



2024 Annual Water Quality Report

Coal Combustion Residue (CCR) Landfill

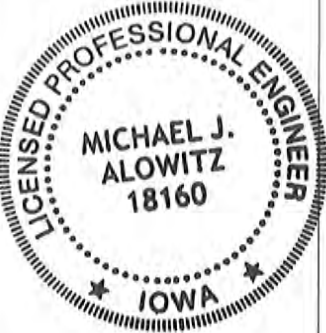


Muscatine Power and Water

February 11, 2025

Certification

2024 Annual Groundwater Monitoring Quality Report
Muscatine Power and Water
CCR Landfill
Permit No. #70-SDP-06-82P

I certify this Annual Groundwater Monitoring and Corrective Action Report meets the requirements of 40 CFR §257.90(e).

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.	
	 _____ Michael J. Alowitz, P.E.	 _____ Date
	License Number: _____	18160
	My license renewal date is: _____	December 31, 2026
	Pages or sheets covered by this seal: _____	Entire Document

Executive Summary

This Annual Water Quality Report (AWQR) was prepared by GHD on behalf of Muscatine Power and Water (MPW) for the MPW Coal Combustion Residue (CCR) landfill located in Muscatine County. This facility is regulated under Iowa Department of Natural Resources (DNR) Sanitary Disposal Project Permit No. 70-SDP-06-82P issued on August 10, 2020 (Doc #98816). This permit expires August 10, 2030. This AWQR is submitted to comply with requirements of MPW's landfill permit and Iowa Administrative Code (IAC) 567, Paragraph 103.1(4)e.

This report documents groundwater monitoring and leachate management in 2024. The CCR Landfill is in active use. Portions of the CCR Landfill are under final closure and portions are under interim cover.

There are no actions on requests pending in this AWQR and no changes to the monitoring system plan are recommended. This AWQR for 2024 adopts groundwater standards from the federal CCR rule for cobalt and molybdenum that are higher than the Iowa Statewide Standard for protected groundwater used previously for comparison.

The landfill has been sampled semiannually under assessment monitoring since October 2016. The Hydrologic Monitoring System Plan (HMSP) consists of 18 groundwater monitoring points. Four upgradient monitoring wells, six downgradient monitoring wells, two groundwater cutoff drains, three assessment monitoring points, and three monitoring points used solely for groundwater level measurements. There are also three surface water sampling points, one upstream, and two downstream. Groundwater samples were analyzed for constituents under the approved permit list containing arsenic, aluminum, barium, beryllium, boron, calcium, chloride, cobalt, copper, fluoride, iron, lead, magnesium, manganese, molybdenum, selenium, strontium, sulfate, and zinc.

The predominant site-wide flow direction is from the west and east toward the center of the Site before flowing southward toward the Farm Pond.

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Abbreviations

AWQR	Annual Water Quality Report
CCR	Coal Combustion Residue
cm/sec	centimeter per second
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
GES	Green Environmental Services
HAL	Health Advisory Level
HMSP	Hydrologic Monitoring System Plan
i	Average horizontal hydraulic gradient
IAC	Iowa Administrative Code
K	Hydraulic Conductivity
LCSP	Leachate Collection System Performance Evaluation
m/d	meters per day
MCL	Maximum Contaminant Level
mg/L	milligram(s) per liter
MPW	Muscatine Power and Water
n	Effective porosity
NPDES	National Pollutant Discharge Elimination System
PGW	Protected Groundwater
SDWR	Secondary Drinking Water Regulations
SSI	Statistically Significant Increases
SWS	Statewide Standards
V	linear velocity

1. Introduction

This Annual Water Quality Report (AWQR) for the Muscatine Power and Water (MPW) Coal Combustion Residue (CCR) landfill was prepared by GHD on behalf of MPW. The landfill is used for disposal of CCR from the MPW coal-fired plant located at 1700 Dick Drake Way in Muscatine, Iowa. The approximate 80-acre landfill is located 7.5 miles west of the power plant in the SW ¼ of Section 16 Township 76N, Range 3W in Muscatine County. The site location is shown on Figure 1.

The landfill has been in continuous operation since 1985. The CCR includes a mixture of gypsum, fly ash, bottom ash, and slag materials. The landfill consists of four separate phases encompassing approximately 34 acres shown on Figure 2. Phases I and II are currently permitted and under development while phases III and IV are designated for future development. This facility is regulated under Iowa Department of Natural Resources (IDNR) Sanitary Disposal Project Permit No. 70-SDP-06-82P reissued on August 8, 2020 (Doc# 98816). The permit expires August 8, 2030.

Water discharge from this facility is regulated under IDNR National Pollutant Discharge Elimination System (NPDES) Permit No. 7000109 issued on January 19, 2010, and expired on January 18, 2015. An application for permit renewal was submitted to the DNR on July 18, 2014, and ruling on this application is still pending. Under the pending permit renewal, MPW is authorized to discharge from the farm pond. Quarterly monitoring of the designated Farm Pond outfall and quarterly reporting are completed by MPW in accordance with this permit.

In accordance with State of Iowa [567] IAC Chapter 103.1(4)e and Special Provision X.3.g of the landfill permit, this AWQR summarizes the effects of the landfill on groundwater and surface water quality and includes the results of the annual measurements and analyses conducted at the monitoring points. This AWQR assesses sampling events conducted in April and September 2024.

The following list is milestone landfill development, plans and specifications, and reports.

Date	Title
<i>State Reporting and Documentation</i>	
11/01/1991	Closure/Post Closure Plan. Original date 11/01/1991, revised January 1996 and December 2009
11/21/1991	Supporting Development and Operations Plan (DOPS)
01/29/1993	Supplemental Plan Sheet 16.
2008-2010	Supplemental information dated 10/02/2008, 12/17/2009, and 03/30/2010.
1/17/2012	CCR Landfill Cell Development – Phase II Drawings
10/3/2018	Unstable Areas Determination
4/3/2019	CCR Landfill Cover Improvements - Drawings
10/16/2020	Construction Documentation Report, CCR Landfill Cover Improvements
Various	Annual Water Quality Report, AWQR (this report)
Various	Annual Leachate Control System Performance Evaluation Report, LCSPER (Included as part of AWQR)
<i>Federal Reporting and Documentation</i>	
10/19/2015	CCR Fugitive Dust Prevention and Control Plan; updated 12/5/2018
05/18/2016	Groundwater Monitoring System and Sampling and Analysis Program; updated 5/2/2017
10/17/2021	Run-on and Run-off Control System Plan
10/17/2016	Closure and Post-Closure Plan
Various	Annual CCR Fugitive Dust Control Report
Various	Annual Inspection Report
Various	Annual Groundwater Monitoring and Corrective Action Report

2. Sampling Protocol

2.1 Hydrologic Monitoring System Plan

The approved Hydrologic Monitoring System Plan (HMSP) (Doc# 39761) includes twelve groundwater monitoring points, which consisting of four upgradient monitoring wells (MW-8, MW-10, MW-22, and MW-23), six downgradient monitoring wells (MW-4A/4B, MW-5B, MW-6A, MW-14A, MW-15A, MW-21), and two groundwater cutoff drains (SW-24 and SW-25). MW-4B is a replacement of the previously damaged MW-4A well. There are also three surface water points, one upstream (SW-22) and two downstream (SW-23 and SW-26). The sample locations are shown on Figure 3 (note SW-26 is identified to the south of the area covered by the figure). Surface water samples were collected in April 2024, but only collected from SW-26 in September 2024 due to insufficient water levels.

There are also three assessment monitoring points, one upgradient (MW-24) and two downgradient (MW-26 and MW-27). The assessment points are sampled at the same time and for the same parameter list as the HMSP points, but may be included as part of the HMSP, abandoned, or simply used for water levels based on further assessment.

The role and monitoring location for HMSP monitoring points are identified in Table 1 and are routinely sampled for parameters specified in IAC Chapter 103.1(2)f and by the landfill permit outlined in Table 2. These parameters are arsenic, aluminum, barium, beryllium, boron, calcium, chloride, cobalt, copper, fluoride, iron, lead, magnesium, manganese, molybdenum, selenium, strontium, sulfate, and zinc. These samples are used to assess potential impacts of the CCR landfill on surrounding groundwater and surface water. Table 3 provides the past and future monitoring well maintenance and performance evaluation schedule.

The HMSP and assessment wells were used for measurement of groundwater levels during each 2024 sampling event along with three monitoring wells used solely for gauging (MW-9, MW-11, and MW-12) to assess trends and horizontal groundwater flow paths. Several monitoring well pairs are also used to assess vertical hydraulic gradient, including MW-8/9, MW-10/11, and MW-11/12. Additionally, the water level is monitored at one piezometer (PZ-05), which was dry during both monitoring events in 2024. A summary of 2024 groundwater level measurements is presented in Table 4.

2.2 Monitoring Well Inspection

An annual review of well performance is conducted to confirm that HMSP wells continue to function as viable monitoring points. A schedule of these reviews is included in Table 3. A summary of the well information and measurements is included in Table 4. Water levels and measurements were recorded and are summarized in Table 4. The depth of each HMSP well is also measured annually. The information is used to assess changes in horizontal and vertical groundwater flow gradients and flow paths, and for potential well deterioration. Groundwater contours generated from the April and September 2024 sampling event are displayed in Figures 4 and 5, respectively.

This review indicates that groundwater horizontal flow gradients appear stable, and wells remain viable sampling points and are physically intact, void of excessive turbidity, and provide the anticipated recharge during sampling. Based on this review, no changes to the HMSP wells, with respect to existing monitoring well performance, are recommended. The monitoring evaluation schedule is included in Table 2.

Well pads at MW-4B, MW-26, and MW-27 were identified as failing in 2024 and repair will be conducted in 2025. For several wells, total depth measurements have long been out-of-line with comparison total depth values. Per discussion with IDNR, MW-4B, MW-22, MW-23, AND MW-27 total depths for comparison have been set to the values measured in the Spring or Fall 2024.

2.3 Sample Collection

Sampling was conducted via low-flow methods. Samples are placed in laboratory-provided containers and preserved on ice. They are then submitted to Eurofins Environmental Testing in Cedar Falls, Iowa for analysis.

Prior to sample collection, the temperature, conductivity, pH, oxidation-reduction potential, dissolved oxygen, and turbidity of the purge water are measured and recorded. Copies of the groundwater sampling records for the 2024 monitoring events are attached in Appendix A. During the 2024 monitoring events, field duplicate samples were collected from monitoring wells MW-26 in the spring, and from monitoring wells MW-10 and MW-22 in the fall, for quality assurance/quality control purposes.

Per request from the IDNR. Total suspended solids (TSS) was added as an analyte in Fall 2024. The timing of adding the analyte was such that TSS was not collected for all locations.

3. Groundwater Flow Conditions

3.1 Hydrology

Surface water enters the site via an intermittent stream originating in agricultural land in the SE¼ of Section 16. The stream enters the site near the northeast corner of the inactive, final covered and vegetated portion of the Phase I fill area. The entry point at the property boundary represents the upstream surface water quality monitored by SW-22. The stream is then routed through a constructed bypass ditch which diverts collected off-site and on-site non-fill surface drainage around the landfill and eventually to a farm pond at the southern boundary of MPW property. This bypass ditch runs along the north and west perimeters of the landfill and sediment runoff control pond before it connects back into the original stream bed location southwest of the landfill. The downstream quality of the bypass ditch is monitored by SW-23. The stream then flows south to the Farm Pond, which is monitored at its overflow point SW 26 (farm pond overflow) corresponding to the NPDES permit's outfall #001.

Runoff originating from the Phase I and II area is managed differently depending on whether it has been in contact with CCR or not. The landfill is managed to minimize storm water contact with the CCR. The general stormwater management approach includes:

- Where possible, runoff from areas that have received final cover is routed off the landfill in a manner that bypasses the site Sediment Runoff Pond.
- In the active area where runoff originating on CCR is generated, the runoff is routed to landfill surface drains and directed to a sediment runoff pond forebay located west of Phase II. The forebay is intended to capture sediment prior to discharge to the Sediment Runoff Pond.
- Portions of the active landfill where final cover is not present and is not intended to receive CCR within a reasonable period are graded and temporarily covered with soil to prevent generation of contact water. This non-contact runoff is routed directly to the Sediment Runoff Pond. As these areas transition to active CCR filling, runoff will be diverted to the Sediment Runoff Pond forebay as described above to the extent practical.

The water level in the Sediment Runoff Pond is controlled by MPW staff through operation of a siphon outlet to the bypass ditch/stream confluence area. Eventually, all the runoff generated from this site flows to the Farm Pond and discharges at the NPDES outfall as described above.

A groundwater cutoff drain runs along the east side of the landfill and empties south of the Sediment Runoff Pond to flow to the Farm Pond. The upstream end of the cutoff drain is monitored via SW-25. The conditions at the outlet end are represented by SW-24.

3.2 Hydrogeology

Green Environmental Services completed a Hydrogeologic Evaluation of the CCR landfill site in October 1991 (GES, 1991, Doc# 28831) in compliance with the then-current requirements of Chapters 103 and 110 of the Iowa Administrative Code. The 1991 evaluation of the hydrogeologic conditions of the site is the basis upon which the Hydrologic Monitoring System Plan was developed.

The uppermost aquifer in the vicinity of the CCR Landfill consists of a glacial till and clayey silt. No perched water zones have been observed. The water table elevation fluctuates with regional changes and varies with topography and native stream flow patterns on the CCR Landfill site. A clay-rich glacial till functions as a lower confining limit and overlies a carbonate bedrock. The depth to bedrock is 335 feet based on a water well drilled at the Site maintenance shop. Additional geologic details are included in the Groundwater Monitoring System and Sampling and Analysis Program (HR Green, 2017).

Groundwater flow maps were prepared using water level measurements from each monitoring event (Figures 4 and 5). The overall groundwater flow direction is generally southward, mimicking topography and surface water flow patterns. Groundwater flows from the west and east toward the center of the Site before flowing southward toward the Farm Pond (the northern extent of this pond is shown on Figures 4 and 5).

3.3 Horizontal Hydraulic Gradient and Groundwater Flow Velocity

Hydraulic conductivity data for the alluvial aquifer are estimated at 1.0E-5 to 1.0E-4 centimeters per second (cm/s) or 0.008 to 0.08 meters per day (m/d) (HR Green, 2017). For calculation purposes, a hydraulic conductivity of 0.04 m/d is used.

The average linear groundwater velocity at the water table was estimated based on hydraulic conductivity, horizontal gradient, and the estimated porosity of the formation using the following equation:

$$V = Ki/n$$

Where V equals the average linear velocity; K equals the hydraulic conductivity (0.04 m/day); i equals the average horizontal hydraulic gradient; and n equals the effective porosity (estimated at 0.3). During the 2024 monitoring events, the average linear groundwater velocity at the shallow alluvial aquifer was estimated at 0.002 m/day (approximately 2 feet per year) for both of the 2024 monitoring events.

3.4 Vertical Hydraulic Gradient

Water levels measured in monitoring well pairs MW-8/MW-9, MW-10/MW-11, and MW-11/MW-12 during the two 2024 gauging events, where both wells in each nest were gauged, were used to calculate vertical hydraulic gradients. The vertical hydraulic gradients were calculated by the following equation:

$$\frac{\text{Water Elevation in Deep Well} - \text{Water Elevation in Shallow Well}}{\text{Elevation of Middle of Saturated Zone of Shallow Well Screen} - \text{Elevation of Middle of Saturated Zone of Deep Well Screen}}$$

The difference in groundwater elevations between nested pairs of wells is variable, ranging from 0.24 (at the MW-11/MW-12 well pair during the September 2024 gauging event) to a maximum difference of 6.42 feet (at the MW-8/MW-9 well pair during the April 2024 gauging event).

The vertical hydraulic gradients ranged from -0.41 (downward-directed flow) in well cluster MW-8/MW-9 (April 2024) to 0.04 (upward-directed flow) in well clusters MW-10/MW-11 (April 2024).

Vertical gradients were in the upward direction during both 2024 gauging events at well clusters MW-10/MW-11. The vertical gradient was in the downward direction during the 2024 monitoring events at well cluster MW-8/MW-9. Vertical gradient was downward in April 2024 monitoring event, and then upward in September 2024 monitoring event at well cluster MW-11/MW-12. The vertical hydraulic gradients for each monitoring event are summarized in Table 12.

4. Data Collection

The HMSP-approved semiannual monitoring events were performed in the spring (April 2024) and fall (September 2024). The events included monitoring points and parameters as described in Section 2.1 above and in accordance with the current DNR-approved HMSP.

Sampling documentation and analytical reports are included in Appendix A and Appendix B, respectively. Groundwater measurements and a summary of historical analytical results are included in Table 4 and Table 8, respectively.

The IDNR requested lithium and total suspended solids (TSS) be added to the analyte list. Historical lithium data are available from the federal monitoring program for groundwater which is included in Table 8. Lithium is included in the September 2024 laboratory reports in Appendix C. TSS was only collected from 7 locations due to timing of the IDNR's request relative to sample collection and available sample volume. TSS is planned for full inclusion in the sampling program in 2025.

4.1 Comparison to Background and Regulatory Standards

Statistical methods were employed to assess the control limits and findings of the analytical results. Statistical calculations were performed by Groundwater Stats Consulting. The statistical report dated November 14, 2024 (Appendix C), incorporates data collected through 2024 and the corresponding statistical analyses, including narrative, control limits, prediction limits, statistically significant increases (SSIs), and trend tests.

Analytical results were also evaluated against published standards. For constituents with a maximum contaminant level (MCL) established by the Environmental Protection Agency (EPA) results are compared to MCLs. The federal CCR rule 40 CFR §257.95(h)(2) provides comparison standards for cobalt, lead, and molybdenum where an MCL is not established. For lead, EPA established an action level which is often treated like an MCL. The EPA action level for lead of 0.015 mg/L is equivalent to the federal CCR rule and thus the lead standard is identified as an MCL in this report. For cobalt, lithium, and molybdenum, the federal CCR rule values are considered equal to MCLs for evaluating data and are used as the standards for evaluation in this report.

Where no MCL exists, results are compared to the Health Advisory Level (HAL) or secondary drinking water regulations (SDWR) value. Where an MCL (or federal CCR rule value), HAL, or SDWR value does not exist, data are compared to the Iowa Statewide Standards (SWS) for protected groundwater. Previous AWQRs used the Iowa SWS for comparison rather than the federal CCR rule values.

The resulting 2024 control limits and regulatory standards are summarized in Table 5 for groundwater and surface water.

4.2 2024 Water Quality Results

Sample collection records are provided in Appendix A and laboratory analytical reports are provided in Appendix B. Groundwater Stats Consulting evaluated the analytical data as reported in Appendix C. Appendix D provides graphs of analytical results over time for the monitoring network. Background concentrations are identified in Appendix C and Table 5. Table 7 provides a summary of locations and constituents with new or ongoing exceedances of control limits. Table 8 summarizes historical sample results from each sampling event from 2016 through 2024. Table 9 summarizes findings since 2016 where exceedances above the control limit, action level (MCL), or other standards (SDWR, HAL, SWS) have occurred.

4.3 Groundwater Results

The background analytical results of MW-8, MW-10, MW-22, MW-23, and SW-22 in 2024 and the statistical report (Appendix C) were used to develop an inter-well control limits for comparison to results from downgradient monitoring

wells. These control limits are listed in Table 5; locations and constituents reported above these limits during at least one sampling event in 2024 are summarized in Table 7 and are listed below:

- Chloride at MW-5B
- Boron, calcium, magnesium, sulfate, and zinc at MW-14A
- Boron and magnesium at MW-15A
- Boron and selenium at MW-21
- Boron and magnesium at MW-26
- Boron at MW-27

Trend tests on the exceedances above and background wells were performed to determine if concentrations are increasing, decreasing, or stabilizing over time through the April and September 2024 sampling events. The Sen's Slope/Mann-Kendall tests were performed at a 99% confidence level. Decreasing trends were more prevalent in the groundwater data and the only increasing trends were noted at upgradient monitoring well locations. Statistically significant trends were identified for the following monitoring points:

- Chloride is increasing at upgradient monitoring wells MW-23
- Sulfate is increasing at upgradient monitoring well MW-22
- Boron is decreasing at downgradient monitoring well MW-15A
- Calcium is decreasing at upgradient monitoring well MW-08
- Chloride is decreasing at upgradient monitoring well MW-22 and downgradient monitoring well MW-5B
- Selenium is decreasing at downgradient monitoring well MW-21
- Sulfate is decreasing at upgradient monitoring wells MW-08 and MW-23

4.4 Surface Water Results

All surface water locations contained insufficient flow to collect samples in September 2024 except for SW-26. The only data for evaluation from 2024 are from the April 2024 sampling event and SW-26 from the September 2024 event. Background values to establish control limits are based on upgradient surface water monitoring point SW-22. Surface water monitoring data were subjected to the same statistical analyses as groundwater data. The following constituent and surface water locations exceeded the background prediction limits.

- Boron, calcium, magnesium, strontium, and sulfate at SW-24
- Strontium at SW-25
- Arsenic at SW-26

No increasing trends were noted and decreasing trend was identified for boron on SW-24.

Surface water monitoring point SW-26 is the outlet of the Farm Pond also identified as Outfall 001 in the NPDES permit for the facility. The April 2024 results were below the MCL for arsenic and the federal CCR rule comparison value for molybdenum in groundwater although the results exceeded the background value. The arsenic result at SW-26 did exceed the arsenic MCL in Fall 2024 and for at least one sample each previous year since 2019 and may be due to naturally occurring arsenic.

4.5 Comparison to Published Standards

Groundwater and surface water data are also compared to the published groundwater standards presented in Table 5. Each monitoring constituent is evaluated below relative to these standards.

- The upper bound of the aluminum SDWR value of 0.05 – 0.2 mg/L was exceeded at upgradient monitoring well MW-23 in 2024.

- The arsenic MCL of 0.01 mg/L was exceeded in the 2024 monitoring event once at SW-26. Arsenic was reported but the MCL was not exceeded at three background groundwater monitoring locations.
- Barium was reported at every monitoring location during 2024, but no results exceeded the MCL of 2 mg/L.
- Beryllium was not reported at any monitoring location during 2024. The reporting limit of 0.001 mg/L is below the MCL of 0.004.
- Boron has a HAL of 6 mg/L. This value was exceeded at downgradient monitoring wells MW-14A (twice) and MW-15A (once) in 2024. The HAL was also exceeded at surface water monitoring point SW-24.
- There is no published standard for calcium. Calcium was reported at each monitored location in 2024.
- The chloride SDWR value is 250 mg/L. Chloride was reported at each monitored location at least once in 2024 at concentrations below the SDWR value.
- The standard for cobalt established by the federal CCR rule is 0.6 mg/L. Cobalt was detected at concentrations below the standard at two background monitoring wells and one downgradient well in 2024.
- Copper has an MCL of 1.3 mg/L. There were no detections of copper at any monitoring location in 2024.
- Fluoride has an MCL of 4 mg/L. Fluoride was not reported at any monitored location in 2024. The reporting limit for fluoride increased to 1.0 mg/L in 2023 relative to 0.5 mg/L for most of the monitoring history.
- Iron has an SDWR value of 0.3 mg/L. This value was exceeded at two upgradient monitoring locations (MW-8 and MW-10) and 5 downgradient monitoring locations (MW-4B, MW-5B, MW-6A, and MW-27) at least once in 2024.
- Lead has an MCL of 0.015 mg/L. This value was not exceeded at any monitored location in 2024.
- Lithium has a standard established by the federal CCR rule of 0.04 mg/L. Lithium was reported at two locations in September 2024 with a maximum of 0.0194 mg/L at MW-21.
- There is no published standard for magnesium. Magnesium was reported at each monitored location in 2024.
- Manganese has an SDWR value of 0.05 mg/L and a HAL of 0.3 mg/L. The SDWR value was exceeded at three background monitoring wells (MW-8, MW-10, MW-22), four downgradient monitoring wells (MW-4B, MW-5B, MW-6A, and MW-26), and downgradient surface monitoring point SW-26. Of these locations, the HAL was also exceeded at least once in 2024 at MW-8, MW-22, MW-4B, MW-5B, and SW-26.
- Molybdenum has a standard of 0.1 mg/L established by the federal CCR rule. The standard was not exceeded at any monitored location in 2024.
- Selenium has an MCL of 0.05 mg/L. Selenium was only detected at one location in 2024 (MW-21) at a concentration below the MCL.
- Strontium has a HAL of 4 mg/L. Strontium was detected at each monitored location in 2024 at concentrations below the HAL.
- Sulfate has an SDWR value of 250 mg/L. Sulfate was reported at each monitored location in 2024 with concentrations above the SDWR value at downgradient monitoring wells MW-14A, MW-15A, and MW-26. Downgradient surface water locations SW-24 and SW-25 also had results exceeding the SDWR value.
- There are no standards for TSS. TSS was only included at 7 monitoring locations in September 2024 with a maximum concentration of 1,830 mg/L at MW-14A.
- Zinc has a HAL of 2 mg/L and an SDWR value of 5 mg/L. Zinc was only detected at MW-14A at a concentration below the HAL and SDWR.

5. Leachate Collection System Performance Evaluation

This Leachate Collection System Performance Evaluation Report (LCSPER) is included in this AWQR as required in Special Provision 6.e of the current landfill SDP permit dated August 10, 2020, and amended October 29, 2020.

The leachate collection system is located in the Phase I and Phase II areas of the developed portions of the landfill. The system consists of three perforated leachate pipes running north-south that tie into an east-west leachate header line. Two of the perforated pipes are located under the west portion of Phase I, while the third is located under Phase II. The east-west header line is also paralleled by a perforated pipe which collects leachate off the north end of Phase II and east into Phase I. All collected leachate in the existing system gravity drains into Lift Station A located along the haul road north of the sediment runoff pond.

5.1 Phase I Leachate Collection System

The two leachate collection pipes on the west side of Phase I were installed in the early 1990s and consist of six-inch diameter schedule 80 perforated pipe that was trenched into the native low permeability landfill base (clay till), backfilled with pea gravel, and covered by geotextile fabric and a sand berm directly over the pipe. Leachate collected in the perforated pipe flows north to the header system (GES, 1991). Leachate collection in Phase I is limited to the west side of that Phase as a majority of the initial CCR landfill development to the east and north had occurred prior to that time.

Historically leachate levels in the CCR had been measured with four piezometers (PZ-1, PZ-2, PZ-3, and PZ-4). These piezometers were abandoned in 2019 to facilitate landfill cover construction activities. The last measurements were documented in the 2019 AWQR. Leachate levels exceeding one foot had been present and persistent in all these piezometers throughout their existence.

5.2 Phase II Leachate Collection System

The Phase II lined cell was constructed in 2012 and includes a contemporary leachate collection design. The base of the landfill in this area consists of a four-foot thick, low permeability clay liner sloped to the center, with an overlying porous aggregate drainage layer over the entire cell. The drainage layer facilitates the flow of leachate along the sloped liner where it drains to a perforated pipe. The leachate then flows north to the header system (HR Green, August 2012). Leachate head on the Phase II liner is monitored with one piezometer (PZ-5). During the fall 2024 HMSP monitoring event, measurement of PZ-5 was dry. Throughout the period of record, head measurements have been less than one foot.

5.3 Leachate Management

The leachate from the collection header drains to Lift Station A. Leachate is then pumped from the lift station to the clay-lined forebay. The lift station pump operates continuously at a rate of 434 gallons per hour for a conservative estimated pumped volume of 3,800,000 gallons per year (HR Green, 2022). The water level in the forebay is controlled at a consistent level by a riser structure that regulates flow out to the Sediment Runoff Control Pond. Water in the Sediment Runoff Pond is managed under the site's NPDES permit.

A sample was analyzed for constituents of concern in September 2024, with the following detections:

- Antimony: 0.00312 mg/L
- Arsenic: 1.64 mg/L
- Barium: 0.0241 mg/L

- Boron: 70.4 mg/L
- Calcium: 531 mg/L
- Chloride: 55.0 mg/L
- Fluoride: 2.47 mg/L
- Lithium: 0.330 mg/L
- Magnesium: 48.2 mg/L
- Manganese: 0.458 mg/L
- Molybdenum: 0.775 mg/L
- pH: 8.8 SU
- Strontium: 4.02 mg/L
- Sulfate: 4,840 mg/L
- TDS: 7880 mg/L
- Combined Radium 226 + 228: 4.54 pCi/L

5.4 LCSPE Conclusions

The presence and variability of leachate levels in Phase I based on historical measurements is typical of heterogeneous CCR fill deposits where a complete underdrain collection system is not present. Given this, the most feasible way to achieve the lowest possible leachate is by minimizing the amount of infiltration into the fill by application of final and temporary soil cover. This was the main focus of the 2019-2020 landfill cover construction activities. Leachate levels in Phase I are expected to stabilize over time. However, it is unlikely that the older Phase I leachate collection system will achieve the standard of a contemporary system of less than 12 inches of leachate head. The Phase I system removes leachate proximate to the collection pipes but was not designed to meet a standard applied to leachate piezometers throughout the cell.

In Phase II, where a contemporary leachate collection system with complete granular underdrain is installed, leachate head on the engineered liner has historically been maintained at less than one foot. This is considered acceptable for a modern collection system.

6. Conclusions and Recommendations

This AWQR documents groundwater and surface water monitoring conducted at MPW CCR landfill during the 2024 monitoring period. Two sample events were conducted in April and September of 2024.

The groundwater flow was consistent through the spring and fall 2024 monitoring events, with flow direction generally toward the middle of the site and southward toward the lower-lying farm pond. The groundwater contour maps (Figures 4 and 5) indicate the monitoring network is sufficient and has appropriately located background and downgradient well locations.

Samples collected during the monitoring period were analyzed under the approved permit list, with the following exceedances above established control limits were noted:

- Chloride at MW-5B
- Boron, calcium, magnesium, sulfate, and zinc at MW-14A
- Boron and magnesium at MW-15A
- Boron and selenium at MW-21
- Boron at MW-27

Exceedances of published standards were primarily SDWR values. No constituents exceeded an MCL in groundwater. Exceedances of published standards are summarized below.

- Aluminum (SDWR) at four locations
- Arsenic (MCL) at surface water location SW-26
- Boron (HAL) at three locations
- Iron (SDWR) at five locations
- Manganese (HAL) at eight locations
- Sulfate (SDWR) at five locations

6.1 Recommendations

Based on the evaluation findings, the MPW site should continue groundwater monitoring as outlined in Table 2 and in accordance with Permit No. 70-SDP-06-82P. No changes to the monitoring network or sampling procedures are necessary. Lithium and TSS will be included in the analyte lists for 2025.

7. References

- Green Environmental Services (GES), June, 1990. Hydrogeologic Evaluation Work Plan for the Muscatine Power and Water Coal Combustion Residue Landfill.
- Green Environmental Services (GES), October 25, 1991. Hydrogeologic Evaluation of the Muscatine Power and Water Coal Combustion Residue Landfill.
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- GHD, February 14, 2024. 2023 Annual Water Quality Report, Coal Combustion Residue (CCR) Landfill Muscatine Power and Water.
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- HR Green, January 17, 2012. CCR Landfill Cell Development – Phase II Expansion Plans, Muscatine Power and Water, Drawings and Specifications.
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- Iowa Administrative Code [567], Chapter 103, Sanitary Landfills: Coal Combustion Residue, July 2, 2008.
- Iowa Department of Natural Resources (IDNR) Sanitary Disposal Project Permit No. 70-SDP-06- 82P dated August 8, 2020.
- Muscatine Power and Water. Federal *CCR Rule Compliance Data and Information*, publicly accessible Internet site at <https://www.mpw.org/utilities/electric/ccr-rule>.
- Muscatine Power and Water, October 2, 2008, December 17, 2009, and March 30, 2010.
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- U.S. Environmental Protection Agency (EPA), March 2018. Drinking Water Standards and Health Advisories Tables, EPA-822-F-18-001, U.S. EPA, Washington, DC.
- U.S. Environmental Protection Agency (EPA), 2015. Published in Federal Register Volume 80, No. 74 published on April 17, 2015, *Final Rule 40 CFR Part 257 Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities*; and *Technical Amendments* (correcting the effective date) published in Federal Register Volume 80, No. 127 on July 2, 2015.

