW-6A), and total dissolved solids (MW-5A, MW-6A). Of the increasing trends, only one instance was for an upgradient well (fluoride at MW-7); however, fluoride was reported as non-detect over the last eight rounds of background sampling. All other constituents were either not trending or had a statistically significant decreasing trend. The trending data have only been reviewed at this time. No trending data was removed before performing the inter-well prediction interval analysis. The trend testing results are included in **Attachment 2**.

### Inorganics – Inter-Well Prediction Limits

Statistical Analysis was performed on the inorganic constituents and metals. Prediction interval analyses compare one or more observations to a limit set by background data. Background data consists of semi-annual groundwater tests from the upgradient wells (MW-2, MW-3, and MW-7) between January 2016 and May 2023 (20 events). Interwell analyses compare observations from upgradient background wells and their relation to the observations for the downgradient wells. Intra-well analyses compare background observations to current observations of the same well.

Sanitas<sup>™</sup> was used to perform the statistical analyses. For most constituents, non-parametric inter-well prediction intervals were performed due to non-detectable levels in more than 50 percent of the background samples or if data were not normally distributed. The Sanitas<sup>™</sup> inter-well prediction limit outputs are included in **Attachment 3**.

**Table 1** lists the parameters that exhibited a statistically significant increase (SSI) during the May 2024 sampling event, the associated monitoring wells, inter-well prediction limit, and the measured concentration. Also included on the table is a comparison to any established USEPA National Primary Drinking Water Standard - Maximum Contaminant Level (MCL).

### **Statistical Power Curves**

A statistical power curve graph has been prepared to allow comparisons between the current monitoring program and USEPA-recommended standards. Under the USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (March 2009), inter-well prediction limits are constructed to have a site-wide false positive rate (SWFPR) of 10% annually, or 5% per event for a semi-annually sampled facility. **Attachment 4** presents the power curves for the facility's monitoring program.

### Results Summary

Boron (MW-5A) and total dissolved solids (MW-5A) exhibited confirmed SSIs during the May 2024 event.

No result exhibited an initial SSI during the May 2024 event.

Of the SSIs, none have an established MCL. During the November 2023 sampling event, an initial SSI was detected for chloride (MW-5A), which was not confirmed as an SSI during the May 2024 sampling event.

	Tabl	e 1			
SSI Obs	erved During Ma	y 2024 Sampling	j Event		
Constituent (units)	Well	Initial vs. Confirmed	Statistical Limit	Result	MCL
Boron (mg/L)	MW-5A	Confirmed	0.9	2.1	NE
Total Dissolved Solids (mg/L)	MW-5A	Confirmed	3100	3200	NE

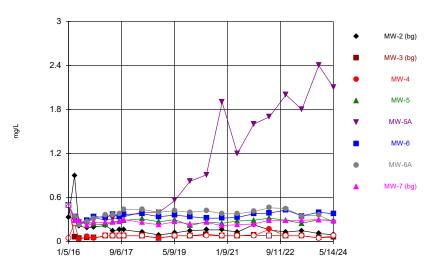
NE = Not Established.

MCL = USEPA National Primary Drinking Water Standard - Maximum Contaminant Level

# ATTACHMENTS

# **ATTACHMENT 1**

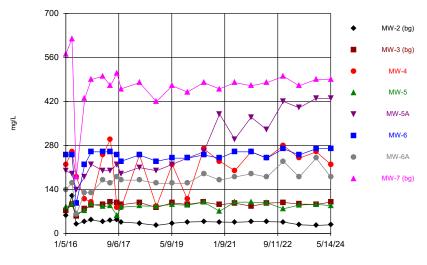
TIME SERIES GRAPHS INORGANICS Sanitas<sup>114</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



Boron

Time Series Analysis Run 7/3/2024 8:43 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG

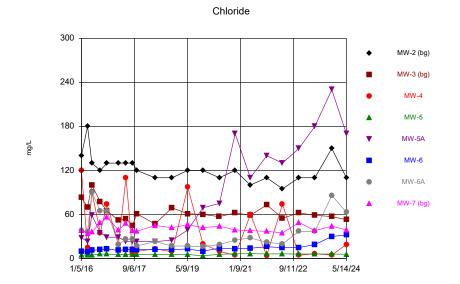
Calcium



 Time Series
 Analysis Run 7/3/2024 8:43 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant

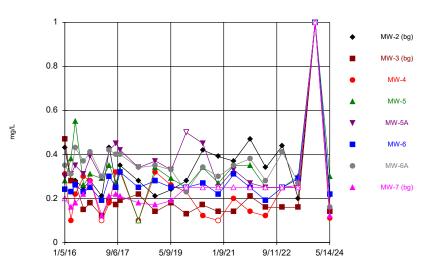
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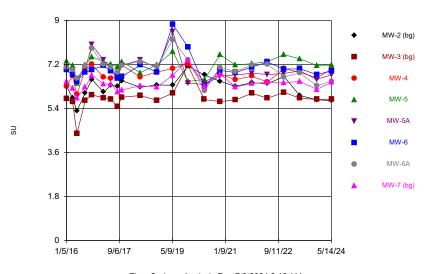


Time Series Analysis Run 7/3/2024 8:43 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.

Fluoride



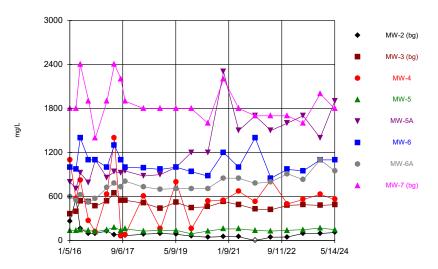


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 Time Series
 Analysis Run 7/3/2024 8:43 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant

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Sulfate

 Time Series
 Analysis Run 7/3/2024 8:43 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant

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Total Dissolved Solids 4000 MW-2 (bg) ٠ MW-3 (bg) 3200 MW-4 MW-5 2400 MW-5A V mg/L MW-6 1600 MW-6A MW-7 (bg) 800 0 1/5/16 9/6/17 5/9/19 1/9/21 9/11/22 5/14/24

 Time Series
 Analysis Run 7/3/2024 8:43 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant

# **ATTACHMENT 2**

TREND TESTING INORGANICS

## **Trend Test**

Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Printed 7/3/2024, 8:47 AM

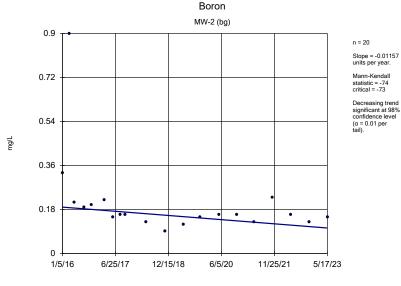
,		<b>,</b>			,						
Constituent	Well	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	Method
Boron (mg/L)	MW-2 (bg)	-0.01157	-74	-73	Yes	20	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	1.4e-10	44	73	No	20	60	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	52	73	No	20	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	0	13	73	No	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.2069	149	73	Yes	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	0.004198	36	73	No	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	0.014	59	73	No	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	0	-22	-73	No	20	5	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-1.025	-60	-73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	1.323	60	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	5.128	33	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	1.7	51	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	29.17	136	73	Yes	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	0	30	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	7.097	108	73	Yes	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	0	-12	-73	No	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	-4.251	-121	-73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	-1.609	-43	-73	No	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	-3.614	-74	-73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	0.1787	93	73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	17.84	105	73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	0.7246	126	73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	-1.923	-41	-73	No	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	-0.08072	-10	-73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	0.008487	22	73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.006744	-61	-73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.006169	-21	-73	No	20	20	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.004548	-27	-73	No	20	5	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.007672	-37	-73	No	20	15	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.0007283	23	73	No	20	10	n/a n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	-0.009747	-49	-73	No	20	0	n/a n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	0.008083	77	73	Yes	20	45	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	0.05735	59	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	0.02709	52	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.0217	19	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.02125	34	73	No	20	0	n/a n/a	n/a	0.02	NP
pH (SU)	MW-5A	-0.03798	-29	-73	No	20	0	n/a n/a	n/a	0.02	NP
pH (SU)	MW-6	0.03219	46	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	-0.008695	-9	-73	No	20	0	n/a n/a	n/a	0.02	NP
pH (SU)		0.03464	-9 52	-73	No	20	0	n/a	n/a	0.02	NP
	MW-7 (bg) <b>MW-2 (bg)</b>										
Sulfate (mg/L)		-16.16	-122	-73	Yes No	<b>20</b>	<b>5</b> 0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	-6.48	-24 -7	-73		20 20	0	n/a n/a	n/a	0.02	NP NP
Sulfate (mg/L)	MW-4	-6.658		-73	No			n/a	n/a	0.02	
Sulfate (mg/L)	MW-5	0	-3	-73	No	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	127.3	132	73	Yes	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-18.61	-57	-73	No	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	34.49	108	73	Yes	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7 (bg)	-33.2	-70	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-16.07	-127	-73	Yes	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	5.317	19	73	No	20	0	n/a	n/a	0.02	NP

# **Trend Test**

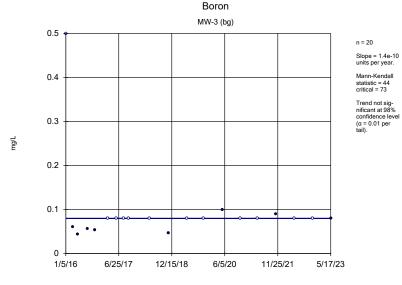
<u>Constituent</u>	Well	Slope	Calc.	<u>Critical</u>	<u>Sig.</u>	N	<u>%NDs</u>	Normality	<u>Xform</u>	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	-6.971	-7	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-3.205	-42	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	195.1	156	73	Yes	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	0	-4	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	50.05	113	73	Yes	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	0	-48	-73	No	20	0	n/a	n/a	0.02	NP

Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Printed 7/3/2024, 8:47 AM

Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG

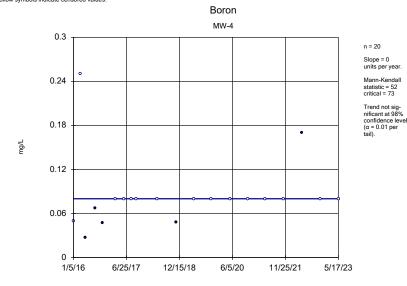


Sanitas<sup>te</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.

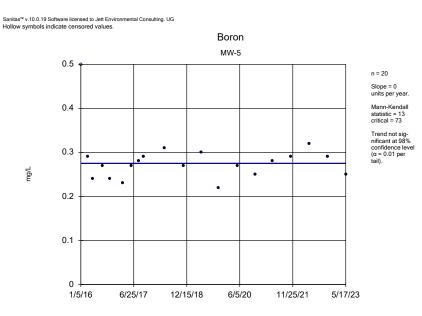


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

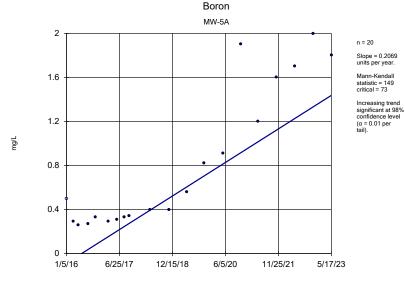
Sanitas<sup>114</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



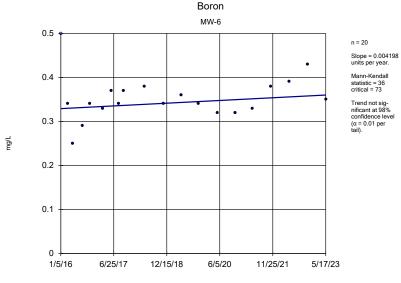
Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant



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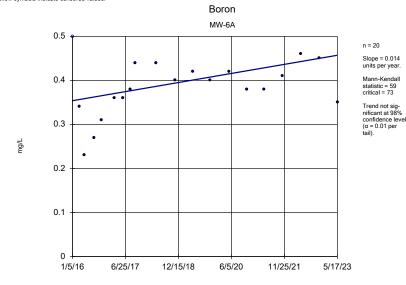


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



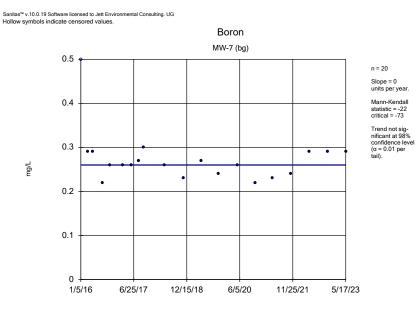
Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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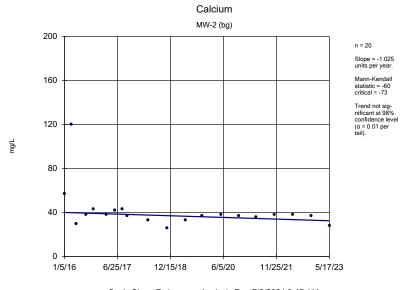


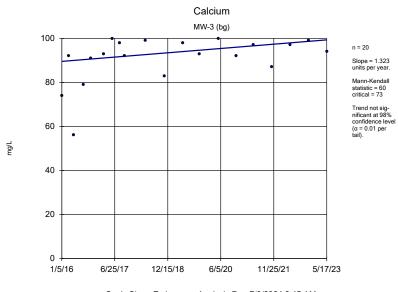
 Sen's Slope Estimator
 Analysis Run 7/3/2024 8:45 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant



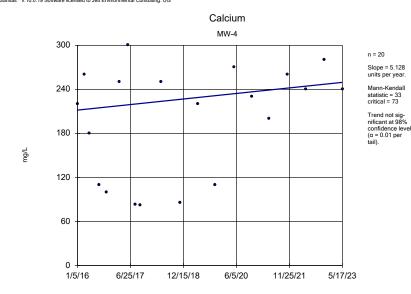
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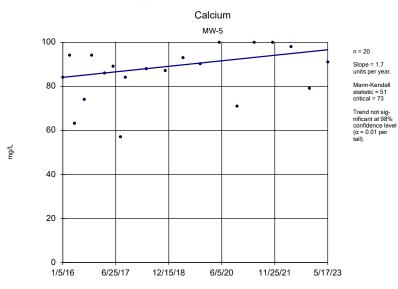


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

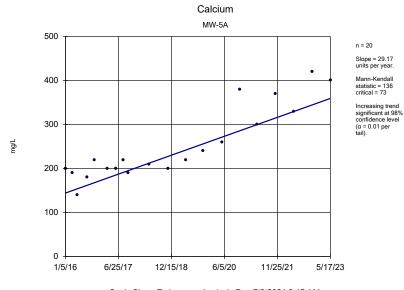
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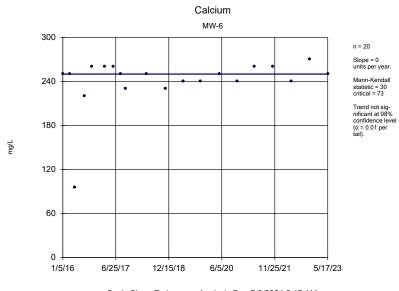


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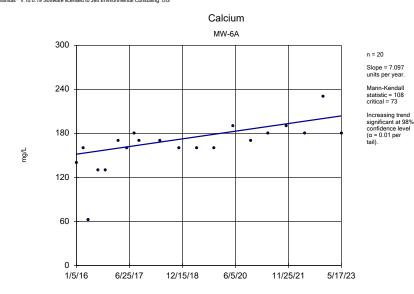
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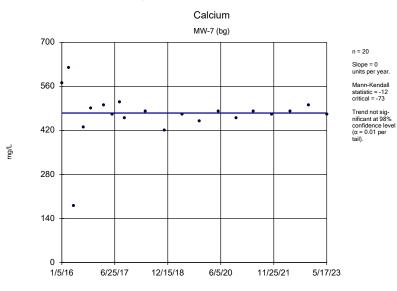


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

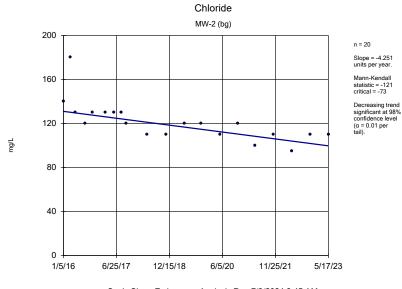
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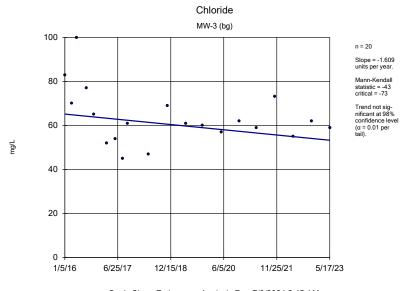


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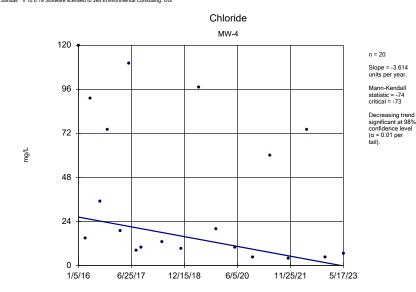




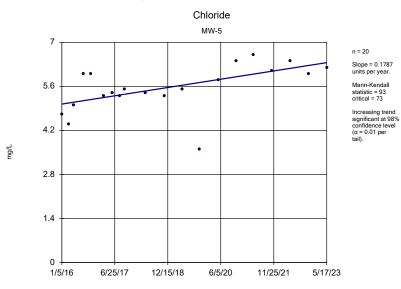


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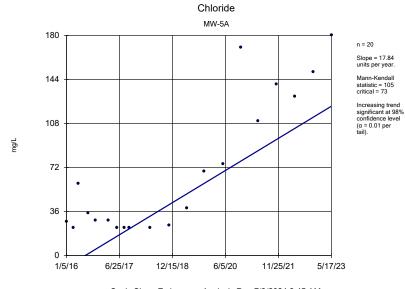
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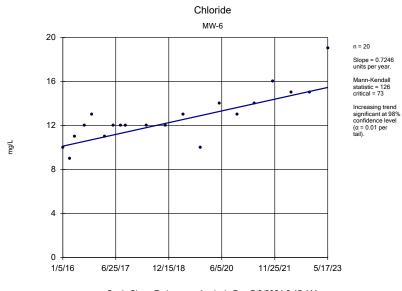


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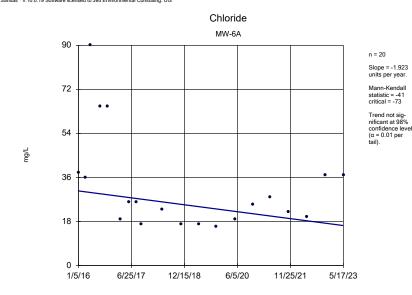
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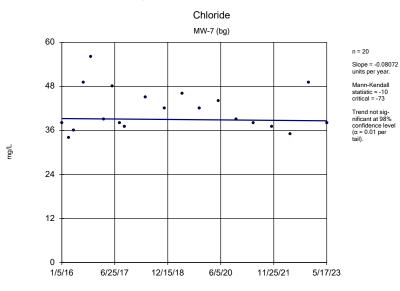


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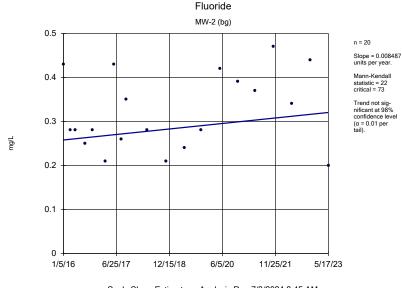
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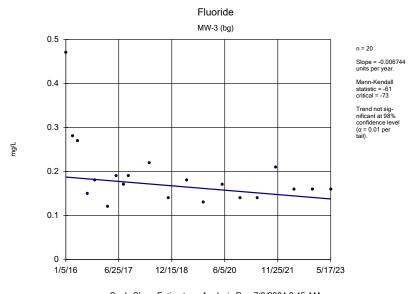


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG



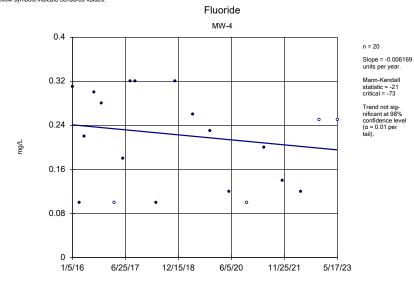
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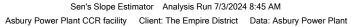


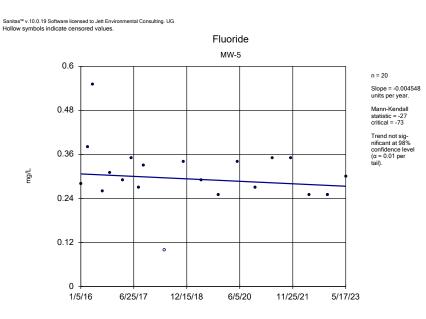


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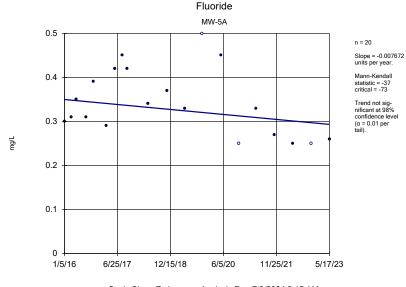
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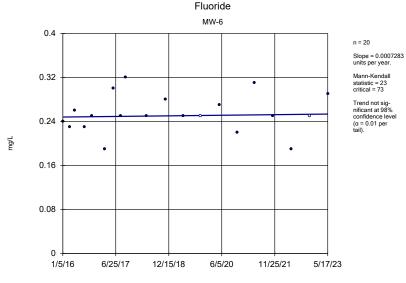




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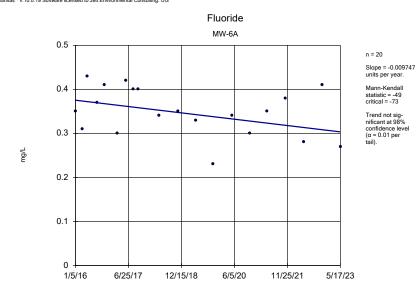


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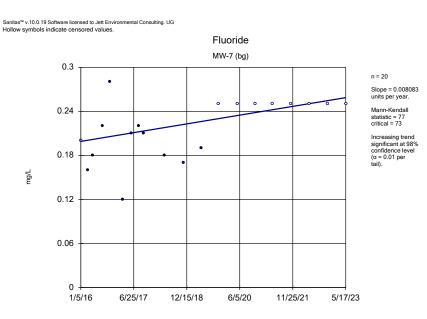
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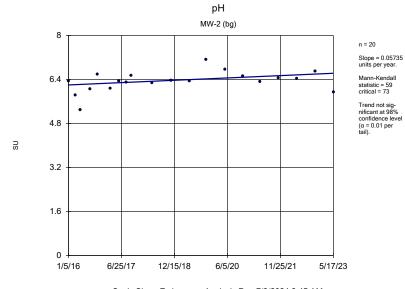


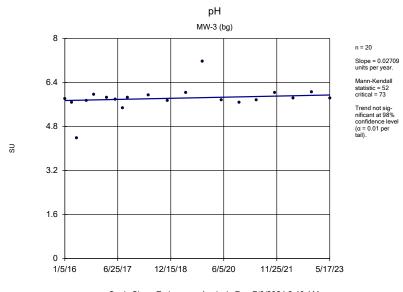
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 Analysis Run 7/3/2024 8:45 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant



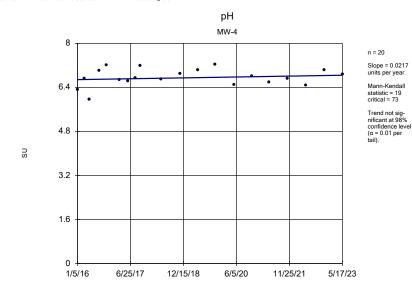




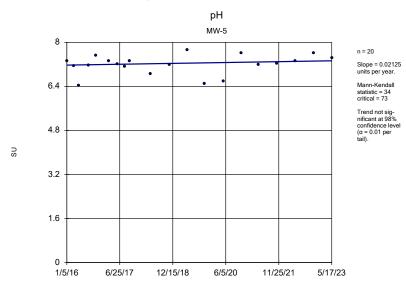


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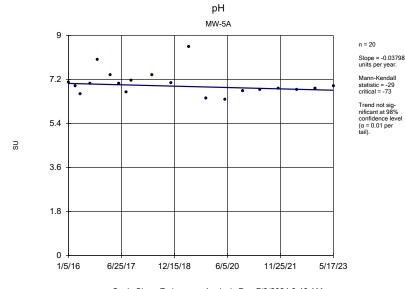
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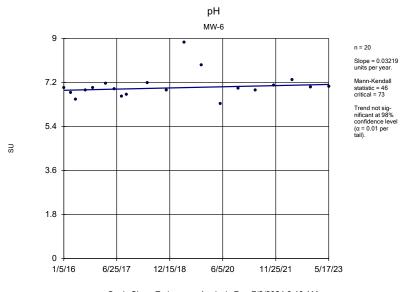


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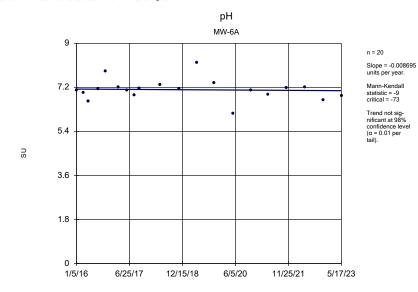




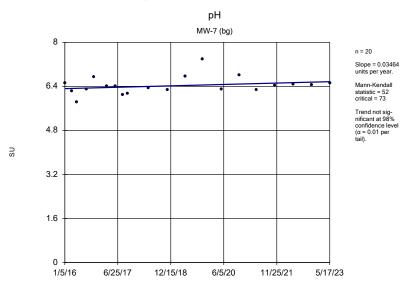


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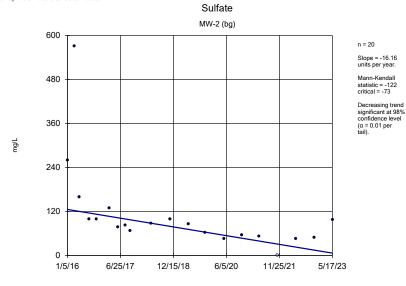


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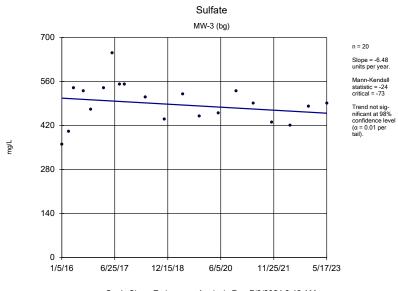


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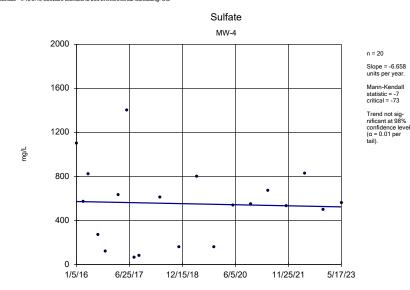


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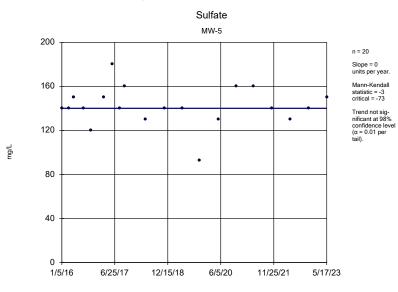


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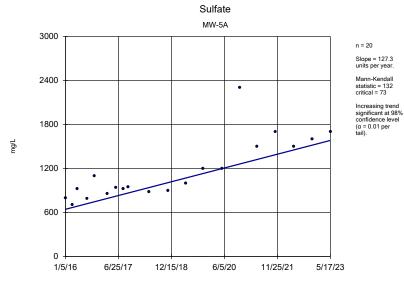


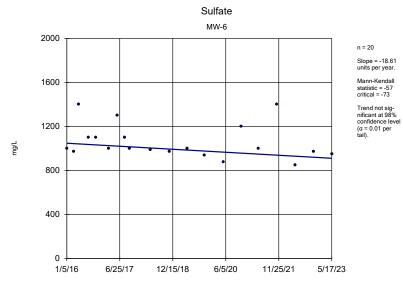
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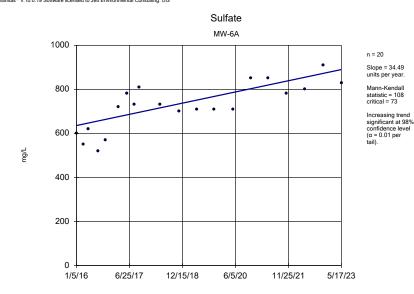
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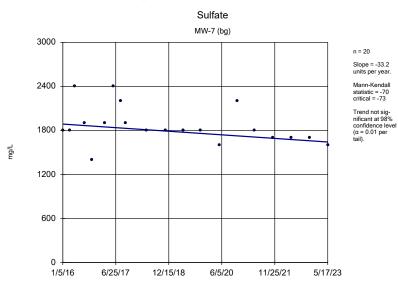


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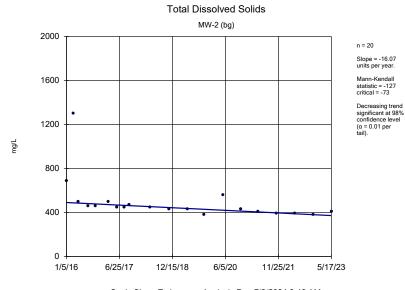
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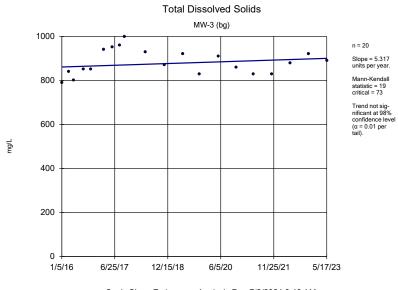


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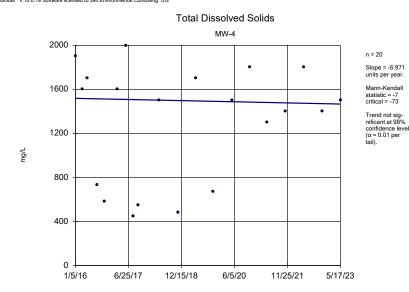




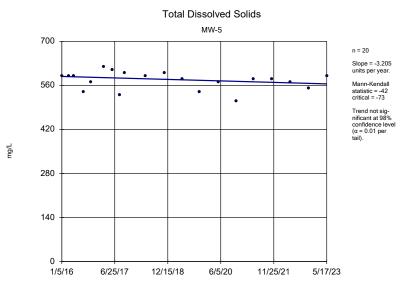


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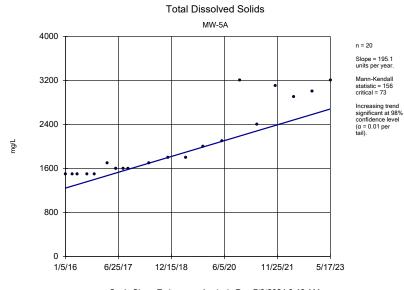
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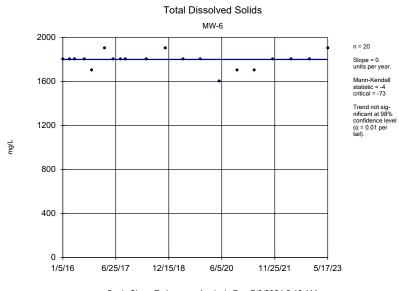


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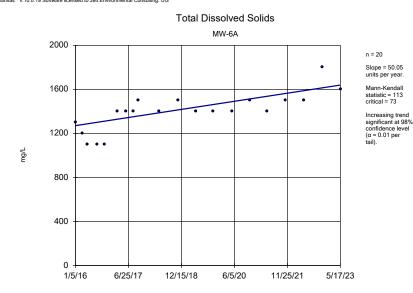




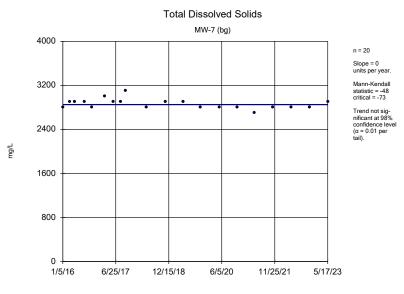


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG



# **ATTACHMENT 3**

**INTER-WELL PREDICTION LIMITS** 

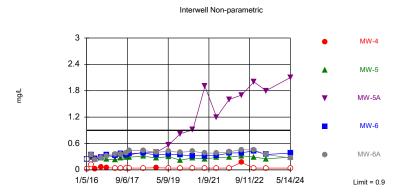
## **Prediction Limit**

Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Printed 7/3/2024, 8:53 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	Std. Dev.	<u>%NDs</u>	ND Adj.	Transform	n <u>Alpha</u>	Method
Boron (mg/L)	MW-4	0.9	n/a	5/14/2024	0.04ND	No	63	n/a	n/a	20.63	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Boron (mg/L)	MW-5	0.9	n/a	5/14/2024	0.29	No	63	n/a	n/a	20.63	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Boron (mg/L)	MW-5A	0.9	n/a	5/14/2024	2.1	Yes	63	n/a	n/a	20.63	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Boron (mg/L)	MW-6	0.9	n/a	5/14/2024	0.38	No	63	n/a	n/a	20.63	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Boron (mg/L)	MW-6A	0.9	n/a	5/14/2024	0.27	No	63	n/a	n/a	20.63	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-4	620	n/a	5/14/2024	220	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5	620	n/a	5/14/2024	89	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5A	620	n/a	5/14/2024	430	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6	620	n/a	5/14/2024	270	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6A	620	n/a	5/14/2024	180	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-4	180	n/a	5/14/2024	19	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5	180	n/a	5/14/2024	5.8	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5A	180	n/a	5/14/2024	170	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6	180	n/a	5/14/2024	32	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6A	180	n/a	5/14/2024	63	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Fluoride (mg/L)	MW-4	0.4305	n/a	5/14/2024	0.11	No	63	-1.6	0.4118	14.29	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-5	0.4305	n/a	5/14/2024	0.3	No	63	-1.6	0.4118	14.29	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-5A	0.4305	n/a	5/14/2024	0.21	No	63	-1.6	0.4118	14.29	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-6	0.4305	n/a	5/14/2024	0.22	No	63	-1.6	0.4118	14.29	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-6A	0.4305	n/a	5/14/2024	0.16	No	63	-1.6	0.4118	14.29	None	ln(x)	0.001504	Param Inter 1 of 2
pH (SU)	MW-4	7.39	4.37	5/14/2024	7	No	63	n/a	n/a	0	n/a	n/a	0.0009652	NP Inter (normality) 1 of 2
pH (SU)	MW-5	7.39	4.37	5/14/2024	7.17	No	63	n/a	n/a	0	n/a	n/a	0.0009652	NP Inter (normality) 1 of 2
pH (SU)	MW-5A	7.39	4.37	5/14/2024	6.78	No	63	n/a	n/a	0	n/a	n/a	0.0009652	NP Inter (normality) 1 of 2
pH (SU)	MW-6	7.39	4.37	5/14/2024	6.93	No	63	n/a	n/a	0	n/a	n/a	0.0009652	NP Inter (normality) 1 of 2
pH (SU)	MW-6A	7.39	4.37	5/14/2024	6.51	No	63	n/a	n/a	0	n/a	n/a	0.0009652	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-4	2400	n/a	5/14/2024	560	No	63	n/a	n/a	1.587	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5	2400	n/a	5/14/2024	150	No	63	n/a	n/a	1.587	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5A	2400	n/a	5/14/2024	1900	No	63	n/a	n/a	1.587	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6	2400	n/a	5/14/2024	1100	No	63	n/a	n/a	1.587	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6A	2400	n/a	5/14/2024	950	No	63	n/a	n/a	1.587	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-4	3100	n/a	5/14/2024	1300	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-5	3100	n/a	5/14/2024	570	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-5A	3100	n/a	5/14/2024	3200	Yes	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-6	3100	n/a	5/14/2024	1900	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-6A	3100	n/a	5/14/2024	1700	No	63	n/a	n/a	0	n/a	n/a	0.0004826	NP Inter (normality) 1 of 2

 $\label{eq:source} Sanitas^{**} v.10.0.19 \ Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.$ 

Exceeds Limit: MW-5A



Boron

Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. 20.63% NDs. Annual perconstituent alpha = 0.004816. Individual comparison alpha = 0.0004826 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

#### Prediction Limit Analysis Run 7/3/2024 8:52 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

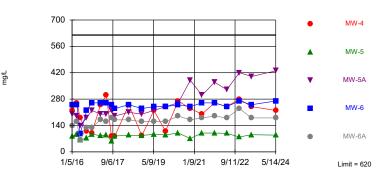


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Hollow symbols indicate censored values.

Within Limit

Calcium



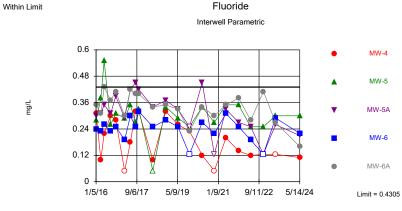
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. Annual per-constituent alpha = 0.004816. Individual comparison alpha = 0.004826 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 7/3/2024 8:52 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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Chloride Within Limit Interwell Non-parametric 200 MW-4 160 MW-5 120 ng/L MW-5A 80 MW-6 40 MW-6A 0 1/5/16 9/6/17 5/9/19 1/9/21 9/11/22 5/14/24 Limit = 180

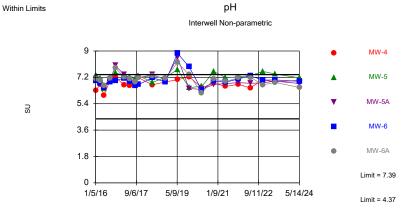
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. Annual per-constituent alpha = 0.004816. Individual comparison alpha = 0.0004826 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.



Background Data Summary (based on natural log transformation): Mean=-1.6, Std. Dev.=0.4118, n=63, 14.29% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9547, critical = 0.947. Kappa = 1.838 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001504. Comparing 5 points to limit.

Prediction Limit Analysis Run 7/3/2024 8:52 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

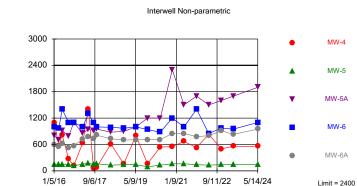
Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 63 background values. Annual perconstituent alpha = 0.009631. Individual comparison alpha = 0.0009652 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence. Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG

Within Limit

mg/L

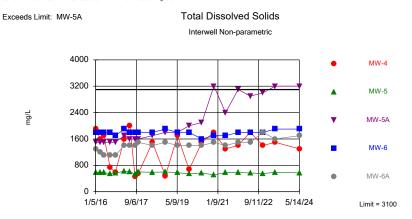


Sulfate

Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. 1.587% NDs. Annual perconstituent alpha = 0.004816. Individual comparison alpha = 0.0004826 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 7/3/2024 8:52 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Prediction Limit Analysis Run 7/3/2024 8:52 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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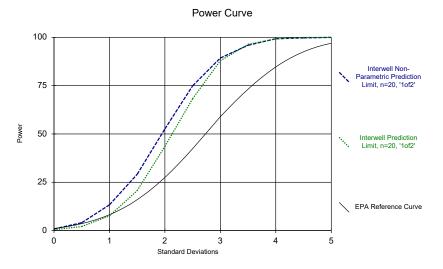


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 63 background values. Annual per-constituent alpha = 0.004816. Individual comparison alpha = 0.0004826 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

## **ATTACHMENT 4**

STATISTICAL POWER CURVES

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Analysis Run 7/3/2024 9:40 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant



**APPENDIX B** 

November 2024 Sampling Event

# Groundwater Monitoring, Sampling & Statistics Per EPA CCR Rule (CFR § 257.90-257.98)

## **November 2024 Sampling Event**

# Asbury Power Plant CCR Impoundment Jasper County, MO

January 2025

Prepared For:

The Empire District Electric Company 602 S. Joplin Avenue Joplin, Missouri 64801







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#### **1.0 INTRODUCTION**

The EPA Coal Combustion Residual Regulations (40 CFR Part 257) (CCR Rule) require groundwater monitoring of CCR impoundments. This Asbury Power Plant CCR impoundment groundwater monitoring sampling report is in accordance with the EPA CCR Rule. In accordance with the EPA CCR Rule (§ 257.90-.98) the status of the Groundwater Monitoring was placed on-line October 17, 2017, as required by the EPA CCR rule. Empire notified the Missouri Department of Natural Resources (MDNR) "State Director" via e-mail when this document was posted on-line, as required in the CCR rule.

The EPA CCR Rule requires the annual groundwater report to be prepared by January 31<sup>st</sup> of the following year. The first report was due January 31, 2018. This report was prepared in general accordance with the EPA CCR Rule for groundwater requirements. These regulations outline groundwater monitoring requirements and data evaluation methods. The annual groundwater report for the 2024 sampling events will be posted on-line within 30 days of placement in the operating record and the State Director will be notified.

A Site Characterization Workplan was submitted to the MDNR. On November 2, 2017, the facility received approval from MDNR that the site had been properly characterized and the facility could begin groundwater monitoring (included in **Appendix 1**).

The purpose of the groundwater monitoring system is to monitor the ground water quality surrounding the facility and to evaluate potential impacts and/or releases from facility operations. Eight rounds of background groundwater data were collected from January 2016 to August 2017. After the background data is obtained and after the first semi-annual sampling event, a reduced sampling frequency replaced the quarterly events to semi-annual events. This reduced sampling frequency will generally be completed during the months of May and November. Statistical analysis for EPA Appendix III results began after the first semi-annual sampling event which was collected on October 4, 2017. This analysis was to determine if a statistically significant increase (SSI) has occurred. If an SSI is verified, additional evaluation is required to determine if the SSI was caused by the CCR impoundment.

The Asbury Power Plant was retired on March 1, 2020. Residual fly ash, bottom ash, and other related wastes were placed in the impoundment area until April 1, 2021, as part of the decommissioning activities. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

On November 11 and 12, 2024, a semi-annual sampling event was conducted per the EPA CCR Rule (§ 7.90-.98). The original nine (9) groundwater-monitoring wells were sampled and analyzed for the EPA Appendix III. In addition, MW-5AR sampling began in May 2023. MW-5AR was installed in April 2023 in response to the Alternative Source Demonstration (ASD) which was completed in April 2021. The ASD was placed in the operating record. After review of the first semi-annual groundwater sampling event analytical results completed in October 2017, the constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan in accordance with the EPA CCR Rule. For quality assurance and quality control



measures, a duplicate sample at MW-5 was taken. These samples were preserved and submitted directly to the laboratory.

This report is a summary of the November 2024 sampling event and the findings of the statistical analysis of the results of the groundwater monitoring program at the Asbury Power Plant CCR Impoundment. Specific information about each sampling event can be obtained from the individual report which is part of the Asbury Operating Record.



#### 2.0 SITE LOCATION

The site occupies the north half of Section 17, Township 30 North, and Range 33 West on the Asbury 7.5-Minute Quadrangle Map as seen in **Figure 1**. The site is located approximately 5.5 miles north-northeast of Asbury, Missouri, about 14 miles north-northwest of Joplin, Missouri. A map showing the locations of the monitoring wells is in **Figure 2**.

#### 2.1 History

In March 1996, five (5) groundwater monitoring wells, MW-1 through MW-5, were installed around the perimeter of the Asbury Power Plant CCR impoundment. Monitoring wells MW-1, MW-2 and MW-3 were installed to a total depth of between 27.0 to 28.5 feet below ground surface (bgs). Monitoring wells MW-4 and MW-5 were installed to a total depth of 48 feet bgs. Each of the five monitoring wells was equipped with 10.0-foot well screens. The five wells were then developed, purged, and sampled in 1996.

In 2003, two (2) additional groundwater monitoring wells were installed and identified as MW-6 and MW-7. Both wells had 2-inch diameter PVC well casings installed to an approximate total depth of 44 feet below ground surface. Both wells were installed with an above ground steel protective cover. No other construction details such as well screen lengths were available for these two (2) wells. In December 2015, two (2) additional groundwater monitoring wells were installed and identified as MW-5A and MW-6A.

In April 2023, monitoring well MW-5AR was installed as proposed in the Alternative Source Demonstration completed April 2021. As part of this well installation maintenance of the entire groundwater monitoring well system was also completed. This included the installation of new concrete well pads, protective covers, and protective bollards. The well riser pipe was also modified for well cap installation. New as-built survey data was obtained and will be utilized in this and future reports. MW-5A will not be removed until after the eight (8) background samples have been collected for MW-5AR.

All wells are registered with MDNR – Missouri Geological Survey Program.

The Asbury Power Plant was retired on March 1, 2020, but residual fly ash, bottom ash, and other related wastes were placed in the impoundment area as part of the decommissioning activities. The facility is now known as the Asbury Renewable Operations Center. On April 1, 2021, a Notification of Intent to Close CCR Surface Impoundment was posted to the facility's website and the State Director (MDNR) was notified. Dewatering of the impoundment was occurring during the first part of 2022. CCR grading, excavation and relocation activities began in June of 2022. Closure of the CCR impoundment was completed on January 23, 2023.

#### 2.2 Site Geology

Drilling and subsurface investigation activities at the Site and as part of the MDNR approved CCR landfill Detailed Site Investigation (DSI) for the adjacent landfill area identified three (3) primary geologic units at the Site. These geologic units include the surficial soil layer, Warner Sandstone (uppermost aquifer), and Riverton Shale (confining unit). The information presented herein includes the primary elements of a site characterization work plan consistent with the MDNR guidance.



<u>Surficial Soil</u>. Soils at the site consist of a surficial unit of cohesive soils (e.g., CL, SC, ML, and CH) underlain by Pennsylvanian-age bedrock. Soil thickness at the Site ranges from approximately 15-25 feet.

<u>Warner Sandstone</u>. The Warner Sandstone (Sandstone) is the uppermost bedrock unit in the south portion of the Site. In the north area of the Site, the Sandstone is overlain by the Riverton Shale (Shale). Based on the DSI information, the Sandstone and Shale can occur as alternating layers. The Sandstone and Shale are gradational in places and transition from shaley sandstone to sandy shale. According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Warner Sandstone formation is described as follows: "Generally, the lower part is interbedded, very fine-grained sandstone and claystone. The upper part is largely medium bedded to massive channel fill sandstone. In places, the Warner consists primarily of shale and claystone, with only minor amounts of sandstone" and "ranges in thickness from 0 to 15m (49.2 ft.)."

The Sandstone is more than 25-30 feet thick in places and is generally medium hard and thin to medium bedded with occasional shale partings. The degree of induration of the Sandstone varies and generally increases with depth. Slug tests performed at selected DSI piezometers screened in the Sandstone exhibited hydraulic conductivities ranging from approximately 1.3x10-4 cm/sec to 5.9x10-6 cm/sec. The slug test results are consistent with values for sandstone and shaley sandstone. The groundwater gradient is towards the east and Blackberry Creek.

<u>Riverton Shale</u>. Layers of the Riverton Shale (Shale) exhibited thicknesses ranging from approximately one foot to more than 10 feet. The Shale is generally dark gray to light gray. The Shale is mainly thin bedded with hardness ranging from soft to hard. Six packer tests were performed during the DSI to assess the hydraulic conductivity of the Shale. The packer test results ranged from approximately  $3.2 \times 10^{-6}$  cm/sec to  $4.9 \times 10^{-8}$  cm/sec. The packer test data indicates that the Shale is an effective confining unit.

According to the MDNR publication on the Pennsylvanian Subsystem in Missouri, the Riverton Shale formation is described as "dark gray to black, fine-grained, relatively brittle shale and contains as many as three coal beds, each of which is underlain by underclay" and "varies in thickness from a featheredge to more than 90 feet".

<u>Unnamed Coal</u>. The Shale includes coal seams in places that range in thickness from a few inches to approximately 1.5 feet. The coal is generally black to dark gray.

#### 2.3 Groundwater Monitoring Network Design

The groundwater monitoring system for the CCR impoundment consists of nine (9) groundwater monitoring wells plus the recently installed MW-5AR. Two (2) wells are considered upgradient. Two (2) wells are considered sidegradient; one well is only monitored for groundwater elevation. The remaining five (5) wells are considered downgradient along with the recently installed MW-5AR.

The groundwater monitoring wells (MWs) at the Asbury Power Plant is equipped with individual dedicated poly tubing to be connected to a peristaltic pump/controller at the surface. Low-flow, micro-purge and sampling techniques and technology are utilized to collect groundwater samples from the subject wells. The groundwater sampling procedures are discussed in further detail below.



#### 2.4 Groundwater Monitoring Network

The locations of the monitoring wells are shown in **Figure 2**. The groundwater monitoring system for the site consists of the following monitoring wells:

- MW-1 Sidegradient (water level only)
- MW-2 Upgradient
- MW-3 Upgradient
- MW-4 Downgradient
- MW-5 Downgradient
- MW-5A Downgradient
- MW-5AR Downgradient (background sampling)
- MW-6 Downgradient
- MW-6A Downgradient
- MW-7 Sidegradient

#### **2.5 Seasonal Variation**

Historical groundwater elevation data has been limited. However, adequate lengths of well screen have been utilized during the construction of the wells to accommodate typical seasonal groundwater elevation variations seen in southwest Missouri.

#### 2.6 Groundwater Flow Direction

Historically, the seasonally high potentiometric surface indicated the groundwater flow direction to the east. **Figure 3** is a potentiometric map for this sampling event.

Originally MW-7 was thought to be a downgradient well but review of the potentiometric mapping from the eight background sampling events revealed that the well is a sidegradient well. Therefore, the designation for MW-7 has been changed from a downgradient to a sidegradient well for compliance monitoring.



#### 3.0 BACKGROUND GROUNDWATER DATA

In accordance with EPA CCR Rule § 257.94(b), the site initiated the detection monitoring program in January 2016 to include obtaining a minimum of eight (8) independent samples for each background and downgradient well. The eight (8) independent groundwater samples were obtained and analyzed as required by the CCR Rule per the groundwater monitoring plan. Background groundwater data was collected from January 2016 to August 2017.

Groundwater Monitoring Reports were completed for each sampling event and have been placed in the Operating Record. A listing of each background groundwater sampling event is below:

- January 2016
- March 2016
- May 2016
- August 2016
- October 2016
- March 2017
- June 2017
- August 2017

Initial background monitoring was required at all monitoring wells. The sampling frequency was quarterly or more frequently for the first two (2) years. After the background data plus the first semi-annual sampling events, a reduced lower sampling frequency replaced the quarterly events to semi-annual events. This lessened sampling frequency will be completed during the months of April/May/June and October/November/December. MW-5AR background monitoring started in May 2023 and will be completed semi-annually until eight (8) rounds of background sampling data are obtained.

The initial two (2) years of background and the first semi-annual detection monitoring included parameters listed in Appendix III and Appendix IV of the EPA CCR Rule. The constituents listed in Appendix IV were eliminated from the overall semi-annual detection monitoring plan after review of the first semi-annual groundwater sampling event analytical results in January 2018, according to the EPA CCR Rule.



#### **4.0 GROUNDWATER SAMPLING EVENT**

On November 11 and 12, 2024, nine (9) groundwater monitoring wells were sampled by Midwest Environmental Consultants (MEC) for the EPA CCR Rule Appendix III parameters. In addition, MW-5AR was also sampled for Appendix III and Appendix IV parameters. For quality assurance and quality control measures, a duplicate sample was taken at MW-5. The sampling protocol and methodology was to be conducted in accordance with the facility's Sampling and Analysis Plan. **Table 1** provides a list of the analytical methods employed by the subcontracted laboratory.

Table 1 – Analytical Methods						
Method Description						
9056A	Anions, Ion Chromatography					
6020A	Metals (ICP/MS)					
SM 2540C	Solids, Total Dissolved (TDS)					
Field Sampling	Field Sampling					

**Appendix 2** includes Monitoring Well Field Inspection sheets and field notes. The physical integrity of the wells was good. During sample collection each of the wells was monitored for pump discharge and formation recharge. Initially, a static water level for each well was recorded (**Table 2**). To ensure sufficient recharge while sampling, static water levels were collected during pumping. Prior to sample collection, field parameters for each well were measured with a flow-through meter. When the field parameters stabilized, samples for analytical testing were collected and placed on ice for hand delivery to the laboratory. At the conclusion of sample collection from each well, a final static water level measurement was obtained. The samples were collected in the appropriately pre-preserved sample containers and placed on ice for delivery.

Table 2 - Groundwater Sampling Field Parameters Summary During November 2024 Sampling Event								
WELL ID	STATIC WA (ft-B		PURGE RATE (mL/min)	STABILIZED				
טו	Initial	Final	(1112/11111)	рН				
MW-1*	9.12	NA	NA	NA				
MW-2	4.01	5.60	200	5.67				
MW-3	3.52	3.60	200	5.80				
MW-4	9.37	15.10	200	6.79				
MW-5	0.35	10.02	200	7.25				
MW-5A	11.07	19.11	200	6.71				
MW-5AR	2.42	10.75	200	7.72				
MW-6	11.19	19.42	200	7.01				
MW-6A	9.95	18.29	200	6.16				
MW-7	5.82	5.85	200	6.30				
* Material Order								

\* Water Level Only NA – Not Applicable

**Appendix 3** includes the analytical results for the sampling event. Included with this analytical report are sample information; chain of custody; wet chemistry data; and volatile data.



#### 5.0 DATA VALIDATION PROCEDURES FOR GROUNDWATER MONITORING DATA

Midwest Environmental Consultants receives Data Packages from the analytical laboratory (Eurofins). The internal quality control/quality assurance case narratives and reported data are then reviewed. Generally, the data validation procedures established by the U.S. Environmental Protection Agency *Contract Laboratory Program Functional Guidelines for Organic Data Review* and *Functional Guidelines for Inorganic Data Review* is followed. These guidelines are used to assign data qualifiers to the data. A formal data validation report for the site is not prepared; however, any significant issues are noted in the groundwater monitoring report.

MEC evaluates the data set for precision, accuracy, representativeness, comparability, and completeness (PARCC).

#### 5.1 Precision

<u>Laboratory Precision</u>. Laboratory quality control procedures to measure precision consist of laboratory control sample (LCS) analysis and analysis of matrix spike/matrix spike duplicates (MS/MSD). These analyses are used to define analytical variability.

<u>Field Precision</u>. Analyses of duplicate samples are used to define the total variability (replicability) of the sampling/analytical system. Field replicates are collected at a rate of one per sampling event.

#### 5.2 Accuracy

Accuracy is determined by calculating the percent recoveries for analyses of surrogate compounds, LCSs, continuing calibration check standards, and matrix spike samples. Acceptable percent recoveries are established for SW-846 and EPA methods. Field and laboratory blank analysis are also used to address measurement bias.

<u>Field Blanks.</u> Field blanks consisted of a trip blank and a field blank. At least one trip blank per cooler shipment accompanies samples for volatile organic analyses.

<u>Laboratory Blanks.</u> Method blanks, artificial, matrix-less samples, are analyzed to monitor the laboratory analysis system for interferences and contamination from glassware, reagents, etc. Method blanks are taken through the entire sample preparation process. They are included with each batch of extractions or digestion prepared, or with each 20 samples, whichever is more frequent.

#### 5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely reflects site condition. Representativeness of the data is determined by comparing actual sampling procedures to those delineated in the field sampling plan, comparing results from field replicate samples, and reviewing the results of field blanks. Field notes are reviewed as part of our data validation process.

#### 5.4 Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured by using established and approved sample collection techniques and analytical methods, consistent basis of analysis, consistent reporting units, and analyzing standard reference materials.



#### 5.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under controlled laboratory conditions. Completeness is defined as the valid data percentage of the total tests requested. Valid data are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form. Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria were met.



#### **6.0 GROUNDWATER ANALYSIS**

Groundwater samples were submitted to Eurofins Environmental Testing for analysis.

#### 6.1 Sampling Results

The constituents with results above the laboratory reporting limits are included in **Table 3**. This table also includes the recently installed MW-5AR. The Eurofins laboratory analytical results are included in **Appendix 3**.

	Table 3 – Constituents During November 2024 Sampling Event											
Constituent	Units	MCL	MW-2 (up)	MW-3 (up)	MW-4 (down)	MW-5 (down)	MW-5A (down)	MW- 5AR (down)	MW-6 (down)	MW-6A (down)	MW-7 (side)	
Appendix III												
Boron	ug/L	NE	93	<100	<100	270	2000	390	350	220	240	
Calcium	mg/L	NE	23000	100000	240000	87000	450000	99000	280000	190000	570000	
Chloride	mg/L	NE	110	52	16	5.9	180	8.1	45	81	49	
Fluoride	mg/L	4.0	0.16	0.13	0.097	0.29	0.22	0.19	0.22	0.15	0.16	
рН	SU	NE	5.67	5.80	6.79	7.25	6.71	7.72	7.01	6.16	6.30	
Sulfate	mg/L	NE	92	520	500	150	1900	430	1100	1000	1800	
Total Dissolved Solids	mg/L	NE	350	890	1300	570	3200	900	1800	1500	2800	

NE = Not Established

<x = Less than reporting limit (nondetectable)</pre>

J = Trace value seen above minimum detection limit but below reporting limit (trace)

No Constituents were detected above the Federal Safe Drinking Water maximum contaminant level (MCL) during the sampling event.

#### 6.2 Statistical Analysis Approach

Prediction interval analyses compare one or more observations to a limit set by background data. Interwell analyses compare observations from background wells, which include upgradient and sidegradient wells per EPA Unified Guidance definitions, and their relation to the observations for the downgradient wells. Due to varying geology in the state of Missouri, intrawell analyses had initially been deemed a more appropriate statistical method.

On January 21, 2020 MDNR forwarded an email from the USEPA that requested the site change the statistical evaluation methodology to interwell prediction limits. This correspondence is located in **Appendix 1.** The EPA review of the groundwater reports is summarized in **Table 4.** 



Table 4 – EPA Review of Groundwater Reports							
Facility	Asbury Power Plant						
Location	Asbury, MO						
Owner	Empire District Electric Company						
Units	Upper Pond-unlined, South Pond-unlined, Lower Pond-unlined						
Geology	Surficial unit of clay, clayey sand, and silt approximately 15 to 25 feet thick underlain by Warner Sandstone approximately 25-30 feet thick in the southern portion of the site and the Riverton Shale in the northern area of the site						
Problematic Use of Intra Well Comparisons	Analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells. Consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra well analysis						
Problematic Alternate Source Determination							
Conclusions	While there are no boring logs in the documents to confirm that the wells are screened in the same geologic unit, consistency in the field parameters and the description of the geology suggest that the wells are screened in the sandstone. The analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells, consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra wells analyses						

#### 6.3 Statistical Analysis Results

Statistical analysis was completed by Jett Environmental Consultant. The results are included in **Appendix 4.** 

#### **Inorganics – Times Series & Trend Testing**

Time Series graphs were generated for each of the inorganic constituents. The time series graphs are included in **Appendix 4 - Attachment 1**.

The inorganic constituents with results above the laboratory reporting limits were analyzed with Sanitas<sup>™</sup> to determine if statistically significant increasing or decreasing trends exist within the background data range (January 2016 through May 2023) utilizing the Sen's Slope / Mann-Kendall trend test. Trends were based on a 98% confidence level (two tailed). The following constituents exhibited statistically significant increasing trends: boron (MW-5A), calcium (MW- 5A, MW-6A), chloride (MW-5, MW-5A, MW-6), fluoride (MW-7), sulfate (MW-5A, MW-6A), and total dissolved solids (MW-5A, MW-6A). Of the increasing trends, only one instance was for an upgradient well (fluoride at MW-7); however, fluoride was reported as non-detect over the last eight rounds of background sampling. All other constituents were either not trending or had a statistically significant decreasing trend. The trending data have only been reviewed at this time. No trending data was removed before performing the inter-well prediction interval analysis. The trend testing results are included in **Appendix 4 - Attachment 2**.



#### **Inorganics – Inter-Well Prediction Limits**

Statistical Analysis was performed on the inorganic constituents and metals. Prediction interval analyses compare one or more observations to a limit set by background data. Background data consists of semi-annual groundwater tests from the upgradient wells (MW-2, MW-3, and MW-7) between January 2016 and May 2023 (20 events). Interwell analyses compare observations from upgradient background wells and their relation to the observations for the downgradient wells. Intra-well analyses compare background observations to current observations of the same well.

Sanitas<sup>™</sup> was used to perform the statistical analyses. For most constituents, non-parametric inter-well prediction intervals were performed due to non-detectable levels in more than 50 percent of the background samples or if data were not normally distributed. The Sanitas<sup>™</sup> interwell prediction limit outputs are included in **Appendix 4 - Attachment 3**.

**Table 5** lists the parameters that exhibited a statistically significant increase (SSI) during the November 2024 sampling event, the associated monitoring wells, inter-well prediction limit, and the measured concentration. Also included on the table is a comparison to any established USEPA National Primary Drinking Water Standard – Maximum Contaminant Level (MCL).

Table 5 SSI Observed During May 2024 Sampling Event									
Constituent (units)	Well	Initial vs. Confirmed	Statistical Limit	Result	MCL				
Boron (mg/L)	MW-5A	Confirmed	0.9	2.0	NE				
pH (SU)	MW-5	Initial	5.22-6.98	7.25	NE				
pH (SU)	MW-6	Initial	5.22-6.98	7.01	NE				
Total Dissolved Solids (mg/L)	MW-5A	Confirmed	3100	3200	NE				

NE = Not Established.

MCL = Maximum Contaminant Level

#### **Statistical Power Curves**

A statistical power curve graph has been prepared to allow comparisons between the current monitoring program and USEPA-recommended standards. Under the USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (March 2009), inter-well prediction limits are constructed to have a site-wide false positive rate (SWFPR) of 10% annually, or 5% per event for a semi-annually sampled facility. **Appendix 4 - Attachment 4** presents the power curves for the facility's monitoring program.

#### **Results Summary**

Boron (MW-5A) and total dissolved solids (MW-5A) exhibited confirmed SSIs during the November 2024 event.

pH (MW-5 and MW-6) exhibited an initial SSI during the November 2024 event.

Of the SSIs, none have an established MCL



#### 6.4 Results Interpretation

The November 2024 sampling results confirmed an interwell prediction exceedance for boron (MW-5A) and total dissolved solids (MW-5A) from the May 2024 sampling event. There are no current primary (health based) MCLs for boron or total dissolved solids. The facility will resample as part of the November 2024 sampling event.

There were two initial interwell prediction limit exceedance for pH in MW-5 and MW-6. These wells will be resampled in May 2025.

The results of the interwell prediction limit statistical analysis of the November 2020, May 2021, November 2021, May 2022, November 2022, May 2023 sampling, November 2023, May 2024, and November 2024 events indicate a confirmed exceedance for Boron (MW-5A). EPA CCR Rule 40 CFR § 257.94(e)(2) allows an Alternative Source Demonstration (ASD) that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality for a constituent found in a monitoring well. This ASD was completed in April 2021 and placed in the operating record. The ASD found the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality instead of a release to groundwater.

The ASD theorized that this SSI was an issue with the location of the well rather than from a release from the facility. This alternative source demonstration confirmed that MW-5A may be impacted by its placement upgradient of a historic dewatering trench and cutoff trench. The ASD proposed a replacement well for MW-5A be installed downgradient of the dewatering trench and cutoff trench system. The new replacement well MW-5AR was installed prior to the May 2023 sampling event and the initial sampling results were compared to the existing MW-5A. Review of initial sampling results indicate that the theory may be correct. Monitoring of both MW-5A and MW-5AR will continue until the eight needed background samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

Based upon these findings the site will not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.

#### 6.5 Proposed Actions

Groundwater sampling and statistical analysis will continue to be completed with interwell prediction limits per EPA's request. The results of the November 2024 sampling event confirmed the exceedance for Boron (MW-5A) and Total Dissolved Solids (MW-5A). Monitoring well MW-5AR was installed in response to the ASD. Monitoring of both MW-5A and MW-5AR will continue until the eight needed background samples are collected for MW-5AR and statistical analysis can begin. Sampling of MW-5A will then cease.

There were two initial interwell prediction limit exceedance for pH in MW-5 and MW-6. These wells will be resampled in May 2025.

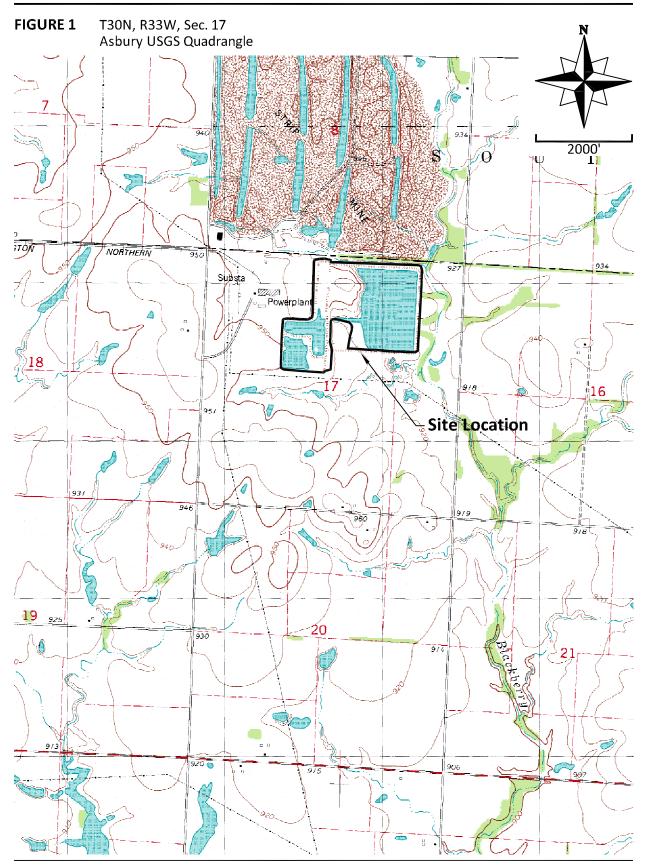
Based upon these findings the site does not need to move into the assessment monitoring program at this time and will continue with the detection monitoring program per the EPA CCR Rule (§ 257.94) on a semi-annual basis.