Tables

Table 1

**Monitoring Program Summary
2024 Annual Water Quality Report
Muscatine Power & Water - CCR
Permit No. 70-SDP-06-82P**

Monitoring Location	Monitored Unit	Current Monitoring Program	Change for next sampling event	2024 Control Limit Exceedances	Total # of Samples in each monitoring program since January 1, 2020		
					Routine	Supplemental	Remedial Action
MW-4B	Uppermost Aquifer	Routine	No change	None	10	0	0
MW-5B	Uppermost Aquifer	Routine	No change	Chloride	10	0	0
MW-6A	Uppermost Aquifer	Routine	No change	None	10	0	0
MW-8	Uppermost Aquifer	Background	No change	None	10	0	0
MW-10	Uppermost Aquifer	Background	No change	None	10	0	0
MW-14A	Uppermost Aquifer	Routine	No change	Boron, Calcium, Magnesium, Sulfate, Zinc	10	0	0
MW-15A	Uppermost Aquifer	Routine	No change	Boron, Magnesium	10	0	0
MW-21	Uppermost Aquifer	Routine	No change	Boron, Selenium	10	0	0
MW-22	Uppermost Aquifer	Background	No change	None	10	0	0
MW-23	Uppermost Aquifer	Background	No change	None	10	0	0
SW-24	Cutoff Drain - South	Routine	No change	Boron, Calcium, Magnesium, Strontium, Sulfate	8	0	0
SW-25	Cutoff Drain - East	Routine	No change	Strontium	8	0	0
SW-22	Surface Water	Background	No change	None	8	0	0
SW-23	Surface Water	Routine	No change	None	8	0	0
SW-26	Surface Water - Pond	Routine	No change	Arsenic	9	0	0
Other monitoring points							
PZ-5	CCR	Leachate Level	No change	NA	7	0	0
MW-9	Uppermost Aquifer	Water Level	No change	NA	7	0	0
MW-11	Uppermost Aquifer	Water Level	No change	NA	7	0	0
MW-12	Lower Confining Unit	Water Level	No change	NA	7	0	0
MW-24	Uppermost Aquifer	Assessment	No change	None	9	0	0
MW-26	Uppermost Aquifer	Assessment	No change	Boron, Magnesium	8	0	0
MW-27	Uppermost Aquifer	Assessment	No change	Boron	8	0	0

Table 2

**Monitoring Program Implementation Schedule
2024 Annual Water Quality Report
Muscatine Power & Water - CCR
Permit No. 70-SDP-06-82P**

Monitoring Location	Recent Sampling Dates and Constituents				Upcoming Sampling Dates and Constituents	
	April 2023	September 2023	Spring 2024	Fall 2024	Spring 2025	Fall 2025
MW-4B	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-5B	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-6A	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-8	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-10	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-14A	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-15A	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-21	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-22	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-23	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
SW-24	Permit List	-	Permit List	-	Permit List	Permit List
SW-25	Permit List	-	Permit List	-	Permit List	Permit List
SW-22	Permit List	-	Permit List	-	Permit List	Permit List
SW-23	Permit List	-	Permit List	-	Permit List	Permit List
SW-26	Permit List	-	Permit List	Permit List	Permit List	Permit List
MW-24	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-26	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List
MW-27	Permit List	Permit List	Permit List	Permit List	Permit List	Permit List

Permit List: Arsenic, barium, beryllium, cobalt, copper, iron, lead, magnesium, manganese, selenium, zinc, chloride, sulfate, aluminum, calcium, boron, fluoride, molybdenum, and strontium

- could not sample due to insufficient flow

Table 3

Monitoring Well Maintenance and Performance Evaluation Schedule
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Compliance with:	Monitoring Calendar Years							
	2018	2019	2020	2021	2022	2023	2024	2025
567 IAC 114.21(2)"a" high and low water levels	Completed		Completed		Completed		Completed	
567 IAC 114.21(2)"b" changes in the hydrologic setting and flow paths	Completed		Completed		Completed		Completed	
567 IAC 114.21(2)"c" well depths	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Scheduled

**Monitoring Well Maintenance and Performance Summary
2024 Annual Water Quality Report
Muscatine Power & Water - CCR
Permit No. 70-SDP-06-82P**

Well	Top of Casing (ft, amsl)	Top of Screen (ft, amsl)	Total Depth (ft)		Date of Measurements		Vertical Gradient 9/12/2024 ⁽¹⁾	Water Levels (ft amsl)		Maximum Depth Discrepancy (ft)
					4/15/2024	9/12/2024		Low	High	
MW-4B	715.87	694.09	27.95	Groundwater Level (ft)	7.14	7.9	-	705.73	710.01	0.15
				Groundwater Elevation (ft amsl)	708.73	707.97				
				Measured Well Depth (ft)	27.95	27.8				
				Submerged screen	Y	Y				
MW-5B	709.1	691.73	25	Groundwater Level (ft)	1.7	1.58	-	704.07	708.36	0.12
				Groundwater Elevation (ft amsl)	707.4	707.52				
				Measured Well Depth (ft)	25.08	24.88				
				Submerged screen	Y	Y				
MW-6A	708.92	691.49	25	Groundwater Level (ft)	2.23	2.47	-	704.47	706.82	-0.18
				Groundwater Elevation (ft amsl)	706.69	706.45				
				Measured Well Depth (ft)	25.22	25.18				
				Submerged screen	Y	Y				
MW-8	747.36	711.33	43.04	Groundwater Level (ft)	15.25	16.8		728.06	737.74	0.02
				Groundwater Elevation (ft amsl)	732.11	730.56				
				Measured Well Depth (ft)	43.02	43.25				
				Submerged screen	Y	Y				
MW-9	747.12	695.66	58.74	Groundwater Level (ft)	21.43	22.85	-0.399	721.96	729.75	-
				Groundwater Elevation (ft amsl)	-	-				
				Measured Well Depth (ft)	-	-				
				Submerged screen	-	-				
MW-10	718.51	706.33	19.99	Groundwater Level (ft)	3.62	4.06	0.0197	710.89	715.1	0.22
				Groundwater Elevation (ft amsl)	714.89	714.45				
				Measured Well Depth (ft)	19.91	19.77				
				Submerged screen	Y	Y				
MW-11	718.34	670.03	55.97	Groundwater Level (ft)	1.95	3.18	-	712.92	718.34	-
				Groundwater Elevation (ft amsl)	-	715.16				
				Measured Well Depth (ft)	-	-				
				Submerged screen	-	Y				
MW-12	717.75	633.98	86.42	Groundwater Level (ft)	2.41	2.35	0.007	713.13	717.75	-
				Groundwater Elevation (ft amsl)	-	715.4				
				Measured Well Depth (ft)	-	-				
				Submerged screen	-	Y				
MW-14A	729	716.19	20	Groundwater Level (ft)	10.32	11.91	-	712.59	719.55	-0.5
				Groundwater Elevation (ft amsl)	718.68	717.09				
				Measured Well Depth (ft)	20.65	20.5				
				Submerged screen	Y	Y				
MW-15A	729.99	717.12	20	Groundwater Level (ft)	80.08	10.67	-	713.83	721.17	-0.45
				Groundwater Elevation (ft amsl)	649.91	719.32				
				Measured Well Depth (ft)	20.49	20.45				
				Submerged screen	N	Y				
MW-21	725.75	710.9	21.91	Groundwater Level (ft)	8.73	10.93	-	713.16	721.01	4.93
				Groundwater Elevation (ft amsl)	717.02	714.82				
				Measured Well Depth (ft)	16.98	22.1				
				Submerged screen	Y	Y				
MW-22	744.27	707.77	43.23	Groundwater Level (ft)	15.78	17.05	-	727.43	731.18	0.00
				Groundwater Elevation (ft amsl)	728.49	727.22				
				Measured Well Depth (ft)	43.23	43.68				
				Submerged screen	Y	Y				
MW-23	726.9	714.44	19.29	Groundwater Level (ft)	4.77	6.2	-	719.37	723.02	0.01
				Groundwater Elevation (ft amsl)	722.13	720.7				
				Measured Well Depth (ft)	19.29	19.28				
				Submerged screen	Y	Y				
MW-24	735.32	719.51	22.59	Groundwater Level (ft)	14.38	15.21	-	717.54	725.83	0.01
				Groundwater Elevation (ft amsl)	720.94	720.11				
				Measured Well Depth (ft)	22.59	22.58				
				Submerged screen	Y	Y				
MW-26	731.08	699.53	37.82	Groundwater Level (ft)	20.5	18.82	-	710.35	712.91	0
				Groundwater Elevation (ft amsl)	710.58	712.26				
				Measured Well Depth (ft)	-	37.82				
				Submerged screen	Y	Y				
MW-27	730.26	716.96	19.3	Groundwater Level (ft)	13.78	13.49	-	714.47	718.43	0
				Groundwater Elevation (ft amsl)	716.48	716.77				
				Measured Well Depth (ft)	19.3	19.4				
				Submerged screen	N	N				

(1) Negative value is a discharge gradient; positive values is a recharge gradient. Well clusters are MW-8/MW-9, MW-10/MW-11, and MW-11/MW-12
 Note: Well depth and measured well depth reported from ground surface
 ft amsl - feet above mean sea level

Table 5

**Background Summary
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Muscatine Power & Water - CCR
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Constituent	Units	Background Level/Control Limit	Action Level	Source
Interwell Background/Control Limit (MW-8, MW-10, MW-22, and MW-23)				
Aluminum	mg/L	0.552	0.05 - 0.2	SDWR
Arsenic	mg/L	0.00367*	0.01	MCL
Barium	mg/L	0.271	2	MCL
Beryllium	mg/L	0.001*	0.004	SWS
Boron	mg/L	0.322	6	HAL
Calcium	mg/L	152	-	-
Chloride	mg/L	30	250	SDWR
Cobalt	mg/L	0.00558	0.006	40CFR§257.95(h)(2)
Copper	mg/L	0.005	1.3	MCL
Fluoride	mg/L	1	4	MCL
Iron	mg/L	4.38	0.3	SDWR
Lead	mg/L	0.00204	0.015	MCL
Lithium	mg/L	0.01	0.04	40CFR§257.95(h)(2)
Magnesium	mg/L	44.62	-	-
Manganese	mg/L	1.2	0.05 / 0.3	SDWR / HAL
Molybdenum	mg/L	0.00822	0.1	40CFR§257.95(h)(2)
Selenium	mg/L	0.005	0.05	MCL
Strontium	mg/L	0.2991	4	HAL
Sulfate	mg/L	366	250	SDWR
Zinc	mg/L	0.02*	5 / 2	SDWR / HAL

Table 6

**Summary of Well/Detected Constituent Pairs With No Immediately Preceding Control Limit Exceedances
2024 Annual Water Quality Report
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Table 6 information can be observed through Tables 7, 8, and 9. The vast majority of well-constituent pairs did not have an immediately preceding control limit exceedance.

Table 7

Summary of Ongoing and Newly Identified Control Limit Exceedances
2024 Annual Water Quality Report
Muscatine Power & Water - CCR
Permit No. 70-SDP-06-82P

Well	Constituent	Units	2024 Results		Control Limit Fall 2024	Action Level/ Standard*
			April	September		
MW-5B	Chloride	mg/l	39.3	40.5	30	250
MW-14A	Boron	mg/l	15.2	17.7	0.322	6
	Calcium	mg/l	344	327	152	-
	Magnesium	mg/l	135	134	44.62	-
	Sulfate	mg/l	1160	1110	366	250
	Zinc	mg/l	-	0.022	0.02	
MW-15A	Boron	mg/l	5.8	8.5	0.322	6
	Magnesium	mg/l	51.6	53.8	44.62	-
MW-21	Boron	mg/l	2.31	3.68	0.322	6
	Selenium	mg/l	ND	0.00666	0.005	0.05
MW-26	Boron	mg/l	3.07	4.19	0.322	6
	Magnesium	mg/l	50.5	45.3	44.62	-
MW-27	Boron	mg/l	1.01	3.02	0.322	6
SW-24	Boron	mg/l	7.91	-	6.67	6
	Calcium	mg/l	231	-	221	
	Magnesium	mg/l	85.8	-	73.3	-
	Strontium	mg/l	0.448	-	0.285	4
	Sulfate	mg/l	676	-	554	250
SW-25	Strontium	mg/l	0.293	-	0.285	
SW-26	Arsenic	mg/l	0.00217	0.0371	0.00367	0.01

* Bold identifies Maximum Contaminant Levels or Federal CCR Regulation comparison values

Table 8

Analytical Data Summary
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 Muscatine Power & Water - CCR
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Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin	
Aluminum (Total) (7429-90-5) SDWR = 0.05 - 0.2	10/10/2016	mg/l	<0.05	0.0826			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05										
	8/7/2017	mg/l	<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05										
	3/6/2018	mg/l	<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0832										
	8/27/2018	mg/l	<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5										
	3/18/2019	mg/l	<0.05	<0.05	<0.05	0.644	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.153	0.0744	<0.05	0.169	<0.2			
	8/6/2019	mg/l	<0.05	<0.05	<0.05	0.253	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.194	0.0761	<0.05	0.0649	<0.05			
	4/10/2020	mg/l	<0.05	<0.05	<0.05	0.552	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0821	0.0578	<0.05	0.134				
	9/18/2020	mg/l	<0.05	<0.05	<0.05	<0.05	0.475	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.28	0.44	<0.05	<0.05		<0.05	<0.05	
	4/6/2021	mg/l	<0.05	<0.05	<0.05	0.39	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.191	0.19	0.432	<0.05	<0.05	<0.05	<0.05	
	9/1/2021	mg/l	<0.05	<0.05	<0.05	0.135	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.858	0.982	0.65	0.0654	<0.05	<0.05	0.112	
	4/20/2022	mg/l	<0.05	<0.05	<0.05	0.478	<0.05	<0.05	<0.05	<0.05	0.111	<0.05	<0.05	<0.05	<0.05	<0.20	<0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.270
	9/14/2022	mg/l	<0.05	<0.05	<0.05	0.142	<0.05	<0.05	<0.05	<0.05	0.119	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.558
	4/12/2023	mg/l	<0.05	<0.05	<0.05	0.233	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0782	<0.05	<0.05	<0.05		0.0884	0.394	
	9/20/2023	mg/l	<0.05	<0.05	<0.05	0.105	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0737
4/15/2024	mg/l	<0.05	<0.05	<0.05	0.243	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.172	<0.05	0.119	<0.05	<0.05	<0.05	0.191	
9/11/2024	mg/l	<0.05	<0.05	<0.05	0.168	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0588	<0.05	<0.05	<0.05	0.0529	
Arsenic (Total) (7440-38-2) MCL = 0.01	10/10/2016	mg/l	<0.002	0.00328			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002										
	8/7/2017	mg/l	<0.002	0.00317			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002										
	3/6/2018	mg/l	<0.002	<0.002			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00265	<0.002										
	8/27/2018	mg/l	<0.002	0.0036			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002										
	3/18/2019	mg/l	<0.002	0.0056	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		
	8/6/2019	mg/l	<0.002	0.00784	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.008	<0.002	<0.002	<0.002	<0.002	<0.002	0.00342	0.00378	0.0347	<0.002	<0.008			
	4/10/2020	mg/l	<0.002	0.00697	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00368	<0.002				
	9/18/2020	mg/l	<0.002	0.00748	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00217	0.00236	0.187	<0.002		<0.002	<0.002	
	4/6/2021	mg/l	<0.002	0.00393	0.00289	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0268	<0.002	<0.002	<0.002	
	9/1/2021	mg/l	<0.002	0.00781	0.00267	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00367	0.00332	0.0262	<0.002	<0.002	<0.002	<0.002	
	4/20/2022	mg/l	<0.002	0.00371	0.00340	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.008	<0.008	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
	9/14/2022	mg/l	<0.002	0.00497	0.00285	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0151	<0.002	<0.002	<0.002	
	4/12/2023	mg/l	0.00247	0.00224	0.00421	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00221	0.00664	<0.002	<0.002	<0.002	
	9/20/2023	mg/l	<0.002	0.0	0.0	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
4/15/2024	mg/l	0.00390	<0.002	0.00634	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00217	<0.002	<0.002	<0.002		
9/11/2024	mg/l	0.00466	0.00525	0.00749	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0371	<0.002	<0.002	<0.002		
Barium (Total) (7440-39-3) MCL = 2	10/10/2016	mg/l	0.0706	0.163			0.131	0.304	0.196	0.0477	0.0391	0.0426	0.0381	0.0606										
	8/7/2017	mg/l	0.0596	0.157			0.133	0.3	0.190	0.0857	0.031	0.0338	0.0329	0.0499										
	3/6/2018	mg/l	0.0617	0.129			0.117	0.341	0.206	0.132	0.0285	0.0352	0.0281	0.0148										
	8/27/2018	mg/l	0.0649	0.216			0.149	0.357	0.206	0.122	0.0344	0.0335	0.036	0.0622										
	3/18/2019	mg/l	0.0751	0.185	0.209	0.0922	0.161	0.326	0.2		0.0328	0.037		0.0511	0.0278	0.056	0.0996	0.079	0.0793	0.0889	0.0342			
	8/6/2019	mg/l	0.0733	0.215	0.215	0.0635	0.147	0.301	0.211		0.0398	0.047		0.0624	0.0272	0.0648	0.168	0.171	0.048	0.128	0.0448			
	4/10/2020	mg/l	0.0613	0.199	0.222	0.0654	0.156	0.25	0.216		0.0266	0.0389		0.0352	0.0254	0.0548	0.0967	0.0806	0.078	0.084				
	9/18/2020	mg/l	0.0549	0.227	0.222	0.0491	0.147	0.239	0.231		0.0328	0.0416		0.0407	0.0257	0.0648	0.168	0.113	0.0772	0.0969		0.114	0.0738	
	4/6/2021	mg/l	0.0596	0.196	0.242	0.0608	0.169	0.252	0.245		0.0355	0.0365		0.0309	0.0285	0.0594	0.112	0.103	0.102	0.0936		0.0989	0.0534	
	9/1/2021	mg/l	0.0623	0.233	0.247	0.0497	0.186	0.241	0.248		0.0345	0.0355		0.0434										

Table 8

Analytical Data Summary
 2024 Annual Water Quality Report
 Muscatine Power & Water - CCR
 Permit No. 70-SDP-06-82P

Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin		
Beryllium (Total) (7440-41-7) MCL = 0.004	10/10/2016	mg/l	<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001											
	8/7/2017	mg/l	<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001											
	3/6/2018	mg/l	<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001											
	8/27/2018	mg/l	<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001											
	3/18/2019	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004			
	8/6/2019	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004		
	4/10/2020	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
	9/18/2020	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	4/6/2021	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	9/1/2021	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	4/20/2022	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	9/14/2022	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	4/12/2023	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	9/20/2023	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	4/15/2024	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
9/11/2024	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Boron (Total) (7440-42-8) HAL = 6	10/10/2016	mg/l	<0.2	<0.2			<0.2	<0.2	<0.2	74.8	19.3	17.9	14.3	8.45											
	8/7/2017	mg/l	<0.2	<0.2			<0.2	<0.2	<0.2	2.72	13	14.7	10.8	7.05											
	3/6/2018	mg/l	<0.2	<0.2			0.66	<0.2	<0.2	21.7	11	9.8	8.81	0.885											
	8/27/2018	mg/l	<0.2	<0.2			<0.2	<0.2	<0.2	1.45	14	14.6	10.5	1.36											
	3/18/2019	mg/l	<0.2	<0.2	0.299	<0.2	<0.2	<0.2	<0.2		15.5	8.35		6.95	9.36	2.9	<0.2	0.693	0.486	<0.2		14.5			
	8/6/2019	mg/l	0.205	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		17.6	7.56		8.46	10.4	8.03	<0.2	2.66	1	<0.2		11.5			
	4/10/2020	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		17.4	10.6		6.76	8.58	3.8	<0.2	0.898	0.745	<0.2					
	9/18/2020	mg/l	<0.1	<0.1	0.263	0.15	<0.1	<0.1	<0.1		19.5	14.5		6.82	9.39	6.36	0.206	2.72	11.3	0.109			2.5	3.25	
	4/6/2021	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		17.2	10.3		5.24	6.55	2.11	<0.1	0.32	1.52	<0.1			2.33	0.17	
	9/1/2021	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		17.1	11.1		5.88	8.55	0.528	<0.1	0.704	0.941	<0.1			2.49	3.82	
	4/20/2022	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		15.2	6.98		3.57	8.12	5	<0.1	1.43	0.855	<0.1			2.07	0.549	
	9/14/2022	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		15.1	10.4		3.69	9.05	5.86	<0.1		0.892	0.134			1.97	1.41	
	4/12/2023	mg/l	<0.1	<0.1	0.247	0.145	<0.1	<0.1	<0.1		14.8	5.80		3.35	7.97	4.20	<0.1	2.17	1.54	0.114			2.26	0.741	
	9/20/2023	mg/l	<0.1	<0.1	0.207	0.128	<0.1	<0.1	<0.1		18.1	9.28		4.42						<0.1			3.08	1	
	4/15/2024	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		15.2	5.8		2.31	7.91	3.76	<0.1	0.485	0.484	<0.1			3.07	1.01	
9/11/2024	mg/l	<0.1	<0.1	0.243	0.126	<0.1	<0.1	<0.1		17.7	8.5		3.68					1.38	<0.1			4.19	3.02		
Calcium (Total) (7440-70-2) MCL = NA	10/10/2016	mg/l	118	83.3			89.3	140	75.7	276	308	203	280	185											
	8/7/2017	mg/l	91.3	85.5			89.7	139	71.2	95.4	296	206	258	163											
	3/6/2018	mg/l	74.7	77.3			95.8	134	74.1	149	278	229	191	25.1											
	8/27/2018	mg/l	83.6	85.4			91.3	146	73.3	93.1	309	155	223	78.7											
	3/18/2019	mg/l	97.6	76.3	91.6	59.7	99.7	134	73.2		290	118		142	263	147	51.8	60.1	52.4	75		157			
	8/6/2019	mg/l	132	78.9	83.8	59.5	93.8	139	80.9		255	111		145	240	223	47.4	115	43.6	103		160			
	4/10/2020	mg/l	92.4	75.4	80.9	61	89.6	117	85.1		245	163		104	242	168	59.6	68.6	65.5	94.3					
	9/18/2020	mg/l	77.7	74.2	75.5	52.1	89	108	87.9		244	134		101	238	203	55.1	114	123	69.6		134	61		
	4/6/2021	mg/l	81.2	78.8	78.4	56.3	94.1	104	87.6		259	128		79.5	221	125	42.4	48.7	44.5	74.6		130	57.6		
	9/1/2021	mg/l	78.3	80	79.4	56.1	95.1	108	90.6		270	125		93.5	229	80.5	58.1	77.3	48.3	69		134	68.4		
	4/20/2022	mg/l	69.6	90.4	80.2	54	106	117	96.5		289	127		97.5	201	154	58.6	71.7	57.4	62.8		121	29.6		
	9/14/2022	mg/l	76.8	82	79.6	54.5	92.3	117	89		301	132		88.2	232	182			59.4	66.8		133	38.7		
	4/12/2023	mg/l	78.2	83.7	80.4	55.3	91.3	107	95.4		318	110		76.0	213	149	57.6	87.6	70.0	78.6		141	26.8		
	9/20/2023	mg/l	79.4	84.7	79	56	90.4	115	82.1		291	126		96.0						70.5		127	33.4		
	4/15/2024	mg/l	84.2	96.2	83.1	59.7	97.7	112	92.4		344	118		59.9	231	142	50.5	60	56.1	71.6		134	35.4		
9/11/2024	mg/l	88.6	97.8	84.3	58	102	123	99.4		327	129		96.6					57.3	73.6		126	63.1			

Table 8

Analytical Data Summary
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 Muscatine Power & Water - CCR
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Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin	
Fluoride (16984-48-8) MCL = 4	10/10/2016	mg/l	<0.5	<0.5			<0.5	<0.5	<0.5	3.25	0.867	<0.5	0.791	<0.5										
	8/7/2017	mg/l	<0.05	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5										
	3/6/2018	mg/l	<0.05	<0.5			<0.5	<0.5	<0.5	2.08	<0.5	<0.5	<0.5	<0.5										
	8/27/2018	mg/l	<0.05	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5										
	3/18/2019	mg/l	<0.05	<0.5	<0.5	<0.5	0.771	<0.5	<0.5	<0.5	<0.5	0.523	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/6/2019	mg/l	0.643	0.596	0.507	<0.5	0.525	<0.5	0.535		<0.5	0.625		<0.5	<0.5	<0.5	<0.5	<0.5	0.512	<0.5	<0.5	<0.5	<0.5	<0.5
	4/10/2020	mg/l	0.864	<0.5	<0.5	<0.5	<0.5	<0.5	0.652		<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	0.597	<0.5	<0.5			
	9/18/2020	mg/l	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
	4/6/2021	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5		<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
	9/1/2021	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
	4/20/2022	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
	9/14/2022	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
	4/12/2023	mg/l	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		<1.00	<1.00	<1.00	<1.0	<1.0	<1.0	<1.00	<1.00		<0.200	<0.200
	9/20/2023	mg/l	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		<1.00						<1.00			<1.00	<1.00
4/15/2024	mg/l	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		<1.00	<1.00	
9/11/2024	mg/l	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		<1.00	<1.00					<1.00	<1.00		<1.00	<1.00	
Iron (Total) (7439-89-6) SDWR = 0.3	10/10/2016	mg/l	<0.1	1.8			1.5	2.49	3.12	<0.1	<0.1	<0.1	<0.1	<0.1										
	8/7/2017	mg/l	<0.1	1.58			1.68	2.51	3.09	0.408	<0.1	<0.1	<0.1	<0.1										
	3/6/2018	mg/l	<0.1	0.177			0.267	2.43	3.05	0.263	<0.1	<0.1	<0.1	<0.1										
	8/27/2018	mg/l	<0.1	1.75			1.63	2.6	3.13	0.86	<0.1	0.102	0.144	<0.1										
	3/18/2019	mg/l	<0.1	2.75	<0.1	0.674	1.97	3.08	3.07		<0.1	<0.1		<0.1	0.705	0.104	0.66	0.176	0.345	0.115	<0.4			
	8/6/2019	mg/l	<0.1	3.33	<0.1	0.231	1.61	2.6	3.39		<0.4	<0.4		<0.1	0.137	<0.1	0.408	0.332	0.227	<0.1	<0.4			
	4/10/2020	mg/l	<0.1	3.36	<0.1	0.485	5.55	1.88	3.47		<0.1	<0.1		<0.1	<0.1	<0.1	0.363	0.275	0.439	<0.1				
	9/18/2020	mg/l	<0.1	4.38	<0.1	<0.1	0.895	1.86	3.45		<0.1	<0.1		<0.1	<0.1	<0.1	1.25	0.827	<1.00	<0.1		<0.1	<0.1	
	4/6/2021	mg/l	0.2	2.08	<0.1	0.3	<0.1	1.85	3.57		<0.1	<0.1		<0.1	<0.1	<0.1	0.21	0.228	0.439	<0.1		<0.1	<0.1	
	9/1/2021	mg/l	0.1	4.37	<0.1	0.1	<0.1	2.21	3.83		<0.1	<0.1		<0.1	<0.1	1.2	1.34	0.967	0.169	<0.1		<0.1	0.11	
	4/20/2022	mg/l	0.565	2.49	<0.1	0.492	<0.1	1.99	3.61		0.165	<0.1		<0.1	<0.4	<0.4	0.123	<0.1	0.157	<0.1		<0.1	0.281	
	9/14/2022	mg/l	0.609	2.70	<0.1	0.117	0.250	2.03	3.43		<0.1	<0.1		<0.1	<0.1	<0.1			0.116	<0.1		<0.1	0.594	
	4/12/2023	mg/l	0.708	1.09	<0.1	0.210	0.423	1.83	3.43		<0.1	<0.1		<0.1	<0.1	<0.1	0.240	0.117	0.286	<0.1		0.456	0.338	
	9/20/2023	mg/l	0.451	2.45	<0.1	<0.1	0.559	2.18	3.09		<0.1	<0.1		<0.1	<0.1	<0.1				<0.1		<0.1	<0.1	
4/15/2024	mg/l	1.29	0.982	<0.1	0.239	0.309	1.78	3.42		<0.1	<0.1		<0.1	<0.1	<0.1	0.196	<0.1	0.178	<0.1		<0.1	0.181		
9/11/2024	mg/l	1.53	2.86	0.189	0.16	0.797	2.06	3.6		<0.1	<0.1		<0.1	<0.1				0.2	<0.1		<0.1	<0.1		
Lead (Total) (7439-92-1) MCL = 0.015	10/10/2016	mg/l	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005										
	8/7/2017	mg/l	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005										
	3/6/2018	mg/l	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005										
	8/27/2018	mg/l	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005										
	3/18/2019	mg/l	<0.0005	<0.0005	<0.0005	0.00204	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
	8/6/2019	mg/l	<0.0005	<0.0005	<0.0005	0.000663	<0.0005	<0.0005	<0.0005		<0.002	<0.0005		<0.0005	<0.002	<0.002	0.000623	<0.0005	<0.0005	<0.0005	<0.0005	<0.002		
	4/10/2020	mg/l	<0.0005	<0.0005	<0.0005	0.00116	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005				
	9/18/2020	mg/l	<0.0005	<0.0005	<0.0005	<0.0005	0.00053	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	0.000829	0.000549	<0.0005	<0.0005		<0.0005	<0.0005	
	4/6/2021	mg/l	<0.0005	<0.0005	<0.0005	0.000624	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00101	<0.0005		<0.0005	<0.0005	
	9/1/2021	mg/l	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	0.00258	0.000726	<0.0005	<0.0005		<0.0005	<0.0005	
	4/20/2022	mg/l	<0.0005	<0.0005	<0.0005	0.000596	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005	
	9/14/2022	mg/l	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005			<0.0005	<0.0005		<0.0005	0.000536	
	4/12/2023	mg/l	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	0.00053	
	9/20/2023	mg/l	<0.0005	<0.0005	<0.0005	<0.0005																		

Table 8

Analytical Data Summary
 2024 Annual Water Quality Report
 Muscatine Power & Water - CCR
 Permit No. 70-SDP-06-82P

Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin	
Lithium 40CFR§257.95(h)(2) = 0.04	10/10/2016	mg/l	<0.05	<0.05				<0.05	<0.05	<0.150	<0.05	<0.05	<0.05	<0.05										
	8/7/2017	mg/l	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05										
	3/6/2018	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0122	<0.01	<0.0005	<0.0005	<0.01										
	8/27/2018	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01								<0.01		
	3/18/2019	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0005	<0.01	<0.01	<0.01	<0.01										
	8/6/2019	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0005	<0.01		<0.04	<0.01										<0.04	
	4/10/2020	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01											
	9/18/2020	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01											
	4/6/2021	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01											
	9/1/2021	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01											
	4/20/2022	mg/l	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100											
	9/14/2022	mg/l	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100											
	4/12/2023	mg/l	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100											
	9/20/2023	mg/l	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100											
4/15/2024	mg/l	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100												
9/11/2024	mg/l	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100								<0.0100		0.0108	<0.0100	
Magnesium (Total) (7439-95-4) MCL = NA	10/10/2016	mg/l	44.1	33.8			31.4	42	23.5	88	122	79.3	107	76.6										
	8/7/2017	mg/l	36.4	37.8			33.4	43.8	24.7	34.9	124	86	99.6	72.1										
	3/6/2018	mg/l	28.5	35.1			36.9	40.3	23.6	55.9	120	92	71.3	11.3										
	8/27/2018	mg/l	31.8	33.4			32.6	44.6	23.6	33	145	63.4	81.5	34.1										
	3/18/2019	mg/l	37.4	31.7	34.9	18.4	35.6	43.1	24.2		103	48.5		60.1	83.9	44.7	22.6	24.3	19.2	32.1	54.8			
	8/6/2019	mg/l	50.1	30.0	33.0	24.7	34	42.8	25.4		103	46.9		62.5	99.9	77.3	20.9	44.6	25.8	44.2	57.4			
	4/10/2020	mg/l	37.1	31.4	34.5	28.5	34	39.6	29.4		102	71		46.9	88.1	53	26.4	28.5	28.2	43				
	9/18/2020	mg/l	31.8	31.9	31.1	24.3	33.2	36.6	28.5		104	59		45.6	89.2	64.5	22.9	36.2	30.5	32		53.4	29.2	
	4/6/2021	mg/l	31.8	32.2	31.0	25.3	34.3	35.7	28.8		116	55.4		34.9	84	32.4	17.2	19	14.8	33		49.5	10.7	
	9/1/2021	mg/l	31.0	31.3	31.4	24.8	35.6	35.2	29.6		119	54		40.8	87.6	33.8	25.8	29.4	23.8	30.3		50.8	28.4	
	4/20/2022	mg/l	27.7	35.0	29.6	23.3	35.1	35.0	28.6		120.0	56.0		40.2	74.4	47.3	23.6	27.2	25.4	28.3		46.4	12.9	
	9/14/2022	mg/l	30.1	33.3	31.8	24.6	33.6	36.8	29.4		122	56.1		39.1	87.1	56.4			18.3	29.1		49.9	17.3	
	4/12/2023	mg/l	31.1	34.5	31.5	24.4	33.9	34.8	31.2		122.0	48.7		33.0	86.1	538	25.1	34.0	33.0	34.7		52.3	11.9	
	9/20/2023	mg/l	31.5	34.7	32.0	25.4	33.6	37.6	27.2		122.0	54.0		42.8						29.9		48.9	15.5	
4/15/2024	mg/l	32.7	41.5	33	26.6	35.6	36.5	31		135	51.6		24.9	85.8	42.2	20.9		23	20.8		30.7	50.5	15.4	
9/11/2024	mg/l	34.3	41.1	33.1	25.9	35.9	36.4	30.8		134	53.8		41.3					20.6	31		45.3	27.9		