**FIGURES** 



**Asbury Generating Station CCR Impoundment** Groundwater Sampling Event - November 2024 Site Location Map



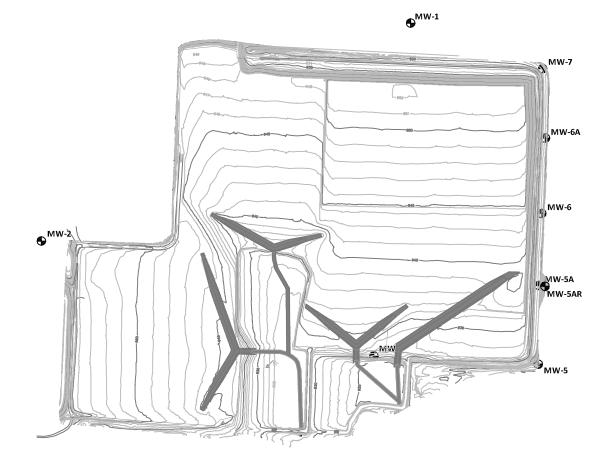
January 2025



**Asbury Generating Station CCR Impoundment** Groundwater Sampling Event - November 2024 Groundwater Monitoring System

#### FIGURE 2





MW-3

Well ID	Northing	Easting
MW-1	435789.71	2765168.83
MW-2	434428.56	2762861.43
MW-3	432844.71	2762721.27
MW-4	433709.70	2764938.79
MW-5	433659.19	2765966.39
MW-5A	434150.39	2765969.77
MW-5AR	434145.71	2766008.17
MW-6	434600.94	2765988.47
MW-6A	435071.72	2766010.58
MW-7	435505.31	2765993.01

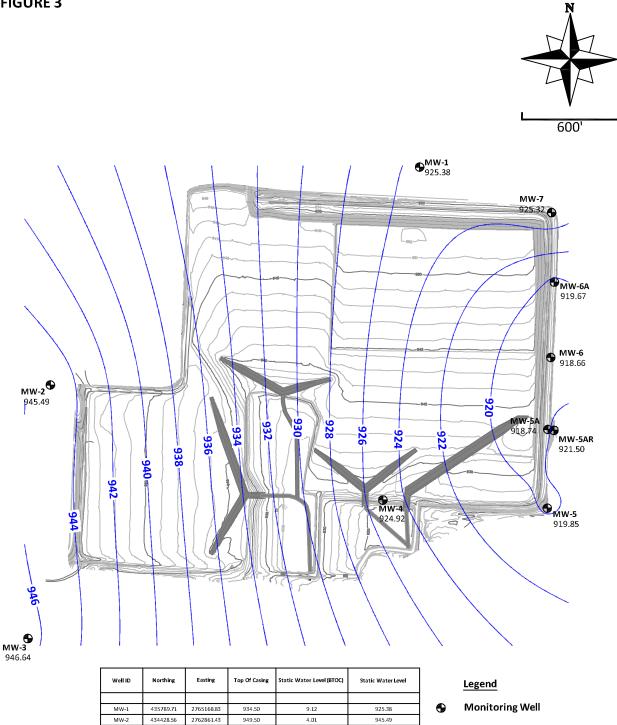
Legend

Monitoring Well



#### **Asbury Generating Station CCR Impoundment** Groundwater Sampling Event - November 2024 Groundwater Piezometric Surface Map

#### **FIGURE 3**



MW-3

MW-4

MW-5

MW-5A

MW-5AR

MW-6

MW-6A

MW-7

432844.71

433709.70

433659.19

434150.39

434145.71

434600.94

435071.72

435505.31

2762721.27

2764938.76

2765966.39

2765969.77

2766008.17

2765988.47

2766010.58

2765993.01

950.16

934.29

920.20

929.76

923.92

929.85

929.61

931.14

3.52

9.37

0.35

11.02

2.42

11.19

9.94

5.82

946.64

924.92

919.85

918.74

921.50

918.66

919.67

925.32



**APPENDIX 1** 

**EPA/MDNR Correspondence** 



NOV 0 2 2017

Mr. Kavan Stull, Senior Environmental Coordinator Empire District 602 South Joplin Avenue Joplin, MO 64802

RE: Site Characterization Workplan

Dear Mr. Stull:

The Missouri Department of Natural Resources has reviewed the document "Site Characterization Workplan" dated May 16, 2017. The site has undergone extensive characterization regarding construction of a coal combustion residual (CCR) landfill near the CCR impoundments. The department's Water Protection Program has determined, through consulting with the Missouri Geological Survey, this characterization is sufficient and may be used in whole to complete the required monitoring of the sub-surface conditions at the site. Additional submittal of site characterization is not necessary, as the previous submittal meets the requirement for special condition 19(b) of the Missouri State Operating Permit MO-0095362. The facility may proceed with the next step laid out in the permit; special condition 19(c). Enclosed is the Missouri Geological Survey concurrence.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to 10 CSR 20 1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Contact information for the AHC is by mail at Administrative Hearing Commission, United States Post Office Building, Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102, by phone at 573-751-2422, by fax at 573-751-5018, and by website at <u>www.oa.mo.gov/ahc</u>.



Mr. Kavan Stull Page 2

If you have any questions, please do not hesitate to contact Ms. Pam Hackler by mail at Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176, by phone at 573-526-3386; or by email at <u>pam.hackler@dnr.mo.gov</u>. Thank you.

Sincerely,

WATER PROTECTION PROGRAM

lies

Michael J. Abbott, Chief Operating Permits Section

MJA/php

Enclosure

c: Mr. Randall Willoughby, Southwest Regional Office



#### MEMORANDUM

DATE:	October	18,	2017
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TO: Pam Hackler- WPP- Industrial Wastewater Unit

FROM: Fletcher N. Bone, Geologist, Environmental Geology Section, Geological Survey Program, MGS

hon n. Bono

SUBJECT:

Site characterization for existing CCR impoundments Asbury Power Plant Site Characterization Work Plan- CCR 37 21 22.66 Latitude, -94 35 4.79 Longitude, Jasper County, Missouri



SWR18011 Jasper County

October 18, 2017

The Missouri Geological Survey (MGS) has reviewed the documents titled, 'NPDES Permit MO-0095362 Asbury Power Plant, Jasper County, Missouri, Site Characterization Work Plan', prepared by Empire District Electric Company, dated September 8, 2017 and 'Site Characterization Work Plan, Coal Combustion Residuals Impoundments, Empire Electric Facility - Permit MO-0095362, Jasper County, Missouri, Geotechnology Project No. J021738.03', prepared by Geotechnology Inc., dated May 16, 2017. The MGS offers the following comment.

General Comment:

The MGS agrees that the existing Coal Combustion Residuals (CCR) impoundments (site 1) do not need further site characterization, at this time. The site characterization performed, as described in the Detailed Site Investigation Report (DSI), dated January 21, 2015, at the proposed CCR impoundment (site 2) that is approximately 1,000 feet south of the existing CCR impoundments (site 1), coupled with the geologic and hydrologic data provided that pertains to the existing CCR impoundments (site 1) (1996 to present data), provides adequate characterization of the geology and hydrology of the site 1. The geologic and hydrologic settings of both sites are similar, with geologic boring logs and potentiometric data of both sites being compared. The hydraulic conductivity testing conducted at the proposed CCR site (site 2) has demonstrated that there is a low potential for groundwater contamination for this area.

If you are in need of further assistance from our office or have questions regarding this evaluation please feel free to contact me at (573) 368-2161.

#### **Drew Landoll**

From:	Snellen, Greg <greg.snellen@dnr.mo.gov></greg.snellen@dnr.mo.gov>
Sent:	Tuesday, January 21, 2020 3:34 PM
То:	Drew Landoll
Cc:	aston.robert@epa.gov; Nagel, Chris; Snellen, Greg
Subject:	RE: EPA Request for Information regarding CCR Units

Good afternoon Drew,

The Environmental Protection Agency (EPA) has been working to verify data on facility specific CCR websites required by 40 CFR 257 at the national level. EPA headquarters provided a list of inquiries to the EPA regions and requested they work with the states to answer their questions. States were given a choice as to the amount of involvement they could have with the information gathering. Missouri elected to take the lead on contacting the facilities in the state, providing the information requested by the EPA and relaying the answers back.

For your company, the EPA has questions about facilities and units which may be seeking an extension under the alternate closure provisions in 2020 and what type of extension may be requested.

#### They provided the following list of units:

		Part A	Plant			Ор	Unit	NOI	NOI	Alterr
Region	State	Extension	Name	Unit Name	Unit Type	Status	Class	Туре	Date	NOI
					Surface					
7	MO		Asbury	Lower Pond	Impoundment	Active	Existing			
					Surface					
7	MO		Asbury	Upper Pond	Impoundment	Active	Existing			
					Surface					
7	MO		Asbury	South Pond	Impoundment	Active	Existing			

EPA has requested a response on extensions by February 14, 2020.

Additionally, the EPA has the following question related to groundwater monitoring:

Facility	Location	Owner	Units	Geology	Problematic Use of Intra Well Comparisons	Problematic Alternate Source Determinations	Conclusions
Asbury Power Plant	Asbury MO	Empire District Electric Company	Upper Pond- unlined South Pond- unlined Lower Pond- unlined	Surficial unit of clay, clayey sand, and silt approximately 15 to 25 feet thick underlain by Warner Sandstone approximately 25- 30 feet thick in the southern portion of the site and the Riverton Shale in the northern area of the site	Analytical results indicate consistent differences in contaminant concentrations between upgradient and downgradient wells. Consequently, inter well comparisons are feasible and would be preferable in the absence of compelling reasons to use intra well analysis		While there are no boring logs in the documents to confirm that the wells are screened in the same geologic unit, consistency in the field parameters and the description of the geology suggest that the wells are screened in the sandstone. The analytical results indicate consistent differences in contaminant concentrations

Facility	Location	Owner	Units	Geology	Problematic Use of Intra Well Comparisons	Problematic Alternate Source Determinations	Conclusions
							between upgradient and downgradient wells, consequently, interwell comparisons are feasible and would be preferable in the absence of compelling reasons to use intra wells analyses

At this time, there is not a deadline for this request.

Please let the Department know if you have any questions. You can also direct inquires to Bob Aston with EPA Region 7 who is copied on this email.

Thank you

Greg Snellen Environmental Supervisor Waste Management Program 573-526-8779

We'd like your feedback on the service you received from the Missouri Department of Natural Resources. Please consider taking a few minutes to complete the department's Customer Satisfaction Survey at <a href="https://www.surveymonkey.com/r/MoDNRsurvey">https://www.surveymonkey.com/r/MoDNRsurvey</a>. Thank you.

From: Aston, Robert
Sent: Friday, January 10, 2020 7:48 AM
To: Nagel, Chris <<u>Christopher.Nagel@dnr.mo.gov</u>>; Snellen, Greg <<u>greg.snellen@dnr.mo.gov</u>>
Cc: Martin, Mike <<u>Martin.Mike@epa.gov</u>>; Kloeckner, Jane <<u>Kloeckner.Jane@epa.gov</u>>; Catlin, Kelley
<<u>Catlin.Kelley@epa.gov</u>>; Werner, Leslye <<u>Werner.Leslye@epa.gov</u>>; Hayworth, Brad <<u>Hayworth.Brad@epa.gov</u>>
Subject: CCR workload

Chris and Greg,

As a follow-up to our call on Wednesday

On Monday December 2, 2019 EPA published in the Federal Register a proposed rule for the Disposal of Coal Combustion Residuals From Electric Utilities: A Holistic Approach to Closure Part A: Deadline To Initiate Closure. The major elements of this proposed rule include:

- Definition of Lined Unit (removing a clay-lined unit from the definition),
- New initiation of Closure and Cease Receipt of Waste Deadline of August 31, 2020,
- New Alternate Closure Provisions for surface impoundment: Extensions to the initiation of closure

Nationally, EPA is gathering data to determine the number of facilities and units which may be seeking an extension under the alternate closure provisions in 2020 and is tasking the regions to work with our state partners and the facilities to determine the number of such facilities and units and what type of extension may be requested. Region 7 is seeking the state's assistance in gathering this information.

To be eligible for an extension the surface impoundment needs to be:

- An existing surface impoundment (eligible inactive surface impoundments should already be closing)
- An unlined or "clay-lined" surface impoundment
- Passed all location restrictions or only failed the uppermost aquifer restriction
  - Those that failed multiple location restrictions or did not post should have ceased receipt of waste in April 2019

This proposed rule offers facilities three options with regards to an extension

- 1.) Three month self-implementing extension (§ 257.103(e)(1)). Under this provision the surface impoundment must cease receipt of waste no later than November 30, 2020, and the facility must document certain conditions and certify "that the CCR and/or non-CCR waste streams must continue to be managed in that CCR surface impoundment to allow the facility to complete the measures necessary to provide alternative disposal capacity, either on-site or off-site of the facility" on its publicly available website no later than August 31, 2020.
- 2.) Site specific alternative to initiation of closure deadline due to lack of disposal capacity (§ 257.103(f)(1)). This provision allows facilities to submit demonstrations to EPA for approval for a specific amount of time to be able to continue to use their surface impoundment while developing alternate capacity for the CCR and non-CCR waste streams. This extension allows the facility to continue to use a unit (surface impoundment) for a maximum of 5 years, until October 15, 2023. Under this extension, facilities are required to submit their demonstrations to EPA no later than June 30, 2020.
- 3.) Site specific alternative to initiation of closure deadline due to Permanent Cessation of Coal Fired Boiler(s) by a Date Certain (§ 257.103(f)(2)): If a facility is ceasing generation of coal fired boiler(s) by a date certain, then the facility must complete closure by October 17, 2023 for surface impoundments less than 40 acres and by October 17, 2028 for surface impoundments larger than 40 acres. The facility is required to submit a demonstration to EPA for approval to continue to use their CCR surface impoundments. Under this extension, demonstrations are required to be submitted to EPA for approval no later than May 15, 2020.

As you can see above, the deadlines for requesting extensions are approaching quickly and will become effective when the proposed rule is final. EPA is requesting assistance from the regions, states, and facilities to estimate the number and types of extensions facility owners/operators may be requesting. EPA headquarters has developed a list (attached) of facilities which may be eligible for extensions by EPA Region and State. This list was developed by examining information included on individual facility web sites which are required as part of the CCR regulations. The list of potential sites in Missouri has been attached (attached Excel file) to this email. EPA headquarters has requested that individual regions reach out to their state counterparts to identify facility contacts and reach out to those contacts to determine which facilities and units may be requesting an extension and which type of extension may be requested. EPA headquarters has requested that this information be collected by February 14, 2020.

As part of the effort to determine what type of an extension a facility may need, EPA would also like the state's assistance in obtaining input regarding an estimate of the length of the extension that may be requested by the facility owners/operators. As part of the discussions, we need an estimate regarding the length of the extension. For example, EPA needs to estimate the following:

- Facilities that will not need an extension
- Facilities that will only need till November 2020 (short term extension)
- Longer than November need about 6 months more
- Longer than November need about 1 year
- Longer than November need longer than 18 months

EPA is collecting this data in order to estimate the potential workload which could be associated with reviewing the above mentioned extension requests.

In addition, EPA headquarters routinely reviews the information posted on individual facility web sites. As part of that review EPA headquarters has identified sites in each region where specific facility information which is required to be posted is either missing, incomplete or technical questions exist. As part of this review EPA has developed two lists. See attached. One list deals with compliance issues related to documents which are, or in some cases are not, posted on the specific facility websites. The second list deals with groundwater questions related to Alternate Source Demonstrations and Intrawell analyses. With regards to the list dealing with compliance issues related to documents, EPA headquarters has requested that the regions work with their state counterparts to identify the appropriate facility contact. The plan is that EPA Headquarters would take the lead in coordination with the regions and states to contact the facilities to discuss and remedy the identified issues. With regards to the second list dealing with Alternate Source Demonstrations, EPA headquarters has requested that the regions work with their state counterparts to identify the appropriate facility contact. The plan is that EPA Headquarters would take the lead in coordination with the regions and states to contact the facilities to discuss and remedy the identified issues. With regards to the second list dealing with Alternate Source Demonstrations, EPA headquarters has requested that the regions work with their state counterparts to identify the appropriate facility contacts. The regions and or the states would then take the lead to address any identified issues. No specific timeframe has been established to address the questions related to either of the above lists. Region 7 anticipates working closely with the state in addressing these issues.

It should be noted that EPA headquarters routinely reviews CCR facility websites and could identify additional questions. If that should occur Region 7 would again reach out to the states.

At your convenience I would like to follow-up with you on the above issues sometime next week to discuss Missouri's perspective and any comments you may have. If you have any questions please do not hesitate to call or email me.

Thanks

Bob Aston USEPA Region 7 (913)551-7392



### **APPENDIX 2**

Monitoring Well Field Inspection Sheets and Field Notes

# 2024 Field Sampling Log

Facility: <u>Asbury CCR (Permit #</u> ) Monitoring Well ID: <u>MW-</u> Sample Blind Duplicate Field Blank .												
Purge Information: Method of Well Purge: Peristaltic Pump with 3/8 - inch Diameter Tubing												
Actual Purge Volume Removed: M_ mL post pump calibration .												
Date / Time Initiated: <u>11 13 -24 @ 1.15</u> Date / Time Completed: <u>11 - 13 -24</u>												
Well Purged To Dryness?: Y / A Gas Detected? Y / A												
Purge Data:												
Purge Rate Time (mL/min)	Cumulativo Volume ( mL	e Temp ) (°C)	. pH (SU)	Conc	ecific luctivity S/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbi	Other (Color, dity Clarity, ) Odor)			
9:18 200	00 600 17.9 5.71				716	0.79	132,9	7 5.8	4 Clear			
:20	1000 17,8 5,6				712	0.43	1275					
:aa	1400	7 17.8		S	711	0,34	126.9					
:24	180	~			7//	0,37	128.1	3,7	/			
Time sampled	aid	5			Field Inspec Access Pad Conditio Casing Cond	on	Good G G	Fair F F F	Poor P P P			
Weather Conditions	Rainy,	509	°F	F	ocking Cap Riser Condit	ion	G	F F	P P I <b>o <u>N/A</u></b>			
Water Level Start	Ut.e	21		S	Vell ID Visib Standing Wa	iter	Ċ		N/A			
Water Level Finish												
Name (MEC Field Samp	oler): <u>Ryan Or</u>	tbals and Ri	ck Elgin			ation Norma Calibration No		י (	N N/A N N/A			
Sampler Signature     Mm     Mm <t< td=""></t<>												
Historical Data: Averag	ge of sampling								· · · · · ·			
Constituent pH		Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR			
Specific Conductance		S.U. hos/cm	NO TEST GW	5.83	5.08	6.30	6.83	6.82				
Total Well Depth		ft	Level	0.786	1.132	2.083	0.841	1.769				
Average CIM Devet		- TC	LEVEI									

					11111	11110 3	11114 374	14144-2-2411
рН	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes		DON'T		800	800	800	800	
(Min Purged Amount)	mL	SAMPLE	800					

	2024 Field Sampling Log											
Facility:	Facility: Asbury CCR (Permit # ) Monitoring Well ID: MW- 3											
	Purge Information: Method of Well Purge: Peristaltic Pump with 3/8 - inch Diameter Tubing											
	Actual Purge Volume Removed: 1600 mL post pump calibration.											
Date / Ti	Date / Time Initiated:       11       13       -24       9:58       Date / Time Completed:       11-13       -24											
Well Pur	ged To Dryne	ss?: Y / N		Gas De	etected? Y / N							
Purge Da	ita:	1										
Time	Purge Rate (mL/min)	Cumulative Volume ( mL )	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity	Other (Color, Clarity, Odor)			
10:00	200	400	16.6	5.80	1.325	073	-0,2	41.76	May			
:02	1	800	16,6	5.30	1.324	0,43	-2.3	25,05	/			
:04		1200	16,5	5,80	1.322	0.33	- 7,3	28.33				
:06	J	1600	16.5	5.80	1.322	0,24	-4,0	33,05	$\bigvee$			
Time sampled $10:10   10:20$ Weather Conditions $10:40 + 50^{\circ}F$					Field Inspect Access Pad Conditi Casing Cond	on	Good G G	Fair P F F F	P P P			
Weather Conditions /logdy 50°F					Locking Cap Riser Condi	0 & Lock tion	G	F	P P			
Water Lev		3.50	2'		Field Inspect Well ID Visi Standing W Clear of We	ble ater	Yes Y	No N N	<b>N/A</b> N/A N/A N/A			
Water Lev	/el Finish	3,60	) (		Measuring	Clear of Weeds Measuring Point Split sample with MDNR						

Name (MEC Field Sampler): Ryan Ortbals and Rick Elgin

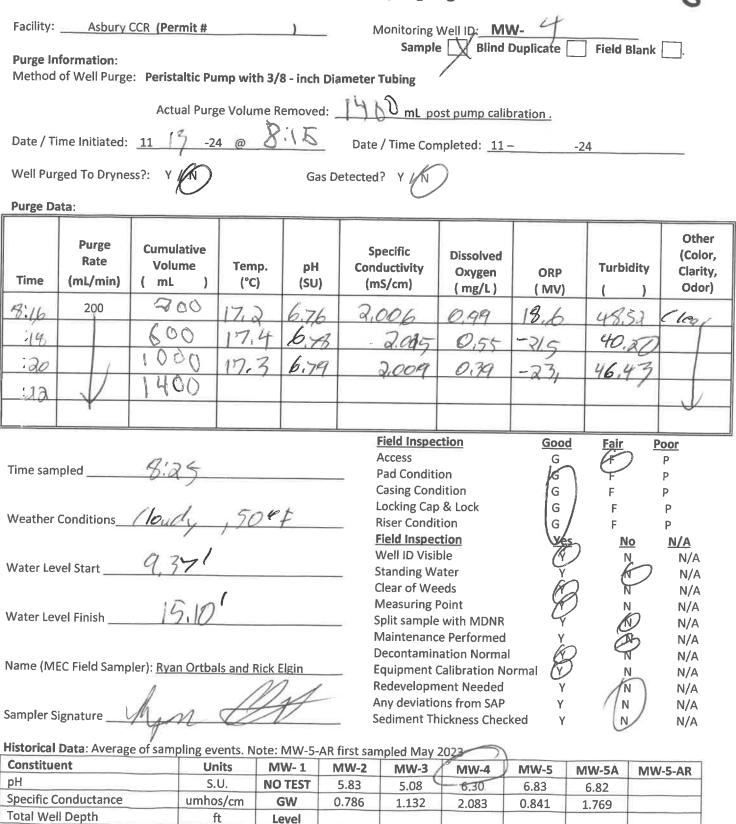
Sampler Signature

Split sample with MDNR N/A Y Maintenance Performed N/A Decontamination Normal N/A **Equipment Calibration Normal** N/A Redevelopment Needed N/A Any deviations from SAP Y Ν N/A Sediment Thickness Checked Y N/A

Historical Data: Average of sampling events. Note: MW-5-AR first sampled May 2023

Constituent	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
рН	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes		DON'T		800	800	800	800	
(Min Purged Amount)	mL	SAMPLE 800						

#### 2024 Field Sampling Log



pH	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level			100		2	
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	-
Average GW Drop	ft						0.02	
2 System Volumes	mL	DON'T	800	800	800	800	800	
(Min Purged Amount)		SAMPLE						

## 2024 Field Sampling Log

Facility:	Facility: <u>Asbury CCR (Permit #</u> ) Monitoring Well ID: <u>MW-</u> Sample Blind Duplicate Field Blank .											
Durgo Inf	formation:					bampre [	A	A				
		. Dovictoltic D		2/0 inch D	inmotor Tr	ubing		1.				
ivietnoa	of well Purge	: Peristaltic P			10							
	Actual Purge Volume Removed: 18 D mL post pump calibration.											
	1) 3 FW											
Date / Time Initiated: <u>11 12 -24 @ R 5H</u> Date / Time Completed: <u>11 - 12 -24</u>												
Well Purged To Dryness?: Y												
Purge Da	ita:											
	Purge	Cumulative			Spe	ecific	Dissolved			Other (Color,		
	Rate	Volume	Temp	. pH	Condu	uctivity	Oxygen	ORP	Turbidi	Y Clarity,		
Time	(mL/min)	(mL )	(°C)	(SU)	(mS	i/cm)	( mg/L )	( MV)	1	) Odor)		
3:57	200	600	17.6	3 7.24	0,9	186	0.92	-136.5	4.3	8 Char		
1.59	1	0001	17.5	10		0.934 0.		-147.9	8,6	4		
		1400				284	0,33		10			
4:01		1800	17.0	0-				-150,1		/		
:03	V	1001	17,6	7.25	0,0	283	0.26	- 152.9	14.2	o V		
		4:0	,	Ruli	P F	ield Inspect	tion	Good	Fair	Poor		
		11	-1		A	ccess		(G)	F	Р		
Time san	npled	4:0	5/0	1:20	Р	ad Conditio	n	G	F	Р		
		÷	1		C	asing Condi	ition	G	F	Р		
				SOF	L	ocking Cap		G	F	Р		
Weather	Conditions	Sunny	6	Ser	R	liser Conditi		(g/	F	Р		
		Janey	1	<i>2</i>		ield Inspect		Yes	No	<u>N/A</u>		
			/		· · · · · · · · · · · · · · · · · · ·	Vell ID Visib		TA	) <u>N</u>	N/A		
Waterle	vel Start	12.35	r			tanding Wa		Ý	Ń	7 N/A		
Water Le						lear of Wee		KO	N	N/A		
			ſ		-	leasuring P		(A)	N	N/A		
Mator Lo	vel Finish	10 .	22			-	with MDNR	Ŷ	R	2 N/A		
water Le							e Performed	Ý		2 N/A		
							ation Norma			N/A		
Name (N	IEC Field Com	nlor), Bilan Or	balc and F	iek Eläin	_		alibration N	11.1	N			
Name (IV	iec rielo sam	pler): <u>Ryan Or</u>	Dais and P				ent Needed	v	KI	) N/A		
		n /		A			ns from SAP	Y		N/A		
Sampler	Signature	Myse	EX.	/			ickness Chec	-	N	N/A		
Historica	l Data: Avera	ge of sampling	events. N	ote: MW-5-A	R first san	npled May 2	2023					
Constitu			Units	MW-1	MW-2	MW-3	MW-4 (	MW-5	MW-5A	MW-5-AR		
nH			S LL	NO TEST	5.83	5.08	6.30	6.83	6.82			

Constituent	Units	T-AAIAI	IVI VV-Z	C-WIVI	IVIV-4	C-AAIAI	JANNA-2H	TALAA-2-MIK
рН	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes		DON'T	200	800	800	800	800	
(Min Purged Amount)	mL	SAMPLE	800					

Facility:	Asbury (	CCR (Perm	it #	)	a Mo	onitoring W.	ell ID: <u>MV</u> Blind I	V- 5A	Field Bla	ank 🗌
-	<b>formation</b> : of Well Purge		tic Pump with			ubing				
		Actua	l Purge Volum	e Removed	1800	) mL post	t pump calib			
Date / Ti	me Initiated:	11 12	-24 @	3.12	Date /	Time Comp	oleted: <u>11-</u>	IN	-24	
Well Pur	ged To Dryne	ss?: Y /	Ø	Gas	Detected?	YTA				
Purge Da	ita:									
Time	Purge Rate (mL/min)	Cumula Volun ( mL	1	· ·	Cond	ecific uctivity 5/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidi (	Other (Color, ity Clarity, ) Odor)
2:48	200	600	0 18,4	3 6.70	2 4.10	41	1.02	105.9	10.8	1 Clear
	ny:	100	()	0		2	21	1.25		
.50		1 1 1 1 1					0.55	102.7		
.52		1901	1414	- 6.71	4.1	23	0.36	100.5		
.54		180	0 18.9	6.7	1 41	143	0,29	99.1	49,	36
						ield Inspect	tion	Good	<u> </u>	Poor
						ccess		G G	F	P
Time sam	npled	25	5		P	ad Conditio	on	G	F	Р
						asing Condi		G	F	Р
	o 1997	6	, 6501	-		ocking Cap		G	F	P
Weather	Conditions_	JUDNY	, 621			iser Conditi <b>ield Inspec</b> t		G/	r <u>No</u>	Р <u>N/A</u>
			a			Vell ID Visib		Yes	) <u>N</u>	N/A
Water Le	vel Start	11.00	א'			tanding Wa		Y	N	> N/A
					C	lear of Wee	eds	(East	2 4	N/A
		19	17 (			Aeasuring P		H.		N/A
Water Le	vel Finish	19.	11				with MDNR		N	
							e Performed ation Norma	0		D N/A N/A
Name (M	IEC Field Sam	pler): Rvar	Ortbals and	Rick Elgin			alibration N		) N	∩ N/A
		A	N	Λ			ent Needed	$\sim$	N	N/A
		Ala =		+11	А	ny deviatio	ns from SAP	Y	N	N/A
Sampler S	Signature 🔟	Wyon	AL.	$\mathcal{U}$	S	ediment Th	ickness Che	cked Y	( N	/ N/A
Historica	l Data: Avera	ge of samp	oling events. N	ote: MW-5-	AR first san	npled May 2	2023			)
Constitu	ient		Units	MW- 1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
рН			S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
	Conductance		umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
	ell Depth		ft	Level	1.24	0.4	E 20	1.22	6.02	
	GW Depth GW Drop		ft ft	Only	1.24	0.4	5.39	1.32	6.92	
I UNCLARE	Ow prop		16							

800

800

DON'T

SAMPLE

mL

2 System Volumes

(Min Purged Amount)

800

800

Facility:	Asbury (	CCR (Permit #		)	Mo	nitoring V Sample	Vell ID: MW Blind D	<u>I- 5 A /-</u>	Field Blank	
Purge In	formation:					Jampie	A			
		: Peristaltic Pu	mp with 3/8	8 - inch Di	iameter Tu	ibing	f -			
		Actual Purg	e Volume R	emoved:	1600	mL po:	st pump calib	ration .		
			2	:25						
Date / Ti	me Initiated:	11 12 -24	@ `	1140	Date /	Time Com	pleted: <u>11 –</u>	12 -2	4	
Well Pur	ged To Dryne	ss?: Y / N		Gas	Detected?	Y / N				
Purge Da	ata:									
Time	Purge Rate (mL/min)	Cumulative Volume ( mL )	Temp. (°C)	pH (SU)	Condu	cific Ictivity /cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity ( )	Other (Color, Clarity, Odor)
3:27	200	408	19.4	7.71	. 13	355	6.77	79,0	10.09	Clear
34	1	800	19-1				6.72	84.3	9.19	
		1200		7.73	1	347				
36			18,9	7,72	1.3	46	6.70	87,6	10.15	
23	. /	1000	189	7.72		346	6,69	88.7	10.25	
										- V
Time san	npled	3:30			A	eld Inspect ccess ad Conditi asing Cond	on	Good	Fair F F F F	P P P P
Weather	Conditions_	gunny,	650	t	Lo Ri	ocking Cap iser Condi eld Inspec	0 & Lock tion	GGYes	F F No	Р Р <u>N/A</u>
Water Le	evel Start	2.42'			W 	ell ID Visi anding W ear of We	ble ater	E Jo		N/A N/A N/A
Water Le	evel Finish	10.7	51		SI		Point e with MDNR ce Performed	Ŷ		N/A N/A N/A
Name (N	1EC Field Sam	pler): <u>Ryan Ortba</u> #	als and Rick	Elgin	E0	quipment edevelopn	nation Norma Calibration No nent Needed	~ ~ )	N	N/A N/A N/A
Sampler	Signature <u></u>	April J		/			ons from SAP hickness Chec	Y ked Y	N	N/A N/A
Historica	l Data: Avera	ge of sampling e								$ \rightarrow $
Constitu	lent	U	nits 🛛 🛚 🔊	/W-1	MW-2	MW-3	MW-4	MW-5 [	MW-5A MI	V-5-AR

Constituent	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5A	MW-5-AR
рН	S.U.	NO TEST	5.83	5.08	6.30	6.83	6.82	
Specific Conductance	umhos/cm	GW	0.786	1.132	2.083	0.841	1.769	
Total Well Depth	ft	Level						
Average GW Depth	ft	Only	1.24	0.4	5.39	1.32	6.92	
Average GW Drop	ft							
2 System Volumes	- Incl	DON'T	800	800	800	800	800	
(Min Purged Amount)	mL	SAMPLE	800					

Facility:	Asbury CO	CR (Permit #	)	·	Monitoring Sample	Well I <b>D:<u>MV</u> e X Blind D</b>	v- 6 Duplicate	Field Blank	].
	<b>formation</b> : of Well Purge:	Peristaltic Pum			eter Tubing	7			r
		Actual Purge	Volume Rem	noved:	NOU mL po	ost pump calib	ration.		
Date / Ti	me Initiated:	11- 12-	24 @ 0	:10	Date / Time Cor	mpleted: <u>11</u>	- 1 2 -24		
Well Pur	ged To Drynes	s?: Y		Gas Dete	ected? Y /	$\overline{)}$			
Purge Da	ita:								
Time	Purge Rate (mL/min)	Cumulative Volume ( ml )	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity	Other (Color, Clarity, Odor)
2:11	200	300 300	18,0	6,95	2.476	0,92	506	127.23	Clear
1:13	1	600	16,1	7.01	2.478	0.1.75		25.80	
.15		1000	17.8		2.477	0,56	61.2	49.92	
:17		1400		7,00 7,01	3,471	0.33	59,4	49.57	
Weather Water Le Water Le	evel Start evel Finish	Sur ny	2/1	lgin	Maintenar Decontam Equipmen Redevelop Any deviat	tion ndition ap & Lock dition ection sible Water Yeeds	l Y al lormal Y Y	Fair F F F F F NO N N N N N N N N N N N N N	P P P P <b>N/A</b> N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
		ge of sampling eve	ents 🧷					U	,
onstituent		Units	MW-6	MW- 6					
1		S.U.	6.72	6.87	6.12				
ecific Con		umhos/cm	1.900	1.601	2.699				
tal Well D		ft	7.00	7.00	2.04				
verage GW		ftft	7.86	7.28	3.04				
erage GW	νιορ	11							

800

mL

800

800

2 System Volumes

(Min Purged Amount)