Table 8

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Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin	
Manganese (Total) (7439-95-5) SDWR = 0.05 / HAL = 0.3	10/10/2016	mg/l	0.28	0.151			0.133	0.69	0.0818	0.509	<0.01	<0.01	<0.01	<0.01										
	8/7/2017	mg/l	0.237	0.166			0.132	0.689	0.0802	0.286	<0.01	<0.01	<0.01	<0.01										
	3/6/2018	mg/l	0.201	0.0706			0.208	0.692	0.0866	0.512	<0.01	<0.01	<0.01	<0.01										
	8/27/2018	mg/l	0.325	0.239			0.131	0.717	0.0805	0.305	<0.01	<0.01	0.0142	<0.01										
	3/18/2019	mg/l	0.455	0.163	0.256	0.134	0.15	0.576	0.0839		<0.01	<0.01		<0.01	0.0179	0.0184	0.196	0.164	0.172	0.0216	0.0369			
	8/6/2019	mg/l	0.758	0.177	1.74	0.0443	0.145	0.784	0.0941		<0.04	<0.01		<0.01	0.0304	0.0387	0.694	0.52	0.993	0.0223	<0.04			
	4/10/2020	mg/l	0.119	0.184	0.0896	0.0718	0.13	0.492	0.103		<0.01	<0.01		<0.01	<0.01	0.0156	0.217	0.14	0.241	0.0156				
	9/18/2020	mg/l	0.652	0.251	1.36	0.0127	0.686	0.546	0.113		<0.01	<0.01		<0.01	<0.01	0.0311	0.492	0.335	0.271	<0.01		0.0501	0.0345	
	4/6/2021	mg/l	0.185	0.199	0.18	0.0634	1.39	0.467	0.109		<0.01	<0.01		<0.01	<0.01	0.0882	0.0311	0.114	0.114	<0.01		0.0395	0.0278	
	9/1/2021	mg/l	0.663	0.221	1.27	0.0444	1.39	0.512	0.117		<0.01	<0.01		<0.01	<0.01	0.054	0.539	0.578	0.29	0.0126		0.0629	0.0375	
	4/20/2022	mg/l	0.411	0.231	0.106	0.0588	0.91	0.454	0.112		0.0264	<0.01		<0.01	<0.04	<0.04	0.125	0.0426	0.0422	<0.01		0.0190	0.0722	
	9/14/2022	mg/l	0.749	0.31	0.795	0.0222	0.871	0.532	0.112		<0.01	<0.01		<0.01	<0.01	0.026			0.131	<0.01		0.0917	0.0406	
	4/12/2023	mg/l	0.309	0.396	0.0633	0.0372	0.510	0.453	0.113		<0.01	<0.01		<0.01	<0.01	0.0169	0.204	0.115	0.728	0.0144		0.0983	0.0378	
	9/20/2023	mg/l	0.370	0.266	0.7670	0.0169	0.612	0.594	0.0995		<0.01	<0.01		<0.01						0.0183		0.1110	0.0231	
4/15/2024	mg/l	0.509	0.233	0.118	0.037	0.395	0.506	0.114		<0.01	<0.01		<0.01	<0.01	0.0148	0.0309	0.0181	0.0612	0.0156		0.0697	0.0376		
9/11/2024	mg/l	0.491	0.255	0.677	0.0301	0.491	0.554	0.118		<0.01	<0.01		<0.01					0.385	0.0111		0.0458	0.0168		
Molybdenum (Total) (7439-98-7) 40CFR§257.95(h)(2) = 0.1	10/10/2016	mg/l	<0.002	<0.002			<0.002	<0.002	<0.002	0.0176	<0.002	<0.002	<0.002	<0.002										
	8/7/2017	mg/l	<0.002	<0.002			<0.002	<0.002	<0.002	0.00329	<0.002	<0.002	<0.002	<0.002										
	3/6/2018	mg/l	0.0022	<0.02			<0.002	<0.002	<0.002	0.00732	<0.002	<0.002	<0.002	<0.002										
	8/27/2018	mg/l	0.00224	0.0022			<0.002	<0.002	<0.002	0.00278	<0.002	<0.002	<0.002	<0.002										
	3/18/2019	mg/l	<0.002	0.00341	0.00263	<0.002	<0.002	0.00212	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00291	<0.002	<0.002			
	8/6/2019	mg/l	<0.002	0.00219	0.00574	<0.002	<0.002	<0.002	<0.002		<0.008	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	0.00379	<0.002	<0.008			
	4/10/2020	mg/l	<0.002	0.00215	0.00297	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002				
	9/18/2020	mg/l	<0.002	<0.002	0.00529	<0.002	0.00296	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	0.00256	<0.002	<0.002	0.0876	<0.002		<0.002	<0.002	
	4/6/2021	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	0.011	<0.002		0.00239	<0.002	
	9/1/2021	mg/l	0.00218	0.0	0.00558	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	<0.002	0.00637	0.00252	0.00925	<0.002		<0.002	<0.002	
	4/20/2022	mg/l	<0.002	<0.002	0.0042	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.008	<0.008	<0.002	<0.002	0.00202	<0.002		<0.002	<0.002	
	9/14/2022	mg/l	<0.002	<0.002	0.00446	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	<0.002			0.00514	<0.002		<0.002	<0.002	
	4/12/2023	mg/l	<0.002	<0.002	0.00364	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	0.0281	0.0149	<0.002		<0.002	<0.002	
	9/20/2023	mg/l	<0.002	<0.002	0.00661	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002					<0.002		<0.002	<0.002	
4/15/2024	mg/l	<0.002	<0.002	0.00217	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		
9/11/2024	mg/l	0.00205	0.00287	0.00578	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002		<0.002	<0.002				0.00433	<0.002		<0.002	<0.002		

Table 8

Analytical Data Summary
 2024 Annual Water Quality Report
 Muscatine Power & Water - CCR
 Permit No. 70-SDP-06-82P

Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin	
Selenium (Total) (7782-49-2) MCL = 0.05	10/10/2016	mg/l	<0.005	<0.005			<0.005	<0.005	<0.005	0.0364	0.00821	<0.005	<0.005	0.0137										
	8/7/2017	mg/l	<0.005	<0.005			<0.005	<0.005	<0.005	<0.005	0.00759	<0.005	<0.005	0.0109										
	3/6/2018	mg/l	<0.005	<0.005			<0.005	<0.005	<0.005	0.0195	<0.005	0.00502	<0.005	<0.005										
	8/27/2018	mg/l	<0.005	<0.005			<0.005	<0.005	<0.005	<0.005	0.00827	<0.005	<0.005	<0.005										
	3/18/2019	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.00569	<0.005		0.0102	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.02		
	8/6/2019	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.02	<0.005		0.0108	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
	4/10/2020	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005		0.00632	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			
	9/18/2020	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005		0.00762	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005		<0.005	<0.005
	4/6/2021	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005
	9/1/2021	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.00617	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005
	4/20/2022	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.00634	<0.02	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005
	9/14/2022	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005			<0.005	<0.005		<0.005	<0.005	
	4/12/2023	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	
	9/20/2023	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.0053						<0.005			<0.005	<0.005
4/15/2024	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	
9/11/2024	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.00666					<0.005	<0.005	<0.005		<0.005	<0.005	
Strontium (Total) (7440-24-6) HAL = 4	10/10/2016	mg/l	0.338	0.156			0.103	0.193	0.156	0.342	0.279	0.185	0.325	0.291										
	8/7/2017	mg/l	0.243	0.165			0.11	0.197	0.161	0.135	0.257	0.178	0.287	0.256										
	3/6/2018	mg/l	0.209	0.159			0.137	0.2	0.172	0.243	0.241	0.191	0.225	0.0425										
	8/27/2018	mg/l	0.198	0.197			0.107	0.212	0.161	0.139	0.266	0.14	0.257	0.133										
	3/18/2019	mg/l	0.236	0.181	0.151	0.123	0.12	0.214	0.176		0.275	0.126		0.254	0.541	0.322	0.12	0.131	0.123	0.0937	0.0953			
	8/6/2019	mg/l	0.323	0.199	0.133	0.0872	0.115	0.208	0.178		0.274	0.134		0.263	0.444	0.346	0.129	0.264	0.158	0.123	0.106			
	4/10/2020	mg/l	0.233	0.19	0.129	0.0661	0.103	0.166	0.173		0.246	0.154		0.175	0.358	0.315	0.128	0.141	0.156	0.109				
	9/18/2020	mg/l	0.176	0.19	0.108	0.0602	0.146	0.167	0.187		0.259	0.153		0.184	0.335	0.288	0.125	0.23	0.759	0.0824		0.174	0.106	
	4/6/2021	mg/l	0.188	0.18	0.130	0.0639	0.129	0.163	0.188		0.261	0.133		0.148	0.388	0.312	0.12	0.137	0.17	0.0899		0.159	0.0986	
	9/1/2021	mg/l	0.172	0.23	0.115	0.068	0.14	0.17	0.204		0.282	0.136		0.178	0.347	0.101	0.147	0.19	0.174	0.085		0.159	0.128	
	4/20/2022	mg/l	0.164	0.173	0.127	0.0595	0.122	0.168	0.194		0.247	0.149		0.169	0.301	0.245	0.125	0.148	0.146	0.0802		0.145	0.0575	
	9/14/2022	mg/l	0.16	0.191	0.111	0.0592	0.101	0.167	0.184		0.266	0.127		0.155	0.326	0.218			0.156	0.0746		0.145	0.0659	
	4/12/2023	mg/l	0.148	0.178	0.137	0.0526	0.0910	0.149	0.194		0.293	0.0985		0.153	0.339	0.257	0.111	0.229	0.203	0.0795		0.133	0.0512	
	9/20/2023	mg/l	0.151	0.207	0.101	0.0601	0.0958	0.163	0.165		0.282	0.113		0.164						0.0768		0.135	0.0752	
4/15/2024	mg/l	0.172	0.188	0.103	0.0585	0.0951	0.166	0.19		0.301	0.125		0.153	0.448	0.293	0.115	0.137	0.146	0.0703		0.147	0.069		
9/11/2024	mg/l	0.181	0.197	0.106	0.0598	0.103	0.162	0.188		0.298	0.117		0.181					0.172	0.0754		0.127	0.113		

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Constituent (CAS #)	Sample Date	Units	MW-8 Bkgrnd	MW-10 Bkgrnd	MW-22 Bkgrnd	MW-23 Bkgrnd	MW-4B DwnGrad	MW-5B DwnGrad	MW-6A DwnGrad	MW-13 Abandone	MW-14A DwnGrad	MW-15A DwnGrad	MW-18 Abandone	MW-21 DwnGrad	SW-24 U-Drain	SW-25 U-Drain	SW-22 UpStrm	SW-23 DwnStrm	SW-26 DwnStrm	MW-24 Assess	MW-25 Abandone	MW-26 Delin	MW-27 Delin	
Sulfate (14808-79-8) SDWR = 250	10/10/2016	mg/l	187	36.4			27.2	105	<5	1170	1010	607	855	603										
	8/7/2017	mg/l	119	39			35.3	114	<5	99.4	1110	664	801	590										
	3/6/2018	mg/l	87.3	51.4			162	122	<5	506	1110	824	624	53.7										
	8/27/2018	mg/l	94.7	34.3			52.2	120	<5	72.7	1070	400	675	96.6										
	3/18/2019	mg/l	223	42.8	134	26.2	48	85	<5		1050	351		442	832	313	20.4	42.2	33.7	90.8	360			
	8/6/2019	mg/l	276	28.8	139	29.7	47	112	<5		837	327		529	694	618	10.1	175	46.3	169	325			
	4/10/2020	mg/l	123	18.6	143	25.5	41.5	58.9	13.6		888	496		373	572	322	16.3	41.5	45.9	164				
	9/18/2020	mg/l	100	36.5	151	25.8	46.9	61.9	19.1		924	403		356	583	456	21	218	828	81		376	119	
	4/6/2021	mg/l	100	27.6	154	35.5	60.1	57.4	27.3		952	338		237	607	127	13.9	23.6	86.4	91.2		341	7.63	
	9/1/2021	mg/l	83	32.3	154	25.8	50.2	53.7	22.7		1010	333		303	533	222	14.3	54.3	85.9	59.3		358	111	
	4/20/2022	mg/l	72.8	48.3	158	25.4	58.4	44.7	18.9		1030	297		293	575	357	15.7	58.4	57.3	48.5		322	30.70	
	9/14/2022	mg/l	67.1	31.2	220	23	49.5	49.9	16.4		978	319		151	588	387			81.4	44.5		313	38.2	
	4/12/2023	mg/l	72.2	39.8	147	25.0	54.0	45.8	20.5		1150	254		215	622	299	15.7	182	121	87.8		72.5	5.13	
	9/20/2023	mg/l	94.2	57.4	208	28.6	53.1	53.4	10.1		1440	365		303						62.9		380.0	27.00	
	4/15/2024	mg/l	65.7	49.6	160	21.8	56.1	46.3	18.1		1160	256		138	676	292	15.1	40.2	43.8	43.8		309	36.7	
9/11/2024	mg/l	68.9	59.9	161	23.8	65.8	50.4	16.3		1110	273		248					52.2	43.8		234	85		
Total Suspended Solids	9/11/2024	mg/L	2.25	386				520	382		1830	602		584										
Zinc (Total) (7440-66-6) HAL = 2 / SDWR = 5	10/10/2016	mg/l	<0.01	<0.01			<0.01	<0.01	<0.01	0.0197	<0.01	<0.01	<0.01	<0.01										
	8/7/2017	mg/l	<0.02	<0.02			<0.02	<0.02	<0.02	<0.002	<0.02	<0.02	<0.02	<0.02										
	3/6/2018	mg/l	<0.02	<0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02										
	8/27/2018	mg/l	<0.02	<0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02										
	3/18/2019	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.08		
	8/6/2019	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.08	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.08		
	4/10/2020	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
	9/18/2020	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4/6/2021	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.0314	<0.02	<0.02	<0.02	<0.02
	9/1/2021	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	0.0312	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4/20/2022	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.08	<0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	9/14/2022	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4/12/2023	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	9/20/2023	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4/15/2024	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
9/11/2024	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.022	<0.02		<0.02					<0.02	<0.02		<0.02	<0.02	<0.02	

Notes.

Bold indicates reported detection

MCL = USEPA Maximum Contaminant Level

HAL = Health Advisory Level

NS - Not Sampled

SS = Iowa Statewide Standards

SDWR = Secondary Drinking Water Regulations (also known as Secondary MCL)

**Historic Control Limit & Action Level Exceedances
2024 Annual Water Quality Report
Muscatine Power & Water - CCR
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Key: gray = CL; black =action level (MCL); X= other standard (SDWR, HAL, SWS)		S p r i n g 2019	F a l l 2019	S p r i n g 2020	F a l l 2020	S p r i n g 2021	F a l l 2021	S p r i n g 2022	F a l l 2022	S p r i n g 2023	F a l l 2023	S p r i n g 2024	F a l l 2024
Well	Constituent												
MW-4B	Aluminum				X								
	Molybdenum						X						
	Iron	X	X	X	X					X	X	X	X
	Manganese	X	X	X	X	X	X	X	X	X	X	X	X
MW-5B	Barium												
	Chloride												
	Iron	X	X	X	X	X	X	X	X	X	X	X	X
	Manganese	X	X	X	X	X	X	X	X	X	X	X	X
MW-6A	Barium												
	Iron	X	X	X	X	X	X	X	X	X	X	X	X
	Manganese	X	X	X	X	X	X	X	X	X	X	X	X
MW-8	Iron							X	X	X	X	X	X
	Molybdenum		X										
	Magnesium												
	Manganese	X	X	X	X	X	X	X	X	X	X	X	X
	Sulfate												
MW-10	Iron	X	X	X	X	X	X	X	X	X	X	X	X
	Manganese	X	X	X	X	X	X	X	X	X	X	X	X
MW-14A	Boron	X	X	X	X	X	X	X	X	X	X	X	X
	Calcium												
	Magnesium												
	Selenium												
	Sulfate	X	X	X	X	X	X	X	X	X	X	X	X
	Zinc												
MW-15A	Boron	X	X	X	X	X	X	X	X		X		X
	Calcium												
	Magnesium												
	Sulfate	X	X	X	X	X	X	X	X	X	X	X	X
MW-21	Boron	X	X	X	X								
	Magnesium												
	Selenium												
	Sulfate	X	X	X	X		X	X			X		
MW-22	Manganese	X	X	X	X	X	X	X	X	X	X	X	X
MW-23	Aluminum	X	X	X		X	X	X		X	X	X	X
	Iron	X		X		X		X					
	Manganese	X		X		X		X					

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Permit No. 70-SDP-06-82P**

Key: gray = CL; black =action level (MCL); X= other standard (SDWR, HAL, SWS)		S p r i n g 2019	F a l l 2019	S p r i n g 2020	F a l l 2020	S p r i n g 2021	F a l l 2021	S p r i n g 2022	F a l l 2022	S p r i n g 2023	F a l l 2023	S p r i n g 2024	F a l l 2024
Well	Constituent												
MW-24	Aluminum	X	X	X									
SW-24	Boron	X	X	X	X	X	X	X	X	X		X	
	Calcium												
	Iron	X											
	Magnesium												
	Strontium												
	Sulfate	X	X	X	X	X	X	X	X			X	
SW-25	Aluminum						X						
	Boron		X			X							
	Calcium												
	Iron						X						
	Magnesium												
	Manganese						X						
MW-26	Sulfate	X	X	X	X			X	X	X		X	
	Boron												
	Iron									X			
	Magnesium												
	Manganese				X		X		X	X	X	X	
MW-27	Sulfate				X	X	X	X	X		X	X	
	Aluminum						X	X	X	X		X	X
	Boron												
	Iron								X	X			
SW-22	Manganese							X					
	Aluminum	X	X	X	X	X	X					X	
	Iron	X	X	X	X		X						
	Manganese	X	X	X	X	X	X	X					
SW-23	Zinc												
	Aluminum	X	X	X	X	X	X						
	Arsenic												
	Copper												
	Iron		X		X		X						
	Manganese	X	X	X	X		X						
SW-26	Molybdenum												
	Aluminum					X	X					X	X
	Arsenic												
	Boron				X								
	Iron	X		X		X							
	Manganese	X	X	X	X	X	X		X			X	
	Molybdenum				X								
Zinc													

**Groundwater Quality Assessment - Trend Analysis
2024 Annual Water Quality Report
Muscatine Power & Water - CCR
Permit No. 70-SDP-06-82P**

Well	Current SSL	Trend (Fall 2024)
MW-5B	Chloride	decreasing
MW-8	Calcium	decreasing
	Sulfate	decreasing
MW-15A	Boron	decreasing
MW-21	Selenium	decreasing
MW-22	Chloride	decreasing
	Sulfate	increasing
MW-23	Sulfate	decreasing
	Chloride	increasing
SW-24	Boron	decreasing

Horizontal Velocity
2024 Annual Water Quality Report
Muscatine Power and Water CCR Landfill
Permit No. #70-SDP-06-82P

Date	Monitoring Wells	Horizontal Hydraulic Gradient (unitless)	Average Linear Groundwater Flow Velocity (meters/day)	Average Linear Groundwater Flow Velocity (feet/year)
4/15/2024	MW-8, MW-15A	0.014	0.002	2
9/12/2024	MW-8, MW-15A	0.015	0.002	2

Notes:

Velocity calculated for given well pair assuming effective porosity of 0.3 and mean hydraulic conductivity of 0.04 meters per day.

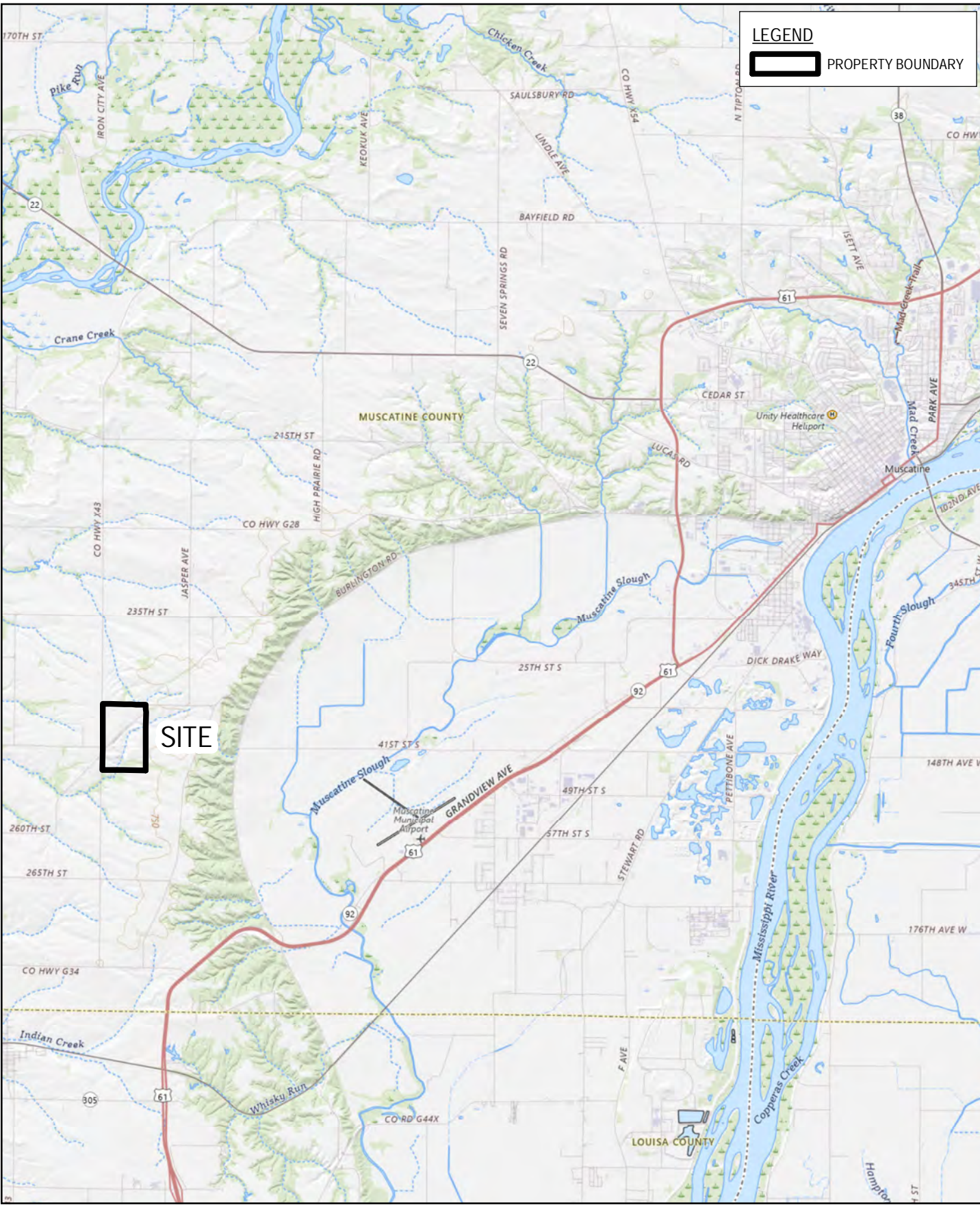
Vertical Hydraulic Gradients^a (ft/ft)
2024 Annual Water Quality Report
Muscatine Power and Water CCR Landfill
Permit No. #70-SDP-06-82P

Well Cluster	Vertical Gradient	
	April 2024	October 2024
<i>Shallow/Deep</i>		
MW-8/MW-9	-0.407	-0.399
MW-10/MW-11	0.042	0.020
MW-11/MW-12	0.031	0.007

Notes:

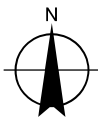
^a Positive hydraulic gradients indicate upward-directed flow, and negative hydraulic gradients indicate downward-directed flow.
 ft/ft - Foot per foot.

Figures



Paper Size ANSI A
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 Miles

Map Projection: Transverse Mercator
 Horizontal Datum: NAD 1983 2011
 Grid: NAD 1983 (2011) 1aRCS zone 14

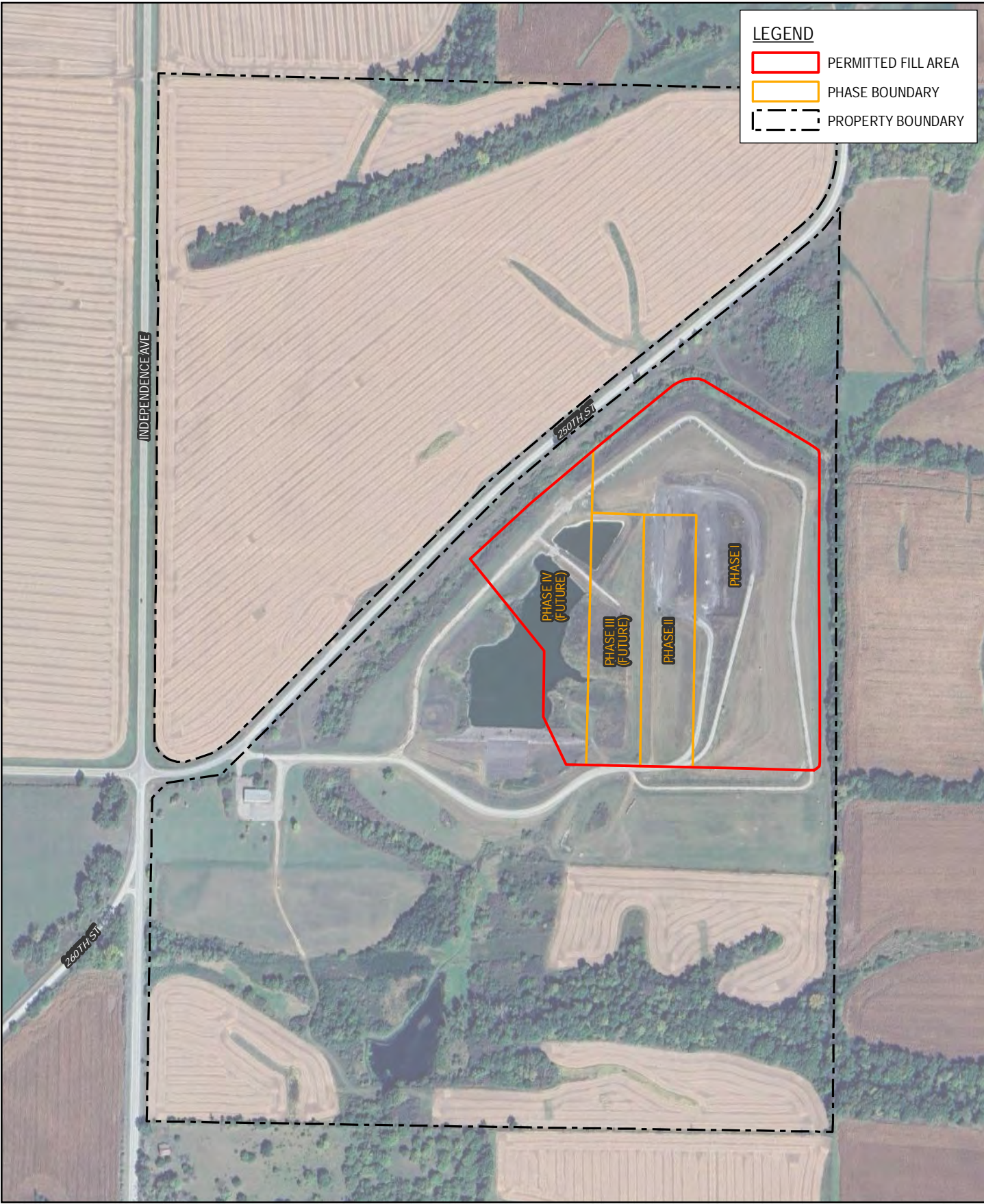


MUSCATINE POWER AND WATER
 CCR LANDFILL
 MUSCATINE, IOWA

Project No. 12606359
 Revision No. -
 Date 12/19/2024

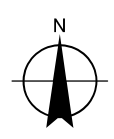
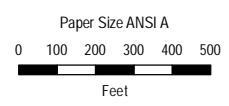
SITE LOCATION

FIGURE 1



LEGEND

- PERMITTED FILL AREA
- PHASE BOUNDARY
- PROPERTY BOUNDARY



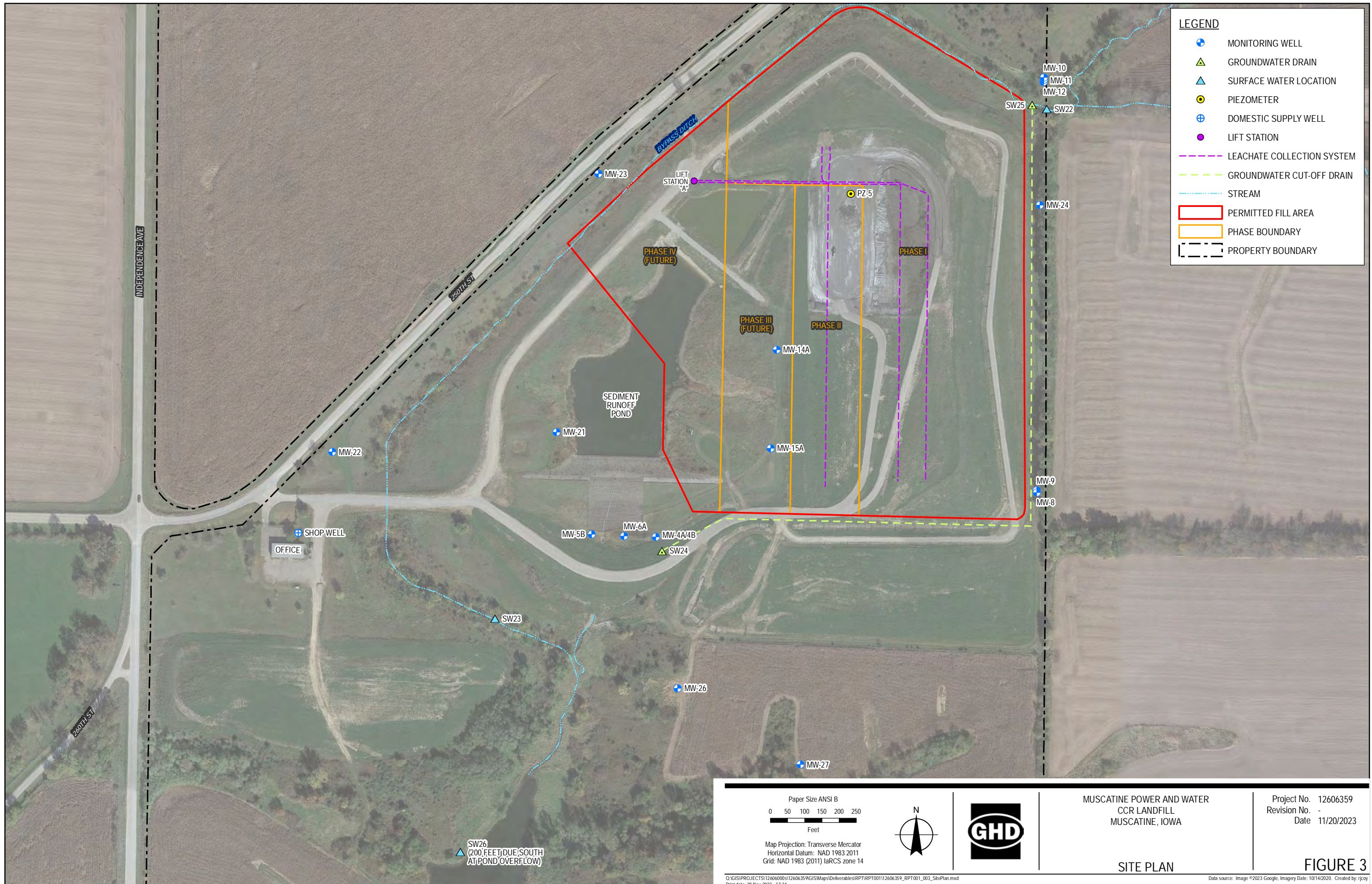
MUSCATINE POWER AND WATER
CCR LANDFILL
MUSCATINE, IOWA

Project No. 12606359
Revision No. -
Date 12/19/2024

Map Projection: Transverse Mercator
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 (2011) IARCS zone 14