÷

Facility:	Asbury C	CCR (Permit #		)	۱ Monitoring ۱ Sample	well/ID: <u>MW</u> Blind D	I- 6A Juplicate	Field Blank	
-	formation: of Well Purge	: Peristaltic Pun	np with 3/8	- inch Diar		7			
		Actual Purge	Volume Re	emoved: 🔦	2020 mL pc	ost pump calibi	ration.		
Date / Ti	me Initiated:	11- 12	-24 @	1:30	Date / Time Con	npleted: <u>11 -</u>	- 12-24		r:
Well Pur	ged To Drynes	ss?: Y/A		Gas Det	tected? Y	)	A		
Purge Da	ata:	U							
	Durgo								Other
	Purge Rate	Cumulative Volume	Temp.	рН	Specific Conductivity	Dissolved Oxygen	ORP	Turbidity	(Color, Clarity,
Time	(mL/min)	(ml)	(°C)	(SU)	(mS/cm)	(mg/L)	(MV)	()	Odor)
1:34	200	800	18,6	6.15	2.842	0.92	- 71.3	40,6	(IAG.
0:36		1200	18,5	6.16	2.842	0.53	-27.5		
:38		1600	18.5	6.16	2.840	6,32		5	
:40		2000	18,6	6.16	2.837	0,20	- 26,5	50.75	J
							-		
1					Field Inspe	ection	Good	<u>Fair F</u>	<mark>'oor</mark> P
Time sar	npled	140			Access Pad Condit	tion	G	F	Р
					Casing Con		G	F	Р
Weather	Conditions	94904, 6 9.95'	SOF		Locking Ca Riser Cond	-	G	F	P P
i cocita		equility, c	2 1		Field Inspe			No	<u>N/A</u>
		Mari			Well ID Vis		Yes	2	N/A
Water Le	evel Start	9.95			Standing W Clear of We		ko	N	N/A N/A
		1.1	/		Measuring		Ø	N	N/A
Water Le	evel Finish	18.29				le with MDNR	Ŷ	C2	N/A
						ice Performed		(AT)	N/A
Name (N	IEC Eield Sam	pler): <u>Ryan Ortba</u>	ls and Rick	Elgin		ination Norma Calibration No		N	N/A N/A
ridine fi				<u></u>		ment Needed	Y	A	N/A
	i M	h	14			ions from SAP	Y	(/N /	N/A
Sampler	Signature <u></u>	pr 4	</td <td></td> <td>Sediment T</td> <td>Fhickness Chec</td> <td>cked Y</td> <td>A</td> <td>N/A</td>		Sediment T	Fhickness Chec	cked Y	A	N/A
Historica	l Data: Avera	ge of sampling ev	rents		2				/
Constituent		Units	MW- 6						
рН		S.U.	6.72	6.87					
Specific Con		umhos/cm	1.900	1.602	1 2.699				+
Total Well D		ft	7.86	7.28	3.04				
Average GW Average GW		ft	7.00	1.20	3.04				
2 System Vo			000	800	000			1	
(Min Purged		l mL	800	1 200	800			- 10 C	

Facility:	Asbury C	CR (Permit #		)		Well JD: <u>MW</u> e X Blind D		Field Blank	
-	ormation:	Peristaltic Pump	with 3/8	- inch Diam					1
Wiethout	or weint dige.								
					COO mL pe				
Date / Tir	me Initiated:	11-12 -2	4 @ ]	:00:	Date / Time Cor	npleted: <u>11 -</u>	- 12 -24		
						-			
Well Purg	ged To Drynes	s?: Y		Gas Dete	ected? Y / A				
Purge Da	ta:								1
Time	Purge Rate (mL/min)	Cumulative Volume ( ml )	Temp. (°C)	pH (SU)	Specific Conductivity (mS/cm)	Dissolved Oxygen ( mg/L )	ORP ( MV)	Turbidity ( )	Other (Color, Clarity, Odor)
1:02	200	400	18.0	6,29	3,106	1.77	-32,2	83.48	Clear
1:04		Ban	17.9	6.29	3,120	0.50		45,40	
06		IDAN	17.8	6.30	71/22	0.35	-	33.72	
:08		2.1	7.8	6.30	3,120	0,27	- 38.8	23.41	L
	~						1		
LI					Field Inspe	ection	Good		oor
		11.00			Access		G	F	Р
Time sam	pled	1.10			Pad Condi		G	F	P
			8	31	Casing Cor		G	F	P P
Maria da esta esta esta esta esta esta esta est	Constitution of	6	LOOF		Locking Ca		G	F	P P
weather	Conditions	Gunny,	00 I		Riser Conc		G		
					Field Inspe Well ID Vis		Yes	<u>No</u>	<u>N/A</u> N/A
Motorla	vel Start	502			Standing V				N/A
water Le	verstart	1, Ba			Clear of W		â	N	N/A
			,		Measuring		Å	N	N/A
Waterle	vel Finish	5.85	ſ		-	le with MDNR	Ŷ	Â	N/A
Watch Ec		1.01				nce Performed	Y	×	N/A
						ination Norma	$  R \rangle$	Ň	N/A
Name (M	EC Field Samp	ler): <u>Ryan Ortbals</u>	and Rick	Elgin	Equipmen	t Calibration N	ormal 🕖	N	N/A
	1	1 /	2.0		Redevelop	ment Needed	Ŷ	/N	N/A
	1	. //	ILA	$\mathcal{L}$	Any deviat	ions from SAP	Y	(N)	N/A
Sampler S	Signature	Am CH	V		Sediment	Thickness Cheo	ked Y	(N)	N/A
Historica	<b>Data</b> : Averag	e of sampling eve	nts 2		$\bigcap$				
nstituent		Units	MW- 6	5 MW-6					
		S.U.	6.72	6.87	6.12				
ecific Cond		umhos/cm	1.900	1.601	2.699				
tal Well De		ft							
erage GW		ft	7.86	7.28	3.04				
erage GW		ft							
System Vol	umes Amount)	mL	800	800	800				

(Min Purged Amount)



**APPENDIX 3** 

**Analytical Results** 



**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

5 6

Attn: Mr. Rick Elgin Midwest Environmental Consultants 2009 East McCarty Street Suite 2 Jefferson City, Missouri 65101 Generated 12/19/2024 11:23:05 AM

# JOB DESCRIPTION

Asbury Pond CCR

# **JOB NUMBER**

180-182762-2

Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh PA 15238



See page two for job notes and contact information.



# **Eurofins Pittsburgh**

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

PA Lab ID: 02-00416

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Pittsburgh Project Manager.

# Authorization

lai a chase

Generated 12/19/2024 11:23:05 AM

Authorized for release by Gail Lage, Senior Project Manager Gail.Lage@et.eurofinsus.com (615)301-5741

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#### **Eurofins Pittsburgh**

#### Job Narrative 180-182762-2

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
  situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
  specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

#### Receipt

The samples were received on 11/14/2024 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.5°C and 4.1°C.

#### HPLC/IC

Method 9056A\_ORGFM\_28D: The following samples were diluted due to the nature of the sample matrix: MW-2 (180-182762-1), MW-3 (180-182762-2), MW-4 (180-182762-3) and DUPLICATE (AT MW-) (180-182762-10). Elevated reporting limits (RLs) are provided.

Method 9056A\_ORGFM\_28D: The following sample was diluted due to the nature of the sample matrix: MW-5A (180-182762-5). Elevated reporting limits (RLs) are provided.

Method 9056A\_ORGFM\_28D: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-6A (180-182762-8). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### Metals

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### General Chemistry

Method 2540C\_Calcd: Due to conductivity and matrix, initial amount of sample used was reduced. MW-5A (180-182762-5) and MW-7 (180-182762-9)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **Gas Flow Proportional Counter**

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# Qualifiers

HPLC/IC Qualifier	Qualifier Description	4
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	4
Metals		Ę
Qualifier	Qualifier Description	
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.	
F1	MS and/or MSD recovery exceeds control limits.	
F3	Duplicate RPD exceeds the control limit	
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	c
Rad		C
Qualifier	Qualifier Description	C
U	Result is less than the sample detection limit.	2
Glossary		
Abbreviation	These commonly used abbreviations may or may not be present in this report.	
<b></b>	Listed under the "D" column to designate that the result is reported on a dry weight basis	
%R	Percent Recovery	
CFL	Contains Free Liquid	
CFU	Colony Forming Unit	
CNF	Contains No Free Liquid	

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE) MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL	Method Detection Limit

MLMinimum Level (Dioxin)MPNMost Probable Number

MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent

POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive QC Quality Control

QC Quality Control RER Relative Error Ratio (Radiochemistry)

- RL Reporting Limit or Requested Limit (Radiochemistry)
- RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)

TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

# Accreditation/Certification Summary

Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR Job ID: 180-182762-2

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#### Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-28-25
California	State	2891	04-30-24 *
Connecticut	State	PH-0688	09-30-24 *
Florida	NELAP	E871008	06-30-25
Georgia	State	PA 02-00416	04-30-25
Ilinois	NELAP	004375	07-31-25
Kansas	NELAP	E-10350	01-31-25
Kentucky (UST)	State	162013	04-30-25
Kentucky (WW)	State	KY98043	12-31-24
Louisiana	NELAP	04041	06-30-22 *
_ouisiana (All)	NELAP	04041	06-30-25
Maine	State	PA00164	03-06-26
Vinnesota	NELAP	042-999-482	12-31-24
New Hampshire	NELAP	2030	04-04-25
New Jersey	NELAP	PA005	06-30-25
New York	NELAP	11182	04-01-25
North Carolina (WW/SW)	State	434	12-31-24
North Dakota	State	R-227	04-30-24 *
Dregon	NELAP	PA-2151	02-06-25
Pennsylvania	NELAP	02-00416	12-05-24
Rhode Island	State	LAO00362	01-01-25
South Carolina	State	89014	04-30-25
Texas	NELAP	T104704528	03-31-25
US Fish & Wildlife	US Federal Programs	058448	04-30-25
JSDA	US Federal Programs	P330-16-00211	04-11-26
Utah	NELAP	PA001462024-14	05-31-25
∕irginia	NELAP	10043	07-14-24 *
West Virginia DEP	State	142	01-31-25
Wisconsin	State	998027800	08-31-25

### Laboratory: Eurofins Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-25
Georgia	State	IA100001 (OR)	09-29-25
Illinois	NELAP	200024	12-15-24
lowa	State	007	12-01-25
Kansas	NELAP	E-10341	01-31-25
Minnesota	NELAP	019-999-319	12-31-25
Minnesota (Petrofund)	State	3349	01-18-26
North Dakota	State	R-186	09-29-24 *
Oregon	NELAP	IA100001	09-29-25

#### Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# **Accreditation/Certification Summary**

**Identification Number** 

L2305

10259

2886

PH-0241

E87689

200023

E-10236

KY90125

04080

04080

LA011

M-MO054

MO00054

MO00054

MO002

11616

29700

R-207

9997

4157

68-00540

85002001

058448

MO00054

460230

C592

381

T104704193

P330-17-00028

310

9005

780

KY90125 (Permit

KY0004049)

n/a

373

AZ0813

**Expiration Date** 

04-06-25

12-08-25

06-30-22 \*

06-30-25

03-31-25

06-30-25

06-30-25

11-30-25

12-01-26

10-31-25

12-31-24

12-31-24

06-30-22

06-30-25

12-31-24

09-30-25

06-30-25

06-30-25

06-30-25

07-31-25

06-30-25

06-30-25

03-31-25

07-31-25

12-31-24

12-31-24

09-01-25

02-28-25

06-30-25

07-31-25

07-31-25

05-18-26 07-31-25

06-14-25

08-30-25

10-31-25

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Los Angeles County Sanitation

Program

State

State

State

State

State

State

State

NFI AP

NELAP

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State

NELAP

NELAP

NELAP

NELAP

NELAP

NELAP

State

State

**US Federal Programs** 

**US Federal Programs** 

State

NELAF

NELAP

NELAP

NELAP

NELAP

Districts

**ISO/IEC 17025** 

**Client: Midwest Environmental Consultants** Project/Site: Asbury Pond CCR

Authority

ANAB

Arizona

California

California

Florida

Illinois

lowa

Kansas

Louisiana

Maryland

Missouri

Nevada

New Jersey

New Mexico

North Dakota

Pennsylvania

South Carolina

US Fish & Wildlife

West Virginia DEP

Oklahoma

Oregon

Texas

USDA

Utah

Virginia

Washington

North Carolina (DW)

New York

Kentucky (DW)

Kentucky (WW)

Louisiana (All)

Louisiana (DW)

Massachusetts

**MI - RadChem Recognition** 

Connecticut

HI - RadChem Recognition

Laboratory: Eurofins St. Louis (Continued)

Job ID: 180-182762-2

Accreditation/Certification renewal pending - accreditation/certification considered valid	

# Sample Summary

#### Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR

Job ID: 180-182762-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-182762-1	MW-2	Water	11/13/24 09:25	11/14/24 09:10
180-182762-2	MW-3	Water	11/13/24 10:10	11/14/24 09:10
180-182762-3	MW-4	Water	11/13/24 08:25	11/14/24 09:10
180-182762-4	MW-5	Water	11/12/24 04:05	11/14/24 09:10
180-182762-5	MW-5A	Water	11/12/24 02:55	11/14/24 09:10
180-182762-6	MW-5AR	Water	11/12/24 03:30	11/14/24 09:10
180-182762-7	MW-6	Water	11/12/24 02:20	11/14/24 09:10
180-182762-8	MW-6A	Water	11/12/24 01:40	11/14/24 09:10
180-182762-9	MW-7	Water	11/12/24 01:10	11/14/24 09:10
180-182762-10	DUPLICATE (AT MW- )	Water	11/12/24 04:20	11/14/24 09:10
180-182762-11	FIELD BLANK	Water	11/13/24 10:20	11/14/24 09:10

# **Method Summary**

#### Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	EET PIT
EPA 6020B	Metals (ICP/MS)	SW846	EET CF
EPA 7470A	Mercury (CVAA)	SW846	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET PIT
9315	Radium-226 (GFPC)	SW846	EET SL
9320	Radium-228 (GFPC)	SW846	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
Field Sampling	Field Sampling	EPA	EET PIT
3005A	Preparation, Total Metals	SW846	EET CF
7470A	Preparation, Mercury	SW846	EET CF
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

#### **Protocol References:**

EPA = US Environmental Protection Agency

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Sample ID: 180-182762-2

Lab Sample ID: 180-182762-3

Matrix: Water

Matrix: Water

#### **Client Sample ID: MW-2** Date Collected: 11/13/24 09:25 Date Received: 11/14/24 09:10

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis Instrumen	EPA 9056A t ID: CHICS2100B		2	1 mL	1 mL	484626	11/18/24 20:11	ERP	EET PIT
Total/NA	Prep	3005A			50 mL	50 mL	440098	11/19/24 09:30	F5MW	EET CF
Total/NA	Analysis Instrumen	EPA 6020B tlD: ICPMS7850		1			440318	11/19/24 17:07	A6US	EET CF
Total/NA	Analysis Instrumen	SM 2540C t ID: NOEQUIP		1	100 mL	100 mL	484481	11/15/24 10:42	EBA	EET PIT
Total/NA	Analysis Instrumen	Field Sampling t ID: NOEQUIP		1			484508	11/13/24 10:25	GAL	EET PIT

#### **Client Sample ID: MW-3** Date Collected: 11/13/24 10:10 Date Received: 11/14/24 09:10

Dil Batch Batch Initial Final Batch Prepared Method Prep Type Туре Run Factor Amount Amount Number or Analyzed Analyst Lab Total/NA Analysis EPA 9056A 1 1 mL 1 mL 484626 11/18/24 20:26 ERP EET PIT Instrument ID: CHICS2100B Total/NA Analysis EPA 9056A 5 1 mL 1 mL 484626 11/18/24 20:43 ERP EET PIT Instrument ID: CHICS2100B Total/NA 3005A 50 mL 11/19/24 09:30 F5MW EET CF Prep 50 mL 440098 Total/NA 440318 11/19/24 17:09 A6US Analysis EPA 6020B 1 EET CF Instrument ID: ICPMS7850 Analysis 484481 Total/NA SM 2540C 1 100 mL 100 mL 11/15/24 10:42 EBA EET PIT Instrument ID: NOEQUIP Total/NA Analysis 484508 Field Sampling 1 11/13/24 11:10 GAL EET PIT Instrument ID: NOEQUIP

#### **Client Sample ID: MW-4** Date Collected: 11/13/24 08:25 Date Received: 11/14/24 09:10

Batch Batch Dil Initial Final Batch Prepared or Analyzed Prep Type Туре Method Run Factor Amount Amount Number Analyst Lab Total/NA EPA 9056A 484626 11/18/24 20:58 ERP EET PIT Analysis 1 mL 1 mL 1 Instrument ID: CHICS2100B Total/NA Analysis EPA 9056A 10 1 mL 1 mL 484626 11/18/24 21:13 ERP EET PIT Instrument ID: CHICS2100B Total/NA 3005A 50 ml Prep 50 ml 440098 11/19/24 09:30 F5MW EET CF Total/NA Analysis EPA 6020B 1 440318 11/19/24 17:24 A6US EET CF Instrument ID: ICPMS7850 Total/NA Analysis SM 2540C 1 100 mL 100 mL 484481 11/15/24 10:42 EBA EET PIT Instrument ID: NOEQUIP Total/NA Analvsis Field Sampling 11/13/24 09:25 GAL EET PIT 484508 1 Instrument ID: NOEQUIP

Eurofins Pittsburgh

#### **Client Sample ID: MW-5** Date Collected: 11/12/24 04:05 Date Received: 11/14/24 09:10

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis Instrumen	EPA 9056A t ID: CHICS2100B		1	1 mL	1 mL	484539	11/16/24 18:18	M1D	EET PIT
Total/NA	Prep	3005A			50 mL	50 mL	440098	11/19/24 09:30	F5MW	EET CF
Total/NA	Analysis Instrumen	EPA 6020B t ID: ICPMS7850		1			440318	11/19/24 17:27	A6US	EET CF
Total/NA	Analysis Instrumen	SM 2540C t ID: NOEQUIP		1	100 mL	100 mL	484481	11/15/24 10:42	EBA	EET PIT
Total/NA	Analysis Instrumen	Field Sampling t ID: NOEQUIP		1			484508	11/12/24 05:05	GAL	EET PIT

#### Client Sample ID: MW-5A Date Collected: 11/12/24 02:55 Date Received: 11/14/24 09:10

Dil Batch Batch Initial Final Batch Prepared Method Prep Type Туре Run Factor Amount Amount Number or Analyzed Analyst Lab Total/NA Analysis EPA 9056A 2 1 mL 1 mL 484539 11/16/24 19:47 M1D EET PIT Instrument ID: CHICS2100B Total/NA Analysis EPA 9056A 20 1 mL 1 mL 484539 11/16/24 20:01 M1D EET PIT Instrument ID: CHICS2100B Total/NA 11/19/24 09:30 F5MW EET CF Prep 3005A 50 mL 50 mL 440098 Total/NA Analysis EPA 6020B 1 440318 11/19/24 17:30 A6US EET CF Instrument ID: ICPMS7850 440098 Total/NA Prep 3005A 50 mL 50 mL 11/19/24 09:30 F5MW EET CF Total/NA 440399 Analysis EPA 6020B 4 11/20/24 13:14 A6US EET CF Instrument ID: ICPMS7850 Total/NA Analysis SM 2540C 1 50 mL 100 mL 484482 11/15/24 10:48 EBA EET PIT Instrument ID: NOEQUIP Total/NA Analysis Field Sampling 484508 11/12/24 03:55 GAL EET PIT 1 Instrument ID: NOEQUIP

# **Client Sample ID: MW-5AR** Date Collected: 11/12/24 03:30

Date Received: 11/14/24 09:10 Batch Batch Dil Initial Final Batch Prepared Analyst Prep Type Туре Method Factor Amount Amount Number or Analyzed Run Lab Total/NA EPA 9056A 484539 11/16/24 18:48 M1D Analysis 1 1 ml 1 mL Instrument ID: CHICS2100B Total/NA Analysis EPA 9056A 5 1 mL 1 mL 484539 11/16/24 19:02 M1D Instrument ID: CHICS2100B Total/NA 3005A 440098 Prep 50 mL 50 mL 11/19/24 09:30 F5MW EET CF Total/NA Analysis EPA 6020B 1 440318 11/19/24 17:33 A6US EET CF Instrument ID: ICPMS7850 Total/NA Prep 7470A 30 mL 40 mL 441704 12/10/24 11:00 QTZ5 EET CF Total/NA Analysis EPA 7470A 1 442141 12/10/24 15:02 QTZ5 EET CF Instrument ID: Juliet

Lab Sample ID: 180-182762-5

Matrix: Water

#### Lab Sample ID: 180-182762-6 Matrix: Water

EET PIT EET PIT

Eurofins Pittsburgh

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Matrix: Water

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Lab Sample ID: 180-182762-6

#### Client Sample ID: MW-5AR Date Collected: 11/12/24 03:30 Date Received: 11/14/24 09:10

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	484481	11/15/24 10:42	EBA	EET PIT
Total/NA	Prep	PrecSep-21			998.16 mL	1.0 g	689539	11/20/24 09:36	BCE	EET SL
Total/NA	Analysis Instrumen	9315 t ID: GFPCRED		1			693277	12/12/24 07:39	SCB	EET SL
Total/NA	Prep	PrecSep_0			998.16 mL	1.0 g	689540	11/20/24 09:42	BCE	EET SL
Total/NA	Analysis Instrumen	9320 t ID: GFPCPURPLE		1			691990	12/05/24 14:08	SCB	EET SL
Total/NA	Analysis Instrumen	Ra226_Ra228 t ID: NOEQUIP		1			694016	12/16/24 15:15	FLC	EET SL
Total/NA	Analysis Instrumen	Field Sampling t ID: NOEQUIP		1			484508	11/12/24 04:30	GAL	EET PIT

#### **Client Sample ID: MW-6** Date Collected: 11/12/24 02:20 Date Received: 11/14/24 09:10

# Lab Sample ID: 180-182762-7

Matrix: Water

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis Instrumen	EPA 9056A t ID: CHICS2100B		1	1 mL	1 mL	484539	11/16/24 20:16	M1D	EET PIT
Total/NA	Analysis Instrumen	EPA 9056A t ID: CHICS2100B		10	1 mL	1 mL	484539	11/16/24 20:31	M1D	EET PIT
Total/NA	Prep	3005A			50 mL	50 mL	440098	11/19/24 09:30	F5MW	EET CF
Total/NA	Analysis Instrumen	EPA 6020B tlD: ICPMS7850		1			440318	11/19/24 17:35	A6US	EET CF
Total/NA	Analysis Instrumen	SM 2540C t ID: NOEQUIP		1	100 mL	100 mL	484481	11/15/24 10:42	EBA	EET PIT
Total/NA	Analysis Instrumen	Field Sampling It ID: NOEQUIP		1			484508	11/12/24 03:20	GAL	EET PIT

#### **Client Sample ID: MW-6A** Date Collected: 11/12/24 01:40 Date Received: 11/14/24 09:10

# Lab Sample ID: 180-182762-8

**Matrix: Water** 

Ргер Туре	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis Instrumen	EPA 9056A It ID: CHICS2100B		1	1 mL	1 mL	484539	11/16/24 20:46	M1D	EET PIT
Total/NA	Analysis Instrumen	EPA 9056A t ID: INTEGRION		10	1 mL	1 mL	485940	12/05/24 15:12	M1D	EET PIT
Total/NA Total/NA	Prep Analysis Instrumen	3005A EPA 6020B tt ID: ICPMS7850		1	50 mL	50 mL	440098 440318	11/19/24 09:30 11/19/24 17:38		EET CF EET CF
Total/NA	Analysis Instrumen	SM 2540C t ID: NOEQUIP		1	100 mL	100 mL	484481	11/15/24 10:42	EBA	EET PIT
Total/NA	Analysis Instrumen	Field Sampling t ID: NOEQUIP		1			484508	11/12/24 02:40	GAL	EET PIT

#### **Client Sample ID: MW-7** Date Collected: 11/12/24 01:10 Date Received: 11/14/24 09:10

### Lab Sample ID: 180-182762-9 Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A ID: CHICS2100B		1	1 mL	1 mL	484539	11/16/24 21:16	M1D	EET PIT
Total/NA	Analysis Instrument	EPA 9056A ID: CHICS2100B		10	1 mL	1 mL	484539	11/16/24 21:30	M1D	EET PIT
Total/NA Total/NA	Prep Analysis Instrument	3005A EPA 6020B ID: ICPMS7850		1	50 mL	50 mL	440099 440318	11/19/24 09:30 11/19/24 18:50	F5MW A6US	EET CF EET CF
Total/NA Total/NA	Prep Analysis Instrument	3005A EPA 6020B ID: ICPMS7850		4	50 mL	50 mL	440099 440399	11/19/24 09:30 11/20/24 13:22		EET CF EET CF
Total/NA	Analysis Instrument	SM 2540C ID: NOEQUIP		1	50 mL	100 mL	484482	11/15/24 10:48	EBA	EET PIT
Total/NA	Analysis Instrument	Field Sampling		1			484508	11/12/24 02:10	GAL	EET PIT

#### Client Sample ID: DUPLICATE (AT MW-) Date Collected: 11/12/24 04:20 Date Received: 11/14/24 09:10

#### Batch Batch Dil Initial Final Batch Prepared **Prep Type** Method Factor Amount Amount Number or Analyzed Туре Run Analyst Lab Total/NA Analysis EPA 9056A 2 1 mL 1 mL 484626 11/18/24 21:28 ERP EET PIT Instrument ID: CHICS2100B 3005A 440099 Total/NA Prep 50 mL 50 mL 11/19/24 09:30 F5MW EET CF Total/NA EPA 6020B 440318 11/19/24 18:53 A6US Analysis EET CF 1 Instrument ID: ICPMS7850 Total/NA Analysis SM 2540C 1 100 mL 100 mL 484481 11/15/24 10:42 EBA EET PIT Instrument ID: NOEQUIP Total/NA Analysis Field Sampling 484508 11/12/24 05:20 GAL EET PIT 1 Instrument ID: NOEQUIP

#### **Client Sample ID: FIELD BLANK** Date Collected: 11/13/24 10:20

#### Date Received: 11/14/24 09:10

Prep Type Total/NA	Batch Type Analysis	Batch Method EPA 9056A	Run	Dil Factor	Initial Amount 1 mL	Final Amount 1 mL	Batch Number 484597	Prepared or Analyzed 11/18/24 21:15	Analyst ERP	Lab EET PIT
	Instrumer	t ID: INUVION								
Total/NA	Prep	3005A			50 mL	50 mL	440099	11/19/24 09:30	F5MW	EET CF
Total/NA	Analysis Instrumer	EPA 6020B nt ID: ICPMS7850		1			440318	11/19/24 18:56	A6US	EET CF
Total/NA	Analysis Instrumer	SM 2540C nt ID: NOEQUIP		1	100 mL	100 mL	484481	11/15/24 10:42	EBA	EET PIT

# Lab Sample ID: 180-182762-11

Lab Sample ID: 180-182762-10

Matrix: Water

Matrix: Water

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Client: Midwest Environmental Consultants Project/Site: Asbury Pond CCR

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401 EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058 EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

#### Analyst References:

Lab: EET CF Batch Type: Prep F5MW = Alexander Wilmer QTZ5 = Anna Martinez Batch Type: Analysis A6US = Orijit Kar QTZ5 = Anna Martinez Lab: EET PIT Batch Type: Analysis EBA = Elizabeth Arbster ERP = Evan Papak GAL = Gail Lage M1D = Maureen Donlin Lab: EET SL Batch Type: Prep BCE = Benjamin Celeslie Batch Type: Analysis FLC = Fernando Cruz SCB = Sarah Bernsen

#### Client Sample ID: MW-2 Date Collected: 11/13/24 09:25 Date Received: 11/14/24 09:10

## Lab Sample ID: 180-182762-1 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		2.0	1.4	mg/L			11/18/24 20:11	2
Fluoride	0.16	J	0.20	0.052	mg/L			11/18/24 20:11	2
Sulfate	92		2.0	1.5	mg/L			11/18/24 20:11	2
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	93	J	100	76	ug/L		11/19/24 09:30	11/19/24 17:07	1
Calcium	23000		500	190	ug/L		11/19/24 09:30	11/19/24 17:07	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	350		10	10	mg/L			11/15/24 10:42	1
Method: EPA Field Sampling - Fi	eld Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.67				SU		-	11/13/24 10:25	1

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#### Client Sample ID: MW-3 Date Collected: 11/13/24 10:10 Date Received: 11/14/24 09:10

### Lab Sample ID: 180-182762-2 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	52		1.0	0.71	mg/L			11/18/24 20:26	1
Fluoride	0.13		0.10	0.026	mg/L			11/18/24 20:26	1
Sulfate	520		5.0	3.8	mg/L			11/18/24 20:43	5
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100	76	ug/L		11/19/24 09:30	11/19/24 17:09	1
Calcium	100000		500	190	ug/L		11/19/24 09:30	11/19/24 17:09	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	890		10	10	mg/L			11/15/24 10:42	1
Method: EPA Field Sampling - F	ield Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.80				SU		-	11/13/24 11:10	1

#### Client Sample ID: MW-4 Date Collected: 11/13/24 08:25 Date Received: 11/14/24 09:10

## Lab Sample ID: 180-182762-3 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16		1.0	0.71	mg/L			11/18/24 20:58	1
Fluoride	0.097	J	0.10	0.026	mg/L			11/18/24 20:58	1
Sulfate	500		10	7.6	mg/L			11/18/24 21:13	10
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100	76	ug/L		11/19/24 09:30	11/19/24 17:24	1
Calcium	240000		500	190	ug/L		11/19/24 09:30	11/19/24 17:24	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1300		10	10	mg/L			11/15/24 10:42	1
Method: EPA Field Sampling - F	ield Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.79				SU			11/13/24 09:25	1

#### Client Sample ID: MW-5 Date Collected: 11/12/24 04:05 Date Received: 11/14/24 09:10

### Lab Sample ID: 180-182762-4 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.9		1.0	0.71	mg/L			11/16/24 18:18	1
Fluoride	0.29		0.10	0.026	mg/L			11/16/24 18:18	1
Sulfate	150		1.0	0.76	mg/L			11/16/24 18:18	1
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	270		100	76	ug/L		11/19/24 09:30	11/19/24 17:27	1
Calcium	87000		500	190	ug/L		11/19/24 09:30	11/19/24 17:27	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	570		10	10	mg/L			11/15/24 10:42	1
Method: EPA Field Sampling - Fi	eld Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.25				SU			11/12/24 05:05	1

9

# **Client Sample Results**

Job ID: 180-182762-2

2

2

1

4

1

1

Q

#### **Client Sample ID: MW-5A** Date Collected: 11/12/24 02:55 Date Received: 11/14/24 09:10

pH

### Lab Sample ID: 180-182762-5 **Matrix: Water**

Method: SW846 EPA 9056A - Anions, Ion Chromatography Analyte Result Qualifier RL MDL Unit D Dil Fac Prepared Analyzed Chloride 2.0 1.4 mg/L 11/16/24 19:47 180 0.20 Fluoride 0.052 mg/L 11/16/24 19:47 0.22 Sulfate 1900 20 15 mg/L 11/16/24 20:01 20 Method: SW846 EPA 6020B - Metals (ICP/MS) MDL Unit Analyte Result Qualifier RL D Prepared Dil Fac Analyzed Boron 2000 100 76 ug/L 11/19/24 09:30 11/19/24 17:30 450000 2000 Calcium 760 ug/L 11/19/24 09:30 11/20/24 13:14 **General Chemistry** Analyte RL MDL Unit **Result Qualifier** D Prepared Analyzed Dil Fac 20 **Total Dissolved Solids (SM 2540C)** 3200 20 mg/L 11/15/24 10:48 Method: EPA Field Sampling - Field Sampling Analyte Result Qualifier RL NONE Unit D Dil Fac Prepared Analyzed SU 11/12/24 03:55 6.71

5 6 7

9

### Lab Sample ID: 180-182762-6 Matrix: Water

Date Collected: 11/12/24 03:30 Date Received: 11/14/24 09:10

Client Sample ID: MW-5AR

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.1		1.0	0.71	mg/L			11/16/24 18:48	1
luoride	0.19		0.10	0.026	mg/L			11/16/24 18:48	1
ulfate	430		5.0	3.8	mg/L			11/16/24 19:02	ţ
Nethod: SW846 EPA 6020B - Me	tals (ICP/	MS)							
nalyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
ntimony	ND		2.0	1.0	ug/L		11/19/24 09:30	11/19/24 17:33	
rsenic	ND		2.0	0.53	ug/L		11/19/24 09:30	11/19/24 17:33	
Barium	13		2.0	0.66	ug/L		11/19/24 09:30	11/19/24 17:33	
eryllium	ND		1.0	0.33	ug/L		11/19/24 09:30	11/19/24 17:33	
Boron	390		100	76	ug/L		11/19/24 09:30	11/19/24 17:33	
Cadmium	ND		0.20	0.10	ug/L		11/19/24 09:30	11/19/24 17:33	
alcium	99000		500	190	ug/L		11/19/24 09:30	11/19/24 17:33	
Chromium	ND		5.0	1.2	ug/L		11/19/24 09:30	11/19/24 17:33	
Cobalt	ND		0.50	0.17	ug/L		11/19/24 09:30	11/19/24 17:33	
ead	ND		0.50	0.26	ug/L		11/19/24 09:30	11/19/24 17:33	
ithium	130		10	2.5	ug/L		11/19/24 09:30	11/19/24 17:33	
lolybdenum	ND		2.0	1.3	ug/L		11/19/24 09:30	11/19/24 17:33	
Selenium	ND		5.0	1.4	ug/L		11/19/24 09:30	11/19/24 17:33	
hallium	ND		1.0	0.57	ug/L		11/19/24 09:30	11/19/24 17:33	
Method: SW846 EPA 7470A - Me	rcury (C\	<b>/AA</b> )							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
/lercury	ND		0.00020	0.00011	mg/L		12/10/24 11:00	12/10/24 15:02	
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
otal Dissolved Solids (SM 2540C)	900		10	10	mg/L			11/15/24 10:42	
Method: SW846 9315 - Radium-2	26 (GFP	C)							
		Count	Total						
		Uncert.	Uncert.						