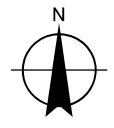
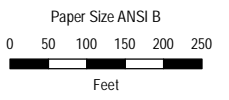
SITE OVERVIEW

FIGURE 2



LEGEND

- + MONITORING WELL
- ▲ GROUNDWATER DRAIN
- ▲ SURFACE WATER LOCATION
- PIEZOMETER
- + DOMESTIC SUPPLY WELL
- LIFT STATION
- LEACHATE COLLECTION SYSTEM
- GROUNDWATER CUT-OFF DRAIN
- STREAM
- PERMITTED FILL AREA
- PHASE BOUNDARY
- PROPERTY BOUNDARY



MUSCATINE POWER AND WATER
CCR LANDFILL
MUSCATINE, IOWA

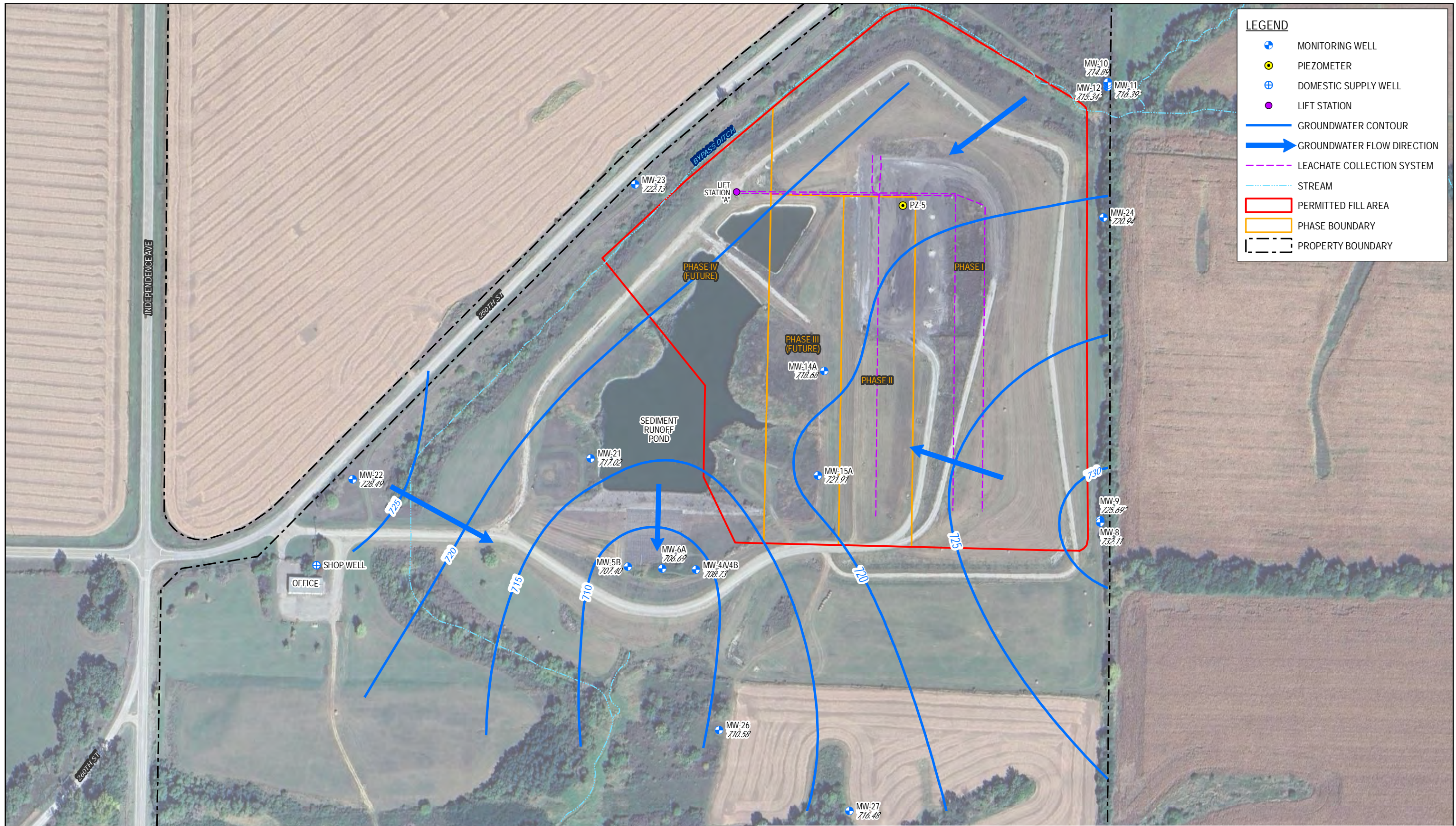
Project No. 12606359
Revision No. -
Date 11/20/2023

SITE PLAN

FIGURE 3

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Print date: 20 Nov 2023 - 17:34

Data source: Image ©2023 Google, Imagery Date: 10/14/2020. Created by: rjtoy



LEGEND

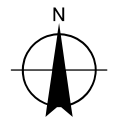
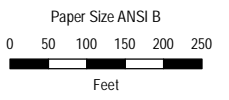
- ⊕ MONITORING WELL
- PIEZOMETER
- ⊕ DOMESTIC SUPPLY WELL
- LIFT STATION
- GROUNDWATER CONTOUR
- ➔ GROUNDWATER FLOW DIRECTION
- - - LEACHATE COLLECTION SYSTEM
- - - STREAM
- PERMITTED FILL AREA
- PHASE BOUNDARY
- PROPERTY BOUNDARY

NOTES

729.95 GROUNDWATER ELEVATION (FT AMSL)

MM NOT MEASURED

709.54* NOT USED FOR CONTOUR INTERPRETATION



Map Projection: Transverse Mercator
 Horizontal Datum: NAD 1983 2011
 Grid: NAD 1983 (2011) 14RCS zone 14

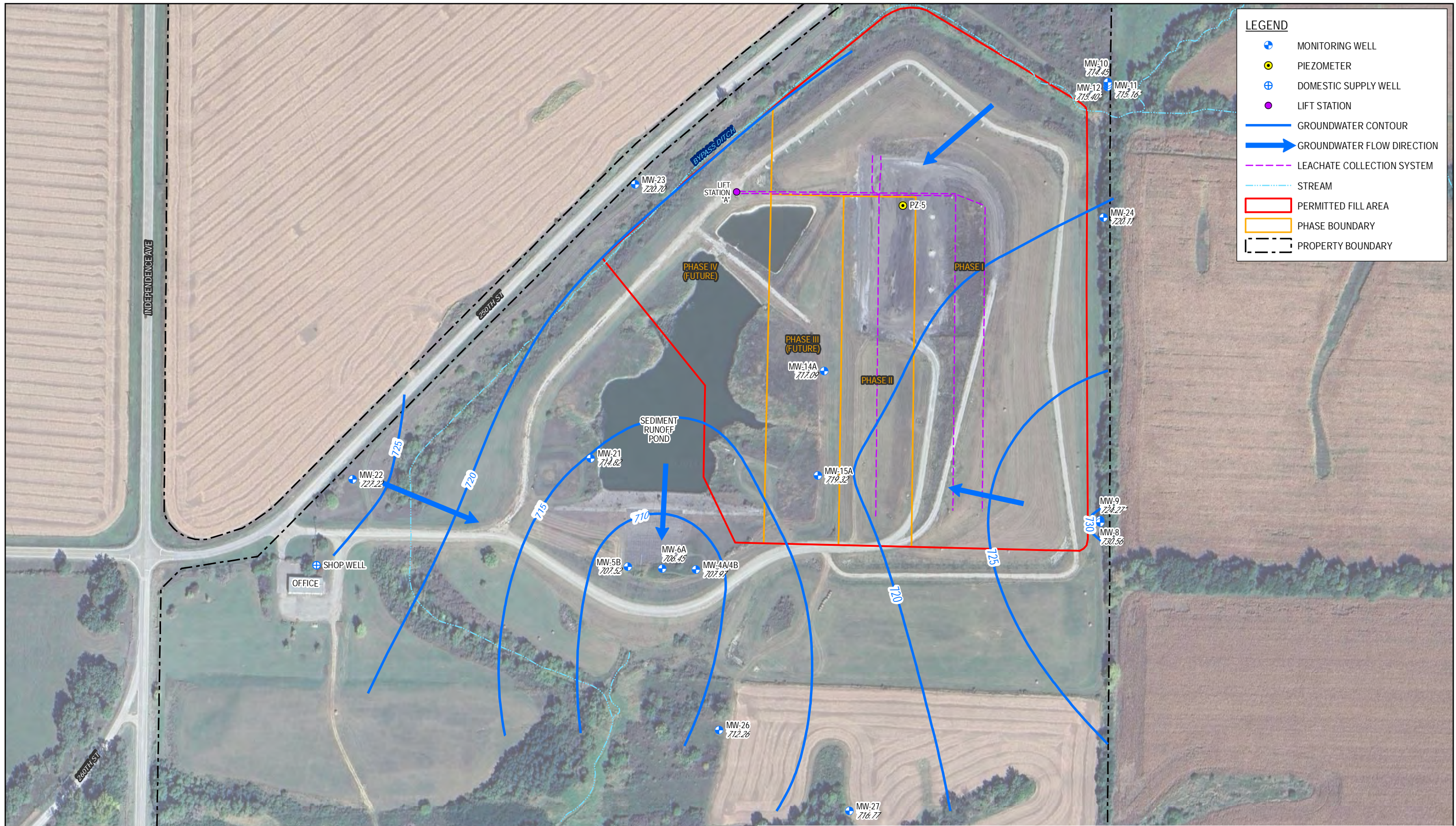
MUSCATINE POWER AND WATER
 CCR LANDFILL
 MUSCATINE, IOWA

GROUNDWATER CONTOURS
 APRIL 15, 2024

Project No. 12606359
 Revision No. -
 Date 12/19/2024

FIGURE 4

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 Print date: 19 Dec 2024 - 12:33
 Data source: Image ©2024 Airbus/Google, Imagery Date: 10/4/2023. Created by: rjroy



LEGEND

- + MONITORING WELL
- PIEZOMETER
- ⊕ DOMESTIC SUPPLY WELL
- LIFT STATION
- GROUNDWATER CONTOUR
- ➔ GROUNDWATER FLOW DIRECTION
- - - LEACHATE COLLECTION SYSTEM
- - - STREAM
- PERMITTED FILL AREA
- PHASE BOUNDARY
- PROPERTY BOUNDARY

NOTES

729.95 GROUNDWATER ELEVATION (FT AMSL)

MM NOT MEASURED

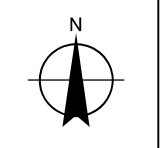
709.54* NOT USED FOR CONTOUR INTERPRETATION

Paper Size ANSI B

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Feet

Map Projection: Transverse Mercator
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 (2011) 14RCS zone 14



MUSCATINE POWER AND WATER
CCR LANDFILL
MUSCATINE, IOWA

GROUNDWATER CONTOURS
SEPTEMBER 12, 2024

Project No. 12606359
Revision No. -
Date 12/19/2024

FIGURE 5

Q:\GIS\PROJECTS\12606359\GIS\Maps\Deliverables\RPT\RPT005\12606359_RPT005_005_GWContSep24.mxd
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Data source: Image ©2024 Airbus/Google, Imagery Date: 10/4/2023. Created by: rjroy

Appendices

Appendix A

Sample Collection Records

LOW FLOW SAMPLING FORM

DATE _____ WELL ID MW-24 SAMPLE DATE / TIME _____
 SITE Muscatine Power & Water DTW 14.38 NOTE _____
 PROJECT # Spring 2024 WELL DEPTH Bottom @ 22.59
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

TIME	PURGE RATE(ml)	VOL REMOVED(m)	DTW	TEMP	Ph	ORP	SpecCond	Turbidity	DO	NOTES		
8:25												
30			14.67	10.46	6.47	398	0.631	0.0	3.57			
35			14.61	10.05	6.89	387	0.639	0.0	2.36			
			14.59	10.46	6.00	382	0.626	0.0	2.97			
			14.58	10.66	7.09	279	0.619	0.0	5.41	Adjusted tubing		
8:55			15.09	10.67	7.34	370	0.595	1.0	3.40			
0900			15.21	10.60	7.34	369	0.592	0.0	3.32			
0905			15.32	10.61	7.33	369	0.597	0.0	3.25	Sample Start		
			15.54									
										Preservative	# of Containers	
										HCl		
										HNO ₃	1	
										NaOH		
										None	1	

0.5-5.0 min 200-500 ml --- minimize --- +/- 0.1 +/-10 mV +/- 3% +/- 10% +/- 10% Limits
 or +/-0.2 mg



SURFACE WATER SAMPLING FORM

Site Name: Muscatine Power and Water Permit No.: 70-SDP-6-82-P
 Surface Monitoring Point No.: SW22 Date/Time: 4/10/24 1330
 Sampler Name: Sam Bennett

A. TYPE OF MONITORING POINT

- Stream Open Tile
 Road Ditch Tile with Riser
 Drainage Ditch Other (describe) _____

B. PURPOSE OF MONITORING POINT

- Upstream Downstream
 Within Landfill Other (describe) _____

C. MONITORING POINT CONDITIONS

Condition commentary/field notes: _____
Bypass ditch

Was monitoring point dry? No Too little water to sample? _____
 Was water flowing? Yes No
 If yes, estimate quantity 375 gal/min If yes, estimate depth 8"
 Was water discolored? Yes No
 If yes, describe _____
 Does water have odor? Yes No
 If yes, describe _____
 Was ground discolored? Yes No
 If yes, describe _____
 Litter present? Yes No
 If yes, describe _____

D. FIELD MEASUREMENT

Weather Conditions Clear Calm 70 dF

Field Measurements (after stabilization):

Temperature 12.2 Units C
 Equipment Used Myron L Ultrameter II
 pH 7.22 Equipment Used Myron L Ultrameter II
 Specific Conditions 425.3 Units uS
 Equipment Used Myron L Ultrameter II



SURFACE WATER SAMPLING FORM

Site Name: Muscatine Power and Water Permit No.: 70-SDP-6-82-P
 Surface Monitoring Point No.: SW23 Date/Time: 4/10/24 1410
 Sampler Name: Sam Bennett

A. TYPE OF MONITORING POINT

- Stream Open Tile
 Road Ditch Tile with Riser
 Drainage Ditch Other (describe) _____

B. PURPOSE OF MONITORING POINT

- Upstream Downstream
 Within Landfill Other (describe) _____

C. MONITORING POINT CONDITIONS

Condition commentary/field notes: _____
Bypass ditch

Was monitoring point dry? No Too little water to sample? _____
 Was water flowing? Yes No
 If yes, estimate quantity 375 gal/min If yes, estimate depth 8"
 Was water discolored? Yes No
 If yes, describe _____
 Does water have odor? Yes No
 If yes, describe _____
 Was ground discolored? Yes No
 If yes, describe _____
 Litter present? Yes No
 If yes, describe _____

D. FIELD MEASUREMENT

Weather Conditions Clear Calm 70 dF

Field Measurements (after stabilization):

Temperature 10.6 Units C
 Equipment Used Myron L Ultrameter II
 pH 7.71 Equipment Used Myron L Ultrameter II
 Specific Conditions 481.2 Units uS
 Equipment Used Myron L Ultrameter II



SURFACE WATER SAMPLING FORM

Site Name: Muscatine Power and Water Permit No.: 70-SDP-6-82-P
 Surface Monitoring Point No.: SW24 Date/Time: 4/9/24 0850
 Sampler Name: Neil Hoskins

A. TYPE OF MONITORING POINT

- Stream Open Tile
 Road Ditch Tile with Riser
 Drainage Ditch Other (describe) _____

B. PURPOSE OF MONITORING POINT

- Upstream Downstream
 Within Landfill Other (describe) _____

C. MONITORING POINT CONDITIONS

Condition commentary/field notes: _____
Southern cut-off drain tile

Was monitoring point dry? No Too little water to sample? _____

Was water flowing? Yes No

If yes, estimate quantity 0.5 gal/min If yes, estimate depth 0.5"

Was water discolored? Yes No

If yes, describe _____

Does water have odor? Yes No

If yes, describe _____

Was ground discolored? Yes No

If yes, describe _____

Litter present? Yes No

If yes, describe _____

D. FIELD MEASUREMENT

Weather Conditions Clear Calm 70 dF

Field Measurements (after stabilization):

Temperature 7.3 Units C

Equipment Used Horiba U52

pH 7.82 Equipment Used Horiba U52

Specific Conditions 1.53 Units mS/m

Equipment Used Horiba U52



SURFACE WATER SAMPLING FORM

Site Name: Muscatine Power and Water Permit No.: 70-SDP-6-82-P
 Surface Monitoring Point No.: SW25 Date/Time: 4/10/24 1345
 Sampler Name: Sam Bennett

A. TYPE OF MONITORING POINT

- Stream Open Tile
 Road Ditch Tile with Riser
 Drainage Ditch Other (describe) _____

B. PURPOSE OF MONITORING POINT

- Upstream Downstream
 Within Landfill Other (describe) _____

C. MONITORING POINT CONDITIONS

Condition commentary/field notes: _____
Eastern cut-ff drain tile

- Was monitoring point dry? No Too little water to sample? _____
 Was water flowing? Yes No
 If yes, estimate quantity 1 gal/min If yes, estimate depth ? full pipe
 Was water discolored? Yes No
 If yes, describe _____
 Does water have odor? Yes No
 If yes, describe _____
 Was ground discolored? Yes No
 If yes, describe _____
 Litter present? Yes No
 If yes, describe _____

D. FIELD MEASUREMENT

Weather Conditions Clear Calm 70 dF

Field Measurements (after stabilization):

Temperature 6.8 Units C
 Equipment Used Myron L Ultrameter II
 pH 6.73 Equipment Used Myron L Ultrameter II
 Specific Conditions 988.3 Units uS
 Equipment Used Myron L Ultrameter II



SURFACE WATER SAMPLING FORM

Site Name: Muscatine Power and Water Permit No.: 70-SDP-6-82-P
 Surface Monitoring Point No.: SW26 Date/Time: 4/9/24 0915
 Sampler Name: Neil Hoskins

A. TYPE OF MONITORING POINT

- Stream Open Tile
 Road Ditch Tile with Riser
 Drainage Ditch Other (describe) Farm Pond

B. PURPOSE OF MONITORING POINT

- Upstream Downstream
 Within Landfill Other (describe) _____

C. MONITORING POINT CONDITIONS

Condition commentary/field notes: _____
Farm Pond overflow tube

- Was monitoring point dry? No Too little water to sample? No
 Was water flowing? Yes No
 If yes, estimate quantity 30 gal/min If yes, estimate depth 1-2"
 Was water discolored? Yes No
 If yes, describe _____
 Does water have odor? Yes No
 If yes, describe _____
 Was ground discolored? Yes No
 If yes, describe _____
 Litter present? Yes No
 If yes, describe _____

D. FIELD MEASUREMENT

Weather Conditions Clear Calm 70 dF

Field Measurements (after stabilization):

Temperature 8.5 Units C
 Equipment Used Horiba U52
 pH 7.77 Equipment Used Horiba U52
 Specific Conditions 0.472 Units mS/m
 Equipment Used Horiba U52



SURFACE WATER SAMPLING FORM

Site Name: _____ Permit No.: _____

Surface Monitoring Point No.: _____ Date/Time: _____

Sampler Name: _____

A. TYPE OF MONITORING POINT

- Stream
- Road Ditch
- Drainage Ditch
- Open Tile
- Tile with Riser
- Other (describe) _____

B. PURPOSE OF MONITORING POINT

- Upstream
- Within Landfill
- Downstream
- Other (describe) _____

C. MONITORING POINT CONDITIONS

Condition commentary/field notes: _____

Was monitoring point dry? _____ Too little water to sample? _____

Was water flowing? Yes No

If yes, estimate quantity _____ If yes, estimate depth _____

Was water discolored? Yes No

If yes, describe _____

Does water have odor? Yes No

If yes, describe _____

Was ground discolored? Yes No

If yes, describe _____

Litter present? Yes No

If yes, describe _____

D. FIELD MEASUREMENT

Weather Conditions _____

Field Measurements (after stabilization):

Temperature _____ Units _____

Equipment Used _____

pH _____ Equipment Used _____

Specific Conditions _____ Units _____

Equipment Used _____

Appendix B

Analytical Reports

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14

ANALYTICAL REPORT

PREPARED FOR

Attn: Sam Bennett
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Generated 4/25/2024 1:48:06 PM

JOB DESCRIPTION

Muscatine Power & Water CCR Landfill

JOB NUMBER

310-278820-1

Eurofins Cedar Falls

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.

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 Environment Testing North Central, LLC Project Manager.

Authorization



Generated
4/25/2024 1:48:06 PM

Authorized for release by
Matthew Hummel, Project Manager I
Matthew.Hummel@et.eurofinsus.com
(319)595-2010



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Case Narrative

Client: Muscatine Power & Water
Project: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Job ID: 310-278820-1

Eurofins Cedar Falls

Job Narrative 310-278820-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample 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 4/12/2024 8:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.1°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: SW-22 (310-278820-1), SW-23 (310-278820-2), SW-24 (310-278820-3), SW-25 (310-278820-4) and SW-26 (310-278820-5). 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.

Metals

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

Eurofins Cedar Falls

Sample Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-278820-1	SW-22	Water	04/10/24 13:30	04/12/24 08:35
310-278820-2	SW-23	Water	04/10/24 14:10	04/12/24 08:35
310-278820-3	SW-24	Water	04/09/24 08:50	04/12/24 08:35
310-278820-4	SW-25	Water	04/10/24 13:45	04/12/24 08:35
310-278820-5	SW-26	Water	04/09/24 09:15	04/12/24 08:35

- 1
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- 14

Detection Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-22

Lab Sample ID: 310-278820-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	21.3		5.00		mg/L	5		9056A	Total/NA
Sulfate	15.1		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.172		0.0500		mg/L	1		6020B	Total/NA
Barium	0.0964		0.00200		mg/L	1		6020B	Total/NA
Calcium	50.5		0.500		mg/L	1		6020B	Total/NA
Iron	0.196		0.100		mg/L	1		6020B	Total/NA
Magnesium	20.9		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0309		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.115		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: SW-23

Lab Sample ID: 310-278820-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	22.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	40.2		5.00		mg/L	5		9056A	Total/NA
Barium	0.0750		0.00200		mg/L	1		6020B	Total/NA
Boron	0.485		0.100		mg/L	1		6020B	Total/NA
Calcium	60.0		0.500		mg/L	1		6020B	Total/NA
Magnesium	23.0		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0181		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.137		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: SW-24

Lab Sample ID: 310-278820-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14.9		5.00		mg/L	5		9056A	Total/NA
Sulfate	676		50.0		mg/L	50		9056A	Total/NA
Barium	0.0262		0.00200		mg/L	1		6020B	Total/NA
Boron	7.91		0.400		mg/L	4		6020B	Total/NA
Calcium	231		0.500		mg/L	1		6020B	Total/NA
Magnesium	85.8		2.00		mg/L	4		6020B	Total/NA
Strontium	0.448		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: SW-25

Lab Sample ID: 310-278820-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	19.3		5.00		mg/L	5		9056A	Total/NA
Sulfate	292		5.00		mg/L	5		9056A	Total/NA
Barium	0.0461		0.00200		mg/L	1		6020B	Total/NA
Boron	3.76		0.100		mg/L	1		6020B	Total/NA
Calcium	142		0.500		mg/L	1		6020B	Total/NA
Magnesium	42.2		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0148		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.293		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: SW-26

Lab Sample ID: 310-278820-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	20.6		5.00		mg/L	5		9056A	Total/NA
Sulfate	43.8		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.119		0.0500		mg/L	1		6020B	Total/NA
Arsenic	0.00217		0.00200		mg/L	1		6020B	Total/NA
Barium	0.0701		0.00200		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-26 (Continued)

Lab Sample ID: 310-278820-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.484		0.100		mg/L	1		6020B	Total/NA
Calcium	56.1		0.500		mg/L	1		6020B	Total/NA
Iron	0.178		0.100		mg/L	1		6020B	Total/NA
Magnesium	20.8		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0612		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.146		0.00100		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-22

Lab Sample ID: 310-278820-1

Date Collected: 04/10/24 13:30

Matrix: Water

Date Received: 04/12/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21.3		5.00		mg/L			04/16/24 12:10	5
Fluoride	<1.00		1.00		mg/L			04/16/24 12:10	5
Sulfate	15.1		5.00		mg/L			04/16/24 12:10	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.172		0.0500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Arsenic	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:22	1
Barium	0.0964		0.00200		mg/L		04/15/24 09:00	04/23/24 22:22	1
Beryllium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 22:22	1
Boron	<0.100		0.100		mg/L		04/15/24 09:00	04/23/24 22:22	1
Calcium	50.5		0.500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Cobalt	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Copper	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Iron	0.196		0.100		mg/L		04/15/24 09:00	04/23/24 22:22	1
Lead	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Magnesium	20.9		0.500		mg/L		04/15/24 09:00	04/24/24 18:00	1
Manganese	0.0309		0.0100		mg/L		04/15/24 09:00	04/23/24 22:22	1
Molybdenum	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:22	1
Nickel	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Selenium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Strontium	0.115		0.00100		mg/L		04/15/24 09:00	04/23/24 22:22	1
Vanadium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:22	1
Zinc	<0.0200		0.0200		mg/L		04/15/24 09:00	04/23/24 22:22	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-23
 Date Collected: 04/10/24 14:10
 Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-2
 Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	22.2		5.00		mg/L			04/16/24 12:22	5
Fluoride	<1.00		1.00		mg/L			04/16/24 12:22	5
Sulfate	40.2		5.00		mg/L			04/16/24 12:22	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Arsenic	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:24	1
Barium	0.0750		0.00200		mg/L		04/15/24 09:00	04/23/24 22:24	1
Beryllium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 22:24	1
Boron	0.485		0.100		mg/L		04/15/24 09:00	04/23/24 22:24	1
Calcium	60.0		0.500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Cobalt	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Copper	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Iron	<0.100		0.100		mg/L		04/15/24 09:00	04/23/24 22:24	1
Lead	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Magnesium	23.0		0.500		mg/L		04/15/24 09:00	04/24/24 18:04	1
Manganese	0.0181		0.0100		mg/L		04/15/24 09:00	04/23/24 22:24	1
Molybdenum	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:24	1
Nickel	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Selenium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Strontium	0.137		0.00100		mg/L		04/15/24 09:00	04/23/24 22:24	1
Vanadium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:24	1
Zinc	<0.0200		0.0200		mg/L		04/15/24 09:00	04/23/24 22:24	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-24

Lab Sample ID: 310-278820-3

Date Collected: 04/09/24 08:50

Matrix: Water

Date Received: 04/12/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14.9		5.00		mg/L			04/16/24 12:35	5
Fluoride	<1.00		1.00		mg/L			04/16/24 12:35	5
Sulfate	676		50.0		mg/L			04/16/24 18:52	50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Arsenic	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:26	1
Barium	0.0262		0.00200		mg/L		04/15/24 09:00	04/23/24 22:26	1
Beryllium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 22:26	1
Boron	7.91		0.400		mg/L		04/15/24 09:00	04/24/24 18:07	4
Calcium	231		0.500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Cobalt	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Copper	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Iron	<0.100		0.100		mg/L		04/15/24 09:00	04/23/24 22:26	1
Lead	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Magnesium	85.8		2.00		mg/L		04/15/24 09:00	04/24/24 18:07	4
Manganese	<0.0100		0.0100		mg/L		04/15/24 09:00	04/23/24 22:26	1
Molybdenum	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:26	1
Nickel	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Selenium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Strontium	0.448		0.00100		mg/L		04/15/24 09:00	04/23/24 22:26	1
Vanadium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:26	1
Zinc	<0.0200		0.0200		mg/L		04/15/24 09:00	04/23/24 22:26	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-25
 Date Collected: 04/10/24 13:45
 Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-4
 Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19.3		5.00		mg/L			04/16/24 12:48	5
Fluoride	<1.00		1.00		mg/L			04/16/24 12:48	5
Sulfate	292		5.00		mg/L			04/16/24 12:48	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Arsenic	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:29	1
Barium	0.0461		0.00200		mg/L		04/15/24 09:00	04/23/24 22:29	1
Beryllium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 22:29	1
Boron	3.76		0.100		mg/L		04/15/24 09:00	04/23/24 22:29	1
Calcium	142		0.500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Cobalt	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Copper	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Iron	<0.100		0.100		mg/L		04/15/24 09:00	04/23/24 22:29	1
Lead	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Magnesium	42.2		0.500		mg/L		04/15/24 09:00	04/24/24 18:10	1
Manganese	0.0148		0.0100		mg/L		04/15/24 09:00	04/23/24 22:29	1
Molybdenum	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:29	1
Nickel	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Selenium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Strontium	0.293		0.00100		mg/L		04/15/24 09:00	04/23/24 22:29	1
Vanadium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:29	1
Zinc	<0.0200		0.0200		mg/L		04/15/24 09:00	04/23/24 22:29	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-26
 Date Collected: 04/09/24 09:15
 Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-5
 Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	20.6		5.00		mg/L			04/16/24 13:00	5
Fluoride	<1.00		1.00		mg/L			04/16/24 13:00	5
Sulfate	43.8		5.00		mg/L			04/16/24 13:00	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.119		0.0500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Arsenic	0.00217		0.00200		mg/L		04/15/24 09:00	04/23/24 22:31	1
Barium	0.0701		0.00200		mg/L		04/15/24 09:00	04/23/24 22:31	1
Beryllium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 22:31	1
Boron	0.484		0.100		mg/L		04/15/24 09:00	04/23/24 22:31	1
Calcium	56.1		0.500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Cobalt	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Copper	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Iron	0.178		0.100		mg/L		04/15/24 09:00	04/23/24 22:31	1
Lead	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Magnesium	20.8		0.500		mg/L		04/15/24 09:00	04/24/24 18:14	1
Manganese	0.0612		0.0100		mg/L		04/15/24 09:00	04/23/24 22:31	1
Molybdenum	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 22:31	1
Nickel	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Selenium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Strontium	0.146		0.00100		mg/L		04/15/24 09:00	04/23/24 22:31	1
Vanadium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 22:31	1
Zinc	<0.0200		0.0200		mg/L		04/15/24 09:00	04/23/24 22:31	1

Definitions/Glossary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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
DLC	Decision Level Concentration (Radiochemistry)
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
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-418992/3
Matrix: Water
Analysis Batch: 418992

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/16/24 09:27	1
Fluoride	<0.200		0.200		mg/L			04/16/24 09:27	1
Sulfate	<1.00		1.00		mg/L			04/16/24 09:27	1

Lab Sample ID: LCS 310-418992/29
Matrix: Water
Analysis Batch: 418992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	10.08		mg/L		101	90 - 110
Fluoride	2.00	2.110		mg/L		106	90 - 110
Sulfate	10.0	10.93		mg/L		109	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-418649/1-A
Matrix: Water
Analysis Batch: 419651

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418649

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Arsenic	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 21:11	1
Barium	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 21:11	1
Beryllium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 21:11	1
Boron	<0.100		0.100		mg/L		04/15/24 09:00	04/23/24 21:11	1
Calcium	<0.500		0.500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Cobalt	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Copper	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Iron	<0.100		0.100		mg/L		04/15/24 09:00	04/23/24 21:11	1
Lead	<0.000500		0.000500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Manganese	<0.0100		0.0100		mg/L		04/15/24 09:00	04/23/24 21:11	1
Molybdenum	<0.00200		0.00200		mg/L		04/15/24 09:00	04/23/24 21:11	1
Nickel	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Selenium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Strontium	<0.00100		0.00100		mg/L		04/15/24 09:00	04/23/24 21:11	1
Vanadium	<0.00500		0.00500		mg/L		04/15/24 09:00	04/23/24 21:11	1
Zinc	<0.0200		0.0200		mg/L		04/15/24 09:00	04/23/24 21:11	1

Lab Sample ID: MB 310-418649/1-A
Matrix: Water
Analysis Batch: 419808

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418649

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	<0.500		0.500		mg/L		04/15/24 09:00	04/24/24 17:16	1

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

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

Lab Sample ID: LCS 310-418649/2-A
Matrix: Water
Analysis Batch: 419651

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418649

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2198		mg/L		110	80 - 120
Arsenic	0.200	0.2149		mg/L		107	80 - 120
Barium	0.100	0.1011		mg/L		101	80 - 120
Beryllium	0.100	0.1012		mg/L		101	80 - 120
Boron	0.200	0.2258		mg/L		113	80 - 120
Calcium	2.00	1.869		mg/L		93	80 - 120
Cobalt	0.100	0.1154		mg/L		115	80 - 120
Copper	0.200	0.2199		mg/L		110	80 - 120
Iron	0.200	0.2370		mg/L		119	80 - 120
Lead	0.200	0.2196		mg/L		110	80 - 120
Manganese	0.100	0.09720		mg/L		97	80 - 120
Molybdenum	0.200	0.2248		mg/L		112	80 - 120
Nickel	0.200	0.2013		mg/L		101	80 - 120
Selenium	0.400	0.3787		mg/L		95	80 - 120
Strontium	0.200	0.2197		mg/L		110	80 - 120
Vanadium	0.100	0.1000		mg/L		100	80 - 120
Zinc	0.200	0.2106		mg/L		105	80 - 120