Analyte	Result	Qualifier	(2 <b>σ+/-</b> )	(2 <b>σ+/-</b> )	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.733		0.160	0.173	1.00	0.101	pCi/L	11/20/24 09:36	12/12/24 07:39	1
<b>Carrier</b> Ba Carrier	% <b>Yield</b> 91.4	Qualifier	Limits 30 - 110					<b>Prepared</b> 11/20/24 09:36	Analyzed 12/12/24 07:39	Dil Fac

#### Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analvzed	Dil Fac
Radium-228	0.781	Guanner	0.410	0.417	1.00		pCi/L	11/20/24 09:42		1
Raulull-220	0.701		0.410	0.417	1.00	0.505	poi/L	11/20/24 03.42	12/03/24 14:00	
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		30 - 110					11/20/24 09:42	12/05/24 14:08	1
Y Carrier	74.8		30 - 110					11/20/24 09:42	12/05/24 14:08	1

#### Client Sample ID: MW-5AR Date Collected: 11/12/24 03:30 Date Received: 11/14/24 09:10

### Lab Sample ID: 180-182762-6 Matrix: Water

9

			Count Uncert.	Total Uncert.							
Analyte	Result	Qualifier	(2 <b>σ</b> +/-)	(2σ+/-)	RL	MDC	Unit		Prepared	Analyzed	Dil Fac
Combined Radium	1.51		0.440	0.451	5.00 0	).569	pCi/L			12/16/24 15:15	
226 + 228											
Method: EPA Field	Sampling	- Field Sam	pling								
Analyte		-	Qualifier	RL	NONE	Unit	t	D	Prepared	Analyzed	Dil Fac
рН		7.72				SU				11/12/24 04:30	

#### **Client Sample ID: MW-6** Date Collected: 11/12/24 02:20 Date Received: 11/14/24 09:10

## Lab Sample ID: 180-182762-7 Matrix: Water

9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	45		1.0	0.71	mg/L			11/16/24 20:16	1
Fluoride	0.22		0.10	0.026	mg/L			11/16/24 20:16	1
Sulfate	1100		10	7.6	mg/L			11/16/24 20:31	10
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	350		100	76	ug/L		11/19/24 09:30	11/19/24 17:35	1
Calcium	280000		500	190	ug/L		11/19/24 09:30	11/19/24 17:35	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	1800		10	10	mg/L			11/15/24 10:42	1
Method: EPA Field Sampling - F	ield Samp	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.01				SU			11/12/24 03:20	1

# **Client Sample Results**

Job ID: 180-182762-2

Q

#### Client Sample ID: MW-6A Date Collected: 11/12/24 01:40 Date Received: 11/14/24 09:10

### Lab Sample ID: 180-182762-8 Matrix: Water

Method: SW846 EPA 9056A - Anions, Ion Chromatography Analyte Result Qualifier RL MDL Unit D Analyzed Dil Fac Prepared Chloride 1.0 0.71 mg/L 11/16/24 20:46 81 1 Fluoride 0.10 0.026 mg/L 11/16/24 20:46 0.15 1 Sulfate 1000 10 7.6 mg/L 12/05/24 15:12 10 Method: SW846 EPA 6020B - Metals (ICP/MS) Analyte Result Qualifier RL MDL Unit D Prepared Dil Fac Analyzed 11/19/24 09:30 Boron 100 76 ug/L 11/19/24 17:38 220 1 500 Calcium 190000 190 ug/L 11/19/24 09:30 11/19/24 17:38 1 **General Chemistry** Analyte RL MDL Unit **Result Qualifier** D Prepared Analyzed Dil Fac **Total Dissolved Solids (SM 2540C)** 1500 10 10 mg/L 11/15/24 10:42 1 Method: EPA Field Sampling - Field Sampling Analyte Result Qualifier RL NONE Unit D Analyzed Dil Fac Prepared SU 11/12/24 02:40 pH 6.16 1

#### **Client Sample ID: MW-7** Date Collected: 11/12/24 01:10 Date Received: 11/14/24 09:10

## Lab Sample ID: 180-182762-9 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49		1.0	0.71	mg/L			11/16/24 21:16	1
Fluoride	0.16		0.10	0.026	mg/L			11/16/24 21:16	1
Sulfate	1800		10	7.6	mg/L			11/16/24 21:30	10
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	240		100	76	ug/L		11/19/24 09:30	11/19/24 18:50	1
Calcium	570000		2000	760	ug/L		11/19/24 09:30	11/20/24 13:22	2
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	2800		20	20	mg/L			11/15/24 10:48	1
Method: EPA Field Sampling - F	ield Sam	oling							
Analyte		Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.70				SU			11/12/24 02:10	

#### Client Sample ID: DUPLICATE (AT MW-) Date Collected: 11/12/24 04:20 Date Received: 11/14/24 09:10

Lab Sample ID: 180-182762-10 Matrix: Water

Job ID: 180-182762-2

Method: SW846 EPA 9056A - An	ions, Ion	Chromatog	raphy						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.7		2.0	1.4	mg/L			11/18/24 21:28	2
Fluoride	0.27		0.20	0.052	mg/L			11/18/24 21:28	2
Sulfate	150		2.0	1.5	mg/L			11/18/24 21:28	2
Method: SW846 EPA 6020B - Me	tals (ICP/	MS)							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	270		100	76	ug/L		11/19/24 09:30	11/19/24 18:53	1
Calcium	85000		500	190	ug/L		11/19/24 09:30	11/19/24 18:53	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	560		10	10	mg/L			11/15/24 10:42	1
Method: EPA Field Sampling - F	ield Sam	oling							
Analyte	Result	Qualifier	RL	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.25				SU			11/12/24 05:20	1

#### **Client Sample ID: FIELD BLANK** Date Collected: 11/13/24 10:20 Date Received: 11/14/24 09:10

Job ID: 180-182762-2

### Lab Sample ID: 180-182762-11 Matrix: Water

Method: SW846 EPA 9056A - An	ions, Ion	Chromatog	raphy						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.6		1.0	0.71	mg/L			11/18/24 21:15	1
Fluoride	0.75		0.10	0.026	mg/L			11/18/24 21:15	1
Sulfate	ND		1.0	0.76	mg/L			11/18/24 21:15	1
Method: SW846 EPA 6020B - Me Analyte	•	MS) Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100	76	ug/L		11/19/24 09:30	11/19/24 18:56	1
Calcium	49000		500	190	ug/L		11/19/24 09:30	11/19/24 18:56	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	260		10	10	mg/L			11/15/24 10:42	1

Lab Sample ID: MB 180-484539/6

**Matrix: Water** 

Analyte

Chloride

Fluoride

Sulfate

Method: EPA 9056A - Anions, Ion Chromatography

MB MB

ND

ND

ND

**Result Qualifier** 

10

#### 11/16/24 10:25 1 **Client Sample ID: Lab Control Sample Prep Type: Total/NA**

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Analyzed

11/16/24 10:25

11/16/24 10:25

#### Matrix: Water Analysis Batch: 484539

Lab Sample ID: LCS 180-484539/7

Analysis Batch: 484539

-	Spike	LCS	LCS				%Rec		
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chloride	 50.0	49.2		mg/L		98	80 - 120	 	-
Fluoride	2.50	2.50		mg/L		100	80 - 120		
Sulfate	50.0	46.4		mg/L		93	80 - 120		

RL

1.0

0.10

1.0

MDL Unit

0.71 mg/L

0.026 mg/L

0.76 mg/L

D

Prepared

#### Lab Sample ID: 180-182866-C-1 MS **Matrix: Water**

Analy	vsis	Batch:	484539

	Sample San	nple Spike	MS	MS				%Rec	
Analyte	Result Qua	alifier Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	6.6	50.0	58.1		mg/L		103	80 - 120	 
Fluoride	0.087 J	2.50	2.76		mg/L		107	80 - 120	
Sulfate	28	50.0	79.4		mg/L		103	80 - 120	

#### Lab Sample ID: 180-182866-C-1 MSD **Matrix: Water**

Analysis Batch: 484539

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	6.6		50.0	57.9		mg/L		103	80 - 120	0	15
Fluoride	0.087	J	2.50	2.74		mg/L		106	80 - 120	1	15
Sulfate	28		50.0	75.5		mg/L		95	80 - 120	5	15

#### Lab Sample ID: MB 180-484597/45 **Matrix: Water**

Analysis Batch: 484597

	IVID								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.745	J	1.0	0.71	mg/L			11/18/24 17:57	1
Fluoride	ND		0.10	0.026	mg/L			11/18/24 17:57	1
Sulfate	ND		1.0	0.76	mg/L			11/18/24 17:57	1

#### Lab Sample ID: LCS 180-484597/46 **Matrix: Water**

Analysis Batch: 484597

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	50.0	53.1		mg/L		106	80 - 120	
Fluoride	2.50	2.56		mg/L		103	80 - 120	
Sulfate	50.0	46.6		mg/L		93	80 - 120	

## Method: EPA 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 180-182902 Matrix: Water	-D-2 103							ient Sa	mple ID: I Prep Ty		
Analysis Batch: 484597										·	
	Sample	Sample	Spike	MS	MS				%Rec		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chloride	10		50.0	62.2		mg/L		104	80 - 120		
Fluoride	0.041	J	2.50	2.59		mg/L		102	80 - 120		
Sulfate	19		50.0	71.5		mg/L		105	80 - 120		
Lab Sample ID: 180-182902 Matrix: Water	-B-2 MSD					Client	Samp	le ID: N	latrix Spil Prep Ty		
Analysis Batch: 484597									i iop i j	pc. 100	
	Sample	Sample	Spike	MSD	MSD				%Rec		RF
Analyte		Qualifier	Added	_	Qualifier	Unit	D	%Rec	Limits	RPD	Lin
Chloride	10		50.0	63.0		mg/L		106	80 - 120	1	
Iuoride	0.041	1	2.50	2.59		mg/L		100	80 - 120	0	
Sulfate	19	5	50.0	71.1		-		102	80 - 120	0	
unate	19		50.0	71.1		mg/L		104	80 - 120	0	
Lab Sample ID: MB 180-484 Matrix: Water	4626/6						Clie	ent Sam	ple ID: M Prep Ty		
Analysis Batch: 484626											
		МВ МВ									
Analyte	Re	esult Qualifier		RL	MDL Unit		D P	repared	Analyz	zed	Dil F
Chloride					0.71 mg/L			iopuiou	11/18/24		2
		ND			0.026 mg/L				11/18/24		
luoride					.020 IIIU/L				11/10/24	12.02	
Sulfate Lab Sample ID: LCS 180-48	34626/7	ND			0.76 mg/L	Clie	ent Sai	mple ID	11/18/24 : Lab Cor	ntrol Sa	
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water	34626/7				0	Clie	ent Sai	mple ID		ntrol Sa	
<sup>Sulfate</sup> Lab Sample ID: LCS 180-48 Matrix: Water	34626/7		Spike	1.0	0	Clie	ent Sai	mple ID	: Lab Cor	ntrol Sa	
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626	34626/7		Spike Added	1.0 LCS	0.76 mg/L	Clie	ent Sai D	mple ID %Rec	: Lab Cor Prep Ty	ntrol Sa	
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte	34626/7		•	1.0 LCS	0.76 mg/L				: Lab Cor Prep Ty %Rec	ntrol Sa	
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride	34626/7		Added	1.0 LCS Result	0.76 mg/L	Unit mg/L		%Rec	: Lab Cor Prep Ty %Rec Limits	ntrol Sa	
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride	34626/7		<b>Added</b> 50.0	1.0 LCS <u>Result</u> 48.0	0.76 mg/L	Unit		%Rec 96	: Lab Cor Prep Ty %Rec Limits 80 - 120	ntrol Sa	
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate			Added 50.0 2.50	1.0 LCS <u>Result</u> 48.0 2.48	0.76 mg/L	Unit mg/L mg/L	<u> </u>	%Rec 96 99 94	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120	ntrol Sa pe: Tot	al/N
Fluoride Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water			Added 50.0 2.50	1.0 LCS <u>Result</u> 48.0 2.48	0.76 mg/L	Unit mg/L mg/L	<u> </u>	%Rec 96 99 94	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120	ntrol Sa pe: Tot 	spił
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Sulfate Lab Sample ID: 180-182712 Matrix: Water			Added 50.0 2.50	1.0 LCS <u>Result</u> 48.0 2.48	0.76 mg/L	Unit mg/L mg/L	<u> </u>	%Rec 96 99 94	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120	ntrol Sa pe: Tot 	spił
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626	-C-1 MS Sample	ND	Added 50.0 2.50 50.0 Spike	1.0 LCS Result 48.0 2.48 46.9	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L	D CI	%Rec 96 99 94	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec	ntrol Sa pe: Tot 	spił
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte	2-C-1 MS Sample Result	ND	Added 50.0 2.50 50.0 Spike Added	1.0 LCS Result 48.0 2.48 46.9 MS Result	0.76 mg/L LCS Qualifier	Unit mg/L mg/L mg/L	<u> </u>	%Rec           96           99           94           ient Sa           %Rec	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits	ntrol Sa pe: Tot 	spił
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte	-C-1 MS Sample	ND	Added 50.0 2.50 50.0 Spike	1.0 LCS Result 48.0 2.48 46.9	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L	D CI	%Rec 96 99 94	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec	ntrol Sa pe: Tot 	spił
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Chloride	2-C-1 MS Sample Result	ND Sample Qualifier	Added 50.0 2.50 50.0 Spike Added	1.0 LCS Result 48.0 2.48 46.9 MS Result	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L	D CI	%Rec           96           99           94           ient Sa           %Rec	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits	ntrol Sa pe: Tot 	spil
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate	2-C-1 MS Sample Result 1.6	ND Sample Qualifier	Added 50.0 2.50 50.0 Spike Added 50.0	1.0 LCS <u>Result</u> 48.0 2.48 46.9 MS <u>Result</u> 51.6	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L	D CI	%Rec           96           99           94           ient Sa           %Rec           100	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120	ntrol Sa pe: Tot 	spił
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712	<b>Sample</b> <b>Result</b> 1.6 0.099 4.3	ND Sample Qualifier	Added 50.0 2.50 50.0 Spike Added 50.0 2.50	1.0 LCS Result 48.0 2.48 46.9 MS Result 51.6 2.67	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L mg/L mg/L mg/L	D CI	%Rec         96         99         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         96           96         99         94         97	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120	Matrix 3 pe: Tot	Spil al/N
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Chloride Fluoride Sulfate	<b>Sample</b> <b>Result</b> 1.6 0.099 4.3	ND Sample Qualifier	Added 50.0 2.50 50.0 Spike Added 50.0 2.50	1.0 LCS Result 48.0 2.48 46.9 MS Result 51.6 2.67	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L mg/L mg/L mg/L	D CI	%Rec         96         99         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         96           96         99         94         97	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120	Matrix 3 pe: Tot	Spil al/N
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water	2-C-1 MS Sample Result 1.6 0.099 4.3 2-C-1 MSD	ND Sample Qualifier	Added 50.0 2.50 50.0 Spike Added 50.0 2.50	1.0 LCS Result 48.0 2.48 46.9 MS Result 51.6 2.67 52.6	0.76 mg/L LCS Qualifier MS	Unit mg/L mg/L mg/L mg/L mg/L mg/L	D CI	%Rec         96         99         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         96           96         99         94         97	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120	Matrix 3 pe: Tot	Spil sal/N
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water	2-C-1 MS Sample Result 1.6 0.099 4.3 2-C-1 MSD Sample	ND	Added 50.0 2.50 50.0 Spike Added 50.0 2.50 50.0	1.0 LCS Result 48.0 2.48 46.9 MS Result 51.6 2.67 52.6	0.76 mg/L LCS Qualifier MS Qualifier	Unit mg/L mg/L mg/L mg/L mg/L mg/L	D CI	%Rec         96         99         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         94           96         99         94         96           96         99         94         97	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120	Matrix 3 pe: Tot	Spil al/N
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Luoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Luoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Analysis Batch: 484626 Analyte Analysis Batch: 484626 Analyte	2-C-1 MS Sample Result 1.6 0.099 4.3 2-C-1 MSD Sample	ND Sample Qualifier J Sample	Added 50.0 2.50 50.0 Spike Added 50.0 2.50 50.0 50.0	1.0 LCS Result 48.0 2.48 46.9 MS Result 51.6 2.67 52.6	0.76 mg/L LCS Qualifier MS Qualifier	Unit mg/L mg/L mg/L Mg/L mg/L mg/L Client	D CI D Samp	%Rec         96         99         94         ient Sa         %Rec         100         103         97         ile ID: N	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120	Matrix : pe: Tot	Spil al/N lica al/N RF
Sulfate Lab Sample ID: LCS 180-48 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626 Analyte Chloride Fluoride Sulfate Lab Sample ID: 180-182712 Matrix: Water Analysis Batch: 484626	2-C-1 MS Sample Result 1.6 0.099 4.3 2-C-1 MSD Sample Result	ND Sample Qualifier J Sample Qualifier	Added 50.0 2.50 50.0 Spike Added 50.0 2.50 50.0 50.0 Spike Added	1.0 LCS Result 48.0 2.48 46.9 MSS Result 51.6 2.67 52.6 MSD Result	0.76 mg/L LCS Qualifier MS Qualifier	Unit mg/L mg/L mg/L Mg/L mg/L mg/L Client	D CI D Samp	%Rec         96         99         94         ient Sa         %Rec         100         103         97         Ie ID: N         %Rec	: Lab Cor Prep Ty %Rec Limits 80 - 120 80 - 120 80 - 120 mple ID: I Prep Ty %Rec Limits 80 - 120 80 - 120	Matrix S pe: Tot pe: Tot ke Dup pe: Tot	Spil al/N lica al/N

Lab Sample ID: MB 180-485940/6

Matrix: Water

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 440098

## Method: EPA 9056A - Anions, Ion Chromatography (Continued)

# **Client Sample ID: Method Blank** Prep Type: Total/NA

Analysis Batch: 485940									
	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			12/05/24 11:05	1
Fluoride	ND		0.10	0.026	mg/L			12/05/24 11:05	1
Sulfate	ND		1.0	0.76	mg/L			12/05/24 11:05	1

#### Lab Sample ID: LCS 180-485940/7 Matrix: Water

#### Analysis Batch: 485940 Spike LCS LCS %Rec Analyte Added Result Qualifier Unit D %Rec Limits Chloride 50.0 80 - 120 49.4 mg/L 99 Fluoride 2.50 2.55 mg/L 102 80 - 120 Sulfate 50.0 mg/L 80 - 120 49.6 99

#### Lab Sample ID: 180-183682-D-1 MS **Matrix: Water** Analysis Batch: 485940

-	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	28		50.0	76.1		mg/L		96	80 - 120	
Fluoride	0.13		2.50	2.68		mg/L		102	80 - 120	
Sulfate	3.6		50.0	53.8		mg/L		100	80 - 120	

#### Lab Sample ID: 180-183682-D-1 MSD

**Matrix: Water** 

Analysis Batch: 485940

-	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	28		50.0	76.2		mg/L		96	80 - 120	0	15
Fluoride	0.13		2.50	2.68		mg/L		102	80 - 120	0	15
Sulfate	3.6		50.0	53.8		mg/L		100	80 - 120	0	15

### Method: EPA 6020B - Metals (ICP/MS)

#### Lab Sample ID: MB 310-440098/1-A **Matrix: Water** Analysis Batch: 440318 MB MB

		IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	1.0	ug/L		11/19/24 09:30	11/19/24 16:02	1
Arsenic	ND		2.0	0.53	ug/L		11/19/24 09:30	11/19/24 16:02	1
Barium	ND		2.0	0.66	ug/L		11/19/24 09:30	11/19/24 16:02	1
Beryllium	ND		1.0	0.33	ug/L		11/19/24 09:30	11/19/24 16:02	1
Boron	ND		100	76	ug/L		11/19/24 09:30	11/19/24 16:02	1
Cadmium	ND		0.20	0.10	ug/L		11/19/24 09:30	11/19/24 16:02	1
Calcium	ND		500	190	ug/L		11/19/24 09:30	11/19/24 16:02	1
Chromium	ND		5.0	1.2	ug/L		11/19/24 09:30	11/19/24 16:02	1
Cobalt	ND		0.50	0.17	ug/L		11/19/24 09:30	11/19/24 16:02	1
Lead	ND		0.50	0.26	ug/L		11/19/24 09:30	11/19/24 16:02	1
Lithium	ND		10	2.5	ug/L		11/19/24 09:30	11/19/24 16:02	1
Molybdenum	ND		2.0	1.3	ug/L		11/19/24 09:30	11/19/24 16:02	1

Lab Sample ID: MB 310-440098/1-A

**Matrix: Water** 

Method: EPA 6020B - Metals (ICP/MS) (Continued)

Prep Type: Total/NA

Prep Batch: 440098

**Client Sample ID: Method Blank** 

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

# 1 1 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

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## Analysis Batch: 440318 MR MR

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Selenium	ND		5.0	1.4	ug/L		11/19/24 09:30	11/19/24 16:02	1	
Thallium	ND		1.0	0.57	ug/L		11/19/24 09:30	11/19/24 16:02	1	

## Lab Sample ID: LCS 310-440098/2-A **Matrix: Water**

Analysis Batch: 440318							Prep Batch: 440098	
	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Antimony	200	194		ug/L		97	80 - 120	Ē
Arsenic	200	191		ug/L		95	80 - 120	ľ
Barium	100	96.8		ug/L		97	80 - 120	2
Beryllium	100	101		ug/L		101	80 - 120	
Boron	200	195		ug/L		98	80 - 120	
Cadmium	100	95.0		ug/L		95	80 - 120	
Calcium	2000	1860		ug/L		93	80 - 120	
Chromium	100	102		ug/L		102	80 - 120	
Cobalt	100	104		ug/L		104	80 - 120	
Lead	200	194		ug/L		97	80 - 120	
Lithium	200	208		ug/L		104	80 - 120	
Molybdenum	200	187		ug/L		94	80 - 120	
Selenium	400	389		ug/L		97	80 - 120	
Thallium	100	104		ug/L		104	80 - 120	

#### Lab Sample ID: 310-295313-A-4-B MS **Matrix: Water**

#### Analysis Batch: 440318

#### Prep Batch: 440098 %Rec MS MS Sample Sample Spike Analyte **Result Qualifier** Added **Result Qualifier** Unit D %Rec Limits ug/L Antimony ND 200 196 98 75 - 125 Arsenic ND 200 209 ug/L 105 75 - 125 Barium 0.090 F1 100 194 F1 ug/L 194 75 - 125 Beryllium ND 100 102 ug/L 102 75 - 125 Boron 230 200 424 ug/L 97 75 - 125 101 Cadmium ND 100 101 ug/L 75 - 125 Calcium 2000 80000 4 90 75 - 125 78000 ug/L Chromium 100 103 103 75 - 125 0.0014 J ug/L Cobalt 0.00033 J 100 102 ug/L 102 75 - 125 Lead 200 195 97 75 - 125 0.0018 ug/L Lithium 0.012 200 214 ug/L 107 75 - 125 ug/L Molybdenum ND 200 204 102 75 - 125 Selenium 0.0016 400 405 ug/L 101 75 - 125 J Thallium ND 100 102 ug/L 102 75 - 125

## Lab Sample ID: 310-295313-A-4-C MSD

Matrix: Water									Prep Ty	pe: Tot	al/NA		
Analysis Batch: 440318									Prep B	Prep Batch: 440098			
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit		
Antimony	ND		200	194		ug/L		97	75 - 125	1	20		

### Method: EPA 6020B - Metals (ICP/MS) (Continued)

### Lab Sample ID: 310-295313-A-4-C MSD **Matrix: Water**

Matrix: Water Analysis Batch: 440318									Prep Ty Prep Ba	-	
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	ND		200	208		ug/L		104	75 - 125	0	20
Barium	0.090	F1	100	195	F1	ug/L		195	75 - 125	0	20
Beryllium	ND		100	101		ug/L		101	75 - 125	1	20
Boron	230		200	429		ug/L		99	75 - 125	1	20
Cadmium	ND		100	101		ug/L		101	75 - 125	0	20
Calcium	78000		2000	80100	4	ug/L		98	75 - 125	0	20
Chromium	0.0014	J	100	102		ug/L		102	75 - 125	1	20
Cobalt	0.00033	J	100	101		ug/L		101	75 - 125	1	20
Lead	0.0018		200	194		ug/L		97	75 - 125	1	20
Lithium	0.012		200	214		ug/L		107	75 - 125	0	20
Molybdenum	ND		200	202		ug/L		101	75 - 125	1	20
Selenium	0.0016	J	400	397		ug/L		99	75 - 125	2	20
Thallium	ND		100	103		ug/L		103	75 - 125	0	20

#### Lab Sample ID: MB 310-440099/1-A **Matrix: Water** Analysis Batch: 440318

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100	76	ug/L		11/19/24 09:30	11/19/24 17:44	1
Calcium	ND		500	190	ug/L		11/19/24 09:30	11/19/24 17:44	1

#### Lab Sample ID: LCS 310-440099/2-A Matrix: Water

Matrix: Water Analysis Batch: 440318							Prep Type: Total/NA Prep Batch: 440099
	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Boron	200	188		ug/L		94	80 - 120
Calcium	2000	1860		ug/L		93	80 - 120

#### Lab Sample ID: 310-295210-A-6-B MS . Matrix: Water

Matrix: Water									Prep Type: Total/NA
Analysis Batch: 440318									Prep Batch: 440099
	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Boron	1300		200	1480	4	ug/L		98	75 - 125
Calcium	44000		2000	44100	4	ug/L		17	75 - 125

#### Lab Sample ID: 310-295210-A-6-C MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA Analysis Batch: 440318 Prep Batch: 440099 Sample Sample Spike MSD MSD %Rec RPD **Result Qualifier** Analyte Added **Result Qualifier** Unit D %Rec Limits RPD Limit Boron 1300 200 1500 4 110 75 - 125 20 ug/L 2 Calcium 44000 2000 45600 4 92 75 - 125 20 ug/L 3

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Job ID: 180-182762-2

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

Prep Batch: 440099

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### Method: EPA 6020B - Metals (ICP/MS) (Continued)

Analysis Batch: 440318							Prep Batch: 44	
	•	Sample		DU				RPI
Analyte		Qualifier		Qualifier	Unit	<u>D</u>	RPD	Limi
Boron	790		806		ug/L		2	2
Calcium	230000		234000		ug/L		0.07	2
Lab Sample ID: 310-295290	-B-21-B D	U				CI	ient Sample ID: Dup	licate
Matrix: Water							Prep Type: Diss	olve
Analysis Batch: 440318							Prep Batch: 44	40098
-	Sample	Sample	DU	DU				RPI
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Lim
Antimony	ND		ND		ug/L		NC	2
Arsenic	ND		ND		ug/L		NC	2
Barium	0.015		14.5	F3	ug/L		200	2
Beryllium	ND		ND		ug/L		NC	2
Boron	ND		ND		ug/L		NC	2
Cadmium	ND		ND		ug/L		NC	2
Calcium	30000		29800		ug/L		1	2
Chromium	ND		ND		ug/L		NC	2
Cobalt	0.00055		0.532	F3	ug/L		200	2
Lead	ND		ND		ug/L		NC	2
Lithium	0.0059	J	5.76	J F3	ug/L		200	2
Molybdenum	ND		ND		ug/L		NC	2
Selenium	ND		ND		ug/L		NC	20
Thallium	ND		ND		ug/L		NC	2
lethod: EPA 7470A - Me	ercury (C	VAA)						

**QC Sample Results** 

Matrix: Water Analysis Batch: 442141										Prep Type: To Prep Batch:	
· ·····, ···· · · · · · · · · · · · · ·	ME	8 MB									
Analyte	Resul	t Qualifier	RL	I	MDL	Unit		D	Prepared	Analyzed	Dil Fac
Mercury	NE	)	0.00020	0.0	0011	mg/L		12	2/10/24 11:00	12/10/24 14:22	1
Lab Sample ID: LCS 310-44	41704/2-A						Clie	nt S	ample ID:	Lab Control	Sample
Matrix: Water										Prep Type: T	otal/NA
Analysis Batch: 442141										Prep Batch:	441704
-			Spike	LCS	LCS					%Rec	
Analyte			Added	Result	Qua	lifier	Unit	I	D %Rec	Limits	
Mercury			0.00167	0.00174			mg/L		105	80 - 120	
Lab Sample ID: 310-295567	7-A-1-C MS							(	Client San	nple ID: Matrix	x Spike
Matrix: Water									F	Prep Type: Dis	solved
Analysis Batch: 442141										Prep Batch:	441704
-	Sample Sa	mple	Spike	MS	MS					%Rec	
Analyte	Result Qu	alifier	Added	Result	Qua	lifier	Unit	I	D %Rec	Limits	
Mercury	ND		0.00167	0.00190			mg/L		114	80 - 120	

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Job ID: 180-182762-2

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Method: EPA 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 310-29556 Matrix: Water	7-A-1-D MS	U				Client S	amp		latrix Spike Du Prep Type: Dis	-
Analysis Batch: 442141									Prep Batch:	
	Sample	Sample	Spike	MSD	MSD				%Rec	RF
Analyte		Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits RPD	
Mercury	ND		0.00167	0.00187		mg/L		112	80 - 120	2 :
lethod: SM 2540C - So	olids, Tota	I Dissolve	d (TDS	5)						
Lab Sample ID: MB 180-48	34481/1						Clie	ent Sam	ple ID: Method	l Blar
Matrix: Water									Prep Type: To	
Analysis Batch: 484481										
	_	MB MB				_	_			
Analyte	Re	Sult Qualifier			MDL Unit	D	P	repared	Analyzed	Dil Fa
Total Dissolved Solids		ND		10	10 mg/L				11/15/24 10:42	
Lab Sample ID: LCS 180-4	84481/2					Client	Sai	mple ID	: Lab Control S	
Matrix: Water									Prep Type: To	otal/N
Analysis Batch: 484481										
			Spike	LCS	LCS				%Rec	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	
Total Dissolved Solids			417	368		mg/L		88	85 - 115	
Lab Sample ID: 180-18273	5-C-7 DU							Client	Sample ID: Du	plica
Matrix: Water									Prep Type: To	-
Analysis Batch: 484481										
	Sample	Sample		DU	DU					R
Analyte		Qualifier		Result	Qualifier	Unit	D		RPD	) Liı
Total Dissolved Solids	1200			1200		mg/L			0.3	
Lab Sample ID: 180-18273	5-C-12 DU							Client	Sample ID: Du	nlics
Matrix: Water	5-0-12 00							onem	Prep Type: To	
Analysis Batch: 484481									пер туре. К	Jtain
Analysis Daten. 404401	Sample	Sample		ווס	DU					R
Analyte	•	Qualifier			Qualifier	Unit	D		RPE	
	730			728		mg/L			(KFL	
Total Dissolved Solids						0				
							<b></b>			
Lab Sample ID: MB 180-48	34482/1						Clie	ent Sam	ple ID: Method	
Lab Sample ID: MB 180-48 Matrix: Water	34482/1						Clie	ent Sam	ple ID: Methoo Prep Type: To	
Lab Sample ID: MB 180-48 Matrix: Water	34482/1						Clie	ent Sam	•	
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482		MB MB							Prep Type: To	otal/N
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 <sup>Analyte</sup>		MB MB esult Qualifier		RL	MDL Unit	D		ent Sam	Prep Type: To	otal/N
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 Analyte				<b>RL</b>	MDL Unit	<u>D</u>			Prep Type: To	otal/N
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 Analyte Total Dissolved Solids	Re	sult Qualifier					P	repared	Prep Type: To	Dil F
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 Analyte Total Dissolved Solids Lab Sample ID: LCS 180-4	Re	sult Qualifier					P	repared	Prep Type: To Analyzed 	Dil F
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 Analyte Total Dissolved Solids Lab Sample ID: LCS 180-4 Matrix: Water	Re	sult Qualifier					P	repared	Prep Type: To <u>Analyzed</u> <u>11/15/24 10:48</u> : Lab Control \$	Dil F
Total Dissolved Solids Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 Analyte Total Dissolved Solids Lab Sample ID: LCS 180-4 Matrix: Water Analysis Batch: 484482	Re	sult Qualifier	Spike	10			P	repared	Prep Type: To <u>Analyzed</u> <u>11/15/24 10:48</u> : Lab Control \$	Dil F
Lab Sample ID: MB 180-48 Matrix: Water Analysis Batch: 484482 Analyte Total Dissolved Solids Lab Sample ID: LCS 180-4 Matrix: Water	Re	sult Qualifier	Spike Added	10 LCS	10 mg/L		P	repared	Prep Type: To Analyzed 11/15/24 10:48 : Lab Control S Prep Type: To	Dil F

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Job ID: 180-182762-2

### Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID	: 180-1	82753-E	3-1 DU						Client	Sample ID: Dup	
Matrix: Water										Prep Type: To	tal/NA
Analysis Batch	ı: <b>4844</b> 8	82	<b>.</b> .	<b>.</b> .							
Awalista			Sample				DU	11			RPD
Analyte Total Dissolved Solie			950	Qualifier		943	Qualifier		D	<b>RPD</b> 0.3	Limit 10
		lium 2				943		mg/L		0.3	10
lethod: 9315	- <b>R</b> au	lium-2	20 (GFF	-0)							
Lab Sample ID	: MB 16	3 <mark>0-689</mark> 5	39/1-A						Client Sam	ple ID: Method	
Matrix: Water										Prep Type: To	
Analysis Batch	i: 6932	77		<b>.</b> .						Prep Batch: 6	89539
		мр	мв	Count	Total						
Analyta		MB		Uncert.	Uncert.	ы	MDC	Unit	Bronorod	Analyzed	
Analyte Radium-226			Qualifier	<u>(2σ+/-)</u> 0.0535	<u>(2σ+/-)</u> 0.0535		0.0989		Prepared 11/20/24 09:30	Analyzed 12/12/24 07:36	Dil Fac
1 auiuiii-220		0.02414 <b>MB</b>	MB	0.0000	0.0000	1.00	0.0909	POIL	11/20/24 09:30	5 12/12/24 07.30	ļ
Carrier		%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier		95.4		30 - 110					11/20/24 09:30		1
Lab Sample ID	: LCS 1	60-689	539/2-A					Cli	ent Sample ID	: Lab Control S	ample
Matrix: Water										Prep Type: To	
Analysis Batch	i: 6932	77								Prep Batch: 6	89539
						Total					
			Spi		LCS	Uncert.				%Rec	
Analyte			Add		Qual	(2σ+/-)	RL	MDC		Limits	
Radium-226			9.	58 9.902		1.05	1.00	0.108	pCi/L 103	75 - 125	
	LCS	LCS									
Carrier	%Yield	Qualifier	Limit	ts							
Ba Carrier	99.0		30 - 1	10							
Lah Samala ID	. 100 4	97767 5							Client	Sample ID: D.	lioote
Lab Sample ID Matrix: Water	. 100-1	02102-6	-0-C DU						Client	Sample ID: Dup Prep Type: To	
Analysis Batch	1. 6932	87								Prep Batch: 6	
, analysis Dator						Total				Top Baton. 0	55000
	Sample	Sample	•	DU	DU	Uncert.					RER
Analyte	Result	•		Result	Qual	(2 <b>σ+/-</b> )	RL	MDC	Unit	RER	Limit
Radium-226	2.05			1.673		0.288	1.00	0.133	pCi/L	0.61	1
	DU	ווח									
Carrier		DU Qualifier	Limit	te							
Ba Carrier	90.6	Quaimer									
lethod: 9320	- Kaŭ	num-2	20 (GFF	-0)							
Lab Sample ID Matrix: Water	: MB 16	30- <mark>689</mark> 5	40/1-A						Client Sam	ple ID: Method	
	. 6010	on								Prep Type: To	
Analysia Datak	1. 03.13	30		Count	Total					Prep Batch: 6	03340
Analysis Batch					iudi						
Analysis Batch		МВ	МВ								
Analysis Batch		MB Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac

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### Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample		60-6895	540/1-A						Cli	ent Sam	ole ID: Method		
Matrix: Wat											Prep Type: To	tal/NA	
<b>Analysis Ba</b>	atch: 6919	90									Prep Batch: 6	89540	
		МВ	МВ										
Carrier			Qualifier	Limits					F	Prepared	Analyzed	Dil Fac	
Ba Carrier		95.4		30 - 110						<u> </u>	12/05/24 14:07	1	
Y Carrier		82.2		30 - 110					11/2	20/24 09:42	12/05/24 14:07	1	
Lab Sample	D: LCS	160-689	540/2-A					Cli	ent Sa	mple ID:	Lab Control S	ample	
Matrix: Wat										•	Prep Type: To		
Analysis Ba	atch: 6919	90									Prep Batch: 6		
						Total							
			Spike	LCS	LCS	Uncert.					%Rec		
Analyte			Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits		
Radium-228			8.29	8.611		1.21	1.00	0.578	pCi/L	104	75 - 125		
	LCS	LCS											
Carrier	%Yield	Qualifier	· Limits										
Ba Carrier	99.0		30 - 110	_									
Y Carrier	79.6		30 - 110										
Lab Sample	e ID: 180-1	82762-1	E-8-D DU							Client S	Sample ID: Du	olicate	
Matrix: Wat	er										Prep Type: To	tal/NA	
Analysis Ba	atch: 6919	89									Prep Batch: 6	89540	
-						Total							
	Sample	e Sample	)	DU	DU	Uncert.						RER	
Analyte	Resu	t Qual		Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit	
Radium-228	2.84	4		1.755		0.542	1.00	0.585	pCi/L		0.89	1	
	DU	DU											
Carrier	%Yield	Qualifier	Limits	_									
Ba Carrier	90.6		30 - 110										
Y Carrier	80.7		30 - 110										

### **QC** Association Summary

Prep Type

Total/NA

Matrix

Water

**Client Sample ID** 

MW-5

MW-5A

MW-5A

MW-5AR

MW-5AR

MW-6

MW-6

MW-6A

MW-7

MW-7

Method Blank

Matrix Spike

Lab Control Sample

Matrix Spike Duplicate

Prep Batch

Method

EPA 9056A

# 9

11 12

Analysis Batch: 484597

HPLC/IC

Lab Sample ID

180-182762-4

180-182762-5

180-182762-5

180-182762-6

180-182762-6

180-182762-7

180-182762-7

180-182762-8

180-182762-9

180-182762-9

MB 180-484539/6

LCS 180-484539/7

180-182866-C-1 MS

180-182866-C-1 MSD

Analysis Batch: 484539

Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
180-182762-11	FIELD BLANK	Total/NA	Water	EPA 9056A	
MB 180-484597/45	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-484597/46	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-182902-B-2 MS	Matrix Spike	Total/NA	Water	EPA 9056A	
180-182902-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 9056A	

#### Analysis Batch: 484626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-1	MW-2	Total/NA	Water	EPA 9056A	
180-182762-2	MW-3	Total/NA	Water	EPA 9056A	
180-182762-2	MW-3	Total/NA	Water	EPA 9056A	
180-182762-3	MW-4	Total/NA	Water	EPA 9056A	
180-182762-3	MW-4	Total/NA	Water	EPA 9056A	
180-182762-10	DUPLICATE (AT MW- )	Total/NA	Water	EPA 9056A	
MB 180-484626/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-484626/7	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-182712-C-1 MS	Matrix Spike	Total/NA	Water	EPA 9056A	
180-182712-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 9056A	

#### Analysis Batch: 485940

Lab Sample ID 180-182762-8	Client Sample ID MW-6A	Prep Type Total/NA	Water	EPA 9056A	Prep Batch
MB 180-485940/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-485940/7	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-183682-D-1 MS	Matrix Spike	Total/NA	Water	EPA 9056A	
180-183682-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 9056A	

### **Metals**

#### Prep Batch: 440098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-1	MW-2	Total/NA	Water	3005A	
180-182762-2	MW-3	Total/NA	Water	3005A	
180-182762-3	MW-4	Total/NA	Water	3005A	

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### Metals (Continued)

### Prep Batch: 440098 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-4	MW-5	Total/NA	Water	3005A	
180-182762-5	MW-5A	Total/NA	Water	3005A	
180-182762-6	MW-5AR	Total/NA	Water	3005A	
180-182762-7	MW-6	Total/NA	Water	3005A	
180-182762-8	MW-6A	Total/NA	Water	3005A	
MB 310-440098/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-440098/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-295313-A-4-B MS	Matrix Spike	Total/NA	Water	3005A	
310-295313-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	3005A	
310-295290-B-21-B DU	Duplicate	Dissolved	Water	3005A	

### Prep Batch: 440099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-9	MW-7	Total/NA	Water	3005A	
180-182762-10	DUPLICATE (AT MW- )	Total/NA	Water	3005A	
180-182762-11	FIELD BLANK	Total/NA	Water	3005A	
MB 310-440099/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-440099/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-295210-A-6-B MS	Matrix Spike	Total/NA	Water	3005A	
310-295210-A-6-C MSD	Matrix Spike Duplicate	Total/NA	Water	3005A	
310-295210-A-4-B DU	Duplicate	Total/NA	Water	3005A	

### Analysis Batch: 440318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-1	MW-2	Total/NA	Water	EPA 6020B	440098
180-182762-2	MW-3	Total/NA	Water	EPA 6020B	440098
180-182762-3	MW-4	Total/NA	Water	EPA 6020B	440098
180-182762-4	MW-5	Total/NA	Water	EPA 6020B	440098
180-182762-5	MW-5A	Total/NA	Water	EPA 6020B	440098
180-182762-6	MW-5AR	Total/NA	Water	EPA 6020B	440098
180-182762-7	MW-6	Total/NA	Water	EPA 6020B	440098
180-182762-8	MW-6A	Total/NA	Water	EPA 6020B	440098
180-182762-9	MW-7	Total/NA	Water	EPA 6020B	440099
180-182762-10	DUPLICATE (AT MW- )	Total/NA	Water	EPA 6020B	440099
180-182762-11	FIELD BLANK	Total/NA	Water	EPA 6020B	440099
MB 310-440098/1-A	Method Blank	Total/NA	Water	EPA 6020B	440098
MB 310-440099/1-A	Method Blank	Total/NA	Water	EPA 6020B	440099
LCS 310-440098/2-A	Lab Control Sample	Total/NA	Water	EPA 6020B	440098
LCS 310-440099/2-A	Lab Control Sample	Total/NA	Water	EPA 6020B	440099
310-295210-A-6-B MS	Matrix Spike	Total/NA	Water	EPA 6020B	440099
310-295210-A-6-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 6020B	440099
310-295313-A-4-B MS	Matrix Spike	Total/NA	Water	EPA 6020B	440098
310-295313-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 6020B	440098
310-295210-A-4-B DU	Duplicate	Total/NA	Water	EPA 6020B	440099
310-295290-B-21-B DU	Duplicate	Dissolved	Water	EPA 6020B	440098

### Analysis Batch: 440399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-5	MW-5A	Total/NA	Water	EPA 6020B	440098
180-182762-9	MW-7	Total/NA	Water	EPA 6020B	440099

Job ID: 180-182762-2

**Client Sample ID** 

Lab Control Sample

**Client Sample ID** 

Lab Control Sample

Matrix Spike Duplicate

MW-5AR

Method Blank

Matrix Spike

Matrix Spike Duplicate

MW-5AR

Method Blank

Matrix Spike

### **QC Association Summary**

Prep Type

Total/NA

Total/NA

Total/NA

Dissolved

Dissolved

Prep Type

Total/NA

Total/NA

Total/NA

Dissolved

Dissolved

Matrix

Water

Water

Water

Water

Water

Matrix

Water

Water

Water

Water

Water

Job ID: 180-182762-2

Prep Batch

Prep Batch

Method

7470A

7470A

7470A

7470A

7470A

Method

EPA 7470A

EPA 7470A

EPA 7470A

EPA 7470A

EPA 7470A

#### 441704 441704 441704 441704 441704 441704 10 11

### **General Chemistry**

**Metals** 

Prep Batch: 441704

MB 310-441704/1-A

LCS 310-441704/2-A

310-295567-A-1-C MS

310-295567-A-1-D MSD

Analysis Batch: 442141

Lab Sample ID

Lab Sample ID

MB 310-441704/1-A

LCS 310-441704/2-A

310-295567-A-1-C MS

310-295567-A-1-D MSD

180-182762-6

180-182762-6

### Analysis Batch: 484481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-1	MW-2	Total/NA	Water	SM 2540C	
180-182762-2	MW-3	Total/NA	Water	SM 2540C	
180-182762-3	MW-4	Total/NA	Water	SM 2540C	
180-182762-4	MW-5	Total/NA	Water	SM 2540C	
180-182762-6	MW-5AR	Total/NA	Water	SM 2540C	
180-182762-7	MW-6	Total/NA	Water	SM 2540C	
180-182762-8	MW-6A	Total/NA	Water	SM 2540C	
180-182762-10	DUPLICATE (AT MW- )	Total/NA	Water	SM 2540C	
180-182762-11	FIELD BLANK	Total/NA	Water	SM 2540C	
MB 180-484481/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-484481/2	Lab Control Sample	Total/NA	Water	SM 2540C	
180-182735-C-7 DU	Duplicate	Total/NA	Water	SM 2540C	
180-182735-C-12 DU	Duplicate	Total/NA	Water	SM 2540C	

#### Analysis Batch: 484482

Lab Sample ID 180-182762-5	Client Sample ID MW-5A	Prep Type Total/NA	Water	Method SM 2540C	Prep Batch
180-182762-9	MW-7	Total/NA	Water	SM 2540C	
MB 180-484482/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-484482/2	Lab Control Sample	Total/NA	Water	SM 2540C	
180-182753-B-1 DU	Duplicate	Total/NA	Water	SM 2540C	

#### Rad

### Prep Batch: 689539

Lab Sample ID 180-182762-6	Client Sample ID	Prep Type Total/NA	Matrix Water	Method PrecSep-21	Prep Batch
MB 160-689539/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-689539/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-182762-E-8-C DU	Duplicate	Total/NA	Water	PrecSep-21	
Prep Batch: 689540					
Lab Sample ID 180-182762-6	Client Sample ID MW-5AR	Prep Type           Total/NA	Matrix Water	Method PrecSep_0	Prep Batch

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### **QC Association Summary**

### Rad (Continued)

### Prep Batch: 689540 (Continued)

Lab Sample ID MB 160-689540/1-A	Client Sample ID Method Blank	Prep Type Total/NA	Matrix Water	Method PrecSep_0	Prep Batch
LCS 160-689540/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-182762-E-8-D DU	Duplicate	Total/NA	Water	PrecSep_0	

### Field Service / Mobile Lab

#### Analysis Batch: 484508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-182762-1	MW-2	Total/NA	Water	Field Sampling	
180-182762-2	MW-3	Total/NA	Water	Field Sampling	
180-182762-3	MW-4	Total/NA	Water	Field Sampling	
180-182762-4	MW-5	Total/NA	Water	Field Sampling	
180-182762-5	MW-5A	Total/NA	Water	Field Sampling	
180-182762-6	MW-5AR	Total/NA	Water	Field Sampling	
180-182762-7	MW-6	Total/NA	Water	Field Sampling	
180-182762-8	MW-6A	Total/NA	Water	Field Sampling	
180-182762-9	MW-7	Total/NA	Water	Field Sampling	
180-182762-10	DUPLICATE (AT MW- )	Total/NA	Water	Field Sampling	

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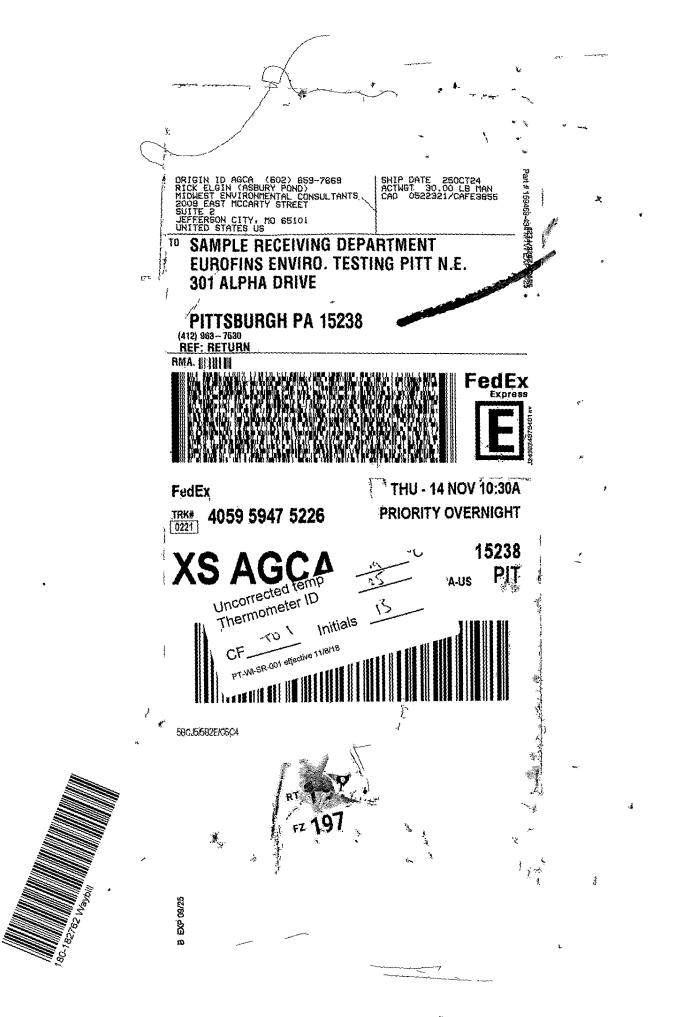
Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pridsburgh, PA 15238 Phone (412) 963-7058 Phone (412) 963-2468	Chain o	of Custody Record	Record				Testing
Client Information	Sampler Rick Ela		Lab PM: Johnson Andy		Carrier 180-182762	2762 Chain of Custody	
Client Contact: Anika Careaga	3-6362	auguation and	E-Mail Andy. Johnson@et. eurofinsus.com	_	State of L NIC		
Company: Midwest Environmental Consultants		PWSID:	Ana	Analysis Requ	Requested	H qof	
Address: 2009 East McCarty Street Suite 2	Due Date Requested:					Preservation Codes	odes. M Hexane
City Jefferson City	TAT Requested (days):			(AA&	(Ajuo Y	B NaOH C Zh Acetate	N None O AsNaO2 P Na2045
State, Zip: MO 65101		A No		-ww	IAJWA	D Nitric Acid	D Na2SO3 R Na2S203
Phone: 573-536-9454(Tel)	Po #: Purchase Order not required		nj∃ 'ap	hqms?	A siqn	F MeOH G Amchlor H Ascorbio Acid	
Email: acareaga@mecpc.com	#OM		Chlorid (Dhorid	) tei 1 t	52 2l		U Acetone V MCAA W pH 4-5
Project Name: Asbury Pond CCR	Project #: 18023389		50. ( 00W	9 <u>1</u> 919	etem \	<u> </u>	Y Trizma Z other (specify)
Site:	SSOW#:		1. (GOW unia) 380 (X	piepae		of con	
	Sample	Sample Matrix Type (W=water Type S=solid (C=comp, O=wate/oi	bid Filtered Stor Bronkow 20 Boronica 40C_Cated (	20,74710 CCR	20CCR Apee	tadmul/ list	
Sample Identification	Sample Date Time	G=grab)   st-rtssue, A=Air) Preservation Code:	EF 64 90 80 80 80 80 80 80 80 80 80 80 80 80 80	26 G	09		Special Instructions/Note:
MW-2	20 10/2/24 9 35	۸ 0	× × ×			7.67	Spec Cand = 0 711
WW-3		M U	× × ×			PH 5.80	Spec Cond
MW-4	11/13/34 8 35	м 0	× × ×			PH= 6.79	Spec Cond = )
MW-5	11/12/24 4 05	G W	X X X			PH= 7,35	Spec Cond 683
MW-5A	11/12/34 255	M D	x x x			рн <i>6</i> ,7(	Spec Cond 4.143
MW-5AR	11/12/24 230	ه ۷	××	× × ×	×	рн=7,73	Spec Cond 1 346
MVV-6	11/12/34 220	M 9	X X X			PH= 7,01	Spec Cond 2 471
MW-6A	0414/8/111	0 N				PH 6,16	Spec Cond = 2, 337
WW-7	11/13/34 110	ກ ບ	x x x			PH= 6, 70	Spec Cond = 7, 12 C
Duplicate (at MW-)	11/12/34 4 20	× ک	x x x			pH 7,25	Spec Cond # 485
Field Blank	11/13/94 10 20	G	X X X			X = Hd	spec Cond
Possible Hazard Identification	Poison B Unknown Re	Radiological	Sample Disposal ( A fee may be assessed if samples	ee may the as:	sessed if samples posal By Lab	are retained longer than 1	1 month) /
			Special Instructions/QC Requirements:	Requirements			
Empty Kit Relinquished by	Date:		Time:		Method of Shipment	tt.	
Relinquished by: Rear Orthog (5	Date/Time: 11/13/34.4.00	DOM COMPANY	Received by: Frank		Date/Time	11me. 13/24, 4.00 p.m.	Company Frold X
	*		Received	22	Date/Tin	14/24 0910	
	Date/Time:	Company	Received by	0	.Date/Time	me:	Company
Custody Seals Intact: Custody Seal No. Δ Yes Δ No			Cooler Temperature(s) °C and Other Remarks:	c and Other Rem	arks:		
			1	1		5	Ver 01/16/2019
			3	1	3 9 0	5	4

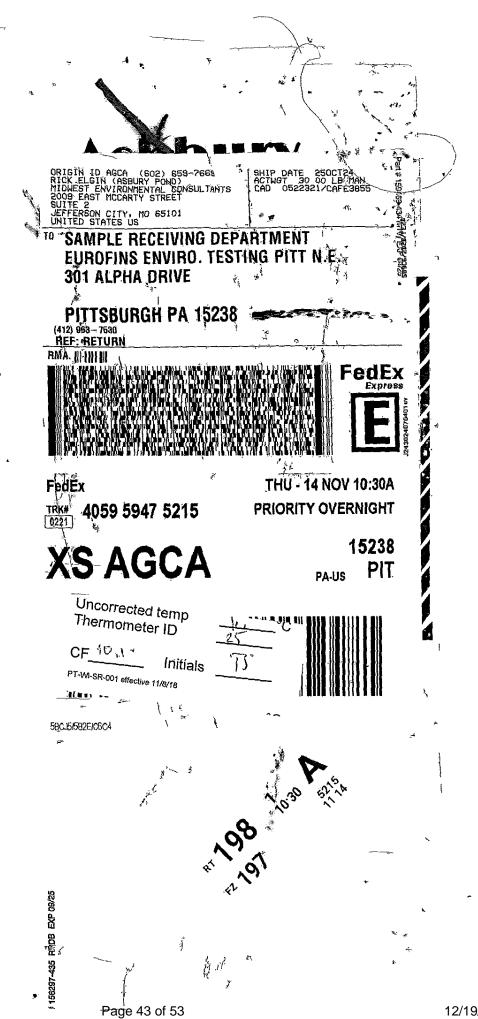
Eurofins Pittsburgh	301 Alpha Drive RIDC Park	Pittsburgh PA 15238	Phone (412) 963.7058 Phone (41

**Chain of Custody Record** 

🔆 eurofins | Environment Testing

		Lab PM:					Carrier Tre	Carrier Tracking No(s):		COC No:	
Client Information	E E	Johnson Andy	n Andy							180-91658-16873.1	373.1
ulent contact. Anika Careaga	MADE 573-636-9454	/ E-Mail: Andy.Jc	E-Mail: Andy.Johnson@et.eurofinsus.com	t.eurofins	sus.com		State of Origin:	NOM O	0	Page: Pageof	
Company: Midwest Environmental Consultants	PWSID:				Analys	Analysis Requested	uested			Job #;	
Address: 2009 East McCarty Street Suite 2	Due Date Requested:		,	F						Preservation Codes	
Cliy Jefferson City	TAT Requested (days):		etetlus,		(צ		(Λίπο			A HCL B NaOH C Zn Acetate	N None C AsNaO2
State, Zip: MO 65101	Compliance Project: Δ Yes Δ No		A ebito		A2-WN		9 9 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		<u></u>		P Na204S Q Na2SO3 R Na2SO3
Phone: 573-636-9454(Tel)	Po #. Purchase Order not required				l ejdwa		M əlqm			F MeOH G Amchlor H Ascorbic Acid	T TSP Dodecahydrate
Email: acareaga@mecpc.com	WO #;	N JO I	- (9)		se) slist		es si				U Acetone V MCAA W pH 4-5
Project Name: Asbury Pond CCR	Project #; 18023389	90) 9	1 <b>10</b> .54	SQ,	əm VI		ы Барал V			×ч	Y Trizma Z other (specify)
Site:	:#MOSS	dures	, 28D (Y		iliqqA i		/ хөри			noo jo	
	Sample		M\SM mom M3990_A33	sOlnoro8 02	NOC 0141102	20_Fa226 St	20_CCR Apee		<u>,</u>	) Jaquinn Ieja	
	Sample Uate I ime G=grab)	ation Code:	<sup>16</sup> Z		1		09 C				Special Instructions/Note:
MW-2	111/13/24 9 25 G	M		57	1	e.	<u> </u>			レイン ミーHd	Spec Cond = 0, 711
WW-3	124 10	N	×	×							Spec Cond 1.322
MW-4	at 8	M	×	××						PH= 6,79	Spec Cand =
MW-5	ナ	N	×	××						PH= 7,25	Spec Cond =
MW-5A	Lalay a	N	×	××						PH 6.71	Spec Cond =
MW-5AR	at 3:	M	×	×	×	× ×	×			PH= 772	Spec Cond = 1,346
8-WM	ਭ 	M	×	××		[				PH = 7 01	Spec Cond = 2 471
MW-6A	,	M	×	××						PH = 6,16	Spec Cond = 3 837
7-WM	(1/12/24 110 G	W	×	××						$p_{\rm H} = 630$	Spec Cond = 3 120
Duplicate (at MW-5)	11/12/24 4.20 G	W	×	××						H= 7, 25	Spec Cond = 0.983
Field Blank	11/13/24 10:30 G	W	×	× ×						X H	Spec Cond = X
	Poison BRadiological	14	Sample I	Disposal tum To C	(A fee n Sient	iay be a	ssessed isnosal I	if sample av Lah	s are reta	Sample Disposal ( A fee may be assessed if samples are retained longér than 1 month) Return To Client Disnosal Rv I ab Archive For Mon	1 month) / Months
Other (specify)			Special Instructions/QC Requirements	Istruction	s/QC Re	quiremer	ts:	1			
Empty Kit Relinquished by	Date:	ι <u>μ</u>	Time:				Meth	Method of Shipment	int		
Relinquished by: Ryan Orthals	11/13/a4, 4'00 pm	Company	Received by	ed by:	OUE	ر د		Date/T	Pme: /3/3	4.4.00	COMPANY EX
Kelinquished by:	Date/Time:	Company	Receiverin	K	) X	2	Ì	Date	+	24 M	" RETAK
1	Date/Time:	Company	Received by:	ed by: V				Date/Time:	lime: /		Company
Custody Seals Intact: Custody Seal No. Δ Yes. Δ No			Cooler	Cooler Temperature(s) <sup>o</sup> C and Other Remarks:	re(s) °C and	Other Re	narks:				
											Ver 01/16/2019
				13	12			9	7 8	5 6	



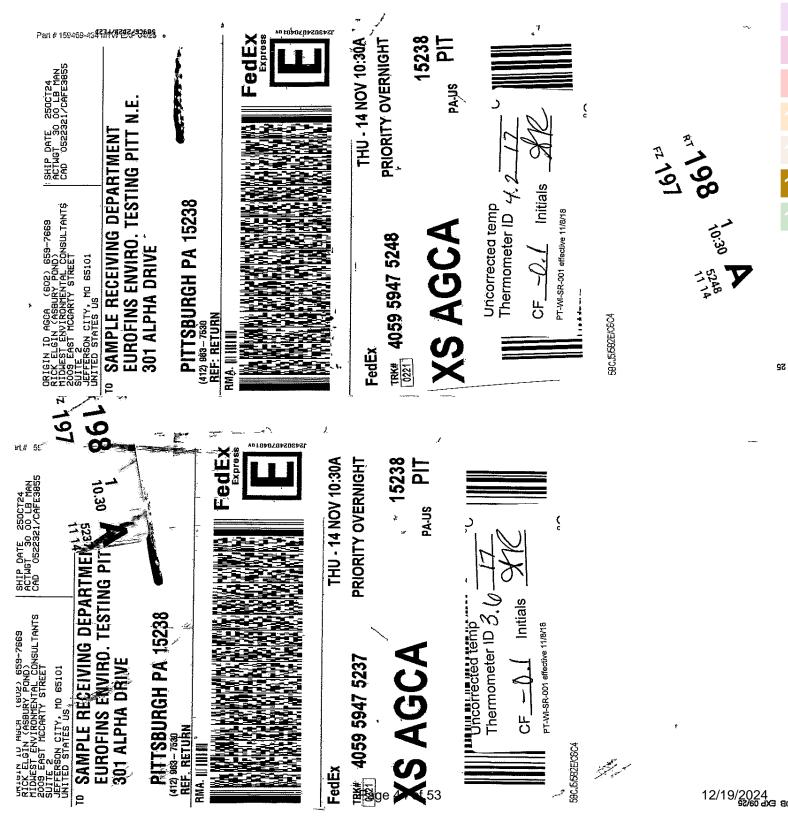


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12/19/2024

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<b>Eurofins Pittsburgh</b> 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468		in of Cu	Chain of Custody Record	cord		🖑 eurofins	ຣິສນໄຂອາເມຣິນ ໄອຣຣ໌ໂດຊ
Client Information (Sub Contract Lab)	Sampler: N/A		Lab PM: Lage, Gail	ail	Carrier Tracking No(s): N/A	(s): COC No: 180-528232.1	
Client Contact: Shipping/Receiving	Phone: N/A		E-Mail: Gail.La	ge@et.eurofinsus.com	State of Origin: Missouri	Page: Page 1 of 1	
Company. TestAmerica Laboratories, Inc.			Ac N/	Accreditations Required (See note): N/A	-	Job #: 180-182762-2	
Address: 13715 Rider Trail North,	Due Date Requested: 11/24/2024			Analys	Analysis Requested	Preservation Codes:	
City: Earth City State, Zip M 63045	TAT Requested (days):	NIA		pue			
Phone: 000-00 14-298-8666(Tel) 314-298-8757(Fax) 314-298-8666(Tel) 314-298-8757(Fax)	PO#: N/A		((	(GFPC) (GFPC)			
Email: N/A	WO #: N/A		OL NO	س-228 اس-22 (0)		ş	
Project Name: Asbury Pond CCR	Project # 18023389		6 (,63	a or a ibeg fS diversion dibeg 0		កម្មកន្លែ	
Site: N/A	SSOW#: N/A		Idme2	:PC/ Cd c2ep_ c2ep_ c2ep_ SD (Y		of con N/A	
Samule Identification - Client ID (Lah ID)	Sample Date	Sample Type Sample (C=comp, Time G=crab)	Matrix (wwwater, seeold, Owweater,	Perform MS/M 1315_Ra226/Pre 1320_Ra228/Pre 1320_Ra228/CF 1320_Ra228/CF 1320_CF 13200_C	· · · · · · · · · · · · · · · · · · ·		
	1	1	ation Code:				S/NOIG:
MW-5AR (180-182762-6)	11/12/24 03	03:30 G Central	Water	× × ×		2 Historical Review required; Run once, Innhad twice	tun once,
Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently mainlain accreditation in the State of Origin listed above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.	In places the ownership of meth rix being analyzed, the samples in the signed Chain of Custody a	od, analyte & accred must be shipped ba ttesting to said comp	itation compliance up ck to the Eurofins Pitt bliance to Eurofins Pitt	on our subcontract laboratories. Thi sburgh laboratory or other instruction isburgh.	s sample shipment is forward swill be provided. Any chang	ed under chair-of-custody. If the laboratory does not les to accreditation status should be brought to Euro	currently ins Pittsburgh
Possible Hazard Identification				Sample Disposal ( A fee m	ay be assessed if sam	ler than 1 mo	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable R	Rank: 2		Return 10 Cilent Usy Special Instructions/QC Requirements:	uirements:	Archive For Months	S
Empty Kit Relinquished by:	Date:			Time:	Method of Shipment	pment:	
Relinquished by: MMUN	Date/Time: 18-24	0021	Company 17NE	Received by: M. P. motts		NOV: 1 9 2024 0910 Company	
Relinquished by:	Date/Time:		Company	Received by: Meadow	a	Date/Time: Company	
	Date/Time:		Company	Received by:		Date/Time: Company	
Custody Seais Intact: Custody Seal No∷ Δ Yes Δ No				Cooler Temperature(s) °C and Other Remarks:	Other Remarks:		
				1:	9	Ver: 10/10/2024	0/2024
				2	) ) 0	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	2

Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468	J	Chain (	of Cus	ain of Custody Record	ecore	T		UNEX 1			🐝 eurofins	Environment Testing
	Sampler:			Lab PM:	W				Carrier Tracking No(s)	g No(s):	COC No:	
Client Information (Sub Contract Lab) Client Contact China contact	Phone:			E-Mail	E-Mail:				N/A State of Origin:		180-528232.1 Page:	
Smanne	N/A			Gail	Lage@et	eurofir	Gail.Lage@et.eurofinsus.com		Missouri		Page 1 of 2	
Company. TestAmerica Laboratories, Inc.					Accreditatic N/A	ons Requ	Accreditations Required (See note): N/A	te):			Job #: 180-182762-1	
Address: 13715 Rider Trail North,	Due Date Requested: 12/2/2024	:pa					An A	Analvsis Requested	uested		Preservation Codes:	Codes:
City. Earth City	TAT Requested (days):	ays): N/A										
State, Zip. MO, 63045	1		_		tei							
Phone. 314-298-8566(Tel) 314-298-8757(Fax)	PO#: N/A				-							
Email: N/A	WO #: N/A				(0)					_	5	
Project Name Asbury Pond NPDES	Project #: 18023389				a or b						nənis	
Site: N/A	SSOW#: N/A				er) de		Dd				of cont	
			Sample Type	Matrix (w=water,	Filtered S M/SM m 8226/Pres		Ra228_GF				Vumber c	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	4 0	S=solid. O=waste/off. BT=Tissue, A=Air)	Perfor		Ra2261					Special Instructions/Note:
	X	X	1 68	Preservation Code:	X							
MW-2 (180-182762-1)	11/13/24	09:25 Central	σ	Water	×	×	×				2 Historical Revie	Historical Review required, Historical Review remined:
MW-3 (180-182762-2)	11/13/24	10:10 Central	υ	Water	×	×	×				2 Historical Review	Historical Review required, Historical
MW-4 (180-182762-3)	11/13/24	08:25 Central	υ	Water	×	×	×				2 Historical Review	ew required, Historical
MW-5 (180-182762-4)	11/12/24	04:05 Central	U	Water	×	×	×				1 Historical Review	Historical Review required, Historical Review required:
MW-5A (180-182762-5)	11/12/24	02:55 Central	υ	Water	×	×	×				2 Historical Revie	Historical Review required, Historical Review required:
MW-5AR (180-182762-6)	11/12/24	03:30 Central	υ	Water	×	×	×				2 Historical Revie	Historical Review required; Run once,
MW-6 (180-182762-7)	11/12/24	02:20 Central	υ	Water	×	×	×				2 Historical Review	Historical Review required, Historical Review required:
MW-6A (180-182762-8)	11/12/24	01:40 Central	σ	Water	×	×	×				2 Historical Review	Historical Review required, Historical Review required:
MW-7 (180-182762-9)	11/12/24	01:10 Central	ს	Water	×	×	×				2 Historical Review	Historical Review required, Historical Review required:
Note: Since laboratory accreditations are subject to change. Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/leststimatity being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.	gh places the ownership c atrix being analyzed, the sa irn the signed Chain of Cu	of method, anal imples must be stody attesting	yte & accredital shipped back to said complia	tion compliance to the Eurofins ince to Eurofins	upon our su Pittsburgh la Pittsburgh.	ubcontra Iboratory	ict laboratorie	s. This sample : ructions will be p	shipment is forv rovided. Any c	varded under cha	in-of-custody. If the labor litation status should be bi	atory does not currently rought to Eurofins Pittsburgh
Possible Hazard Identification					Samp	le Disp	osal (A	Be may be as	sessed if s	amples are n	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	1 1 month)
Unconfirmed Deliverable Requested: I, II, II, IV, Other (specify)	Primary Deliverable	ble Rank: 2			] Snecis	Return	Return To Client	Return To Client Dis	Disposal By Lab	ab	Archive For	Months
Constant Vit Dutters included to												
Entropy har restricted by:		Date:			ē				Method o	Method of Shipment:		
reinquisired by MUUM	2	-24	1720	Company ITME		Received by:	Y M. F.	M. Pinette			9 20240410	Company
				Company	Rec	Received by		Meadow Pinette		Date/Time:		Company
I	Date/Time:		<u> </u>	Company	Rec	Received by				Date/Time:		Company
Custody Seals Intact: Custody Seal No.: △ Yes △ No					ð	oler Tem	perature(s) °	Cooler Temperature(s) °C and Other Remarks:	larks:			
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301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468	Ū	ain of	Chain of Custody Record	dy Re	i C O	Þ										States, Messager
Client Information (Sub Contract Lab)	Sampler: N/A			Lab PM: Lage, Gail	Gail						Carrier 7 N/A	Carrier Tracking No(s) N/A	(s):	COC 1	COC No: 180-528232.2	
Client Contact: Shipping/Receiving	Phone: N/A			E-Mail: Gail.L:	ige@e	t.eur	E-Mail: Gail.Lage@et.eurofinsus.com	Com			State of Origin: Missouri	Origin: Iri		Page: Page	12 of 2	
Company: TestAmerica Laboratories, Inc.				<u> </u>	Accredita N/A	tions R	Accreditations Required (See note) N/A	(See no	ite):				ľ	Jeb #	Job #: 180_182762_1	
Address: 13715 Rider Trail North,	Due Date Requested: 12/2/2024			F				<b>A</b>	alysi	s Req	Analysis Requested	<del>م</del>		Pres	Preservation Codes:	
Gity: Earth City	TAT Requested (days):	: N/A												200		
State, Zip: MO, 63045							19									
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO#: N/A						1 Jaßı									
Email: N/A	WO#: N/A													8		
Project Name: Asbury Pond NPDES	Project #: 18023389													nenisd		
Site: N/A	SSOW#: N/A			lutes										of con		
Semanto Identification - Oficat ID d. ak ID)				Matrix (www.absr, 5 seolid, 0 wwasholi, iiiitered	M/SM mone	814/9228/Jan	ar226Ra228_GF							o tedmuvi listo		
אמווו או המבוווורמווהו - הופווי וה (רפה וה)			Preservation Code:	5		+	-							1	Special Ins	Special Instructions/Note:
DUPLICATE (AT MW- ) (180-182762-10)	11/12/24		0	Water		×	×		-					2 Histor	ical Review re	Historical Review required, Historical
FIELD BLANK (180-182762-11)	11/13/24	10:20 Central	0	Water		×	×		$\vdash$	_			-	2 Histor	ical Review re	Historical Review required, Historical
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									+							
						-	-		1	-			$\square$			
							$\vdash$		$\vdash$							
Note: Since laboratory accreditations are subject to change. Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/matrix being analyzed. The samplee duack to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh	    sburgh places the ownership of m s/matrix being analyzed, the samp	ethod, analyte	& accreditation of peed back to the	compliance u	oon our tsburgh	subcor	Itract lat	Joratorie ther ins	s. This tructions	sample : will be p	shipment rovided.	is forward	ad under of	hain-of-custody.	If the laboratory hould be brough	does not current tt to Eurofins Pitt
attention immediately. If all requested accreditations are current to date,	return the signed Chain of Custo	fy attesting to s	aid compliance	to Eurofins P	ttsburgt	_								-		
rossible nazaru idenuncarion Unconfirmed						Die D Reti	le Disposal ( A I Return To Client	al (A	fee m	ة ( 2 2	ssesse	assessed if sam	oles an	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) — Return To Client — Disposal Rv Lah — Archive For Murry	ger than 1 r	ionth) Monthe
Deliverable Requested: I, II, II, IV, Other (specify)	Primary Deliverable	e Rank: 2			Spec	ial In:	structic	ins/Q(	Requ	Special Instructions/QC Requirements:	ts:					SUDIOM
Empty Kit Relinquished by:	Date	ate:			Time:						Me	Method of Shipment	pment:			
Relinquished by: AMUN	Date/Time 8 - 24	120	2000 C	JNLI de Jo	(	Received by:		M.	M. Pinette	tter 1		<u>ă</u>	<sup>Date</sup> N <sup>DV</sup>	19	2024 0910	Company
Relinquished by:	Date/Time:		Company	pany		Received by		Meac	10W F	Meadow Pinette		ă	Date/Time:			Company
Relinquished by:	Date/Time:		Company	pany	<u></u>	Received by						ă	Date/Time:			Company
Custody Seals Intact: Custody Seal No.: △ Yes △ No						ooler T	empera	ture(s)	C and	Cooler Temperature(s) °C and Other Remarks	narks:					
					1	Ľ										Ver: 10/10/2024



Environment Testing America



180-182762 Chain of Custody

### Cooler/Sample Receipt and Temperature Log Form

Client Information	
Client: Euro hr	LS
City/State: CITY STATE	Project:
Receipt Information	· · · · · · · · · · · · · · · · · · ·
Date/Time Received:	) S Received By: CGC
Delivery Type: 🗌 UPS 🛛 🖉 FedEx SA7	🗍 FedEx Ground 🛛 US Mail 🗌 Spee-Dee
🗌 Lab Courier 🔲 Lab Field Serv	vices  Client Drop-off Other:
Condition of Cooler/Containers	· · · · · · · · · · · · · · · · · · ·
Sample(s) received in Cooler? 🛛 Yes 🗌 N	o If yes: Cooler ID:
Multiple Coolers?	o <i>If yes:</i> Cooler # of
Cooler Custody Seals Present?  Yes  Variable V	o If yes: Cooler custody seals intact? Yes
Sample Custody Seals Present?  Yes  N No	o <i>If yes:</i> Sample custody seals intact? Yes
Trip Blank Present?	o <i>If yes:</i> Which VOA samples are in cooler? 1
Temperature Record	
Coolant: 🗌 Wet ice 🗌 Blue ice 🗌 D	ry ice 🔲 Other: 😰 NONE
Thermometer ID: P	Correction Factor (°C):
• Temp Blank Temperature – If no temp blank, or temp bl	ank temperature above critéria, proceed to Sample Container Temperature
Uncorrected Temp (°C): 17.1	Corrected Temp (°C): ( 7 . /
Sample Container Temperature	
Container(s) used:	CONTAINER 2
Uncorrected Temp (°C)·	
Corrected Temp (°C):	
Exceptions Noted	1
<ol> <li>If temperature exceeds criteria, was sample(s)</li> <li>a) If yes: Is there evidence that the chilling p</li> </ol>	
<ol> <li>If temperature is &lt;0°C, are there obvious signs (e.g., bulging septa, broken/cracked bottles, fr</li> </ol>	s that the integrity of sample containers is compromised? ozen solid?)
NOTE. If yes, contact PM before proceeding. If no,	proceed with login
Additional Comments	۵ <u>۲</u> ۱ ۱
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Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-963-7058 Fax: 412-963-2468	U	chain c	of Cust	Chain of Custody Record	corc					**** ****	😽 eurofins	E. / onment Test ng
Client Information (Sub Contract Lab)	Sampler <sup>-</sup> N/A			Lab PM. Lade.	Gail			Carrier Tr N/A	Carrier Tracking No(s): N/A	8 #	COC No. 180-528064 1	
	Phone: N/A			E-Mail: Garl Lage@	E-Mail: Gail Lage@et.eurofinsus.com	eurofins	us.com	State of Origin: Missouri	rigin:	e d	Page: Page 1 of 2	
Company Eurofins Environment Testing North Centr				₹∠	Accreditatio N/A	ns Requir	Accreditations Required (See note): N/A			or 15	Job #: 180-182762-2	
Address: 3019 Venture Way,	Due Date Requested: 12/2/2024	÷					Anal	Analysis Requested		ι <u>η</u> -	Preservation Codes	es:
City Cedar Falls State, Zip. IA, 50613	TAT Requested (days):	ys): N/A				jsi						
Phone: 219-277-2401(Tel) 319-277-2425(Fax)	Po#: N/A											
Email: N/A	WO#: N/A			1	(oN					SJ		
Project Name: Asbury Pond CCR	Project #: 18023389				10 29		rcury.			enistr		
Site: N/A	ssow#: N/A				r) asi		əM qər				Other N/A	
Comments Indensities of the formers	Commic Date	Sample	Sample Type (C=comp,		bərətilə biəi <sup>:</sup> N\SM mrotre <sup>c</sup> T_Azooc\8020	TA800£\8020	q_A0747\A074		·····	iedmuN listo]	Special In	Snecial Instructions/Note:
				Preservation Code:	Ż	+	2			X		
MW-2 (180-182762-1)	11/13/24	09:25 Central	υ	Water	×					2		
MW-3 (180-182762-2)	11/13/24	10 10 Central	υ	Water	×					2		
MW 4 (180-182762-3)	11/13/24	08.25 Central	υ	Water	×					5		
MW-5 (180-182762-4)	11/12/24	04.05 Central	U	Water	×					2		
MW-5A (180-182762-5)	11/12/24	02 55 Central	υ	Water	×					2		
MW-5AR (180-182762-6)	11/12/24	03.30 Central	U	Water		×	×			8	run once - report twice	vice
MW-6 (180-182762-7)	11/12/24	02:20 Central	υ	Water	×					8		
MW-6A (180-182762-8)	11/12/24	01 40 Central	υ	Water	×					5		
MW-7 (180-182762-9)	11/12/24	01 10 Central	υ	Water	×					5		
Note: Since laboratory acceditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh latention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Pittsburgh.	I places the ownership o x being analyzed the sa the signed Chain of Cur	f method, anal imples must be stody attesting	yte & accredita shipped back to said complia	tion compliance u to the Eurofins P ince to Eurofins F	pon our si ttsburgh <i>l</i> a ittsburgh.	ubcontrac Iboratory	t laboratories. or other instruc	This sample shipment i tions will be provided. /	s forwarded un Any changes to	ler chain-of-custo accreditation stat	dy If the laborato tus should be broug	ry does not currently ght to Eurofins Pittsburgh
Possible Hazard Identification					Samp	le Disp	osal ( A fee	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	l if samples	are retained	longer than 1	month)
Unconfirmed Deliverable Requested I, II, III, IV, Other (specify)	Primary Deliverable	able Rank: 2			Speci	Return al Instru	Return To Client al Instructions/QC F	Return To Client Disposal By Lab Special Instructions/QC Requirements.	By Lab	Archive For	e For	Months
Empty Kit Relinquished by		Date.			Lime.			Met	Method of Shipment	ŧ		
Reinquished 6/	Date(Time;	217	00	WHILL A	Re	Received by	66	ر	Date/Time:	1-16 ·24	4 0705	Company EUrofixr
Reinquished by	Date/Time:			Company	Re	Received by			Date/Time	ne:		Company
Relinquished by	Date/Time:			Company	Re	Received by:			Date/Time:	ле:		Company
Custody Seals Intact: Custody Seal No A Yes A No					<u>8</u>	oler Temı	berature(s) °C	Cooler Temperature(s) °C and Other Remarks:				
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Eurofins Pittsburgh 301 Alpha Drive RIDC Park Pittsburgh, PA 15238 Phone: 412-863-7058 Fax: 412-863-2468	0	Chain e	of Cust	ain of Custody Record	score									🕂 eurofins	ц Со Со Со Со	es. ng
Client Information (Suth Contract Lab)	Sampler N/A			Lab PM: Lage, (	Gail					arrier Tr VA	acking No	(s):		COC No: 180-528064.2	5	
1	Phone: N/A			E-Mail: Gail.La	E-Mail: Gail.Lage@ef.eurofinsus.com	eurofin:	sus.com			Itate of C	State of Origin: Missouri			Page: Page 2 of 2		
Company Eurofins Environment Testing North Centr					Accreditatio N/A	ns Requi	Accreditations Required (See note): N/A	te):						Job #. 180-182762-2	2	
Address: 3019 Venture Way,	Due Date Requested: 12/2/2024	ÿ					A	Analysis Requested	Regi	leste				Preservation Codes	Codes:	
City Cedar Falls State Zip: IA, 50613	TAT Requested (days):	lys): N/A				jsi										
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO# N/A															
Email: N/A	wo#; N/A				(on											
Project Name: Asbury Pond CCR	Project #. 18023389				10 58		Leniy						onietr			
Site: N/A	ssow#: N/A				v) as		eM qer							Other N/A		
Samule Identification - Client ID (I ah ID)	Samnle Dafe	Sample Time	Sample Type (C=comp, G=drab)	Matrix (w=water s=solid, O=watbioli,	leid Filtered Perform MSM T_A∂00£\80508	T_A8006\80208	9						redmild letoT	Total Number M A	Special Instructions/Note:	
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DUPLICATE (AT MW- ) (180-182762-10)	11/12/24	04:20 Central	υ	Water	×									2		
FIELD BLANK (180-182762-11)	11/13/24	10:20 Central	υ	Water	×					<u> </u>				2		
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								$\rightarrow$								Τ
Note: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation is the State of Origin fisted above for analysis/tests/matrix being analyzed, the samples stupped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh.	I n places the ownership of x being analyzed, the si the signed Chain of Cu	of method, anal amples must be stody attesting	yte & accreditati shipped back t to said compliar	ion compliance to the Eurofins P	Ipon our su titsburgh la 'ittsburgh.	boratory	t laboratorie or other ins	ss. This s tructions	ample s vill be pi	ipment ovided.	s forward Any chan	ed under jes to ac	chain-of- creditatio	custody If the lab n status should be	oratory does not currently brought to Eurofins Pittsburg	f.
Possible Hazard Identification					Samp	le Disp	osal (A	fee may	be as	sesse	l if sam	ples al	e retai	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	an 1 month)	Τ
Unconfirmed Deliverable Reguested   11 11/ 1V Other (snectiv)	Prmary Deliverable	ahle Rank: 2				Return	Return To Client Dis	Redui		sposal	Disposal By Lab		Ă	Archive For	Months	Τ
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Empty Kit Relinquished by		Date:			Time:					Wei	Method of Shipment:	pment				Т
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Custody Seals Intact: Custody Seal No Δ Yes Δ No					8	oler Tem	Cooler Temperature(s) °C and Other Remarks:	C and Ot	her Rem	arks:						
															Ver 10/10/2024	

### Page 50 of 53

### Login Sample Receipt Checklist

**Client: Midwest Environmental Consultants** 

#### Login Number: 182762 List Number: 1 Creator: Abernathy, Eric L

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login. **Eurofins Pittsburgh** 

List Source: Eurofins Pittsburgh

### Job Number: 180-182762-2

### Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

#### Login Number: 182762 List Number: 2 Creator: Hirsch, Preston

Answer	Comment
N/A	
N/A	
N/A	
True	
N/A	
	N/A N/A N/A True True True True True True True True

Job Number: 180-182762-2

List Source: Eurofins Cedar Falls

List Creation: 11/16/24 11:21 AM

### Login Sample Receipt Checklist

Client: Midwest Environmental Consultants

#### Login Number: 182762 List Number: 3 Creator: Pinette, Meadow L

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

13

Job Number: 180-182762-2

List Source: Eurofins St. Louis

List Creation: 11/19/24 01:44 PM



**APPENDIX 4** 

**Statistical Analysis** 



January 16, 2025

Submitted via Email

Mr. Lindsey R. Henry, PE Midwest Environmental Consultants 2009 E. McCarty St., Suite 2 Jefferson City, MO 65101

#### Re: Groundwater Statistical Analysis Results Asbury Power Plant – Coal Combustion Residuals (CCR) Impoundment United States Environmental Protection Agency Program

Dear Mr. Henry:

Jett Environmental Consulting is providing the results of the groundwater statistical analysis for the November 2024 event at the Asbury Power Plant – CCR Impoundment.

If you have any questions or comments, please contact me at steve.jett@jettenviro.com or 314-496-4654.

Sincerely,

Steve Jett, P.G. Owner

Attachments: Table 1 – SSIs Observed During November 2024 Sampling Event

- 1 Time Series Graphs Inorganics
- 2 Trend Testing Inorganics
- 3 Inter-Well Prediction Limits
- 4 Statistical Power Curves

Ciara Childers Beavers

Ciara Childers Beavers Project Geologist

#### Inorganics – Times Series & Trend Testing

Time Series graphs were generated for each of the inorganic constituents. The time series graphs are included in **Attachment 1**.

The inorganic constituents with results above the laboratory reporting limits were analyzed with Sanitas<sup>™</sup> to determine if statistically significant increasing or decreasing trends exist within the background data range (January 2016 through May 2023) utilizing the Sen's Slope / Mann-Kendall trend test. Trends were based on a 98% confidence level (two tailed). The following constituents exhibited statistically significant increasing trends: boron (MW-5A), calcium (MW-5A, MW-6A), chloride (MW-5, MW-5A, MW-6), fluoride (MW-7), sulfate (MW-5A, MW-6A), and total dissolved solids (MW-5A, MW-6A). Of the increasing trends, only one instance was for an upgradient well (fluoride at MW-7); however, fluoride was reported as non-detect over the last eight rounds of background sampling. All other constituents were either not trending or had a statistically significant decreasing trend. The trending data have only been reviewed at this time. No trending data was removed before performing the inter-well prediction interval analysis. The trend testing results are included in **Attachment 2**.

#### Inorganics – Inter-Well Prediction Limits

Statistical Analysis was performed on the inorganic constituents and metals. Prediction interval analyses compare one or more observations to a limit set by background data. Background data consists of semi-annual groundwater tests from the upgradient wells (MW-2, MW-3, and MW-7) between January 2016 and May 2023 (20 events). Interwell analyses compare observations from upgradient background wells and their relation to the observations for the downgradient wells. Intra-well analyses compare background observations to current observations of the same well.

Sanitas<sup>™</sup> was used to perform the statistical analyses. For most constituents, non-parametric inter-well prediction intervals were performed due to non-detectable levels in more than 50 percent of the background samples or if data were not normally distributed. The Sanitas<sup>™</sup> inter-well prediction limit outputs are included in **Attachment 3**.

**Table 1** lists the parameters that exhibited a statistically significant increase (SSI) during the November 2024 sampling event, the associated monitoring wells, inter-well prediction limit, and the measured concentration. Also included on the table is a comparison to any established USEPA National Primary Drinking Water Standard - Maximum Contaminant Level (MCL).

#### **Statistical Power Curves**

A statistical power curve graph has been prepared to allow comparisons between the current monitoring program and USEPA-recommended standards. Under the USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (March 2009), inter-well prediction limits are constructed to have a site-wide false positive rate (SWFPR) of 10% annually, or 5% per event for a semi-annually sampled facility. **Attachment 4** presents the power curves for the facility's monitoring program.

#### Results Summary

Boron (MW-5A) and total dissolved solids (MW-5A) exhibited confirmed SSIs during the November 2024 event.

pH (MW-5 and MW-6) exhibited an initial SSI during the November 2024 event.

Of the SSIs, none have an established MCL.

	Tab	le 1			
SSIs Obse	erved During Nove	ember 2024 Samp	oling Event		
Constituent (units)	Well	Initial vs. Confirmed	Statistical Limit	Result	MCL
Boron (mg/L)	MW-5A	Confirmed	0.9	2.0	NE
pH (SU)	MW-5	Initial	5.22-6.98	7.25	NE
pH (SU)	MW-6	Initial	5.22-6.98	7.01	NE
Total Dissolved Solids (mg/L)	MW-5A	Confirmed	3100	3200	NE

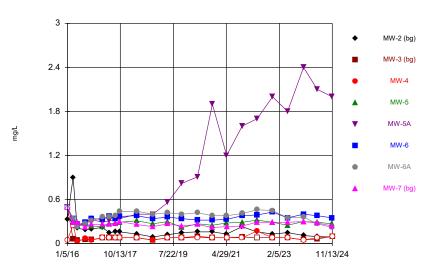
NE = Not Established.

MCL = USEPA National Primary Drinking Water Standard - Maximum Contaminant Level

### ATTACHMENTS

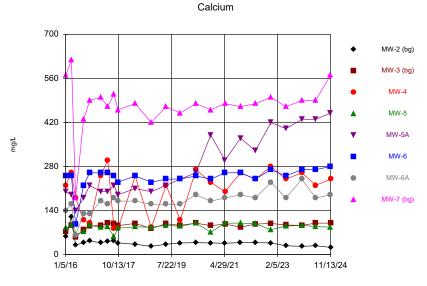
### **ATTACHMENT 1**

TIME SERIES GRAPHS INORGANICS Sanitas<sup>™</sup> v.10.0.24 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



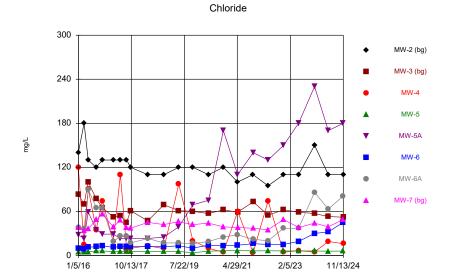
Boron

Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant



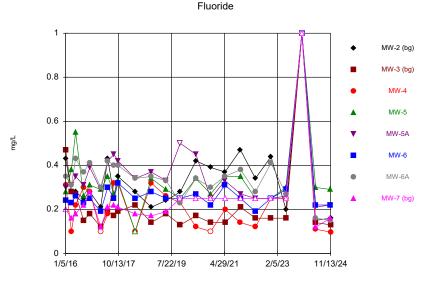
Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

Sanitas™ v.10.0.24 Software licensed to Jett Environmental Consulting. UG

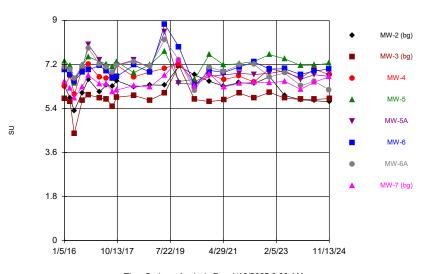


Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

 $\label{eq:source} Sanitas^{iu} v.10.0.24 \mbox{ Software licensed to Jett Environmental Consulting. UG} Hollow symbols indicate censored values.$ 

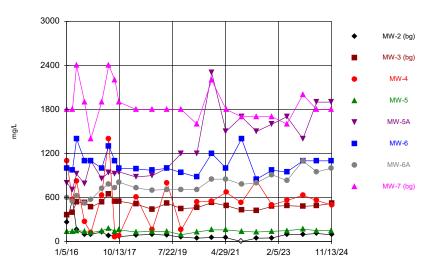


Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant



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Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant  $\label{eq:Sanitas} Sanitas^{ss} v.10.0.24 \mbox{ Software licensed to Jett Environmental Consulting. UG} Hollow symbols indicate censored values.$ 

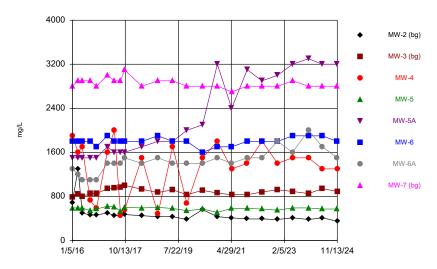


Sulfate

Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

Sanitas<sup>™</sup> v.10.0.24 Software licensed to Jett Environmental Consulting. UG

Total Dissolved Solids



Time Series Analysis Run 1/16/2025 9:00 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

### **ATTACHMENT 2**

TREND TESTING INORGANICS

### **Trend Test**

Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Printed 7/3/2024, 8:47 AM

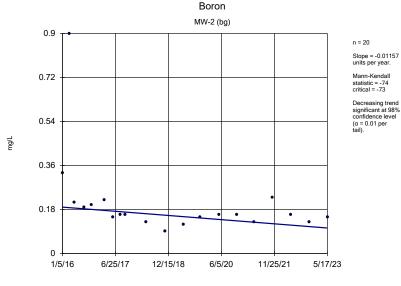
,		<b>,</b>			,						
Constituent	Well	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	Normality	<u>Xform</u>	<u>Alpha</u>	Method
Boron (mg/L)	MW-2 (bg)	-0.01157	-74	-73	Yes	20	0	n/a	n/a	0.02	NP
Boron (mg/L)	MW-3 (bg)	1.4e-10	44	73	No	20	60	n/a	n/a	0.02	NP
Boron (mg/L)	MW-4	0	52	73	No	20	75	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5	0	13	73	No	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-5A	0.2069	149	73	Yes	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6	0.004198	36	73	No	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-6A	0.014	59	73	No	20	5	n/a	n/a	0.02	NP
Boron (mg/L)	MW-7 (bg)	0	-22	-73	No	20	5	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2 (bg)	-1.025	-60	-73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3 (bg)	1.323	60	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4	5.128	33	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	1.7	51	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5A	29.17	136	73	Yes	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	0	30	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6A	7.097	108	73	Yes	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7 (bg)	0	-12	-73	No	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2 (bg)	-4.251	-121	-73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3 (bg)	-1.609	-43	-73	No	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4	-3.614	-74	-73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	0.1787	93	73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5A	17.84	105	73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	0.7246	126	73	Yes	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6A	-1.923	-41	-73	No	20	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7 (bg)	-0.08072	-10	-73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2 (bg)	0.008487	22	73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3 (bg)	-0.006744	-61	-73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4	-0.006169	-21	-73	No	20	20	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	-0.004548	-27	-73	No	20	5	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5A	-0.007672	-37	-73	No	20	15	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.0007283	23	73	No	20	10	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6A	-0.009747	-49	-73	No	20	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7 (bg)	0.008083	77	73	Yes	20	45	n/a	n/a	0.02	NP
pH (SU)	MW-2 (bg)	0.05735	59	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-3 (bg)	0.02709	52	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-4	0.0217	19	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-5	0.02125	34	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-5A	-0.03798	-29	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-6	0.03219	46	73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-6A	-0.008695	-9	-73	No	20	0	n/a	n/a	0.02	NP
pH (SU)	MW-7 (bg)	0.03464	52	73	No	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2 (bg)	-16.16	-122	-73	Yes	20	5	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3 (bg)	-6.48	-24	-73	No	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4	-6.658	-7	-73	No	20	0 0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	0	-3	-73	No	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5A	127.3	132	73	Yes	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-18.61	-57	-73	No	20	0	n/a n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6A	34.49	-37 108	-73 73	Yes	20 20	0	n/a	n/a	0.02 0.02	NP
Sulfate (mg/L)	MW-7 (bg)	-33.2	-70	-73	No	20	0	n/a n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2 (bg)	-35.2 -16.07	-70 - <b>127</b>	-73 -73	Yes	20 20	0 0	n/a	n/a	0.02 0.02	NP
Total Dissolved Solids (mg/L)	MW-3 (bg)	5.317	-127	-73 73	No	20	0	n/a n/a	n/a	0.02	NP
i otai Dissolveu Sullus (IIIy/L)	ww-5 (bg)	5.517	19	13	INU	20	U	n/a	ıı/a	0.02	INF

### **Trend Test**

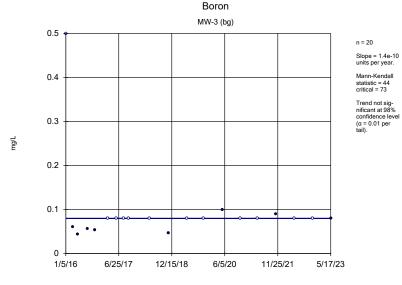
Constituent	Well	Slope	Calc.	<u>Critical</u>	<u>Sig.</u>	N	<u>%NDs</u>	Normality	<u>Xform</u>	Alpha	Method
Total Dissolved Solids (mg/L)	MW-4	-6.971	-7	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-3.205	-42	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5A	195.1	156	73	Yes	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	0	-4	-73	No	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6A	50.05	113	73	Yes	20	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7 (bg)	0	-48	-73	No	20	0	n/a	n/a	0.02	NP

Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Printed 7/3/2024, 8:47 AM

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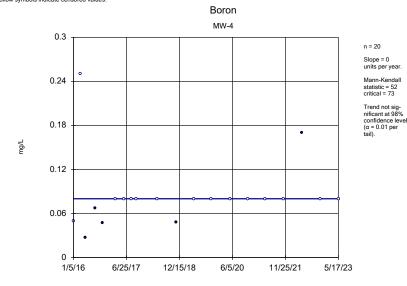


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>te</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.

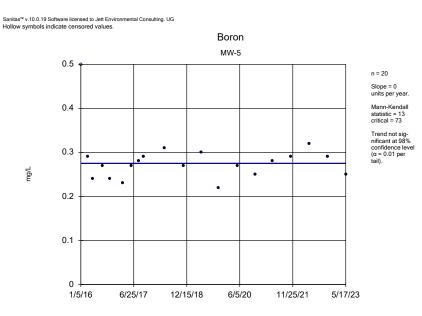


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

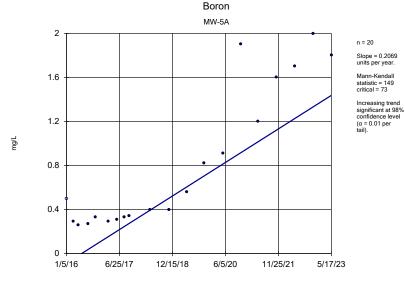
Sanitas<sup>114</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



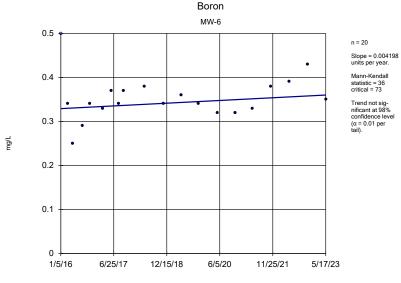
Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant



Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.