Lab Sample ID: LCS 310-418649/2-A
Matrix: Water
Analysis Batch: 419808

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418649

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Magnesium	2.00	1.936		mg/L		97	80 - 120

QC Association Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

HPLC/IC

Analysis Batch: 418992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278820-1	SW-22	Total/NA	Water	9056A	
310-278820-2	SW-23	Total/NA	Water	9056A	
310-278820-3	SW-24	Total/NA	Water	9056A	
310-278820-3	SW-24	Total/NA	Water	9056A	
310-278820-4	SW-25	Total/NA	Water	9056A	
310-278820-5	SW-26	Total/NA	Water	9056A	
MB 310-418992/3	Method Blank	Total/NA	Water	9056A	
LCS 310-418992/29	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 418649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278820-1	SW-22	Total/NA	Water	3005A	
310-278820-2	SW-23	Total/NA	Water	3005A	
310-278820-3	SW-24	Total/NA	Water	3005A	
310-278820-4	SW-25	Total/NA	Water	3005A	
310-278820-5	SW-26	Total/NA	Water	3005A	
MB 310-418649/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-418649/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 419651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278820-1	SW-22	Total/NA	Water	6020B	418649
310-278820-2	SW-23	Total/NA	Water	6020B	418649
310-278820-3	SW-24	Total/NA	Water	6020B	418649
310-278820-4	SW-25	Total/NA	Water	6020B	418649
310-278820-5	SW-26	Total/NA	Water	6020B	418649
MB 310-418649/1-A	Method Blank	Total/NA	Water	6020B	418649
LCS 310-418649/2-A	Lab Control Sample	Total/NA	Water	6020B	418649

Analysis Batch: 419808

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278820-1	SW-22	Total/NA	Water	6020B	418649
310-278820-2	SW-23	Total/NA	Water	6020B	418649
310-278820-3	SW-24	Total/NA	Water	6020B	418649
310-278820-4	SW-25	Total/NA	Water	6020B	418649
310-278820-5	SW-26	Total/NA	Water	6020B	418649
MB 310-418649/1-A	Method Blank	Total/NA	Water	6020B	418649
LCS 310-418649/2-A	Lab Control Sample	Total/NA	Water	6020B	418649

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-22

Date Collected: 04/10/24 13:30

Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418992	QTZ5	EET CF	04/16/24 12:10
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419808	NFT2	EET CF	04/24/24 18:00
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 22:22

Client Sample ID: SW-23

Date Collected: 04/10/24 14:10

Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418992	QTZ5	EET CF	04/16/24 12:22
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419808	NFT2	EET CF	04/24/24 18:04
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 22:24

Client Sample ID: SW-24

Date Collected: 04/09/24 08:50

Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418992	QTZ5	EET CF	04/16/24 12:35
Total/NA	Analysis	9056A		50	418992	QTZ5	EET CF	04/16/24 18:52
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		4	419808	NFT2	EET CF	04/24/24 18:07
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 22:26

Client Sample ID: SW-25

Date Collected: 04/10/24 13:45

Date Received: 04/12/24 08:35

Lab Sample ID: 310-278820-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418992	QTZ5	EET CF	04/16/24 12:48
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419808	NFT2	EET CF	04/24/24 18:10
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 22:29

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Client Sample ID: SW-26

Lab Sample ID: 310-278820-5

Date Collected: 04/09/24 09:15

Matrix: Water

Date Received: 04/12/24 08:35

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
Total/NA	Analysis	9056A		5	418992	QTZ5	EET CF	04/16/24 13:00
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419808	NFT2	EET CF	04/24/24 18:14
Total/NA	Prep	3005A			418649	KM3E	EET CF	04/15/24 09:00
Total/NA	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 22:31

Laboratory References:

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



Accreditation/Certification Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-278820-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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

Laboratory References:

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

- 1
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- 14



Environment Testing
America



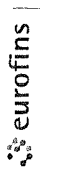
310-278820 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Muscatine Power & Water</u>			
City/State:	<small>CITY</small>	<small>STATE</small>	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	<small>DATE</small>	<small>TIME</small>	Received By:
	<u>4-12-24</u>	<u>835</u>	<u>MC</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # ____ of ____	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>X</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.1</u>		Corrected Temp (°C): <u>0.1</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Chain of Custody Record



Client Information		Sampler: <u>Sam Bennett</u>		Lab PM	Carrier Tracking No(s)		COC No
Client Contact: Sam Bennett		Phone <u>563-262-3583</u>		Hummel, Matthew R	State of Origin		310-92078-124361
Company Muscatine Power & Water		PWSID		E-Mail Matthew.Hummel@et.eurofinsus.com		Page 1 of 1	
Address: 1700 Dick Drake Way PO BOX 899		Due Date Requested		Job #:		Page 1 of 1	
City: Muscatine		TAT Requested (days)		Analysis Requested		Job #:	
State Zip IA 52761		Compliance Project <input type="checkbox"/> Yes <input type="checkbox"/> No		Analysis Requested		Job #:	
Phone: 563-262-3582(Tel)		PO #: <u>231622-4/2023</u>		Analysis Requested		Job #:	
Email: sbennett@mpw.org		WO #: <u>241620</u>		Analysis Requested		Job #:	
Project Name: Muscatine Power & Water CCR Event Desc Quarterly CCR		Project #: 31007856		Analysis Requested		Job #:	
Site:		SSOW#:		Analysis Requested		Job #:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=TISSUE, AA=AI)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Special Instructions/Note
SW-22	4-10-24	1330	G	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SW-23	4-10-24	1410	G	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SW 24	4-9-24	0850	G	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SW 25	4-10-24	1345	G	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SW 26	4-9-24	0915	G	Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
MW-24				Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
MW-25				Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Dup-1				Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Extra				Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Extra				Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Possible Hazard Identification <input type="checkbox"/> Non Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	
Deliverable Requested I II III IV Other (specify)	
Empty Kit Relinquished by	Time
Relinquished by: <u>Sam Bennett</u>	Date: <u>4-10-24 0830</u>
Relinquished by:	Date/Time
Relinquished by:	Date/Time
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Method of Shipment:
	Received by: <u>MW</u>
	Date/Time: <u>4-12-24 835</u>
	Company:
	Received by:
	Date/Time:
	Company:
	Received by:
	Date/Time:
	Company:
	Cooler Temperature(s) °C and Other Remarks



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-278820-1

Login Number: 278820

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Costello, Mackenzie K

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





ANALYTICAL REPORT

PREPARED FOR

Attn: Sam Bennett
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Generated 5/1/2024 2:20:32 PM

JOB DESCRIPTION

Muscatine Power & Water CCR Landfill

JOB NUMBER

310-279208-1

Eurofins Cedar Falls

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.

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 Environment Testing North Central, LLC Project Manager.

Authorization



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Authorized for release by
Matthew Hummel, Project Manager I
Matthew.Hummel@et.eurofinsus.com
(319)595-2010



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Case Narrative

Client: Muscatine Power & Water
Project: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Job ID: 310-279208-1

Eurofins Cedar Falls

Job Narrative 310-279208-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample 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 4/17/2024 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.3°C and 2.3°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-4B (310-279208-1), MW-5B (310-279208-2), MW-6A (310-279208-3), MW-8 (310-279208-4), MW-10 (310-279208-5), MW-14A (310-279208-6), MW-15A (310-279208-7), MW-21 (310-279208-8), MW-22 (310-279208-9), MW-23 (310-279208-10), MW-24 (310-279208-11), MW-26 (310-279208-12), MW-27 (310-279208-13), DUP-1 (310-279208-14) and DUP-2 (310-279208-15). 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.

Eurofins Cedar Falls

Sample Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-279208-1	MW-4B	Ground Water	04/15/24 09:00	04/17/24 08:45
310-279208-2	MW-5B	Ground Water	04/15/24 11:40	04/17/24 08:45
310-279208-3	MW-6A	Ground Water	04/15/24 09:55	04/17/24 08:45
310-279208-4	MW-8	Ground Water	04/12/24 10:45	04/17/24 08:45
310-279208-5	MW-10	Ground Water	04/11/24 11:05	04/17/24 08:45
310-279208-6	MW-14A	Ground Water	04/15/24 14:20	04/17/24 08:45
310-279208-7	MW-15A	Ground Water	04/15/24 13:15	04/17/24 08:45
310-279208-8	MW-21	Ground Water	04/12/24 13:45	04/17/24 08:45
310-279208-9	MW-22	Ground Water	04/11/24 13:20	04/17/24 08:45
310-279208-10	MW-23	Ground Water	04/11/24 12:05	04/17/24 08:45
310-279208-11	MW-24	Ground Water	04/12/24 09:05	04/17/24 08:45
310-279208-12	MW-26	Ground Water	04/12/24 12:40	04/17/24 08:45
310-279208-13	MW-27	Ground Water	04/12/24 12:00	04/17/24 08:45
310-279208-14	DUP-1	Ground Water	04/11/24 12:00	04/17/24 08:45
310-279208-15	DUP-2	Ground Water	04/12/24 12:00	04/17/24 08:45



Detection Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-4B

Lab Sample ID: 310-279208-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	18.1		5.00		mg/L	5		9056A	Total/NA
Sulfate	56.1		5.00		mg/L	5		9056A	Total/NA
Barium	0.168		0.00200		mg/L	1		6020B	Total/NA
Calcium	97.7		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.00172		0.000500		mg/L	1		6020B	Total/NA
Iron	0.309		0.100		mg/L	1		6020B	Total/NA
Magnesium	35.6		0.500		mg/L	1		6020B	Total/NA
Manganese	0.395		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.0951		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-5B

Lab Sample ID: 310-279208-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	39.3		5.00		mg/L	5		9056A	Total/NA
Sulfate	46.3		5.00		mg/L	5		9056A	Total/NA
Barium	0.243		0.00200		mg/L	1		6020B	Total/NA
Calcium	112		0.500		mg/L	1		6020B	Total/NA
Iron	1.78		0.100		mg/L	1		6020B	Total/NA
Magnesium	36.5		0.500		mg/L	1		6020B	Total/NA
Manganese	0.506		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.166		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-6A

Lab Sample ID: 310-279208-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	18.1		5.00		mg/L	5		9056A	Total/NA
Barium	0.235		0.00200		mg/L	1		6020B	Total/NA
Calcium	92.4		0.500		mg/L	1		6020B	Total/NA
Iron	3.42		0.100		mg/L	1		6020B	Total/NA
Magnesium	31.0		0.500		mg/L	1		6020B	Total/NA
Manganese	0.114		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.190		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 310-279208-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	65.7		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00390		0.00200		mg/L	1		6020B	Total/NA
Barium	0.0857		0.00200		mg/L	1		6020B	Total/NA
Calcium	84.2		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.00180		0.000500		mg/L	1		6020B	Total/NA
Iron	1.29		0.100		mg/L	1		6020B	Total/NA
Magnesium	32.7		0.500		mg/L	1		6020B	Total/NA
Manganese	0.509		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.172		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-10

Lab Sample ID: 310-279208-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	49.6		5.00		mg/L	5		9056A	Total/NA
Barium	0.193		0.00200		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-10 (Continued)

Lab Sample ID: 310-279208-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	96.2		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.00122		0.000500		mg/L	1		6020B	Total/NA
Iron	0.982		0.100		mg/L	1		6020B	Total/NA
Magnesium	41.5		0.500		mg/L	1		6020B	Total/NA
Manganese	0.233		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.188		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-14A

Lab Sample ID: 310-279208-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16.4		5.00		mg/L	5		9056A	Total/NA
Sulfate	1160		50.0		mg/L	50		9056A	Total/NA
Barium	0.0323		0.00200		mg/L	1		6020B	Total/NA
Boron	15.2		0.700		mg/L	7		6020B	Total/NA
Calcium	344		0.500		mg/L	1		6020B	Total/NA
Magnesium	135		3.50		mg/L	7		6020B	Total/NA
Strontium	0.301		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-15A

Lab Sample ID: 310-279208-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.01		5.00		mg/L	5		9056A	Total/NA
Sulfate	256		5.00		mg/L	5		9056A	Total/NA
Barium	0.0353		0.00200		mg/L	1		6020B	Total/NA
Boron	5.80		0.400		mg/L	4		6020B	Total/NA
Calcium	118		0.500		mg/L	1		6020B	Total/NA
Magnesium	51.6		0.500		mg/L	1		6020B	Total/NA
Strontium	0.125		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-21

Lab Sample ID: 310-279208-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	138		5.00		mg/L	5		9056A	Total/NA
Barium	0.0310		0.00200		mg/L	1		6020B	Total/NA
Boron	2.31		0.100		mg/L	1		6020B	Total/NA
Calcium	59.9		0.500		mg/L	1		6020B	Total/NA
Magnesium	24.9		0.500		mg/L	1		6020B	Total/NA
Strontium	0.153		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-22

Lab Sample ID: 310-279208-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15.8		5.00		mg/L	5		9056A	Total/NA
Sulfate	160		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00634		0.00200		mg/L	1		6020B	Total/NA
Barium	0.271		0.00200		mg/L	1		6020B	Total/NA
Calcium	83.1		0.500		mg/L	1		6020B	Total/NA
Magnesium	33.0		0.500		mg/L	1		6020B	Total/NA
Manganese	0.118		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00217		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.103		0.00100		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-23

Lab Sample ID: 310-279208-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	19.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	21.8		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.243		0.0500		mg/L	1		6020B	Total/NA
Barium	0.0547		0.00200		mg/L	1		6020B	Total/NA
Calcium	59.7		0.500		mg/L	1		6020B	Total/NA
Iron	0.239		0.100		mg/L	1		6020B	Total/NA
Magnesium	26.6		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0370		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.0585		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-24

Lab Sample ID: 310-279208-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	19.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	43.8		5.00		mg/L	5		9056A	Total/NA
Barium	0.0899		0.00200		mg/L	1		6020B	Total/NA
Calcium	71.6		0.500		mg/L	1		6020B	Total/NA
Magnesium	30.7		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0156		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.0703		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-26

Lab Sample ID: 310-279208-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17.4		5.00		mg/L	5		9056A	Total/NA
Sulfate	309		5.00		mg/L	5		9056A	Total/NA
Barium	0.0716		0.00200		mg/L	1		6020B	Total/NA
Boron	3.07		0.100		mg/L	1		6020B	Total/NA
Calcium	134		0.500		mg/L	1		6020B	Total/NA
Magnesium	50.5		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0697		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.147		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: MW-27

Lab Sample ID: 310-279208-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	19.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	36.7		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.191		0.0500		mg/L	1		6020B	Total/NA
Barium	0.0511		0.00200		mg/L	1		6020B	Total/NA
Boron	1.01		0.100		mg/L	1		6020B	Total/NA
Calcium	35.4		0.500		mg/L	1		6020B	Total/NA
Iron	0.181		0.100		mg/L	1		6020B	Total/NA
Magnesium	15.4		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0376		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.0690		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: DUP-1

Lab Sample ID: 310-279208-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16.7		5.00		mg/L	5		9056A	Total/NA
Sulfate	162		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00781		0.00200		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: DUP-1 (Continued)

Lab Sample ID: 310-279208-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.273		0.00200		mg/L	1		6020B	Total/NA
Calcium	85.7		0.500		mg/L	1		6020B	Total/NA
Iron	0.168		0.100		mg/L	1		6020B	Total/NA
Magnesium	33.7		0.500		mg/L	1		6020B	Total/NA
Manganese	0.143		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00375		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.106		0.00100		mg/L	1		6020B	Total/NA

Client Sample ID: DUP-2

Lab Sample ID: 310-279208-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17.0		5.00		mg/L	5		9056A	Total/NA
Sulfate	306		5.00		mg/L	5		9056A	Total/NA
Barium	0.0717		0.00200		mg/L	1		6020B	Total/NA
Boron	3.04		0.100		mg/L	1		6020B	Total/NA
Calcium	135		0.500		mg/L	1		6020B	Total/NA
Magnesium	50.3		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0582		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.149		0.00100		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-4B
 Date Collected: 04/15/24 09:00
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-1
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18.1		5.00		mg/L			04/19/24 12:57	5
Fluoride	<1.00		1.00		mg/L			04/19/24 12:57	5
Sulfate	56.1		5.00		mg/L			04/19/24 12:57	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:34	1
Barium	0.168		0.00200		mg/L		04/19/24 09:00	04/25/24 15:34	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:34	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:34	1
Calcium	97.7		0.500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Cobalt	0.00172		0.000500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Iron	0.309		0.100		mg/L		04/19/24 09:00	04/25/24 15:34	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Magnesium	35.6		0.500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Manganese	0.395		0.0100		mg/L		04/19/24 09:00	04/25/24 15:34	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:34	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Strontium	0.0951		0.00100		mg/L		04/19/24 09:00	04/25/24 15:34	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:34	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:34	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-5B
 Date Collected: 04/15/24 11:40
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-2
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39.3		5.00		mg/L			04/19/24 13:34	5
Fluoride	<1.00		1.00		mg/L			04/19/24 13:34	5
Sulfate	46.3		5.00		mg/L			04/19/24 13:34	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:36	1
Barium	0.243		0.00200		mg/L		04/19/24 09:00	04/25/24 15:36	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:36	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:36	1
Calcium	112		0.500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Iron	1.78		0.100		mg/L		04/19/24 09:00	04/25/24 15:36	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Magnesium	36.5		0.500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Manganese	0.506		0.0100		mg/L		04/19/24 09:00	04/25/24 15:36	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:36	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Strontium	0.166		0.00100		mg/L		04/19/24 09:00	04/25/24 15:36	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:36	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:36	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-6A
 Date Collected: 04/15/24 09:55
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-3
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.5		5.00		mg/L			04/19/24 13:46	5
Fluoride	<1.00		1.00		mg/L			04/19/24 13:46	5
Sulfate	18.1		5.00		mg/L			04/19/24 13:46	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:38	1
Barium	0.235		0.00200		mg/L		04/19/24 09:00	04/25/24 15:38	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:38	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:38	1
Calcium	92.4		0.500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Iron	3.42		0.100		mg/L		04/19/24 09:00	04/25/24 15:38	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Magnesium	31.0		0.500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Manganese	0.114		0.0100		mg/L		04/19/24 09:00	04/25/24 15:38	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:38	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Strontium	0.190		0.00100		mg/L		04/19/24 09:00	04/25/24 15:38	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:38	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:38	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-8
 Date Collected: 04/12/24 10:45
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-4
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17.2		5.00		mg/L			04/19/24 13:58	5
Fluoride	<1.00		1.00		mg/L			04/19/24 13:58	5
Sulfate	65.7		5.00		mg/L			04/19/24 13:58	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Arsenic	0.00390		0.00200		mg/L		04/19/24 09:00	04/25/24 15:40	1
Barium	0.0857		0.00200		mg/L		04/19/24 09:00	04/25/24 15:40	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:40	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:40	1
Calcium	84.2		0.500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Cobalt	0.00180		0.000500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Iron	1.29		0.100		mg/L		04/19/24 09:00	04/25/24 15:40	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Magnesium	32.7		0.500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Manganese	0.509		0.0100		mg/L		04/19/24 09:00	04/25/24 15:40	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:40	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Strontium	0.172		0.00100		mg/L		04/19/24 09:00	04/25/24 15:40	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:40	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:40	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-10
Date Collected: 04/11/24 11:05
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-5
Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			04/19/24 14:10	5
Fluoride	<1.00		1.00		mg/L			04/19/24 14:10	5
Sulfate	49.6		5.00		mg/L			04/19/24 14:10	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:42	1
Barium	0.193		0.00200		mg/L		04/19/24 09:00	04/25/24 15:42	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:42	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:42	1
Calcium	96.2		0.500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Cobalt	0.00122		0.000500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Iron	0.982		0.100		mg/L		04/19/24 09:00	04/25/24 15:42	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Magnesium	41.5		0.500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Manganese	0.233		0.0100		mg/L		04/19/24 09:00	04/25/24 15:42	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:42	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Strontium	0.188		0.00100		mg/L		04/19/24 09:00	04/25/24 15:42	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:42	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:42	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-14A
 Date Collected: 04/15/24 14:20
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-6
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.4		5.00		mg/L			04/19/24 14:22	5
Fluoride	<1.00		1.00		mg/L			04/19/24 14:22	5
Sulfate	1160		50.0		mg/L			04/20/24 09:22	50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:53	1
Barium	0.0323		0.00200		mg/L		04/19/24 09:00	04/25/24 15:53	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:53	1
Boron	15.2		0.700		mg/L		04/19/24 09:00	04/26/24 13:25	7
Calcium	344		0.500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:53	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Magnesium	135		3.50		mg/L		04/19/24 09:00	04/26/24 13:25	7
Manganese	<0.0100		0.0100		mg/L		04/19/24 09:00	04/25/24 15:53	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:53	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Strontium	0.301		0.00100		mg/L		04/19/24 09:00	04/25/24 15:53	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:53	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:53	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-15A

Lab Sample ID: 310-279208-7

Date Collected: 04/15/24 13:15

Matrix: Ground Water

Date Received: 04/17/24 08:45

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.01		5.00		mg/L			04/20/24 09:34	5
Fluoride	<1.00		1.00		mg/L			04/20/24 09:34	5
Sulfate	256		5.00		mg/L			04/20/24 09:34	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:55	1
Barium	0.0353		0.00200		mg/L		04/19/24 09:00	04/25/24 15:55	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:55	1
Boron	5.80		0.400		mg/L		04/19/24 09:00	04/26/24 13:29	4
Calcium	118		0.500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:55	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Magnesium	51.6		0.500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Manganese	<0.0100		0.0100		mg/L		04/19/24 09:00	04/25/24 15:55	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:55	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Strontium	0.125		0.00100		mg/L		04/19/24 09:00	04/25/24 15:55	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:55	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:55	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-21
Date Collected: 04/12/24 13:45
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-8
Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			04/19/24 16:24	5
Fluoride	<1.00		1.00		mg/L			04/19/24 16:24	5
Sulfate	138		5.00		mg/L			04/19/24 16:24	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:57	1
Barium	0.0310		0.00200		mg/L		04/19/24 09:00	04/25/24 15:57	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:57	1
Boron	2.31		0.100		mg/L		04/19/24 09:00	04/26/24 13:32	1
Calcium	59.9		0.500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:57	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Magnesium	24.9		0.500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Manganese	<0.0100		0.0100		mg/L		04/19/24 09:00	04/25/24 15:57	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:57	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Strontium	0.153		0.00100		mg/L		04/19/24 09:00	04/25/24 15:57	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:57	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:57	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-22
 Date Collected: 04/11/24 13:20
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-9
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.8		5.00		mg/L			04/19/24 16:36	5
Fluoride	<1.00		1.00		mg/L			04/19/24 16:36	5
Sulfate	160		5.00		mg/L			04/19/24 16:36	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Arsenic	0.00634		0.00200		mg/L		04/19/24 09:00	04/25/24 16:02	1
Barium	0.271		0.00200		mg/L		04/19/24 09:00	04/25/24 16:02	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:02	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/26/24 13:39	1
Calcium	83.1		0.500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 16:02	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Magnesium	33.0		0.500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Manganese	0.118		0.0100		mg/L		04/19/24 09:00	04/25/24 16:02	1
Molybdenum	0.00217		0.00200		mg/L		04/19/24 09:00	04/25/24 16:02	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Strontium	0.103		0.00100		mg/L		04/19/24 09:00	04/25/24 16:02	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:02	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:02	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-23
 Date Collected: 04/11/24 12:05
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-10
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19.2		5.00		mg/L			04/19/24 16:48	5
Fluoride	<1.00		1.00		mg/L			04/19/24 16:48	5
Sulfate	21.8		5.00		mg/L			04/19/24 16:48	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.243		0.0500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:04	1
Barium	0.0547		0.00200		mg/L		04/19/24 09:00	04/25/24 16:04	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:04	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/26/24 13:43	1
Calcium	59.7		0.500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Iron	0.239		0.100		mg/L		04/19/24 09:00	04/25/24 16:04	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Magnesium	26.6		0.500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Manganese	0.0370		0.0100		mg/L		04/19/24 09:00	04/25/24 16:04	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:04	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Strontium	0.0585		0.00100		mg/L		04/19/24 09:00	04/25/24 16:04	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:04	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:04	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-24
Date Collected: 04/12/24 09:05
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-11
Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19.5		5.00		mg/L			04/19/24 17:00	5
Fluoride	<1.00		1.00		mg/L			04/19/24 17:00	5
Sulfate	43.8		5.00		mg/L			04/19/24 17:00	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:06	1
Barium	0.0899		0.00200		mg/L		04/19/24 09:00	04/25/24 16:06	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:06	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/26/24 13:46	1
Calcium	71.6		0.500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 16:06	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Magnesium	30.7		0.500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Manganese	0.0156		0.0100		mg/L		04/19/24 09:00	04/25/24 16:06	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:06	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Strontium	0.0703		0.00100		mg/L		04/19/24 09:00	04/25/24 16:06	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:06	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:06	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-26
 Date Collected: 04/12/24 12:40
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-12
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17.4		5.00		mg/L			04/19/24 17:12	5
Fluoride	<1.00		1.00		mg/L			04/19/24 17:12	5
Sulfate	309		5.00		mg/L			04/19/24 17:12	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:08	1
Barium	0.0716		0.00200		mg/L		04/19/24 09:00	04/25/24 16:08	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:08	1
Boron	3.07		0.100		mg/L		04/19/24 09:00	04/26/24 13:50	1
Calcium	134		0.500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 16:08	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Magnesium	50.5		0.500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Manganese	0.0697		0.0100		mg/L		04/19/24 09:00	04/25/24 16:08	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:08	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Strontium	0.147		0.00100		mg/L		04/19/24 09:00	04/25/24 16:08	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:08	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:08	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-27
Date Collected: 04/12/24 12:00
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-13
Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19.5		5.00		mg/L			04/19/24 17:25	5
Fluoride	<1.00		1.00		mg/L			04/19/24 17:25	5
Sulfate	36.7		5.00		mg/L			04/19/24 17:25	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.191		0.0500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:11	1
Barium	0.0511		0.00200		mg/L		04/19/24 09:00	04/25/24 16:11	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:11	1
Boron	1.01		0.100		mg/L		04/19/24 09:00	04/26/24 13:53	1
Calcium	35.4		0.500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Iron	0.181		0.100		mg/L		04/19/24 09:00	04/25/24 16:11	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Magnesium	15.4		0.500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Manganese	0.0376		0.0100		mg/L		04/19/24 09:00	04/25/24 16:11	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:11	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Strontium	0.0690		0.00100		mg/L		04/19/24 09:00	04/25/24 16:11	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:11	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:11	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: DUP-1
 Date Collected: 04/11/24 12:00
 Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-14
 Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.7		5.00		mg/L			04/19/24 17:37	5
Fluoride	<1.00		1.00		mg/L			04/19/24 17:37	5
Sulfate	162		5.00		mg/L			04/19/24 17:37	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Arsenic	0.00781		0.00200		mg/L		04/19/24 09:00	04/25/24 16:13	1
Barium	0.273		0.00200		mg/L		04/19/24 09:00	04/25/24 16:13	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:13	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/26/24 13:57	1
Calcium	85.7		0.500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Iron	0.168		0.100		mg/L		04/19/24 09:00	04/25/24 16:13	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Magnesium	33.7		0.500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Manganese	0.143		0.0100		mg/L		04/19/24 09:00	04/25/24 16:13	1
Molybdenum	0.00375		0.00200		mg/L		04/19/24 09:00	04/25/24 16:13	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Strontium	0.106		0.00100		mg/L		04/19/24 09:00	04/25/24 16:13	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:13	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:13	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: DUP-2

Lab Sample ID: 310-279208-15

Date Collected: 04/12/24 12:00

Matrix: Ground Water

Date Received: 04/17/24 08:45

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17.0		5.00		mg/L			04/19/24 17:49	5
Fluoride	<1.00		1.00		mg/L			04/19/24 17:49	5
Sulfate	306		5.00		mg/L			04/19/24 17:49	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:24	1
Barium	0.0717		0.00200		mg/L		04/19/24 09:00	04/25/24 16:24	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 16:24	1
Boron	3.04		0.100		mg/L		04/19/24 09:00	04/26/24 14:14	1
Calcium	135		0.500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 16:24	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Magnesium	50.3		0.500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Manganese	0.0582		0.0100		mg/L		04/19/24 09:00	04/25/24 16:24	1
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 16:24	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Strontium	0.149		0.00100		mg/L		04/19/24 09:00	04/25/24 16:24	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 16:24	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 16:24	1

Definitions/Glossary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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
DLC	Decision Level Concentration (Radiochemistry)
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
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-419441/3
Matrix: Water
Analysis Batch: 419441

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/19/24 12:33	1
Fluoride	<0.200		0.200		mg/L			04/19/24 12:33	1
Sulfate	<1.00		1.00		mg/L			04/19/24 12:33	1

Lab Sample ID: LCS 310-419441/4
Matrix: Water
Analysis Batch: 419441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	10.02		mg/L		100	90 - 110
Fluoride	2.00	2.197		mg/L		110	90 - 110
Sulfate	10.0	10.41		mg/L		104	90 - 110

Lab Sample ID: 310-279208-1 MS
Matrix: Ground Water
Analysis Batch: 419441

Client Sample ID: MW-4B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	18.1		25.0	41.69		mg/L		94	80 - 120
Fluoride	<1.00		5.00	5.320		mg/L		106	80 - 120
Sulfate	56.1		25.0	80.68		mg/L		98	80 - 120

Lab Sample ID: 310-279208-1 MSD
Matrix: Ground Water
Analysis Batch: 419441

Client Sample ID: MW-4B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	18.1		25.0	41.66		mg/L		94	80 - 120	0	15
Fluoride	<1.00		5.00	5.524		mg/L		110	80 - 120	4	15
Sulfate	56.1		25.0	80.47		mg/L		98	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-419189/1-A
Matrix: Water
Analysis Batch: 419931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 419189

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Arsenic	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:06	1
Barium	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:06	1
Beryllium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:06	1
Boron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:06	1
Calcium	<0.500		0.500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Cobalt	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Copper	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Iron	<0.100		0.100		mg/L		04/19/24 09:00	04/25/24 15:06	1
Lead	<0.000500		0.000500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Magnesium	<0.500		0.500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Manganese	<0.0100		0.0100		mg/L		04/19/24 09:00	04/25/24 15:06	1

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

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

Lab Sample ID: MB 310-419189/1-A
Matrix: Water
Analysis Batch: 419931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 419189

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	<0.00200		0.00200		mg/L		04/19/24 09:00	04/25/24 15:06	1
Nickel	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Selenium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Strontium	<0.00100		0.00100		mg/L		04/19/24 09:00	04/25/24 15:06	1
Vanadium	<0.00500		0.00500		mg/L		04/19/24 09:00	04/25/24 15:06	1
Zinc	<0.0200		0.0200		mg/L		04/19/24 09:00	04/25/24 15:06	1

Lab Sample ID: LCS 310-419189/2-A
Matrix: Water
Analysis Batch: 419931

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 419189

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2215		mg/L		111	80 - 120
Arsenic	0.200	0.2150		mg/L		107	80 - 120
Barium	0.100	0.1086		mg/L		109	80 - 120
Beryllium	0.100	0.1051		mg/L		105	80 - 120
Boron	0.200	0.2155		mg/L		108	80 - 120
Calcium	2.00	1.949		mg/L		97	80 - 120
Cobalt	0.100	0.1130		mg/L		113	80 - 120
Copper	0.200	0.2166		mg/L		108	80 - 120
Iron	0.200	0.2332		mg/L		117	80 - 120
Lead	0.200	0.2173		mg/L		109	80 - 120
Magnesium	2.00	2.140		mg/L		107	80 - 120
Manganese	0.100	0.1004		mg/L		100	80 - 120
Molybdenum	0.200	0.2212		mg/L		111	80 - 120
Nickel	0.200	0.2165		mg/L		108	80 - 120
Selenium	0.400	0.4169		mg/L		104	80 - 120
Strontium	0.200	0.2118		mg/L		106	80 - 120
Vanadium	0.100	0.09626		mg/L		96	80 - 120
Zinc	0.200	0.1967		mg/L		98	80 - 120

Lab Sample ID: 310-279208-8 DU
Matrix: Ground Water
Analysis Batch: 419931

Client Sample ID: MW-21
Prep Type: Total/NA
Prep Batch: 419189

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	<0.0500		<0.0500		mg/L		NC	20
Arsenic	<0.00200		<0.00200		mg/L		NC	20
Barium	0.0310		0.03103		mg/L		0	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Calcium	59.9		59.78		mg/L		0.2	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Copper	<0.00500		<0.00500		mg/L		NC	20
Iron	<0.100		<0.100		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Magnesium	24.9		24.83		mg/L		0.1	20
Manganese	<0.0100		<0.0100		mg/L		NC	20
Molybdenum	<0.00200		<0.00200		mg/L		NC	20
Nickel	<0.00500		<0.00500		mg/L		NC	20

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

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

Lab Sample ID: 310-279208-8 DU
Matrix: Ground Water
Analysis Batch: 419931

Client Sample ID: MW-21
Prep Type: Total/NA
Prep Batch: 419189

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Selenium	<0.00500		<0.00500		mg/L		NC	20
Strontium	0.153		0.1535		mg/L		0.5	20
Vanadium	<0.00500		<0.00500		mg/L		NC	20
Zinc	<0.0200		<0.0200		mg/L		NC	20

Lab Sample ID: 310-279208-8 DU
Matrix: Ground Water
Analysis Batch: 420079

Client Sample ID: MW-21
Prep Type: Total/NA
Prep Batch: 419189

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Boron	2.31		2.335		mg/L		1	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

HPLC/IC

Analysis Batch: 419441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279208-1	MW-4B	Total/NA	Ground Water	9056A	
310-279208-2	MW-5B	Total/NA	Ground Water	9056A	
310-279208-3	MW-6A	Total/NA	Ground Water	9056A	
310-279208-4	MW-8	Total/NA	Ground Water	9056A	
310-279208-5	MW-10	Total/NA	Ground Water	9056A	
310-279208-6	MW-14A	Total/NA	Ground Water	9056A	
310-279208-6	MW-14A	Total/NA	Ground Water	9056A	
310-279208-7	MW-15A	Total/NA	Ground Water	9056A	
310-279208-8	MW-21	Total/NA	Ground Water	9056A	
310-279208-9	MW-22	Total/NA	Ground Water	9056A	
310-279208-10	MW-23	Total/NA	Ground Water	9056A	
310-279208-11	MW-24	Total/NA	Ground Water	9056A	
310-279208-12	MW-26	Total/NA	Ground Water	9056A	
310-279208-13	MW-27	Total/NA	Ground Water	9056A	
310-279208-14	DUP-1	Total/NA	Ground Water	9056A	
310-279208-15	DUP-2	Total/NA	Ground Water	9056A	
MB 310-419441/3	Method Blank	Total/NA	Water	9056A	
LCS 310-419441/4	Lab Control Sample	Total/NA	Water	9056A	
310-279208-1 MS	MW-4B	Total/NA	Ground Water	9056A	
310-279208-1 MSD	MW-4B	Total/NA	Ground Water	9056A	

Metals

Prep Batch: 419189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279208-1	MW-4B	Total/NA	Ground Water	3005A	
310-279208-2	MW-5B	Total/NA	Ground Water	3005A	
310-279208-3	MW-6A	Total/NA	Ground Water	3005A	
310-279208-4	MW-8	Total/NA	Ground Water	3005A	
310-279208-5	MW-10	Total/NA	Ground Water	3005A	
310-279208-6	MW-14A	Total/NA	Ground Water	3005A	
310-279208-7	MW-15A	Total/NA	Ground Water	3005A	
310-279208-8	MW-21	Total/NA	Ground Water	3005A	
310-279208-9	MW-22	Total/NA	Ground Water	3005A	
310-279208-10	MW-23	Total/NA	Ground Water	3005A	
310-279208-11	MW-24	Total/NA	Ground Water	3005A	
310-279208-12	MW-26	Total/NA	Ground Water	3005A	
310-279208-13	MW-27	Total/NA	Ground Water	3005A	
310-279208-14	DUP-1	Total/NA	Ground Water	3005A	
310-279208-15	DUP-2	Total/NA	Ground Water	3005A	
MB 310-419189/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-419189/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-279208-8 DU	MW-21	Total/NA	Ground Water	3005A	

Analysis Batch: 419931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279208-1	MW-4B	Total/NA	Ground Water	6020B	419189
310-279208-2	MW-5B	Total/NA	Ground Water	6020B	419189
310-279208-3	MW-6A	Total/NA	Ground Water	6020B	419189
310-279208-4	MW-8	Total/NA	Ground Water	6020B	419189
310-279208-5	MW-10	Total/NA	Ground Water	6020B	419189

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QC Association Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Metals (Continued)

Analysis Batch: 419931 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279208-6	MW-14A	Total/NA	Ground Water	6020B	419189
310-279208-7	MW-15A	Total/NA	Ground Water	6020B	419189
310-279208-8	MW-21	Total/NA	Ground Water	6020B	419189
310-279208-9	MW-22	Total/NA	Ground Water	6020B	419189
310-279208-10	MW-23	Total/NA	Ground Water	6020B	419189
310-279208-11	MW-24	Total/NA	Ground Water	6020B	419189
310-279208-12	MW-26	Total/NA	Ground Water	6020B	419189
310-279208-13	MW-27	Total/NA	Ground Water	6020B	419189
310-279208-14	DUP-1	Total/NA	Ground Water	6020B	419189
310-279208-15	DUP-2	Total/NA	Ground Water	6020B	419189
MB 310-419189/1-A	Method Blank	Total/NA	Water	6020B	419189
LCS 310-419189/2-A	Lab Control Sample	Total/NA	Water	6020B	419189
310-279208-8 DU	MW-21	Total/NA	Ground Water	6020B	419189

Analysis Batch: 420079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279208-6	MW-14A	Total/NA	Ground Water	6020B	419189
310-279208-7	MW-15A	Total/NA	Ground Water	6020B	419189
310-279208-8	MW-21	Total/NA	Ground Water	6020B	419189
310-279208-9	MW-22	Total/NA	Ground Water	6020B	419189
310-279208-10	MW-23	Total/NA	Ground Water	6020B	419189
310-279208-11	MW-24	Total/NA	Ground Water	6020B	419189
310-279208-12	MW-26	Total/NA	Ground Water	6020B	419189
310-279208-13	MW-27	Total/NA	Ground Water	6020B	419189
310-279208-14	DUP-1	Total/NA	Ground Water	6020B	419189
310-279208-15	DUP-2	Total/NA	Ground Water	6020B	419189
310-279208-8 DU	MW-21	Total/NA	Ground Water	6020B	419189

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-4B
Date Collected: 04/15/24 09:00
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 12:57
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:34

Client Sample ID: MW-5B
Date Collected: 04/15/24 11:40
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 13:34
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:36

Client Sample ID: MW-6A
Date Collected: 04/15/24 09:55
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 13:46
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:38

Client Sample ID: MW-8
Date Collected: 04/12/24 10:45
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 13:58
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:40

Client Sample ID: MW-10
Date Collected: 04/11/24 11:05
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-5
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 14:10
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:42

Client Sample ID: MW-14A
Date Collected: 04/15/24 14:20
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-6
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 14:22

Eurofins Cedar Falls

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-14A

Date Collected: 04/15/24 14:20

Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		50	419441	QTZ5	EET CF	04/20/24 09:22
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		7	420079	NFT2	EET CF	04/26/24 13:25
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:53

Client Sample ID: MW-15A

Date Collected: 04/15/24 13:15

Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-7

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/20/24 09:34
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		4	420079	NFT2	EET CF	04/26/24 13:29
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:55

Client Sample ID: MW-21

Date Collected: 04/12/24 13:45

Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-8

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 16:24
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:32
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 15:57

Client Sample ID: MW-22

Date Collected: 04/11/24 13:20

Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-9

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 16:36
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:39
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:02

Client Sample ID: MW-23

Date Collected: 04/11/24 12:05

Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-10

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 16:48

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: MW-23
Date Collected: 04/11/24 12:05
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-10
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:43
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:04

Client Sample ID: MW-24
Date Collected: 04/12/24 09:05
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-11
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 17:00
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:46
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:06

Client Sample ID: MW-26
Date Collected: 04/12/24 12:40
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-12
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 17:12
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:50
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:08

Client Sample ID: MW-27
Date Collected: 04/12/24 12:00
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-13
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 17:25
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:53
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:11

Client Sample ID: DUP-1
Date Collected: 04/11/24 12:00
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-14
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 17:37

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Client Sample ID: DUP-1
Date Collected: 04/11/24 12:00
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-14
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 13:57
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:13

Client Sample ID: DUP-2
Date Collected: 04/12/24 12:00
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279208-15
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	419441	QTZ5	EET CF	04/19/24 17:49
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	420079	NFT2	EET CF	04/26/24 14:14
Total/NA	Prep	3005A			419189	KM3E	EET CF	04/19/24 09:00
Total/NA	Analysis	6020B		1	419931	NFT2	EET CF	04/25/24 16:24

Laboratory References:

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

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Accreditation/Certification Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

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Method Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-279208-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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

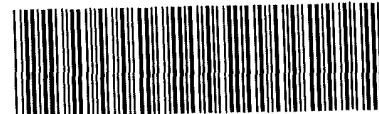
Laboratory References:

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





Environment Testing
America



310-279208 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Muscatine Power</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>4/17/24</u>	<u>0845</u>	<u>[Signature]</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>3</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>T</u>		Correction Factor (°C): <u>to 0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.4</u>		Corrected Temp (°C): <u>1.4</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

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Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Muscatine Power</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>4/17/24</u>	<u>0845</u>	<u>N</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:	
Multiple Coolers?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>2</u> of <u>3</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID:	<u>T</u>	Correction Factor (°C):	<u>0.0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	<u>2.3</u>	Corrected Temp (°C):	<u>2.3</u>
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			





Environment Testing
America

Place COC scanning label
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Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Muscatine Power</u>			
City/State:	CITY	STATE <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>4/17/24</u>	TIME <u>0845</u>	Received By: <u>N</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>3</u> of <u>3</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>T</u>		Correction Factor (°C): <u>to 0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>2</u>		Corrected Temp (°C): <u>23</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Eurofins Cedar Falls

3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

Client Information		Company: Muscatine Power & Water		Lab PM: Hayes, Shawn M		Carrier Tracking No(s):		COC No:	
Client Contact: Sam Bennett MP&W		Address: 1700 Dick Drake Way		E-Mail: shawn_hayes@testamericainc.com				Page:	
City: Muscatine		State Zip: IA, 52761		Phone: 241397				Job #:	
Email: sbennett@mpw.org and neil.hoskins@mpw.org		Project Name: Muscatine Power & Water CCR Landfill		TesAmerica Project #:				Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other	
Site: Iowa		Event: Spring 2023 Sampling		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of Containers	
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=water/oil, BT=Tissue, AA/AI)	
		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=water/oil, BT=Tissue, AA/AI)	
MW-4B		4/15/24		0900		G		GW	
MW-5B		4/15/24		1140		G		GW	
MW-6A		4/15/24		0955		G		GW	
MW-8		4/12/24		1045		G		GW	
MW-10		4/11/24		1105		G		GW	
MW-14A		4/15/24		1420		G		GW	
MW-15A		4/15/24		1315		G		GW	
MW-21		4/12/24		1345		G		GW	
MW-22		4/11/24		1320		G		GW	
MW-23		4/11/24		1205		G		GW	
MW-24		4/12/24		0905		G		GW	
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard		<input type="checkbox"/> Flammable		<input type="checkbox"/> Skin Irritant		<input type="checkbox"/> Poison B	
Deliverable Requested I II III, IV Other (specify)		Unknown		Radiological		Return To Client		Disposal By Lab	
Empty Kit Relinquished by		Date:		Time:		Special Instructions/QC Requirements.		Archive For Months	
Relinquished by: <i>Neil Hoskins</i>		Date/Time: 4-16-24 0830		Company: mpw		Received by:		Date/Time:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks:					



Eurofins Cedar Falls

3019 Venture Way
 Cedar Falls, IA 50613
 Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

Client Information Client Contact: Sam Bennett MP&W Company: Muscatine Power & Water		Lab Pw: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com		Carrier Tracking No(s):		COC No: Page: Job #:	
Address: 1700 Dick Drake Way City: Muscatine State, Zip: IA, 52761 Phone: 231623 Email: sbennett@mpw.org and neil.hoskins@mpw.org Project Name: Muscatine Power & Water CCR Landfill Site: Iowa		Due Date Requested: TAT Requested (days): PO #: 231623 WO #: Test/America Project #:		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Event: Spring 2023 Sampling		Field Filtered Sample (Yes or No)		Total Number of Containers		Special Instructions/Note:	
Sample Identification MW-26 MW-27 Dup-1 Dup-2	Sample Date 4/12/24 4/12/24 4/11/24 4/12/24	Sample Time 1240 1200 1200 1200	Sample Type (C=comp, G=grab) G G G G	Matrix (Water, Solid, Organic, Other)	Preservation Code: GW GW GW GW	Field Filtered Sample (Yes or No)	Special Instructions/Note:
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements.	
Empty Kit Relinquished by		Date/Time:		Method of Shipment:		Received by:	
Relinquished by		Date/Time:		Received by:		Date/Time:	
Relinquished by		Date/Time:		Received by:		Date/Time:	
Custody Seals Intact Δ Yes Δ No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks.		Date/Time:	



Eurofins Cedar Falls

3019 Venture Way
 Cedar Falls IA 50613
 Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

Client Information Client Contact: Sam Bennett MP&W Phone: 563-262-3583		Lab PM: Hayes, Shawn M E-Mail: shawn_hayes@testamericainc.com		Camer Tracking No(s):		COC No: Page: Job #:	
Company: Muscatine Power & Water Address: 1700 Dick Drake Way City: Muscatine State Zip: IA, 52761 Phone: 231623 Email: sbennett@mpw.org and neil hoskins@mpw.org		Due Date Requested TAT Requested (days): PO #: 231623 WG #:		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L EDA Other:	
Project Name: Muscatine Power & Water State Landfill Site: Iowa		TestAmerica Project #:		Perform MS/MSD (Yes or No)		Total Number of Containers	
Event: Spring 2023 Sampling		Field Filtered Sample (Yes or No)		9056A Chloride, Fluoride, Sulfate		Special Instructions/Note:	
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
MW-26		4/12/24		1240		G GW	
MW-27		4/12/24		1200		G GW	
Dup-1		4/11/24		1200		G GW	
Dup-2		4/12/24		1200		G GW	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested I II III, IV Other (specify)		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Empty Kit Relinquished by:		Date:		Method of Shipment:		Special Instructions/QC Requirements:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Custody Seals Intact:		Custody Seal No		Cooler Temperature(s) °C and Other Remarks:		Date/Time:	



Eurofins Cedar Falls

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Chain of Custody Record

Client Information		Sampler Sam Bennett		Lab PM Hayes, Shawn M		Carrier Tracking No(s)		COC No:	
Client Contact: Sam Bennett MP&W		Phone: 563-262-3583		E-Mail: shawn.hayes@testamericainc.com				Page:	
Company: Muscatine Power & Water		Address: 1700 Dick Drake Way		City: Muscatine		State, Zip: IA, 52761		Job #:	
Phone: 241397		PO #: 241397		WO #:		TestAmerica Project #:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other	
Email: sbennett@mpw.org and neil.hoskins@mpw.org		Project Name: Muscatine Power & Water State Landfill		Site: Iowa		Spring 2023 Sampling		Special Instructions/Note.	
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=titania, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	602A State Metals List	905A Chloride, Fluoride, Sulfate	Total Number of Containers
MW-4B	4/15/24	0900	G	GW	X	X	X	X	
MW-5B	4/15/24	1140	G	GW	X	X	X	X	
MW-6A	4/15/24	0955	G	GW	X	X	X	X	
MW-8	4/12/24	1045	G	GW	X	X	X	X	
MW-10	4/11/24	1105	G	GW	X	X	X	X	
MW-14A	4/15/24	1420	G	GW	X	X	X	X	
MW-15A	4/15/24	1315	G	GW	X	X	X	X	
MW-21	4/12/24	1345	G	GW	X	X	X	X	
MW-22	4/11/24	1320	G	GW	X	X	X	X	
MW-23	4/11/24	1205	G	GW	X	X	X	X	
MW-24	4/12/24	0905	G	GW	X	X	X	X	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested I II III IV Other (specify)									
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months									
Special Instructions/QC Requirements.									
Empty Kit Relinquished by		Date:		Time		Method of Shipment:			
Relinquished by <i>NLS MHS</i>		4-16-24		0830		Company <i>MPW</i>		Received by	
Relinquished by						Company		Received by	
Relinquished by						Company		Received by <i>4/17/24 0845</i>	
Custody Seals Intact:		Custody Seal No		Cooler Temperature(s) °C and Other Remarks.					
Δ Yes Δ No									



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-279208-1

Login Number: 279208

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Hummel, Matthew R

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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.	False	MWs 24, 26, 27 and DUP 2 are all state parameters only.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





ANALYTICAL REPORT

PREPARED FOR

Attn: Sam Bennett
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Generated 10/15/2024 9:34:10 AM

JOB DESCRIPTION

Muscatine Power & Water CCR Landfill

JOB NUMBER

310-290523-1

Eurofins Cedar Falls

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.

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 Environment Testing North Central, LLC Project Manager.

Authorization



Generated
10/15/2024 9:34:10 AM

Authorized for release by
Bob Michels, Project Manager I
Bob.Michels@et.eurofinsus.com
(319)277-2401



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Case Narrative

Client: Muscatine Power & Water
Project: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Job ID: 310-290523-1

Eurofins Cedar Falls

Job Narrative 310-290523-1

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 9/13/2024 8:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1°C, 1.2°C and 2.3°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-8 (310-290523-1), MW-10 (310-290523-2), MW-14A (310-290523-3), MW-15A (310-290523-4), MW-21 (310-290523-5), MW-22 (310-290523-6), MW-23 (310-290523-7), MW-24 (310-290523-8), MW-26 (310-290523-9), MW-27 (310-290523-10), QC1 (310-290523-11) and QC2 (310-290523-12). 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

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.

Eurofins Cedar Falls

Sample Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-290523-1	MW-8	Ground Water	09/11/24 10:00	09/13/24 08:35
310-290523-2	MW-10	Ground Water	09/10/24 12:10	09/13/24 08:35
310-290523-3	MW-14A	Ground Water	09/11/24 13:20	09/13/24 08:35
310-290523-4	MW-15A	Ground Water	09/11/24 14:20	09/13/24 08:35
310-290523-5	MW-21	Ground Water	09/10/24 13:50	09/13/24 08:35
310-290523-6	MW-22	Ground Water	09/10/24 09:15	09/13/24 08:35
310-290523-7	MW-23	Ground Water	09/10/24 10:35	09/13/24 08:35
310-290523-8	MW-24	Ground Water	09/11/24 08:45	09/13/24 08:35
310-290523-9	MW-26	Ground Water	09/11/24 12:25	09/13/24 08:35
310-290523-10	MW-27	Ground Water	09/11/24 11:40	09/13/24 08:35
310-290523-11	QC1	Ground Water	09/10/24 12:00	09/13/24 08:35
310-290523-12	QC2	Ground Water	09/10/24 12:00	09/13/24 08:35



Detection Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-8

Lab Sample ID: 310-290523-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	20.1		5.00		mg/L	5		9056A	Total/NA
Sulfate	68.9		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00466		0.00200		mg/L	1		6020B	Total/NA
Barium	0.0944		0.00200		mg/L	1		6020B	Total/NA
Calcium	88.6		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.00216		0.000500		mg/L	1		6020B	Total/NA
Iron	1.53		0.100		mg/L	1		6020B	Total/NA
Magnesium	34.3		0.500		mg/L	1		6020B	Total/NA
Manganese	0.491		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00205		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.181		0.00100		mg/L	1		6020B	Total/NA
Total Suspended Solids	2.25		1.88		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	320		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-10

Lab Sample ID: 310-290523-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.65		5.00		mg/L	5		9056A	Total/NA
Sulfate	59.9		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00525		0.00200		mg/L	1		6020B	Total/NA
Barium	0.219		0.00200		mg/L	1		6020B	Total/NA
Calcium	97.8		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.000977		0.000500		mg/L	1		6020B	Total/NA
Iron	2.86		0.100		mg/L	1		6020B	Total/NA
Magnesium	41.1		0.500		mg/L	1		6020B	Total/NA
Manganese	0.255		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00287		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.197		0.00100		mg/L	1		6020B	Total/NA
Total Suspended Solids	7.25		1.88		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	386		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-14A

Lab Sample ID: 310-290523-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16.3		5.00		mg/L	5		9056A	Total/NA
Sulfate	1110		50.0		mg/L	50		9056A	Total/NA
Barium	0.0338		0.00200		mg/L	1		6020B	Total/NA
Boron	17.7		0.500		mg/L	5		6020B	Total/NA
Calcium	327		0.500		mg/L	1		6020B	Total/NA
Magnesium	134		2.50		mg/L	5		6020B	Total/NA
Strontium	0.298		0.00100		mg/L	1		6020B	Total/NA
Zinc	0.0220		0.0200		mg/L	1		6020B	Total/NA
Total Dissolved Solids	1830		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-15A

Lab Sample ID: 310-290523-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.41		5.00		mg/L	5		9056A	Total/NA
Sulfate	273		5.00		mg/L	5		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-15A (Continued)

Lab Sample ID: 310-290523-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0335		0.00200		mg/L	1		6020B	Total/NA
Boron	8.50		0.400		mg/L	4		6020B	Total/NA
Calcium	129		0.500		mg/L	1		6020B	Total/NA
Magnesium	53.8		0.500		mg/L	1		6020B	Total/NA
Strontium	0.117		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	602		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-21

Lab Sample ID: 310-290523-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	248		5.00		mg/L	5		9056A	Total/NA
Barium	0.0555		0.00200		mg/L	1		6020B	Total/NA
Boron	3.68		0.100		mg/L	1		6020B	Total/NA
Calcium	96.6		0.500		mg/L	1		6020B	Total/NA
Chromium	0.00657		0.00500		mg/L	1		6020B	Total/NA
Lithium	0.0194		0.0100		mg/L	1		6020B	Total/NA
Magnesium	41.3		0.500		mg/L	1		6020B	Total/NA
Selenium	0.00666		0.00500		mg/L	1		6020B	Total/NA
Strontium	0.181		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	584		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-22

Lab Sample ID: 310-290523-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16.6		5.00		mg/L	5		9056A	Total/NA
Sulfate	161		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00749		0.00200		mg/L	1		6020B	Total/NA
Barium	0.268		0.00200		mg/L	1		6020B	Total/NA
Boron	0.243		0.100		mg/L	1		6020B	Total/NA
Calcium	84.3		0.500		mg/L	1		6020B	Total/NA
Iron	0.189		0.100		mg/L	1		6020B	Total/NA
Magnesium	33.1		0.500		mg/L	1		6020B	Total/NA
Manganese	0.677		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00578		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.106		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	396		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-23

Lab Sample ID: 310-290523-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	21.7		5.00		mg/L	5		9056A	Total/NA
Sulfate	23.8		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.168		0.0500		mg/L	1		6020B	Total/NA
Barium	0.0521		0.00200		mg/L	1		6020B	Total/NA
Boron	0.126		0.100		mg/L	1		6020B	Total/NA
Calcium	58.0		0.500		mg/L	1		6020B	Total/NA
Iron	0.160		0.100		mg/L	1		6020B	Total/NA
Magnesium	25.9		0.500		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-23 (Continued)

Lab Sample ID: 310-290523-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	0.0301		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.0598		0.00100		mg/L	1		6020B	Total/NA
Total Suspended Solids	31.3		1.88		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	260		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-24

Lab Sample ID: 310-290523-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	22.8		5.00		mg/L	5		9056A	Total/NA
Sulfate	43.8		5.00		mg/L	5		9056A	Total/NA
Barium	0.0885		0.00200		mg/L	1		6020B	Total/NA
Calcium	73.6		0.500		mg/L	1		6020B	Total/NA
Magnesium	31.0		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0111		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.0754		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	306		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-26

Lab Sample ID: 310-290523-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17.3		5.00		mg/L	5		9056A	Total/NA
Sulfate	234		5.00		mg/L	5		9056A	Total/NA
Barium	0.0643		0.00200		mg/L	1		6020B	Total/NA
Boron	4.19		0.100		mg/L	1		6020B	Total/NA
Calcium	126		0.500		mg/L	1		6020B	Total/NA
Lithium	0.0108		0.0100		mg/L	1		6020B	Total/NA
Magnesium	45.3		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0458		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.127		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	622		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-27

Lab Sample ID: 310-290523-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	85.0		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.0529		0.0500		mg/L	1		6020B	Total/NA
Barium	0.0795		0.00200		mg/L	1		6020B	Total/NA
Boron	3.02		0.100		mg/L	1		6020B	Total/NA
Calcium	63.1		0.500		mg/L	1		6020B	Total/NA
Magnesium	27.9		0.500		mg/L	1		6020B	Total/NA
Manganese	0.0168		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.113		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	290		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: QC1

Lab Sample ID: 310-290523-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.86		5.00		mg/L	5		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: QC1 (Continued)

Lab Sample ID: 310-290523-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	60.8		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00450		0.00200		mg/L	1		6020B	Total/NA
Barium	0.207		0.00200		mg/L	1		6020B	Total/NA
Boron	0.100		0.100		mg/L	1		6020B	Total/NA
Calcium	97.2		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.000935		0.000500		mg/L	1		6020B	Total/NA
Iron	2.59		0.100		mg/L	1		6020B	Total/NA
Magnesium	40.8		0.500		mg/L	1		6020B	Total/NA
Manganese	0.247		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.191		0.00100		mg/L	1		6020B	Total/NA
Total Suspended Solids	7.33		5.00		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	398		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: QC2

Lab Sample ID: 310-290523-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16.4		5.00		mg/L	5		9056A	Total/NA
Sulfate	156		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00685		0.00200		mg/L	1		6020B	Total/NA
Barium	0.260		0.00200		mg/L	1		6020B	Total/NA
Calcium	84.9		0.500		mg/L	1		6020B	Total/NA
Iron	0.165		0.100		mg/L	1		6020B	Total/NA
Magnesium	32.9		0.500		mg/L	1		6020B	Total/NA
Manganese	0.612		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00590		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.106		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	408		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-8

Lab Sample ID: 310-290523-1

Date Collected: 09/11/24 10:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	20.1		5.00		mg/L			09/19/24 12:35	5
Fluoride	<1.00		1.00		mg/L			09/19/24 12:35	5
Sulfate	68.9		5.00		mg/L			09/19/24 12:35	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 13:55	1
Arsenic	0.00466		0.00200		mg/L		09/17/24 09:30	09/30/24 14:28	1
Barium	0.0944		0.00200		mg/L		09/17/24 09:30	09/30/24 14:28	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Boron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 14:28	1
Calcium	88.6		0.500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Cobalt	0.00216		0.000500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Iron	1.53		0.100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Magnesium	34.3		0.500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Manganese	0.491		0.0100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Molybdenum	0.00205		0.00200		mg/L		09/17/24 09:30	09/30/24 14:28	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Strontium	0.181		0.00100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:28	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:28	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 14:28	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	2.25		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	320		50.0		mg/L			09/16/24 21:05	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.3	HF	1.0		SU			09/13/24 12:34	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.110	U	0.0693	0.0695	1.00	0.110	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.8		30 - 110					09/17/24 08:10	10/10/24 17:44	1

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-8

Lab Sample ID: 310-290523-1

Date Collected: 09/11/24 10:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.606	U	0.378	0.380	1.00	0.606	pCi/L	09/17/24 08:14	10/02/24 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.8		30 - 110					09/17/24 08:14	10/02/24 11:51	1
Y Carrier	79.6		30 - 110					09/17/24 08:14	10/02/24 11:51	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-10

Lab Sample ID: 310-290523-2

Date Collected: 09/10/24 12:10

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.65		5.00		mg/L			09/19/24 12:47	5
Fluoride	<1.00		1.00		mg/L			09/19/24 12:47	5
Sulfate	59.9		5.00		mg/L			09/19/24 12:47	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:01	1
Arsenic	0.00525		0.00200		mg/L		09/17/24 09:30	09/30/24 14:56	1
Barium	0.219		0.00200		mg/L		09/17/24 09:30	09/30/24 14:56	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Boron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 14:56	1
Calcium	97.8		0.500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Cobalt	0.000977		0.000500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Iron	2.86		0.100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Magnesium	41.1		0.500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Manganese	0.255		0.0100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Molybdenum	0.00287		0.00200		mg/L		09/17/24 09:30	09/30/24 14:56	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Strontium	0.197		0.00100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:56	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:56	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 14:56	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	7.25		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	386		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.3	HF	1.0		SU			09/13/24 12:35	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.355		0.120	0.124	1.00	0.121	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.3		30 - 110					09/17/24 08:10	10/10/24 17:44	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-10

Lab Sample ID: 310-290523-2

Date Collected: 09/10/24 12:10

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.466	U	0.277	0.278	1.00	0.466	pCi/L	09/17/24 08:14	10/02/24 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.3		30 - 110					09/17/24 08:14	10/02/24 11:51	1
Y Carrier	78.9		30 - 110					09/17/24 08:14	10/02/24 11:51	1

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- 15

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-14A

Lab Sample ID: 310-290523-3

Date Collected: 09/11/24 13:20

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.3		5.00		mg/L			09/19/24 12:59	5
Fluoride	<1.00		1.00		mg/L			09/19/24 12:59	5
Sulfate	1110		50.0		mg/L			09/19/24 15:37	50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Antimony	<0.00800		0.00800		mg/L		09/17/24 09:30	10/02/24 14:03	4
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:00	1
Barium	0.0338		0.00200		mg/L		09/17/24 09:30	09/30/24 15:00	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:00	1
Boron	17.7		0.500		mg/L		09/17/24 09:30	10/03/24 13:24	5
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:00	1
Calcium	327		0.500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:00	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:00	1
Magnesium	134		2.50		mg/L		09/17/24 09:30	10/03/24 13:24	5
Manganese	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:00	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:00	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Strontium	0.298		0.00100		mg/L		09/17/24 09:30	09/30/24 15:00	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:00	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:00	1
Zinc	0.0220		0.0200		mg/L		09/17/24 09:30	09/30/24 15:00	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	1830		50.0		mg/L			09/16/24 21:05	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.2	HF	1.0		SU			09/13/24 12:36	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143		0.0979	0.0988	1.00	0.142	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.3		30 - 110					09/17/24 08:10	10/10/24 17:44	1

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-14A

Lab Sample ID: 310-290523-3

Date Collected: 09/11/24 13:20

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.603	U	0.352	0.352	1.00	0.603	pCi/L	09/17/24 08:14	10/02/24 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.3		30 - 110					09/17/24 08:14	10/02/24 11:51	1
Y Carrier	80.7		30 - 110					09/17/24 08:14	10/02/24 11:51	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-15A

Lab Sample ID: 310-290523-4

Date Collected: 09/11/24 14:20

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.41		5.00		mg/L			09/19/24 13:12	5
Fluoride	<1.00		1.00		mg/L			09/19/24 13:12	5
Sulfate	273		5.00		mg/L			09/19/24 13:12	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Antimony	<0.00800		0.00800		mg/L		09/17/24 09:30	10/02/24 14:05	4
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:04	1
Barium	0.0335		0.00200		mg/L		09/17/24 09:30	09/30/24 15:04	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:04	1
Boron	8.50		0.400		mg/L		09/17/24 09:30	10/02/24 14:05	4
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:04	1
Calcium	129		0.500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:04	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:04	1
Magnesium	53.8		0.500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Manganese	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:04	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:04	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Strontium	0.117		0.00100		mg/L		09/17/24 09:30	09/30/24 15:04	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:04	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:04	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:04	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	602		50.0		mg/L			09/16/24 21:05	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.2	HF	1.0		SU			09/13/24 12:37	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.146	U	0.0784	0.0784	1.00	0.146	pCi/L	09/17/24 08:10	10/10/24 17:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.3		30 - 110					09/17/24 08:10	10/10/24 17:45	1

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-15A

Lab Sample ID: 310-290523-4

Date Collected: 09/11/24 14:20

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.549	U	0.338	0.340	1.00	0.549	pCi/L	09/17/24 08:14	10/02/24 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.3		30 - 110					09/17/24 08:14	10/02/24 11:53	1
Y Carrier	81.9		30 - 110					09/17/24 08:14	10/02/24 11:53	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-21

Lab Sample ID: 310-290523-5

Date Collected: 09/10/24 13:50

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13.5		5.00		mg/L			09/19/24 13:24	5
Fluoride	<1.00		1.00		mg/L			09/19/24 13:24	5
Sulfate	248		5.00		mg/L			09/19/24 13:24	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:08	1
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:07	1
Barium	0.0555		0.00200		mg/L		09/17/24 09:30	09/30/24 15:07	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Boron	3.68		0.100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:07	1
Calcium	96.6		0.500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Chromium	0.00657		0.00500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Lithium	0.0194		0.0100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Magnesium	41.3		0.500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Manganese	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:07	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Selenium	0.00666		0.00500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Strontium	0.181		0.00100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:07	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:07	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:07	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	584		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.9	HF	1.0		SU			09/13/24 12:38	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.124	U	0.0855	0.0862	1.00	0.124	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.3		30 - 110					09/17/24 08:10	10/10/24 17:44	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-21