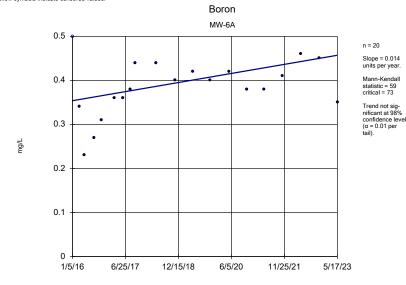


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



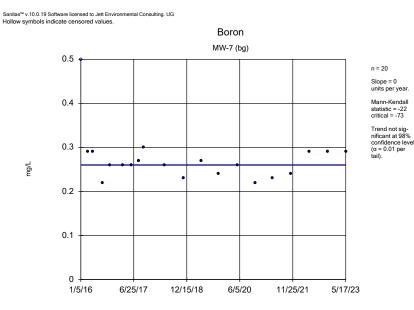
Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

Sanitas  $^{\rm tw}$  v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



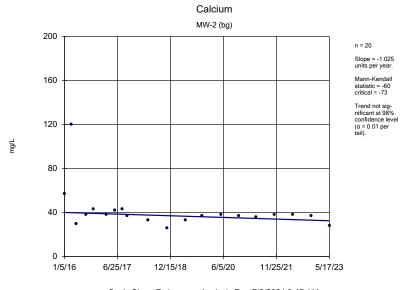
 Sen's Slope Estimator
 Analysis Run 7/3/2024 8:45 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant

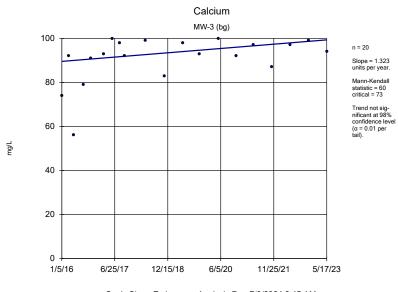


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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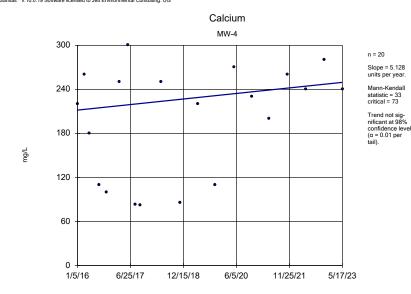


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

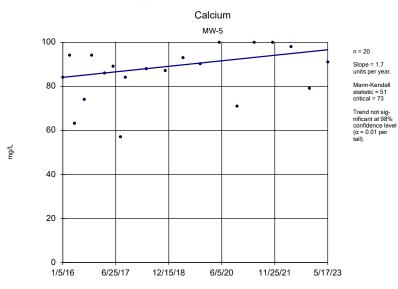


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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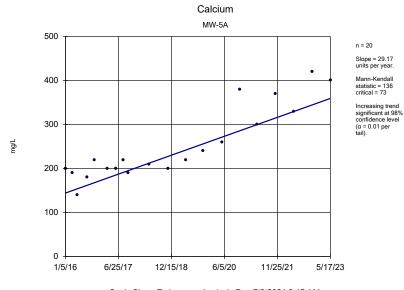


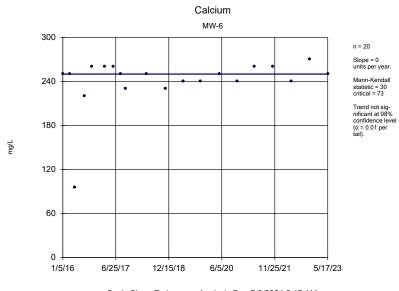
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Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

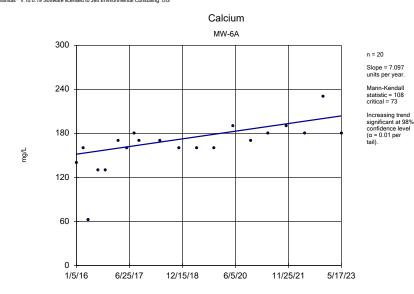
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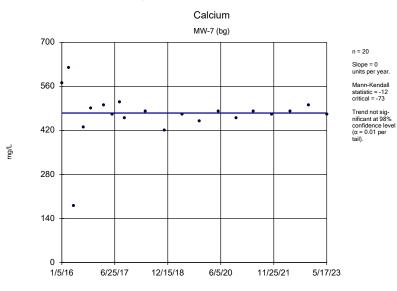


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

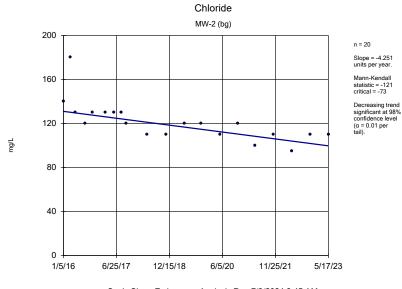
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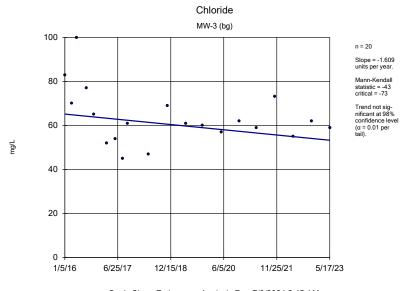


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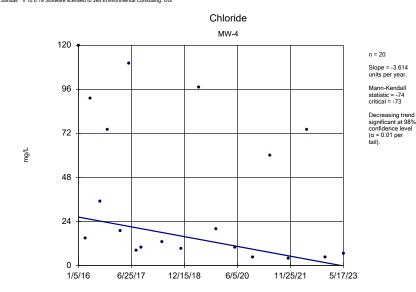




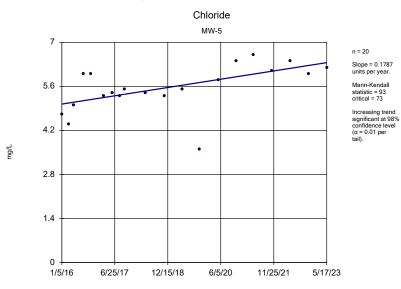


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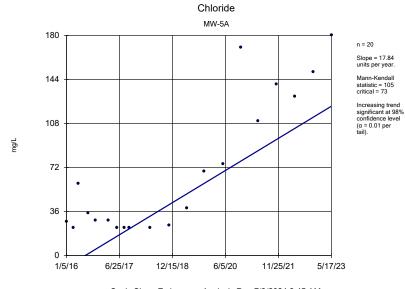
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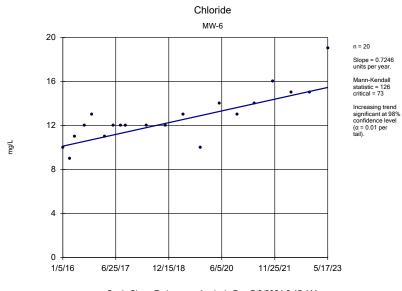


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG



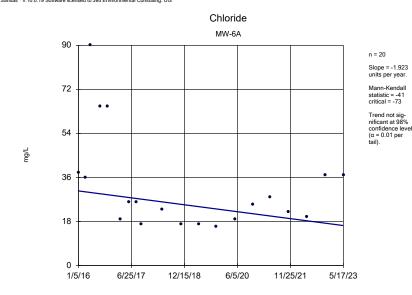
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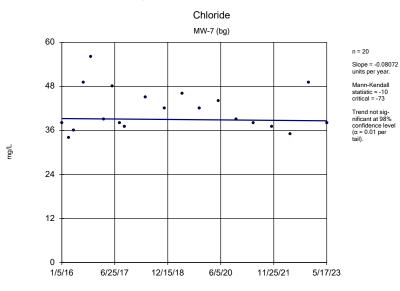


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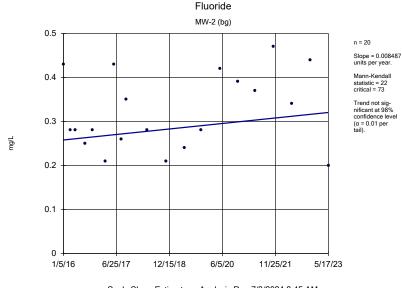
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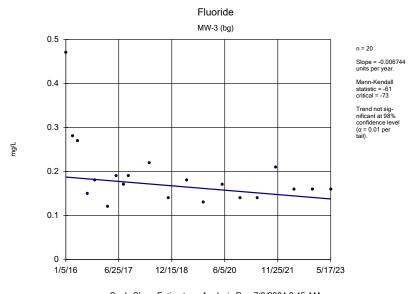


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG



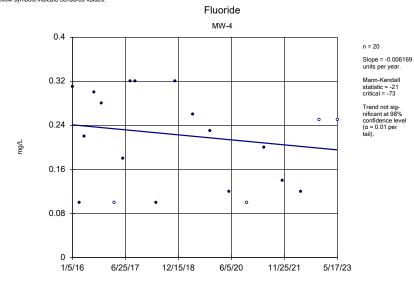
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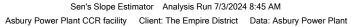


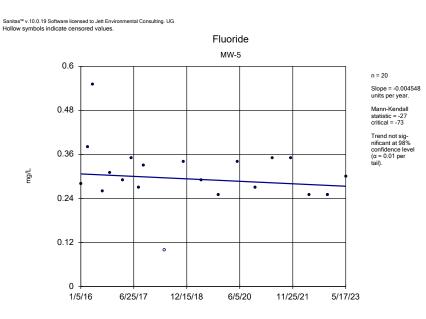


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

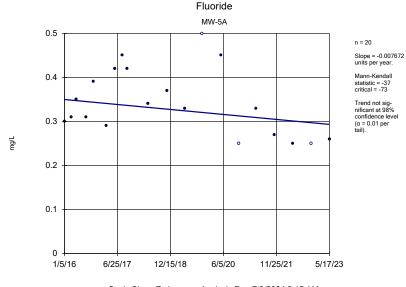
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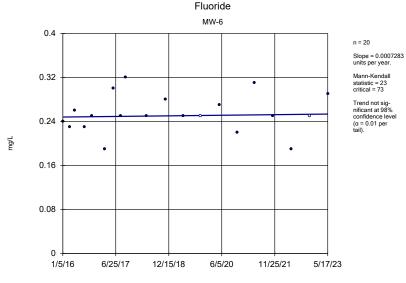




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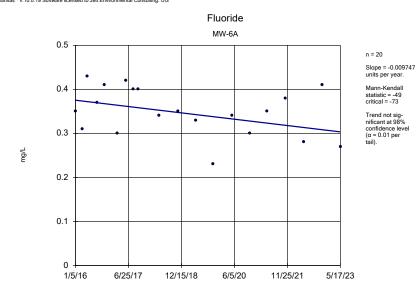


Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.



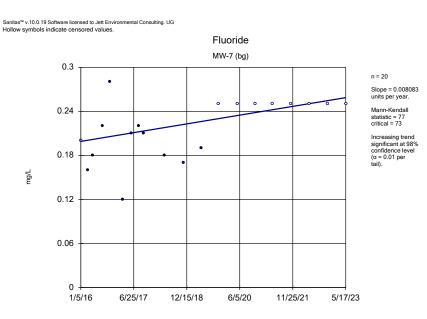
Sen's Slope Estimator Analysis Run 7/3/2024 8:45 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG

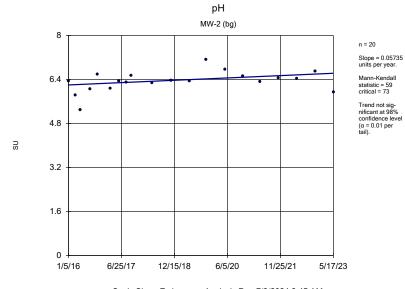


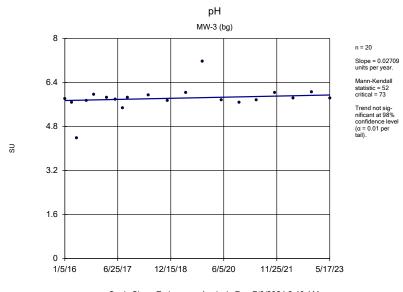
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 Analysis Run 7/3/2024 8:45 AM

 Asbury Power Plant CCR facility
 Client: The Empire District
 Data: Asbury Power Plant



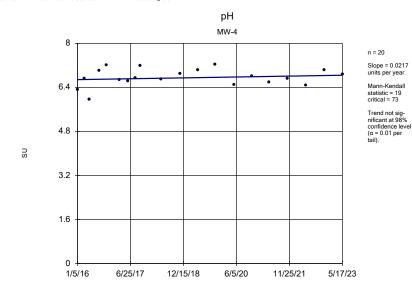




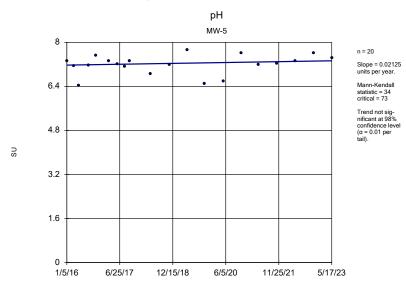


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

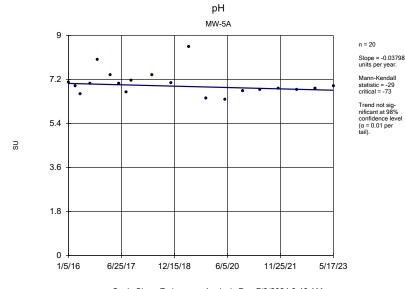
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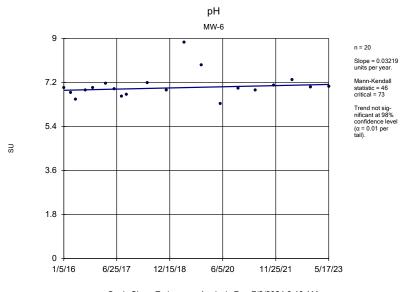


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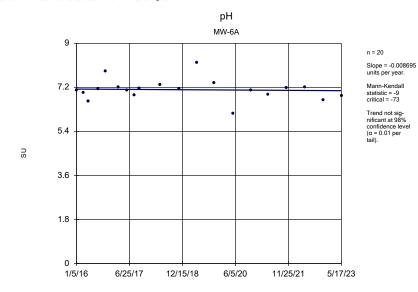




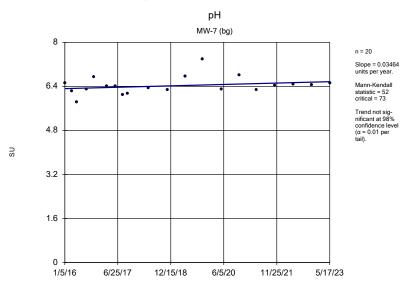


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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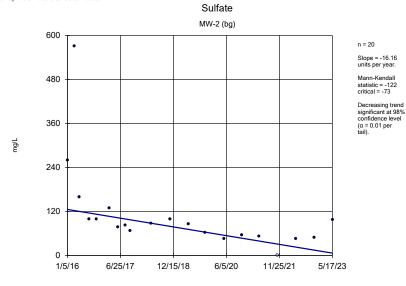


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG

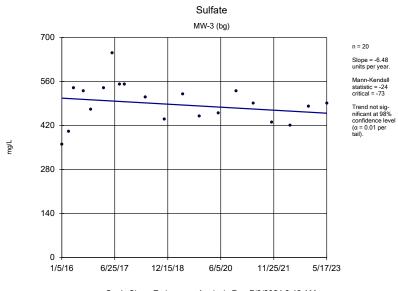


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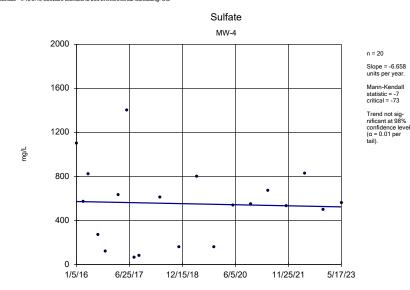


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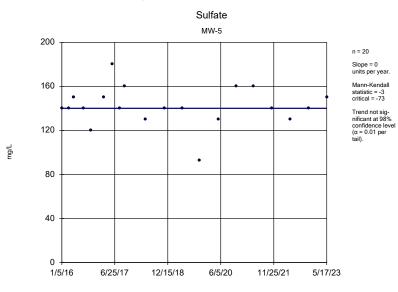


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG

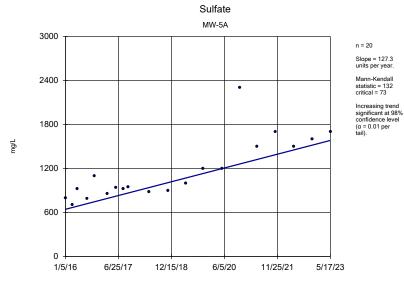


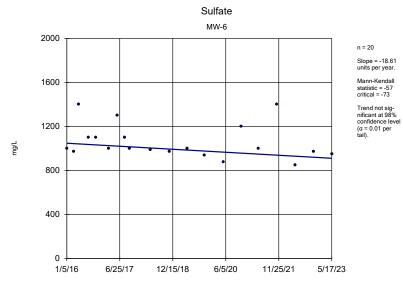
Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG



Sanitas<sup>™</sup> v.10.0.19 Software licensed to Jett Environmental Consulting. UG

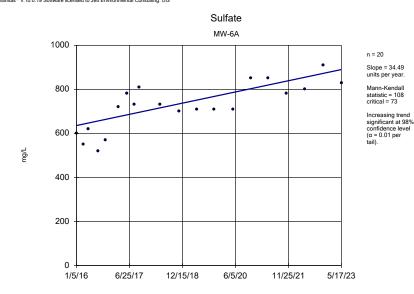
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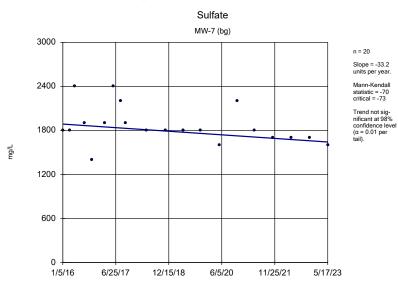


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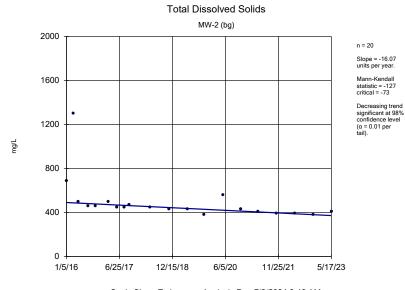
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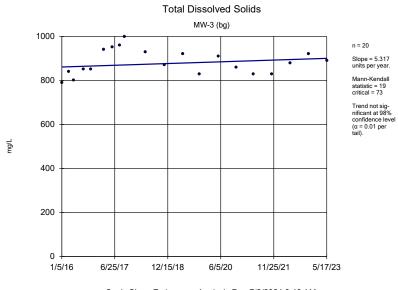


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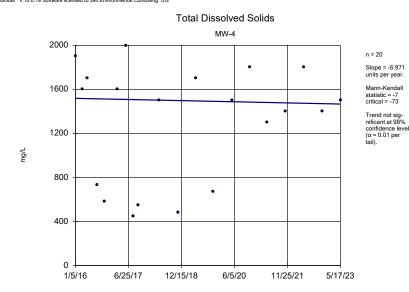




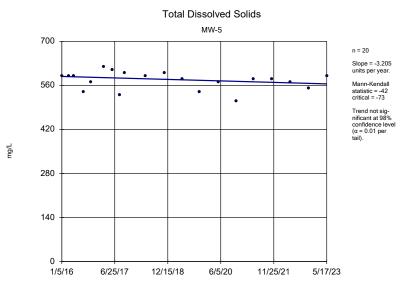


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

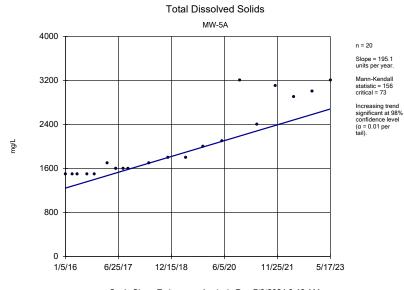
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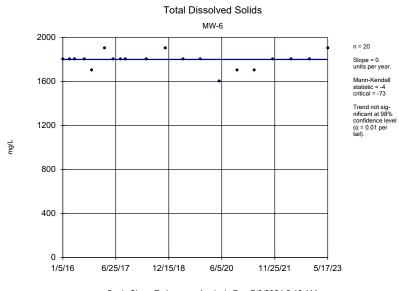


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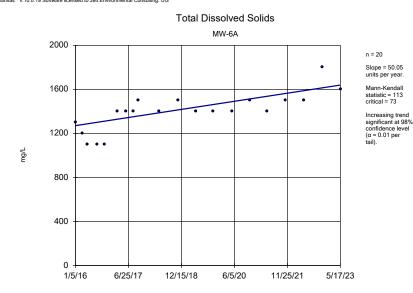




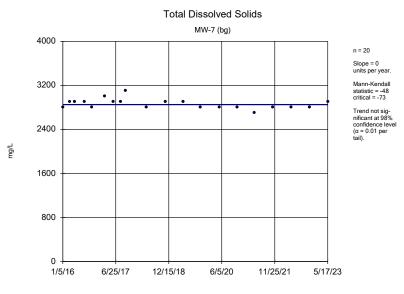


Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

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Sen's Slope Estimator Analysis Run 7/3/2024 8:46 AM Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas™ v.10.0.19 Software licensed to Jett Environmental Consulting. UG



## **ATTACHMENT 3**

**INTER-WELL PREDICTION LIMITS** 

#### **Prediction Limit**

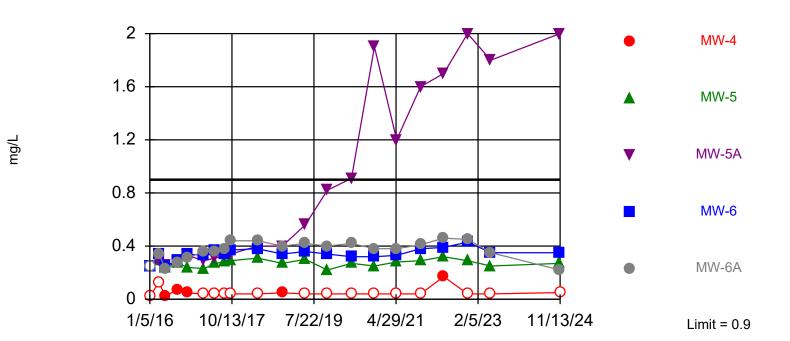
Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Printed 1/16/2025, 9:28 AM

Constituent	Well	Upperli	m.Lower Lii	m Date	Observ.	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	Std. Dev.	%ND	s ND Adj.	Transform	n Alpha	Method
Boron (mg/L)	MW-4	0.9	n/a	11/13/2024		No	60	n/a	n/a	21.67		n/a		NP Inter (normality) 1 of 2
Boron (mg/L)	MW-5	0.9	n/a	11/12/2024	0.27	No	60	n/a	n/a	21.67	n/a	n/a		NP Inter (normality) 1 of 2
Boron (mg/L)	MW-5A	0.9	n/a	11/12/2024	2	Yes	60	n/a	n/a	21.67	n/a	n/a		NP Inter (normality) 1 of 2
Boron (mg/L)	MW-6	0.9	n/a	11/12/2024	0.35	No	60	n/a	n/a	21.67	n/a	n/a		NP Inter (normality) 1 of 2
Boron (mg/L)	MW-6A	0.9	n/a	11/12/2024	0.22	No	60	n/a	n/a	21.67	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-4	620	n/a	11/13/2024	240	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5	620	n/a	11/12/2024	87	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5A	620	n/a	11/12/2024	450	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6	620	n/a	11/12/2024	280	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6A	620	n/a	11/12/2024	190	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-4	180	n/a	11/13/2024	16	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5	180	n/a	11/12/2024	5.9	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5A	180	n/a	11/12/2024	180	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6	180	n/a	11/12/2024	45	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6A	180	n/a	11/12/2024	81	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Fluoride (mg/L)	MW-4	0.4397	n/a	11/13/2024	0.097J	No	60	-1.58	0.4116	15	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-5	0.4397	n/a	11/12/2024	0.29	No	60	-1.58	0.4116	15	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-5A	0.4397	n/a	11/12/2024	0.22	No	60	-1.58	0.4116	15	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-6	0.4397	n/a	11/12/2024	0.22	No	60	-1.58	0.4116	15	None	ln(x)	0.001504	Param Inter 1 of 2
Fluoride (mg/L)	MW-6A	0.4397	n/a	11/12/2024	0.15	No	60	-1.58	0.4116	15	None	ln(x)	0.001504	Param Inter 1 of 2
pH (SU)	MW-4	6.982	5.222	11/13/2024	6.79	No	60	241.4	53.74	0	None	x^3	0.000752	Param Inter 1 of 2
pH (SU)	MW-5	6.982	5.222	11/12/2024	7.25	Yes	60	241.4	53.74	0	None	x^3	0.000752	Param Inter 1 of 2
pH (SU)	MW-5A	6.982	5.222	11/12/2024	6.71	No	60	241.4	53.74	0	None	x^3	0.000752	Param Inter 1 of 2
pH (SU)	MW-6	6.982	5.222	11/12/2024	7.01	Yes	60	241.4	53.74	0	None	x^3	0.000752	Param Inter 1 of 2
pH (SU)	MW-6A	6.982	5.222	11/12/2024		No	60	241.4	53.74	0	None	x^3	0.000752	Param Inter 1 of 2
Sulfate (mg/L)	MW-4	2400	n/a	11/13/2024	500	No	60	n/a	n/a	1.667		n/a	0.0005231	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5	2400	n/a	11/12/2024		No	60	n/a	n/a	1.667		n/a		NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5A	2400	n/a	11/12/2024	1900	No	60	n/a	n/a	1.667	n/a	n/a		NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6	2400	n/a	11/12/2024	1100	No	60	n/a	n/a	1.667		n/a		NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6A	2400	n/a	11/12/2024	1000	No	60	n/a	n/a	1.667	n/a	n/a		NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-4	3100	n/a	11/13/2024		No	60	n/a	n/a	0	n/a	n/a		NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-5	3100	n/a	11/12/2024	570	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-5A	3100	n/a	11/12/2024		Yes	60	n/a	n/a	0	n/a	n/a		NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-6	3100	n/a	11/12/2024		No	60	n/a	n/a	0	n/a	n/a		NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	MW-6A	3100	n/a	11/12/2024	1500	No	60	n/a	n/a	0	n/a	n/a	0.0005231	NP Inter (normality) 1 of 2

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#### Exceeds Limit: MW-5A

#### Boron



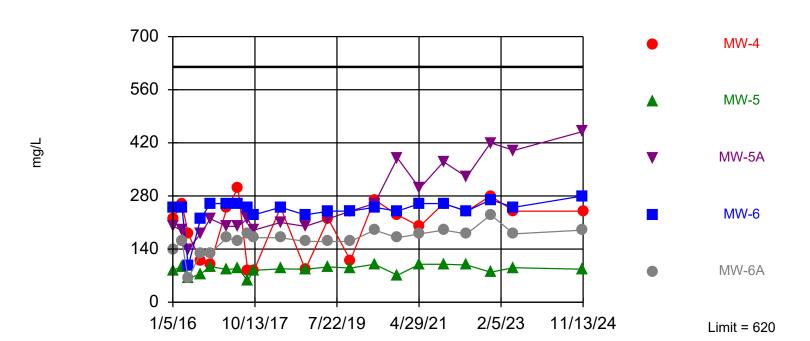
Interwell Non-parametric

Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. 21.67% NDs. Annual perconstituent alpha = 0.005219. Individual comparison alpha = 0.0005231 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 1/16/2025 9:22 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

## Calcium

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. Annual per-constituent alpha = 0.005219. Individual comparison alpha = 0.0005231 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

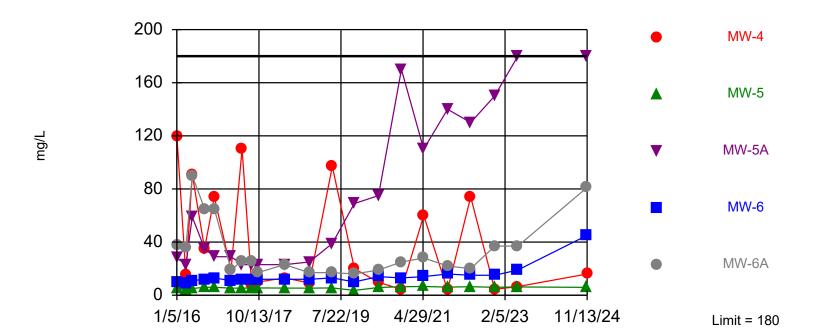
Prediction Limit Analysis Run 1/16/2025 9:23 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

## Within Limit

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#### Within Limit

### Chloride



Interwell Non-parametric

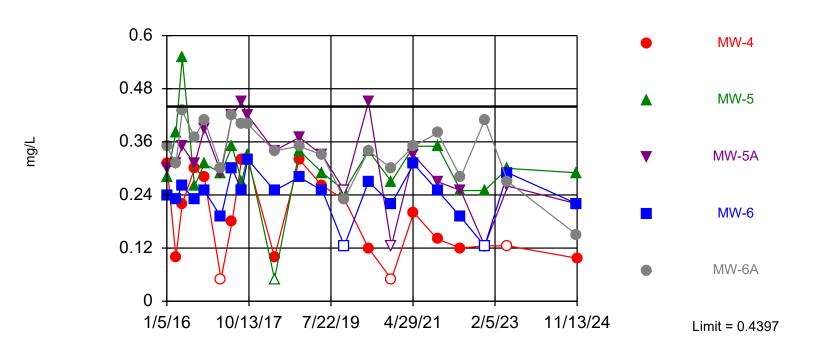
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. Annual per-constituent alpha = 0.005219. Individual comparison alpha = 0.0005231 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 1/16/2025 9:23 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant Sanitas<sup>™</sup> v.10.0.24 Software licensed to Jett Environmental Consulting. UG Hollow symbols indicate censored values.

Within Limit

### Fluoride

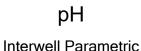
**Interwell Parametric** 

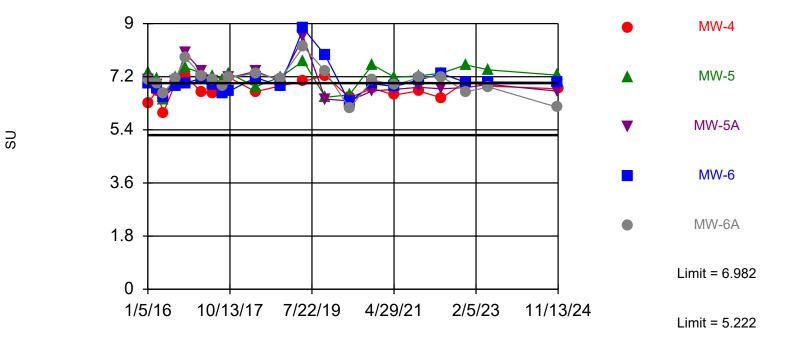


Background Data Summary (based on natural log transformation): Mean=-1.58, Std. Dev.=0.4116, n=60, 15% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9605, critical = 0.945. Kappa = 1.842 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001504. Comparing 5 points to limit.

Prediction Limit Analysis Run 1/16/2025 9:24 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

#### Exceeds Limits: MW-5, MW-6



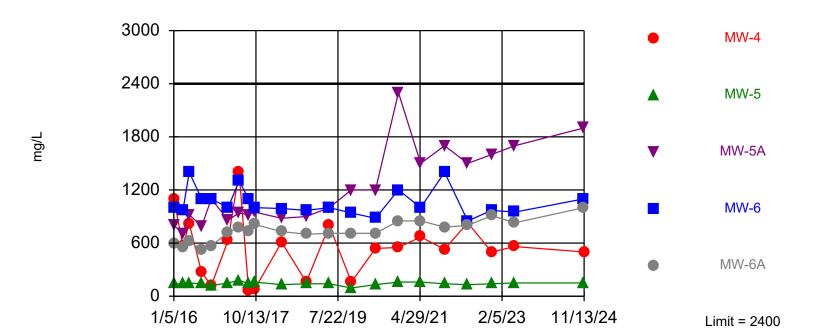


Background Data Summary (based on cube transformation): Mean=241.4, Std. Dev.=53.74, n=60. Seasonality was not detected with 95% confidence. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9466, critical = 0.945. Kappa = 1.842 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.000752. Comparing 5 points to limit.

Prediction Limit Analysis Run 1/16/2025 9:24 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

#### Within Limit

# Sulfate



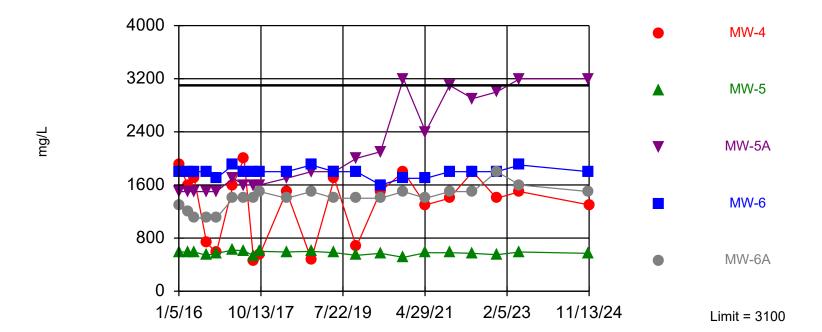
Interwell Non-parametric

Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. 1.667% NDs. Annual perconstituent alpha = 0.005219. Individual comparison alpha = 0.0005231 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 1/16/2025 9:25 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

#### Exceeds Limit: MW-5A

# **Total Dissolved Solids**



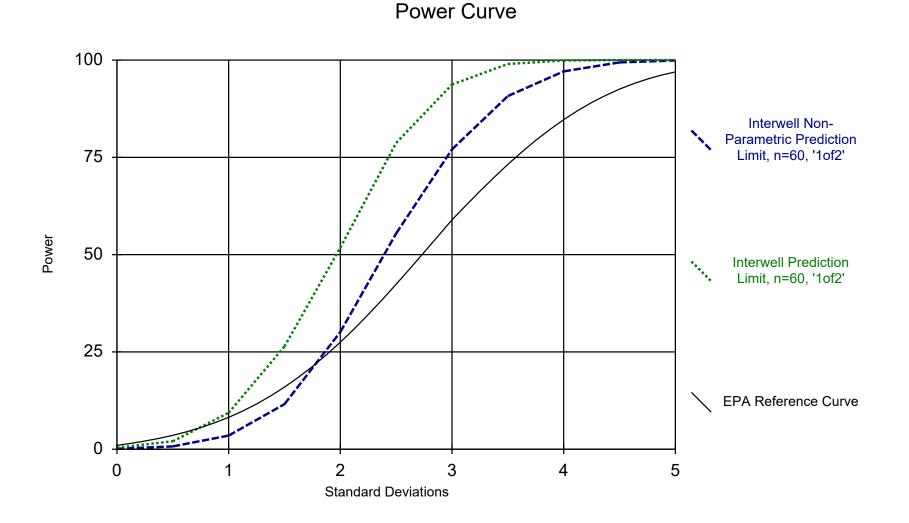
Interwell Non-parametric

Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. Annual per-constituent alpha = 0.005219. Individual comparison alpha = 0.0005231 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Prediction Limit Analysis Run 1/16/2025 9:25 AM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant

### **ATTACHMENT 4**

STATISTICAL POWER CURVES



Analysis Run 1/16/2025 1:37 PM View: Inter-Well PLs Asbury Power Plant CCR facility Client: The Empire District Data: Asbury Power Plant