Lab Sample ID: 310-290523-5

Date Collected: 09/10/24 13:50

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	<0.586	U	0.335	0.335	1.00	0.586	pCi/L	09/17/24 08:14	10/02/24 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.3		30 - 110					09/17/24 08:14	10/02/24 11:53	1
Y Carrier	75.1		30 - 110					09/17/24 08:14	10/02/24 11:53	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-22

Lab Sample ID: 310-290523-6

Date Collected: 09/10/24 09:15

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.6		5.00		mg/L			09/19/24 13:36	5
Fluoride	<1.00		1.00		mg/L			09/19/24 13:36	5
Sulfate	161		5.00		mg/L			09/19/24 13:36	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:19	1
Arsenic	0.00749		0.00200		mg/L		09/17/24 09:30	09/30/24 15:11	1
Barium	0.268		0.00200		mg/L		09/17/24 09:30	09/30/24 15:11	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Boron	0.243		0.100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:11	1
Calcium	84.3		0.500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Iron	0.189		0.100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Magnesium	33.1		0.500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Manganese	0.677		0.0100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Molybdenum	0.00578		0.00200		mg/L		09/17/24 09:30	09/30/24 15:11	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Strontium	0.106		0.00100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:11	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:11	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:11	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	396		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.5	HF	1.0		SU			09/13/24 12:39	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.185		0.0989	0.100	1.00	0.129	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.8		30 - 110					09/17/24 08:10	10/10/24 17:44	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-22

Lab Sample ID: 310-290523-6

Date Collected: 09/10/24 09:15

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.576	U	0.376	0.379	1.00	0.576	pCi/L	09/17/24 08:14	10/02/24 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.8		30 - 110					09/17/24 08:14	10/02/24 11:53	1
Y Carrier	77.8		30 - 110					09/17/24 08:14	10/02/24 11:53	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-23

Lab Sample ID: 310-290523-7

Date Collected: 09/10/24 10:35

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21.7		5.00		mg/L			09/19/24 13:48	5
Fluoride	<1.00		1.00		mg/L			09/19/24 13:48	5
Sulfate	23.8		5.00		mg/L			09/19/24 13:48	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.168		0.0500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:21	1
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:15	1
Barium	0.0521		0.00200		mg/L		09/17/24 09:30	09/30/24 15:15	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Boron	0.126		0.100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:15	1
Calcium	58.0		0.500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Iron	0.160		0.100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Magnesium	25.9		0.500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Manganese	0.0301		0.0100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:15	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Strontium	0.0598		0.00100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:15	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:15	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:15	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	31.3		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	260		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.4	HF	1.0		SU			09/13/24 12:40	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.116	U	0.0535	0.0535	1.00	0.116	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.5		30 - 110					09/17/24 08:10	10/10/24 17:44	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-23

Lab Sample ID: 310-290523-7

Date Collected: 09/10/24 10:35

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.563	U	0.360	0.362	1.00	0.563	pCi/L	09/17/24 08:14	10/02/24 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.5		30 - 110					09/17/24 08:14	10/02/24 11:53	1
Y Carrier	90.5		30 - 110					09/17/24 08:14	10/02/24 11:53	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-24

Lab Sample ID: 310-290523-8

Date Collected: 09/11/24 08:45

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	22.8		5.00		mg/L			09/19/24 14:00	5
Fluoride	<1.00		1.00		mg/L			09/19/24 14:00	5
Sulfate	43.8		5.00		mg/L			09/19/24 14:00	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:23	1
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:18	1
Barium	0.0885		0.00200		mg/L		09/17/24 09:30	09/30/24 15:18	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Boron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:18	1
Calcium	73.6		0.500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Magnesium	31.0		0.500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Manganese	0.0111		0.0100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:18	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Strontium	0.0754		0.00100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:18	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:18	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:18	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	306		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.4	HF	1.0		SU			09/13/24 12:46	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-26

Lab Sample ID: 310-290523-9

Date Collected: 09/11/24 12:25

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17.3		5.00		mg/L			09/19/24 14:12	5
Fluoride	<1.00		1.00		mg/L			09/19/24 14:12	5
Sulfate	234		5.00		mg/L			09/19/24 14:12	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:25	1
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:22	1
Barium	0.0643		0.00200		mg/L		09/17/24 09:30	09/30/24 15:22	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Boron	4.19		0.100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:22	1
Calcium	126		0.500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Lithium	0.0108		0.0100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Magnesium	45.3		0.500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Manganese	0.0458		0.0100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:22	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Strontium	0.127		0.00100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:22	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:22	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:22	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	622		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.7	HF	1.0		SU			09/13/24 12:47	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-27

Lab Sample ID: 310-290523-10

Date Collected: 09/11/24 11:40

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.2		5.00		mg/L			09/19/24 14:48	5
Fluoride	<1.00		1.00		mg/L			09/19/24 14:48	5
Sulfate	85.0		5.00		mg/L			09/19/24 14:48	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0529		0.0500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:27	1
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:26	1
Barium	0.0795		0.00200		mg/L		09/17/24 09:30	09/30/24 15:26	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Boron	3.02		0.100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:26	1
Calcium	63.1		0.500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Magnesium	27.9		0.500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Manganese	0.0168		0.0100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:26	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Strontium	0.113		0.00100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:26	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:26	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:26	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	290		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.8	HF	1.0		SU			09/13/24 12:48	1

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: QC1

Lab Sample ID: 310-290523-11

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.86		5.00		mg/L			09/19/24 15:00	5
Fluoride	<1.00		1.00		mg/L			09/19/24 15:00	5
Sulfate	60.8		5.00		mg/L			09/19/24 15:00	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:30	1
Arsenic	0.00450		0.00200		mg/L		09/17/24 09:30	09/30/24 15:44	1
Barium	0.207		0.00200		mg/L		09/17/24 09:30	09/30/24 15:44	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Boron	0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:44	1
Calcium	97.2		0.500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Cobalt	0.000935		0.000500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Iron	2.59		0.100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Magnesium	40.8		0.500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Manganese	0.247		0.0100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 15:44	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Strontium	0.191		0.00100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:44	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:44	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:44	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	7.33		5.00		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	398		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.2	HF	1.0		SU			09/13/24 12:41	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.397		0.123	0.128	1.00	0.113	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.6		30 - 110					09/17/24 08:10	10/10/24 17:44	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: QC1

Lab Sample ID: 310-290523-11

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.721		0.415	0.420	1.00	0.597	pCi/L	09/17/24 08:14	10/02/24 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.6		30 - 110					09/17/24 08:14	10/02/24 11:53	1
Y Carrier	78.9		30 - 110					09/17/24 08:14	10/02/24 11:53	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: QC2

Lab Sample ID: 310-290523-12

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.4		5.00		mg/L			09/19/24 15:12	5
Fluoride	<1.00		1.00		mg/L			09/19/24 15:12	5
Sulfate	156		5.00		mg/L			09/19/24 15:12	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 14:34	1
Arsenic	0.00685		0.00200		mg/L		09/17/24 09:30	09/30/24 15:51	1
Barium	0.260		0.00200		mg/L		09/17/24 09:30	09/30/24 15:51	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Boron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 15:51	1
Calcium	84.9		0.500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Iron	0.165		0.100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Magnesium	32.9		0.500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Manganese	0.612		0.0100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Molybdenum	0.00590		0.00200		mg/L		09/17/24 09:30	09/30/24 15:51	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Strontium	0.106		0.00100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 15:51	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 15:51	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 15:51	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88		mg/L			09/17/24 15:55	1
Total Dissolved Solids (SM 2540C)	408		50.0		mg/L			09/16/24 20:09	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.8	HF	1.0		SU			09/13/24 12:44	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.229		0.100	0.103	1.00	0.116	pCi/L	09/17/24 08:10	10/10/24 17:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.1		30 - 110					09/17/24 08:10	10/10/24 17:44	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: QC2

Lab Sample ID: 310-290523-12

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	<0.596	U	0.386	0.389	1.00	0.596	pCi/L	09/17/24 08:14	10/02/24 11:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.1		30 - 110					09/17/24 08:14	10/02/24 11:55	1
Y Carrier	75.5		30 - 110					09/17/24 08:14	10/02/24 11:55	1



Definitions/Glossary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Qualifiers

Metals

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.

General Chemistry

Qualifier	Qualifier Description
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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
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
DLC	Decision Level Concentration (Radiochemistry)
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
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-433822/3
Matrix: Water
Analysis Batch: 433822

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			09/19/24 09:58	1
Fluoride	<0.200		0.200		mg/L			09/19/24 09:58	1
Sulfate	<1.00		1.00		mg/L			09/19/24 09:58	1

Lab Sample ID: LCS 310-433822/4
Matrix: Water
Analysis Batch: 433822

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.849		mg/L		98	90 - 110
Fluoride	2.00	2.045		mg/L		102	90 - 110
Sulfate	10.0	10.40		mg/L		104	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-433329/1-A
Matrix: Water
Analysis Batch: 434788

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Arsenic	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 14:21	1
Barium	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 14:21	1
Beryllium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Boron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Cadmium	<0.000200		0.000200		mg/L		09/17/24 09:30	09/30/24 14:21	1
Calcium	<0.500		0.500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Chromium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Cobalt	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Copper	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Iron	<0.100		0.100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Lead	<0.000500		0.000500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Lithium	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Magnesium	<0.500		0.500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Manganese	<0.0100		0.0100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Molybdenum	<0.00200		0.00200		mg/L		09/17/24 09:30	09/30/24 14:21	1
Nickel	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Selenium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Strontium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Thallium	<0.00100		0.00100		mg/L		09/17/24 09:30	09/30/24 14:21	1
Vanadium	<0.00500		0.00500		mg/L		09/17/24 09:30	09/30/24 14:21	1
Zinc	<0.0200		0.0200		mg/L		09/17/24 09:30	09/30/24 14:21	1

Lab Sample ID: MB 310-433329/1-A
Matrix: Water
Analysis Batch: 435065

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200		mg/L		09/17/24 09:30	10/02/24 13:51	1

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

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

Lab Sample ID: LCS 310-433329/2-A
Matrix: Water
Analysis Batch: 434788

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2079		mg/L		104	80 - 120
Arsenic	0.200	0.2288		mg/L		114	80 - 120
Barium	0.100	0.1070		mg/L		107	80 - 120
Beryllium	0.100	0.1038		mg/L		104	80 - 120
Boron	0.200	0.2037		mg/L		102	80 - 120
Cadmium	0.100	0.09901		mg/L		99	80 - 120
Calcium	2.00	2.067		mg/L		103	80 - 120
Chromium	0.100	0.1030		mg/L		103	80 - 120
Cobalt	0.100	0.1097		mg/L		110	80 - 120
Copper	0.200	0.2179		mg/L		109	80 - 120
Iron	0.200	0.2229		mg/L		111	80 - 120
Lead	0.200	0.2165		mg/L		108	80 - 120
Lithium	0.200	0.2132		mg/L		107	80 - 120
Magnesium	2.00	2.095		mg/L		105	80 - 120
Manganese	0.100	0.1074		mg/L		107	80 - 120
Molybdenum	0.200	0.2135		mg/L		107	80 - 120
Nickel	0.200	0.2171		mg/L		109	80 - 120
Selenium	0.400	0.3949		mg/L		99	80 - 120
Strontium	0.200	0.2073		mg/L		104	80 - 120
Thallium	0.100	0.09703		mg/L		97	80 - 120
Vanadium	0.100	0.1003		mg/L		100	80 - 120
Zinc	0.200	0.1998		mg/L		100	80 - 120

Lab Sample ID: LCS 310-433329/2-A
Matrix: Water
Analysis Batch: 435065

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2108		mg/L		105	80 - 120
Antimony	0.200	0.2302		mg/L		115	80 - 120

Lab Sample ID: 310-290523-1 MS
Matrix: Ground Water
Analysis Batch: 434788

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	<0.0500		0.200	0.2077		mg/L		104	75 - 125
Arsenic	0.00466		0.200	0.2408		mg/L		118	75 - 125
Barium	0.0944		0.100	0.1967		mg/L		102	75 - 125
Beryllium	<0.00100		0.100	0.1047		mg/L		105	75 - 125
Boron	<0.100		0.200	0.2363		mg/L		118	75 - 125
Cadmium	<0.000200		0.100	0.1010		mg/L		101	75 - 125
Calcium	88.6		2.00	89.68	4	mg/L		56	75 - 125
Chromium	<0.00500		0.100	0.1021		mg/L		102	75 - 125
Cobalt	0.00216		0.100	0.1089		mg/L		107	75 - 125
Copper	<0.00500		0.200	0.2085		mg/L		104	75 - 125
Iron	1.53		0.200	1.630	4	mg/L		50	75 - 125
Lead	<0.000500		0.200	0.2109		mg/L		105	75 - 125
Lithium	<0.0100		0.200	0.2151		mg/L		106	75 - 125

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

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

Lab Sample ID: 310-290523-1 MS
Matrix: Ground Water
Analysis Batch: 434788

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec		
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	Limit
Magnesium	34.3		2.00	35.82	4	mg/L		76	75 - 125		
Manganese	0.491		0.100	0.5751	4	mg/L		84	75 - 125		
Molybdenum	0.00205		0.200	0.2079		mg/L		103	75 - 125		
Nickel	<0.00500		0.200	0.2071		mg/L		102	75 - 125		
Selenium	<0.00500		0.400	0.4242		mg/L		106	75 - 125		
Strontium	0.181		0.200	0.3879		mg/L		104	75 - 125		
Thallium	<0.00100		0.100	0.08189		mg/L		82	75 - 125		
Vanadium	<0.00500		0.100	0.1003		mg/L		100	75 - 125		
Zinc	<0.0200		0.200	0.1972		mg/L		99	75 - 125		

Lab Sample ID: 310-290523-1 MS
Matrix: Ground Water
Analysis Batch: 435065

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec		
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	Limit
Antimony	<0.00200		0.200	0.2353		mg/L		118	75 - 125		

Lab Sample ID: 310-290523-1 MSD
Matrix: Ground Water
Analysis Batch: 434788

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec		RPD	
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	Limit	
Aluminum	<0.0500		0.200	0.2077		mg/L		104	75 - 125	0	20	
Arsenic	0.00466		0.200	0.2407		mg/L		118	75 - 125	0	20	
Barium	0.0944		0.100	0.1994		mg/L		105	75 - 125	1	20	
Beryllium	<0.00100		0.100	0.1037		mg/L		104	75 - 125	1	20	
Boron	<0.100		0.200	0.2438		mg/L		122	75 - 125	3	20	
Cadmium	<0.000200		0.100	0.1012		mg/L		101	75 - 125	0	20	
Calcium	88.6		2.00	89.73	4	mg/L		58	75 - 125	0	20	
Chromium	<0.00500		0.100	0.1025		mg/L		102	75 - 125	0	20	
Cobalt	0.00216		0.100	0.1085		mg/L		106	75 - 125	0	20	
Copper	<0.00500		0.200	0.2078		mg/L		104	75 - 125	0	20	
Iron	1.53		0.200	1.649	4	mg/L		60	75 - 125	1	20	
Lead	<0.000500		0.200	0.2094		mg/L		105	75 - 125	1	20	
Lithium	<0.0100		0.200	0.2125		mg/L		105	75 - 125	1	20	
Magnesium	34.3		2.00	35.89	4	mg/L		79	75 - 125	0	20	
Manganese	0.491		0.100	0.5861	4	mg/L		95	75 - 125	2	20	
Molybdenum	0.00205		0.200	0.2076		mg/L		103	75 - 125	0	20	
Nickel	<0.00500		0.200	0.2077		mg/L		103	75 - 125	0	20	
Selenium	<0.00500		0.400	0.4254		mg/L		106	75 - 125	0	20	
Strontium	0.181		0.200	0.3926		mg/L		106	75 - 125	1	20	
Thallium	<0.00100		0.100	0.07708		mg/L		77	75 - 125	6	20	
Vanadium	<0.00500		0.100	0.1002		mg/L		100	75 - 125	0	20	
Zinc	<0.0200		0.200	0.1970		mg/L		99	75 - 125	0	20	

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

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

Lab Sample ID: 310-290523-1 MSD
Matrix: Ground Water
Analysis Batch: 435065

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	<0.0500		0.200	0.2147		mg/L		107	75 - 125	0	20
Antimony	<0.00200		0.200	0.2268		mg/L		113	75 - 125	4	20

Lab Sample ID: 310-290523-11 DU
Matrix: Ground Water
Analysis Batch: 434788

Client Sample ID: QC1
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	<0.0500		<0.0500		mg/L		NC	20
Arsenic	0.00450		0.004538		mg/L		0.9	20
Barium	0.207		0.2059		mg/L		0.4	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	0.100		<0.100		mg/L		NC	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Calcium	97.2		96.20		mg/L		1	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	0.000935		0.0009040		mg/L		3	20
Copper	<0.00500		<0.00500		mg/L		NC	20
Iron	2.59		2.612		mg/L		0.7	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Lithium	<0.0100		<0.0100		mg/L		NC	20
Magnesium	40.8		40.78		mg/L		0.1	20
Manganese	0.247		0.2457		mg/L		0.4	20
Molybdenum	<0.00200		<0.00200		mg/L		NC	20
Nickel	<0.00500		<0.00500		mg/L		NC	20
Selenium	<0.00500		<0.00500		mg/L		NC	20
Strontium	0.191		0.1885		mg/L		1	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Vanadium	<0.00500		<0.00500		mg/L		NC	20
Zinc	<0.0200		<0.0200		mg/L		NC	20

Lab Sample ID: 310-290523-11 DU
Matrix: Ground Water
Analysis Batch: 435065

Client Sample ID: QC1
Prep Type: Total/NA
Prep Batch: 433329

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-433662/1-A
Matrix: Water
Analysis Batch: 433861

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433662

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/19/24 13:55	09/20/24 15:06	1

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

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

Lab Sample ID: LCS 310-433662/2-A
 Matrix: Water
 Analysis Batch: 433861

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 433662

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001682		mg/L		101	80 - 120

Lab Sample ID: 310-290523-2 MS
 Matrix: Ground Water
 Analysis Batch: 433861

Client Sample ID: MW-10
 Prep Type: Total/NA
 Prep Batch: 433662

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	<0.000200		0.00167	0.001625		mg/L		98	80 - 120

Lab Sample ID: 310-290523-2 MSD
 Matrix: Ground Water
 Analysis Batch: 433861

Client Sample ID: MW-10
 Prep Type: Total/NA
 Prep Batch: 433662

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	<0.000200		0.00167	0.001639		mg/L		98	80 - 120	1	20

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-433438/1
 Matrix: Water
 Analysis Batch: 433438

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00		mg/L			09/17/24 15:55	1

Lab Sample ID: LCS 310-433438/2
 Matrix: Water
 Analysis Batch: 433438

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	103.0		mg/L		103	81 - 116

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

Lab Sample ID: MB 310-433336/1
 Matrix: Water
 Analysis Batch: 433336

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			09/16/24 20:09	1

Lab Sample ID: LCS 310-433336/2
 Matrix: Water
 Analysis Batch: 433336

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	954.0		mg/L		95	88 - 110

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

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

Lab Sample ID: MB 310-433337/1
 Matrix: Water
 Analysis Batch: 433337

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			09/16/24 21:05	1

Lab Sample ID: LCS 310-433337/2
 Matrix: Water
 Analysis Batch: 433337

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	1000		mg/L		100	88 - 110

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-433123/29
 Matrix: Water
 Analysis Batch: 433123

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.1		SU		101	98 - 102

Lab Sample ID: 310-290523-12 DU
 Matrix: Ground Water
 Analysis Batch: 433123

Client Sample ID: QC2
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.8	HF	7.8		SU		0.1	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-679741/1-A
 Matrix: Water
 Analysis Batch: 683026

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 679741

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	<0.143	U	0.0751	0.0751	1.00	0.143	pCi/L	09/17/24 08:10	10/10/24 15:13	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.8		30 - 110					09/17/24 08:10	10/10/24 15:13	1

Lab Sample ID: LCS 160-679741/2-A
 Matrix: Water
 Analysis Batch: 683026

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 679741

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	9.58	9.491		1.00	1.00	0.122	pCi/L	99	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.5		30 - 110						

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-679742/1-A
Matrix: Water
Analysis Batch: 681957

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 679742

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	<0.477	U	0.264	0.264	1.00	0.477	pCi/L	09/17/24 08:14	10/02/24 11:50	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	97.8		30 - 110		09/17/24 08:14	10/02/24 11:50	1			
Y Carrier	77.8		30 - 110		09/17/24 08:14	10/02/24 11:50	1			

Lab Sample ID: LCS 160-679742/2-A
Matrix: Water
Analysis Batch: 681957

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 679742

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.46	10.56		1.44	1.00	0.594	pCi/L	125	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.5		30 - 110						
Y Carrier	76.3		30 - 110						

QC Association Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

HPLC/IC

Analysis Batch: 433822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	9056A	
310-290523-2	MW-10	Total/NA	Ground Water	9056A	
310-290523-3	MW-14A	Total/NA	Ground Water	9056A	
310-290523-3	MW-14A	Total/NA	Ground Water	9056A	
310-290523-4	MW-15A	Total/NA	Ground Water	9056A	
310-290523-5	MW-21	Total/NA	Ground Water	9056A	
310-290523-6	MW-22	Total/NA	Ground Water	9056A	
310-290523-7	MW-23	Total/NA	Ground Water	9056A	
310-290523-8	MW-24	Total/NA	Ground Water	9056A	
310-290523-9	MW-26	Total/NA	Ground Water	9056A	
310-290523-10	MW-27	Total/NA	Ground Water	9056A	
310-290523-11	QC1	Total/NA	Ground Water	9056A	
310-290523-12	QC2	Total/NA	Ground Water	9056A	
MB 310-433822/3	Method Blank	Total/NA	Water	9056A	
LCS 310-433822/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 433329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	3005A	
310-290523-2	MW-10	Total/NA	Ground Water	3005A	
310-290523-3	MW-14A	Total/NA	Ground Water	3005A	
310-290523-4	MW-15A	Total/NA	Ground Water	3005A	
310-290523-5	MW-21	Total/NA	Ground Water	3005A	
310-290523-6	MW-22	Total/NA	Ground Water	3005A	
310-290523-7	MW-23	Total/NA	Ground Water	3005A	
310-290523-8	MW-24	Total/NA	Ground Water	3005A	
310-290523-9	MW-26	Total/NA	Ground Water	3005A	
310-290523-10	MW-27	Total/NA	Ground Water	3005A	
310-290523-11	QC1	Total/NA	Ground Water	3005A	
310-290523-12	QC2	Total/NA	Ground Water	3005A	
MB 310-433329/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-433329/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-290523-1 MS	MW-8	Total/NA	Ground Water	3005A	
310-290523-1 MSD	MW-8	Total/NA	Ground Water	3005A	
310-290523-11 DU	QC1	Total/NA	Ground Water	3005A	

Prep Batch: 433662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	7470A	
310-290523-2	MW-10	Total/NA	Ground Water	7470A	
310-290523-3	MW-14A	Total/NA	Ground Water	7470A	
310-290523-4	MW-15A	Total/NA	Ground Water	7470A	
310-290523-5	MW-21	Total/NA	Ground Water	7470A	
310-290523-6	MW-22	Total/NA	Ground Water	7470A	
310-290523-7	MW-23	Total/NA	Ground Water	7470A	
310-290523-8	MW-24	Total/NA	Ground Water	7470A	
310-290523-9	MW-26	Total/NA	Ground Water	7470A	
310-290523-10	MW-27	Total/NA	Ground Water	7470A	
310-290523-11	QC1	Total/NA	Ground Water	7470A	

QC Association Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Metals (Continued)

Prep Batch: 433662 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-12	QC2	Total/NA	Ground Water	7470A	
MB 310-433662/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-433662/2-A	Lab Control Sample	Total/NA	Water	7470A	
310-290523-2 MS	MW-10	Total/NA	Ground Water	7470A	
310-290523-2 MSD	MW-10	Total/NA	Ground Water	7470A	

Analysis Batch: 433861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	7470A	433662
310-290523-2	MW-10	Total/NA	Ground Water	7470A	433662
310-290523-3	MW-14A	Total/NA	Ground Water	7470A	433662
310-290523-4	MW-15A	Total/NA	Ground Water	7470A	433662
310-290523-5	MW-21	Total/NA	Ground Water	7470A	433662
310-290523-6	MW-22	Total/NA	Ground Water	7470A	433662
310-290523-7	MW-23	Total/NA	Ground Water	7470A	433662
310-290523-8	MW-24	Total/NA	Ground Water	7470A	433662
310-290523-9	MW-26	Total/NA	Ground Water	7470A	433662
310-290523-10	MW-27	Total/NA	Ground Water	7470A	433662
310-290523-11	QC1	Total/NA	Ground Water	7470A	433662
310-290523-12	QC2	Total/NA	Ground Water	7470A	433662
MB 310-433662/1-A	Method Blank	Total/NA	Water	7470A	433662
LCS 310-433662/2-A	Lab Control Sample	Total/NA	Water	7470A	433662
310-290523-2 MS	MW-10	Total/NA	Ground Water	7470A	433662
310-290523-2 MSD	MW-10	Total/NA	Ground Water	7470A	433662

Analysis Batch: 434788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	6020B	433329
310-290523-2	MW-10	Total/NA	Ground Water	6020B	433329
310-290523-3	MW-14A	Total/NA	Ground Water	6020B	433329
310-290523-4	MW-15A	Total/NA	Ground Water	6020B	433329
310-290523-5	MW-21	Total/NA	Ground Water	6020B	433329
310-290523-6	MW-22	Total/NA	Ground Water	6020B	433329
310-290523-7	MW-23	Total/NA	Ground Water	6020B	433329
310-290523-8	MW-24	Total/NA	Ground Water	6020B	433329
310-290523-9	MW-26	Total/NA	Ground Water	6020B	433329
310-290523-10	MW-27	Total/NA	Ground Water	6020B	433329
310-290523-11	QC1	Total/NA	Ground Water	6020B	433329
310-290523-12	QC2	Total/NA	Ground Water	6020B	433329
MB 310-433329/1-A	Method Blank	Total/NA	Water	6020B	433329
LCS 310-433329/2-A	Lab Control Sample	Total/NA	Water	6020B	433329
310-290523-1 MS	MW-8	Total/NA	Ground Water	6020B	433329
310-290523-1 MSD	MW-8	Total/NA	Ground Water	6020B	433329
310-290523-11 DU	QC1	Total/NA	Ground Water	6020B	433329

Analysis Batch: 435065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	6020B	433329
310-290523-2	MW-10	Total/NA	Ground Water	6020B	433329
310-290523-3	MW-14A	Total/NA	Ground Water	6020B	433329
310-290523-4	MW-15A	Total/NA	Ground Water	6020B	433329

QC Association Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Metals (Continued)

Analysis Batch: 435065 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-5	MW-21	Total/NA	Ground Water	6020B	433329
310-290523-6	MW-22	Total/NA	Ground Water	6020B	433329
310-290523-7	MW-23	Total/NA	Ground Water	6020B	433329
310-290523-8	MW-24	Total/NA	Ground Water	6020B	433329
310-290523-9	MW-26	Total/NA	Ground Water	6020B	433329
310-290523-10	MW-27	Total/NA	Ground Water	6020B	433329
310-290523-11	QC1	Total/NA	Ground Water	6020B	433329
310-290523-12	QC2	Total/NA	Ground Water	6020B	433329
MB 310-433329/1-A	Method Blank	Total/NA	Water	6020B	433329
LCS 310-433329/2-A	Lab Control Sample	Total/NA	Water	6020B	433329
310-290523-1 MS	MW-8	Total/NA	Ground Water	6020B	433329
310-290523-1 MSD	MW-8	Total/NA	Ground Water	6020B	433329
310-290523-11 DU	QC1	Total/NA	Ground Water	6020B	433329

Analysis Batch: 435215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-3	MW-14A	Total/NA	Ground Water	6020B	433329

General Chemistry

Analysis Batch: 433123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-2	MW-10	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-3	MW-14A	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-4	MW-15A	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-5	MW-21	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-6	MW-22	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-7	MW-23	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-8	MW-24	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-9	MW-26	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-10	MW-27	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-11	QC1	Total/NA	Ground Water	SM 4500 H+ B	
310-290523-12	QC2	Total/NA	Ground Water	SM 4500 H+ B	
LCS 310-433123/29	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-290523-12 DU	QC2	Total/NA	Ground Water	SM 4500 H+ B	

Analysis Batch: 433336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-2	MW-10	Total/NA	Ground Water	SM 2540C	
310-290523-5	MW-21	Total/NA	Ground Water	SM 2540C	
310-290523-6	MW-22	Total/NA	Ground Water	SM 2540C	
310-290523-7	MW-23	Total/NA	Ground Water	SM 2540C	
310-290523-8	MW-24	Total/NA	Ground Water	SM 2540C	
310-290523-9	MW-26	Total/NA	Ground Water	SM 2540C	
310-290523-10	MW-27	Total/NA	Ground Water	SM 2540C	
310-290523-11	QC1	Total/NA	Ground Water	SM 2540C	
310-290523-12	QC2	Total/NA	Ground Water	SM 2540C	
MB 310-433336/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-433336/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Eurofins Cedar Falls

QC Association Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

General Chemistry

Analysis Batch: 433337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	SM 2540C	
310-290523-3	MW-14A	Total/NA	Ground Water	SM 2540C	
310-290523-4	MW-15A	Total/NA	Ground Water	SM 2540C	
MB 310-433337/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-433337/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 433438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	I-3765-85	
310-290523-2	MW-10	Total/NA	Ground Water	I-3765-85	
310-290523-3	MW-14A	Total/NA	Ground Water	I-3765-85	
310-290523-4	MW-15A	Total/NA	Ground Water	I-3765-85	
310-290523-5	MW-21	Total/NA	Ground Water	I-3765-85	
310-290523-6	MW-22	Total/NA	Ground Water	I-3765-85	
310-290523-7	MW-23	Total/NA	Ground Water	I-3765-85	
310-290523-11	QC1	Total/NA	Ground Water	I-3765-85	
310-290523-12	QC2	Total/NA	Ground Water	I-3765-85	
MB 310-433438/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-433438/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Rad

Prep Batch: 679741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	PrecSep-21	
310-290523-2	MW-10	Total/NA	Ground Water	PrecSep-21	
310-290523-3	MW-14A	Total/NA	Ground Water	PrecSep-21	
310-290523-4	MW-15A	Total/NA	Ground Water	PrecSep-21	
310-290523-5	MW-21	Total/NA	Ground Water	PrecSep-21	
310-290523-6	MW-22	Total/NA	Ground Water	PrecSep-21	
310-290523-7	MW-23	Total/NA	Ground Water	PrecSep-21	
310-290523-11	QC1	Total/NA	Ground Water	PrecSep-21	
310-290523-12	QC2	Total/NA	Ground Water	PrecSep-21	
MB 160-679741/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-679741/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 679742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290523-1	MW-8	Total/NA	Ground Water	PrecSep_0	
310-290523-2	MW-10	Total/NA	Ground Water	PrecSep_0	
310-290523-3	MW-14A	Total/NA	Ground Water	PrecSep_0	
310-290523-4	MW-15A	Total/NA	Ground Water	PrecSep_0	
310-290523-5	MW-21	Total/NA	Ground Water	PrecSep_0	
310-290523-6	MW-22	Total/NA	Ground Water	PrecSep_0	
310-290523-7	MW-23	Total/NA	Ground Water	PrecSep_0	
310-290523-11	QC1	Total/NA	Ground Water	PrecSep_0	
310-290523-12	QC2	Total/NA	Ground Water	PrecSep_0	
MB 160-679742/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-679742/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-8
 Date Collected: 09/11/24 10:00
 Date Received: 09/13/24 08:35

Lab Sample ID: 310-290523-1
 Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 12:35
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 14:28
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 13:55
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:10
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433337	MDU9	EET CF	09/16/24 21:05
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:34
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683026	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681958	SWS	EET SL	10/02/24 11:51

Client Sample ID: MW-10
 Date Collected: 09/10/24 12:10
 Date Received: 09/13/24 08:35

Lab Sample ID: 310-290523-2
 Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 12:47
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 14:56
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:01
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:13
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:35
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683026	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681958	SWS	EET SL	10/02/24 11:51

Client Sample ID: MW-14A
 Date Collected: 09/11/24 13:20
 Date Received: 09/13/24 08:35

Lab Sample ID: 310-290523-3
 Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 12:59
Total/NA	Analysis	9056A		50	433822	HE7K	EET CF	09/19/24 15:37
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:00

Eurofins Cedar Falls

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-14A

Lab Sample ID: 310-290523-3

Date Collected: 09/11/24 13:20

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		5	435215	NFT2	EET CF	10/03/24 13:24
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		4	435065	NFT2	EET CF	10/02/24 14:03
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:19
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433337	MDU9	EET CF	09/16/24 21:05
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:36
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683026	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681958	SWS	EET SL	10/02/24 11:51

Client Sample ID: MW-15A

Lab Sample ID: 310-290523-4

Date Collected: 09/11/24 14:20

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 13:12
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:04
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		4	435065	NFT2	EET CF	10/02/24 14:05
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:21
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433337	MDU9	EET CF	09/16/24 21:05
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:37
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683026	FLC	EET SL	10/10/24 17:45
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681767	SWS	EET SL	10/02/24 11:53

Client Sample ID: MW-21

Lab Sample ID: 310-290523-5

Date Collected: 09/10/24 13:50

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 13:24
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:07
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:08

Eurofins Cedar Falls

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-21

Lab Sample ID: 310-290523-5

Date Collected: 09/10/24 13:50

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:28
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:38
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683028	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681767	SWS	EET SL	10/02/24 11:53

Client Sample ID: MW-22

Lab Sample ID: 310-290523-6

Date Collected: 09/10/24 09:15

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 13:36
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:11
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:19
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:30
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:39
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683028	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681767	SWS	EET SL	10/02/24 11:53

Client Sample ID: MW-23

Lab Sample ID: 310-290523-7

Date Collected: 09/10/24 10:35

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 13:48
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:15
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:21
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:32
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-23

Lab Sample ID: 310-290523-7

Date Collected: 09/10/24 10:35

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:40
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683028	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681767	SWS	EET SL	10/02/24 11:53

Client Sample ID: MW-24

Lab Sample ID: 310-290523-8

Date Collected: 09/11/24 08:45

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 14:00
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:18
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:23
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:34
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:46

Client Sample ID: MW-26

Lab Sample ID: 310-290523-9

Date Collected: 09/11/24 12:25

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 14:12
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:22
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:25
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:36
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:47

Client Sample ID: MW-27

Lab Sample ID: 310-290523-10

Date Collected: 09/11/24 11:40

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 14:48
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:26

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: MW-27

Lab Sample ID: 310-290523-10

Date Collected: 09/11/24 11:40

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:27
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:38
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:48

Client Sample ID: QC1

Lab Sample ID: 310-290523-11

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 15:00
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:44
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:30
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:40
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:41
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683028	FLC	EET SL	10/10/24 17:44
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681767	SWS	EET SL	10/02/24 11:53

Client Sample ID: QC2

Lab Sample ID: 310-290523-12

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	433822	HE7K	EET CF	09/19/24 15:12
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	434788	NFT2	EET CF	09/30/24 15:51
Total/NA	Prep	3005A			433329	QTZ5	EET CF	09/17/24 09:30
Total/NA	Analysis	6020B		1	435065	NFT2	EET CF	10/02/24 14:34
Total/NA	Prep	7470A			433662	DHM5	EET CF	09/19/24 13:55
Total/NA	Analysis	7470A		1	433861	QTZ5	EET CF	09/20/24 15:43
Total/NA	Analysis	I-3765-85		1	433438	MDU9	EET CF	09/17/24 15:55
Total/NA	Analysis	SM 2540C		1	433336	MDU9	EET CF	09/16/24 20:09
Total/NA	Analysis	SM 4500 H+ B		1	433123	W9YR	EET CF	09/13/24 12:44
Total/NA	Prep	PrecSep-21			679741	BCE	EET SL	09/17/24 08:10
Total/NA	Analysis	9315		1	683028	FLC	EET SL	10/10/24 17:44

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Client Sample ID: QC2

Lab Sample ID: 310-290523-12

Date Collected: 09/10/24 12:00

Matrix: Ground Water

Date Received: 09/13/24 08:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep_0			679742	BCE	EET SL	09/17/24 08:14
Total/NA	Analysis	9320		1	681767	SWS	EET SL	10/02/24 11:55

Laboratory References:

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

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

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Accreditation/Certification Summary

Client: Muscatine Power & Water
Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Ground Water	Lithium

Laboratory: Eurofins St. Louis

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	373	12-01-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9315	PrecSep-21	Ground Water	Radium-226
9320	PrecSep_0	Ground Water	Radium-228

Method Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
SM 4500 H+ B	pH	SM	EET CF
9315	Radium-226 (GFPC)	SW846	EET SL
9320	Radium-228 (GFPC)	SW846	EET SL
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:

- 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.
- USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

- EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401
- EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





Environment Testing
America



310-290523 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Mosaic Fine Power & Water</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>9/3/24</u>	TIME <u>8:35</u>	Received By: <u>XB</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>3</u> <u>see</u>	
Cooler Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>2</u>	Correction Factor (°C)	<u>0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C).	<u>0.1</u>	Corrected Temp (°C)	<u>0.1</u>
Sample Container Temperature			
Container(s) used	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C)			
Corrected Temp (°C)			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Muscantine Power & Water</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>8-13-24</u>	TIME <u>0835</u>	Received By: <u>XB</u>
Delivery Type:	<input checked="" type="checkbox"/> UPS <u>1</u>	<input type="checkbox"/> FedEx	<input type="checkbox"/> FedEx Ground
	<input type="checkbox"/> Lab Courier	<input type="checkbox"/> Lab Field Services	<input type="checkbox"/> Client Drop-off
	<input type="checkbox"/> US Mail	<input type="checkbox"/> Spee-Dee	<input type="checkbox"/> Other: _____
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler ID: _____
Multiple Coolers?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler # <u>2</u> of <u>3</u>
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice	<input type="checkbox"/> Blue ice	<input type="checkbox"/> Dry ice
	<input type="checkbox"/> Other: _____	<input type="checkbox"/> NONE	
Thermometer ID:	<u>2</u>	Correction Factor (°C):	<u>0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C)	<u>2.3</u>	Corrected Temp (°C):	<u>2.3</u>
• Sample Container Temperature			
Container(s) used.	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			





Environment Testing
America

Place COC scanning label
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Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Muscataine Power & Water</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>9/13/24</u>	TIME <u>8:35</u>	Received By: <u>XB</u>
Delivery Type:	<input checked="" type="checkbox"/> UPS	<input type="checkbox"/> FedEx	<input type="checkbox"/> FedEx Ground
	<input type="checkbox"/> Lab Courier	<input type="checkbox"/> Lab Field Services	<input type="checkbox"/> Client Drop-off
	<input type="checkbox"/> US Mail	<input type="checkbox"/> Spee-Dee	<input type="checkbox"/> Other: _____
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler ID: _____
Multiple Coolers?	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Cooler # <u>3</u> of <u>3</u>
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice	<input type="checkbox"/> Blue ice	<input type="checkbox"/> Dry ice
	<input type="checkbox"/> Other: _____	<input type="checkbox"/> NONE	
Thermometer ID:	<u>2</u>	Correction Factor (°C):	<u>0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	<u>1.2</u>	Corrected Temp (°C):	<u>1.2</u>
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Michels, Bob C	Carrier Tracking No(s): 310-76304.1
Client Contact: Bob Michels		E-Mail: Bob.Michels@st.eurofins.com	State of Origin: Iowa
Shipping/Receiving		Accreditations Required (See note): State - Iowa	Page: 1 of 1
Company: TestAmerica Laboratories, Inc.		Job #:	Preservation Codes:
Address: 13715 Rider Trail North,		310-290523-1	
City: Earth City		Analysis Requested	
State, Zip: MO, 63045		Total Number of Containers	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		9315_Ra226/PreSep_21 Radium-226	
Email:		9315_Ra228/PreSep_0 Standard Target Lat	
Project Name: Muscatine Power & Water CCR Landfill		Perform MS/MSD (Yes or No)	
Site:		Field Filtered Sample (Yes or No)	
Project #: 31017990		Special Instructions/Note:	
SSOW#:		Other:	

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, A=air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Radium-226	9315_Ra228/PreSep_0 Standard Target Lat	Analysis Requested	Total Number of Containers	Special Instructions/Note:
MW-8 (310-290523-1)	9/11/24	10:00 Central	G	Water		X	X	X			2	
MW-10 (310-290523-2)	9/10/24	12:10 Central	G	Water		X	X	X			2	
MW-14A (310-290523-3)	9/11/24	13:20 Central	G	Water		X	X	X			2	
MW-15A (310-290523-4)	9/11/24	14:20 Central	G	Water		X	X	X			2	
MW-21 (310-290523-5)	9/10/24	13:50 Central	G	Water		X	X	X			2	
MW-22 (310-290523-6)	9/10/24	09:15 Central	G	Water		X	X	X			2	
MW-23 (310-290523-7)	9/10/24	10:35 Central	G	Water		X	X	X			2	
QC1 (310-290523-11)	9/10/24	12:00 Central	G	Water		X	X	X			2	
QC2 (310-290523-12)	9/10/24	12:00 Central	G	Water		X	X	X			2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC 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/test/main being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification

Unconfirmed Return To Client Disposal By Lab Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) **Primary Deliverable Rank: 2**

Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____ Method of Shipment: _____

Relinquished by: _____ Date/Time: **SEP 16 2024 08:55** Company: **EMSK**

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No **Custody Seal No.:** _____

Cooler Temperature(s) °C and Other Remarks: _____



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-290523-1

SDG Number:

Login Number: 290523

List Number: 1

Creator: Collins, Charlotte G

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-290523-1

SDG Number:

Login Number: 290523

List Number: 2

Creator: Worthington, Sierra M

List Source: Eurofins St. Louis

List Creation: 09/16/24 11:28 AM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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	

Tracer/Carrier Summary

Client: Muscatine Power & Water
 Project/Site: Muscatine Power & Water CCR Landfill

Job ID: 310-290523-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
310-290523-1	MW-8	89.8	
310-290523-2	MW-10	92.3	
310-290523-3	MW-14A	94.3	
310-290523-4	MW-15A	96.3	
310-290523-5	MW-21	91.3	
310-290523-6	MW-22	89.8	
310-290523-7	MW-23	94.5	
310-290523-11	QC1	89.6	
310-290523-12	QC2	93.1	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
LCS 160-679741/2-A	Lab Control Sample	93.5	
MB 160-679741/1-A	Method Blank	97.8	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
310-290523-1	MW-8	89.8	79.6
310-290523-2	MW-10	92.3	78.9
310-290523-3	MW-14A	94.3	80.7
310-290523-4	MW-15A	96.3	81.9
310-290523-5	MW-21	91.3	75.1
310-290523-6	MW-22	89.8	77.8
310-290523-7	MW-23	94.5	90.5
310-290523-11	QC1	89.6	78.9
310-290523-12	QC2	93.1	75.5
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
LCS 160-679742/2-A	Lab Control Sample	93.5	76.3

Eurofins Cedar Falls

Tracer/Carrier Summary

Client: Muscatine Power & Water

Job ID: 310-290523-1

Project/Site: Muscatine Power & Water CCR Landfill

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

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba	Y
		(30-110)	(30-110)
MB 160-679742/1-A	Method Blank	97.8	77.8

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

1

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14



ANALYTICAL REPORT

PREPARED FOR

Attn: Sam Bennett
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Generated 9/26/2024 3:43:51 PM

JOB DESCRIPTION

MPW CCR - State Parameters

JOB NUMBER

310-290689-1

Eurofins Cedar Falls

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.

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 Environment Testing North Central, LLC Project Manager.

Authorization



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Authorized for release by
Bob Michels, Project Manager I
Bob.Michels@et.eurofinsus.com
(319)277-2401



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Case Narrative

Client: Muscatine Power & Water
Project: MPW CCR - State Parameters

Job ID: 310-290689-1

Job ID: 310-290689-1

Eurofins Cedar Falls

Job Narrative 310-290689-1

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 sample was received on 9/17/2024 8:30 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.3°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following sample was diluted due to the nature of the sample matrix: SW-26 (310-290689-1). 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.

Eurofins Cedar Falls

Sample Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-290689-1	SW-26	Water	09/12/24 12:00	09/17/24 08:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Muscatine Power & Water
 Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Client Sample ID: SW-26

Lab Sample ID: 310-290689-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	18.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	52.2		5.00		mg/L	5		9056A	Total/NA
Aluminum	0.0588		0.0500		mg/L	1		6020B	Total/NA
Arsenic	0.0371		0.00200		mg/L	1		6020B	Total/NA
Barium	0.0808		0.00200		mg/L	1		6020B	Total/NA
Boron	1.38		0.100		mg/L	1		6020B	Total/NA
Calcium	57.3		0.500		mg/L	1		6020B	Total/NA
Iron	0.200		0.100		mg/L	1		6020B	Total/NA
Magnesium	20.6		0.500		mg/L	1		6020B	Total/NA
Manganese	0.385		0.0100		mg/L	1		6020B	Total/NA
Molybdenum	0.00433		0.00200		mg/L	1		6020B	Total/NA
Strontium	0.172		0.00100		mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Client Sample ID: SW-26
 Date Collected: 09/12/24 12:00
 Date Received: 09/17/24 08:30

Lab Sample ID: 310-290689-1
 Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18.5		5.00		mg/L			09/24/24 12:09	5
Fluoride	<1.00		1.00		mg/L			09/24/24 12:09	5
Sulfate	52.2		5.00		mg/L			09/24/24 12:09	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0588		0.0500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Antimony	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:39	1
Arsenic	0.0371		0.00200		mg/L		09/18/24 09:00	09/19/24 13:39	1
Barium	0.0808		0.00200		mg/L		09/18/24 09:00	09/19/24 13:39	1
Beryllium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/23/24 18:17	1
Boron	1.38		0.100		mg/L		09/18/24 09:00	09/24/24 15:25	1
Cadmium	<0.000200		0.000200		mg/L		09/18/24 09:00	09/23/24 18:17	1
Calcium	57.3		0.500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Cobalt	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Copper	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Iron	0.200		0.100		mg/L		09/18/24 09:00	09/19/24 13:39	1
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Lithium	<0.0100		0.0100		mg/L		09/18/24 09:00	09/23/24 18:17	1
Magnesium	20.6		0.500		mg/L		09/18/24 09:00	09/23/24 18:17	1
Manganese	0.385		0.0100		mg/L		09/18/24 09:00	09/23/24 18:17	1
Molybdenum	0.00433		0.00200		mg/L		09/18/24 09:00	09/19/24 13:39	1
Nickel	<0.00500		0.00500		mg/L		09/18/24 09:00	09/23/24 18:17	1
Selenium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Strontium	0.172		0.00100		mg/L		09/18/24 09:00	09/19/24 13:39	1
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 13:39	1
Vanadium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:39	1
Zinc	<0.0200		0.0200		mg/L		09/18/24 09:00	09/19/24 13:39	1

Definitions/Glossary

Client: Muscatine Power & Water
Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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
DLC	Decision Level Concentration (Radiochemistry)
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
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-434244/3
 Matrix: Water
 Analysis Batch: 434244

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			09/24/24 09:27	1
Fluoride	<0.200		0.200		mg/L			09/24/24 09:27	1
Sulfate	<1.00		1.00		mg/L			09/24/24 09:27	1

Lab Sample ID: LCS 310-434244/4
 Matrix: Water
 Analysis Batch: 434244

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.690		mg/L		97	90 - 110
Fluoride	2.00	1.889		mg/L		94	90 - 110
Sulfate	10.0	10.00		mg/L		100	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-433443/1-A
 Matrix: Water
 Analysis Batch: 433771

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 433443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Antimony	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Arsenic	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Barium	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Beryllium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Boron	<0.100		0.100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Calcium	<0.500		0.500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Cobalt	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Copper	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Iron	<0.100		0.100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Lithium	<0.0100		0.0100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Molybdenum	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Selenium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Strontium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Vanadium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Zinc	<0.0200		0.0200		mg/L		09/18/24 09:00	09/19/24 12:36	1

Lab Sample ID: MB 310-433443/1-A
 Matrix: Water
 Analysis Batch: 434059

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 433443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.000200		0.000200		mg/L		09/18/24 09:00	09/23/24 16:50	1
Magnesium	<0.500		0.500		mg/L		09/18/24 09:00	09/23/24 16:50	1
Manganese	<0.0100		0.0100		mg/L		09/18/24 09:00	09/23/24 16:50	1
Nickel	<0.00500		0.00500		mg/L		09/18/24 09:00	09/23/24 16:50	1

Eurofins Cedar Falls

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

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

Lab Sample ID: LCS 310-433443/2-A
Matrix: Water
Analysis Batch: 433771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	0.200	0.2147		mg/L		107	80 - 120
Antimony	0.200	0.2206		mg/L		110	80 - 120
Arsenic	0.200	0.2209		mg/L		110	80 - 120
Barium	0.100	0.1070		mg/L		107	80 - 120
Beryllium	0.100	0.1064		mg/L		106	80 - 120
Boron	0.200	0.2112		mg/L		106	80 - 120
Calcium	2.00	2.075		mg/L		104	80 - 120
Chromium	0.100	0.09961		mg/L		100	80 - 120
Cobalt	0.100	0.1014		mg/L		101	80 - 120
Copper	0.200	0.2102		mg/L		105	80 - 120
Iron	0.200	0.2175		mg/L		109	80 - 120
Lead	0.200	0.2130		mg/L		106	80 - 120
Lithium	0.200	0.2218		mg/L		111	80 - 120
Molybdenum	0.200	0.2161		mg/L		108	80 - 120
Selenium	0.400	0.4106		mg/L		103	80 - 120
Strontium	0.200	0.2058		mg/L		103	80 - 120
Thallium	0.100	0.1031		mg/L		103	80 - 120
Vanadium	0.100	0.1062		mg/L		106	80 - 120
Zinc	0.200	0.2045		mg/L		102	80 - 120

Lab Sample ID: LCS 310-433443/2-A
Matrix: Water
Analysis Batch: 434059

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	0.100	0.09573		mg/L		96	80 - 120
Magnesium	2.00	2.144		mg/L		107	80 - 120
Manganese	0.100	0.1048		mg/L		105	80 - 120
Nickel	0.200	0.2031		mg/L		102	80 - 120

QC Association Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

HPLC/IC

Analysis Batch: 434244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290689-1	SW-26	Total/NA	Water	9056A	
MB 310-434244/3	Method Blank	Total/NA	Water	9056A	
LCS 310-434244/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 433443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290689-1	SW-26	Total/NA	Water	3005A	
MB 310-433443/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-433443/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 433771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290689-1	SW-26	Total/NA	Water	6020B	433443
MB 310-433443/1-A	Method Blank	Total/NA	Water	6020B	433443
LCS 310-433443/2-A	Lab Control Sample	Total/NA	Water	6020B	433443

Analysis Batch: 434059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290689-1	SW-26	Total/NA	Water	6020B	433443
MB 310-433443/1-A	Method Blank	Total/NA	Water	6020B	433443
LCS 310-433443/2-A	Lab Control Sample	Total/NA	Water	6020B	433443

Analysis Batch: 434220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290689-1	SW-26	Total/NA	Water	6020B	433443

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Client Sample ID: SW-26

Lab Sample ID: 310-290689-1

Date Collected: 09/12/24 12:00

Matrix: Water

Date Received: 09/17/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	434244	HE7K	EET CF	09/24/24 12:09
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434059	NFT2	EET CF	09/23/24 18:17
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	433771	NFT2	EET CF	09/19/24 13:39
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434220	NFT2	EET CF	09/24/24 15:25

Laboratory References:

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



Accreditation/Certification Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Water	Lithium

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Method Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - State Parameters

Job ID: 310-290689-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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

Laboratory References:

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

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Environment Testing
America



310-290689 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client <u>Muscantine Power Water</u>			
City/State.	CITY	STATE	Project
Receipt Information			
Date/Time Received	DATE <u>9/17/24</u>	TIME <u>0630</u>	Received By: <u>JJ</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler ID: _____			
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler # _____ of _____			
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes. Which VOA samples are in cooler? ↓			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID <u>Y</u>		Correction Factor (°C): <u>TD</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>-0.3</u>		Corrected Temp (°C): <u>-0.3</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-290689-1

Login Number: 290689

List Number: 1

Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

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



ANALYTICAL REPORT

PREPARED FOR

Attn: Sam Bennett
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Generated 10/16/2024 9:24:55 AM

JOB DESCRIPTION

MPW CCR - Landfill Fall 2024

JOB NUMBER

310-290691-1

Eurofins Cedar Falls

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.

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 Environment Testing North Central, LLC Project Manager.

Authorization



Generated
10/16/2024 9:24:55 AM

Authorized for release by
Bob Michels, Project Manager I
Bob.Michels@et.eurofinsus.com
(319)277-2401



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Case Narrative

Client: Muscatine Power & Water
Project: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Job ID: 310-290691-1

Eurofins Cedar Falls

Job Narrative 310-290691-1

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 9/17/2024 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was -0.3°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-4B (310-290691-1), MW-5B (310-290691-2) and MW-6A (310-290691-3). 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

Method 6020B: The following sample was diluted due to the nature of the sample matrix: Leachate (310-290691-4) at 100.0. 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.

General Chemistry

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

Gas Flow Proportional Counter

Method 9320_Ra228: Radium-228 batch 680337

The detection goal was not met for the following sample due to the reduced volume used in prep attributed to the presence of matrix interferences: Leachate (310-290691-4). Analytical results are reported with the detection limit achieved.

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.

Eurofins Cedar Falls

Sample Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-290691-1	MW-4B	Water	09/12/24 10:55	09/17/24 08:30
310-290691-2	MW-5B	Water	09/12/24 10:35	09/17/24 08:30
310-290691-3	MW-6A	Water	09/12/24 11:20	09/17/24 08:30
310-290691-4	Leachate	Water	09/12/24 12:35	09/17/24 08:30

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Detection Summary

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-4B

Lab Sample ID: 310-290691-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14.6		5.00		mg/L	5		9056A	Total/NA
Sulfate	65.8		5.00		mg/L	5		9056A	Total/NA
Barium	0.184		0.00200		mg/L	1		6020B	Total/NA
Calcium	102		0.500		mg/L	1		6020B	Total/NA
Cobalt	0.00280		0.000500		mg/L	1		6020B	Total/NA
Iron	0.797		0.100		mg/L	1		6020B	Total/NA
Magnesium	35.9		0.500		mg/L	1		6020B	Total/NA
Manganese	0.491		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.103		0.00100		mg/L	1		6020B	Total/NA
Total Dissolved Solids	410		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-5B

Lab Sample ID: 310-290691-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	40.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	50.4		5.00		mg/L	5		9056A	Total/NA
Barium	0.258		0.00200		mg/L	1		6020B	Total/NA
Calcium	123		0.500		mg/L	1		6020B	Total/NA
Iron	2.06		0.100		mg/L	1		6020B	Total/NA
Magnesium	36.4		0.500		mg/L	1		6020B	Total/NA
Manganese	0.554		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.162		0.00100		mg/L	1		6020B	Total/NA
Total Suspended Solids	4.88		1.88		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	520		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-6A

Lab Sample ID: 310-290691-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14.4		5.00		mg/L	5		9056A	Total/NA
Sulfate	16.3		5.00		mg/L	5		9056A	Total/NA
Barium	0.249		0.00200		mg/L	1		6020B	Total/NA
Calcium	99.4		0.500		mg/L	1		6020B	Total/NA
Iron	3.60		0.100		mg/L	1		6020B	Total/NA
Magnesium	30.8		0.500		mg/L	1		6020B	Total/NA
Manganese	0.118		0.0100		mg/L	1		6020B	Total/NA
Strontium	0.188		0.00100		mg/L	1		6020B	Total/NA
Total Suspended Solids	8.25		1.88		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	382		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Leachate

Lab Sample ID: 310-290691-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	55.0		5.00		mg/L	5		9056A	Total/NA
Fluoride	2.47		1.00		mg/L	5		9056A	Total/NA
Sulfate	4840		50.0		mg/L	50		9056A	Total/NA
Antimony	0.00312		0.00200		mg/L	1		6020B	Total/NA
Arsenic	1.64		0.0800		mg/L	40		6020B	Total/NA
Barium	0.0241		0.00200		mg/L	1		6020B	Total/NA
Boron	70.4		4.00		mg/L	40		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: Leachate (Continued)

Lab Sample ID: 310-290691-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	531		10.0		mg/L	20		6020B	Total/NA
Lithium	0.330		0.0400		mg/L	4		6020B	Total/NA
Magnesium	48.2		10.0		mg/L	20		6020B	Total/NA
Manganese	0.458		0.200		mg/L	20		6020B	Total/NA
Molybdenum	0.775		0.0400		mg/L	20		6020B	Total/NA
Strontium	4.02		0.00400		mg/L	4		6020B	Total/NA
Total Suspended Solids	3.25		1.88		mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	7880		250		mg/L	1		SM 2540C	Total/NA
pH	8.8	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-4B

Lab Sample ID: 310-290691-1

Date Collected: 09/12/24 10:55

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14.6		5.00		mg/L			09/24/24 12:21	5
Fluoride	<1.00		1.00		mg/L			09/24/24 12:21	5
Sulfate	65.8		5.00		mg/L			09/24/24 12:21	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Antimony	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:41	1
Arsenic	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:41	1
Barium	0.184		0.00200		mg/L		09/18/24 09:00	09/19/24 13:41	1
Beryllium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/23/24 18:21	1
Boron	<0.100		0.100		mg/L		09/18/24 09:00	09/24/24 15:28	1
Cadmium	<0.000200		0.000200		mg/L		09/18/24 09:00	09/23/24 18:21	1
Calcium	102		0.500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Cobalt	0.00280		0.000500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Copper	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Iron	0.797		0.100		mg/L		09/18/24 09:00	09/19/24 13:41	1
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Lithium	<0.0100		0.0100		mg/L		09/18/24 09:00	09/23/24 18:21	1
Magnesium	35.9		0.500		mg/L		09/18/24 09:00	09/23/24 18:21	1
Manganese	0.491		0.0100		mg/L		09/18/24 09:00	09/23/24 18:21	1
Molybdenum	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:41	1
Nickel	<0.00500		0.00500		mg/L		09/18/24 09:00	09/23/24 18:21	1
Selenium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Strontium	0.103		0.00100		mg/L		09/18/24 09:00	09/19/24 13:41	1
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 13:41	1
Vanadium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:41	1
Zinc	<0.0200		0.0200		mg/L		09/18/24 09:00	09/19/24 13:41	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/26/24 13:00	09/26/24 16:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88		mg/L			09/18/24 11:05	1
Total Dissolved Solids (SM 2540C)	410		50.0		mg/L			09/18/24 19:55	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.5	HF	1.0		SU			09/17/24 10:36	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.166		0.107	0.108	1.00	0.149	pCi/L	09/20/24 09:04	10/14/24 23:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110					09/20/24 09:04	10/14/24 23:43	1

Eurofins Cedar Falls

Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-4B

Lab Sample ID: 310-290691-1

Date Collected: 09/12/24 10:55

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.13		0.453	0.464	1.00	0.585	pCi/L	09/20/24 09:10	10/09/24 12:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110					09/20/24 09:10	10/09/24 12:05	1
Y Carrier	83.7		30 - 110					09/20/24 09:10	10/09/24 12:05	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.30		0.465	0.476	5.00	0.585	pCi/L		10/15/24 11:30	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-5B

Lab Sample ID: 310-290691-2

Date Collected: 09/12/24 10:35

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	40.5		5.00		mg/L			09/24/24 12:33	5
Fluoride	<1.00		1.00		mg/L			09/24/24 12:33	5
Sulfate	50.4		5.00		mg/L			09/24/24 12:33	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Antimony	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:43	1
Arsenic	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:43	1
Barium	0.258		0.00200		mg/L		09/18/24 09:00	09/19/24 13:43	1
Beryllium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/23/24 18:24	1
Boron	<0.100		0.100		mg/L		09/18/24 09:00	09/24/24 15:30	1
Cadmium	<0.000200		0.000200		mg/L		09/18/24 09:00	09/23/24 18:24	1
Calcium	123		0.500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Cobalt	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Copper	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Iron	2.06		0.100		mg/L		09/18/24 09:00	09/19/24 13:43	1
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Lithium	<0.0100		0.0100		mg/L		09/18/24 09:00	09/23/24 18:24	1
Magnesium	36.4		0.500		mg/L		09/18/24 09:00	09/23/24 18:24	1
Manganese	0.554		0.0100		mg/L		09/18/24 09:00	09/23/24 18:24	1
Molybdenum	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:43	1
Nickel	<0.00500		0.00500		mg/L		09/18/24 09:00	09/23/24 18:24	1
Selenium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Strontium	0.162		0.00100		mg/L		09/18/24 09:00	09/19/24 13:43	1
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 13:43	1
Vanadium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:43	1
Zinc	<0.0200		0.0200		mg/L		09/18/24 09:00	09/19/24 13:43	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/26/24 13:00	09/26/24 16:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	4.88		1.88		mg/L			09/18/24 11:05	1
Total Dissolved Solids (SM 2540C)	520		50.0		mg/L			09/18/24 19:55	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.3	HF	1.0		SU			09/17/24 10:35	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.264		0.122	0.124	1.00	0.147	pCi/L	09/20/24 09:04	10/14/24 23:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		30 - 110					09/20/24 09:04	10/14/24 23:43	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-5B

Lab Sample ID: 310-290691-2

Date Collected: 09/12/24 10:35

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.31		0.459	0.475	1.00	0.550	pCi/L	09/20/24 09:10	10/09/24 12:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		30 - 110					09/20/24 09:10	10/09/24 12:05	1
Y Carrier	78.9		30 - 110					09/20/24 09:10	10/09/24 12:05	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.57		0.475	0.491	5.00	0.550	pCi/L		10/15/24 11:30	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-6A

Lab Sample ID: 310-290691-3

Date Collected: 09/12/24 11:20

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14.4		5.00		mg/L			09/24/24 12:44	5
Fluoride	<1.00		1.00		mg/L			09/24/24 12:44	5
Sulfate	16.3		5.00		mg/L			09/24/24 12:44	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Antimony	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:45	1
Arsenic	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:45	1
Barium	0.249		0.00200		mg/L		09/18/24 09:00	09/19/24 13:45	1
Beryllium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/23/24 18:28	1
Boron	<0.100		0.100		mg/L		09/18/24 09:00	09/24/24 15:32	1
Cadmium	<0.000200		0.000200		mg/L		09/18/24 09:00	09/23/24 18:28	1
Calcium	99.4		0.500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Cobalt	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Copper	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Iron	3.60		0.100		mg/L		09/18/24 09:00	09/19/24 13:45	1
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Lithium	<0.0100		0.0100		mg/L		09/18/24 09:00	09/23/24 18:28	1
Magnesium	30.8		0.500		mg/L		09/18/24 09:00	09/23/24 18:28	1
Manganese	0.118		0.0100		mg/L		09/18/24 09:00	09/23/24 18:28	1
Molybdenum	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 13:45	1
Nickel	<0.00500		0.00500		mg/L		09/18/24 09:00	09/23/24 18:28	1
Selenium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Strontium	0.188		0.00100		mg/L		09/18/24 09:00	09/19/24 13:45	1
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 13:45	1
Vanadium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:45	1
Zinc	<0.0200		0.0200		mg/L		09/18/24 09:00	09/19/24 13:45	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/26/24 13:00	09/26/24 16:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	8.25		1.88		mg/L			09/18/24 11:05	1
Total Dissolved Solids (SM 2540C)	382		50.0		mg/L			09/18/24 19:55	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.5	HF	1.0		SU			09/17/24 10:32	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.180		0.113	0.114	1.00	0.154	pCi/L	09/20/24 09:04	10/14/24 23:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.6		30 - 110					09/20/24 09:04	10/14/24 23:43	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-6A

Lab Sample ID: 310-290691-3

Date Collected: 09/12/24 11:20

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.696		0.442	0.447	1.00	0.652	pCi/L	09/20/24 09:10	10/09/24 12:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.6		30 - 110					09/20/24 09:10	10/09/24 12:05	1
Y Carrier	78.5		30 - 110					09/20/24 09:10	10/09/24 12:05	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.876		0.456	0.461	5.00	0.652	pCi/L		10/15/24 11:30	1



Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: Leachate

Lab Sample ID: 310-290691-4

Date Collected: 09/12/24 12:35

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	55.0		5.00		mg/L			09/24/24 12:56	5
Fluoride	2.47		1.00		mg/L			09/24/24 12:56	5
Sulfate	4840		50.0		mg/L			09/24/24 14:52	50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<5.00		5.00		mg/L		09/18/24 09:00	10/01/24 13:13	100
Antimony	0.00312		0.00200		mg/L		09/18/24 09:00	09/19/24 13:47	1
Arsenic	1.64		0.0800		mg/L		09/18/24 09:00	09/27/24 17:15	40
Barium	0.0241		0.00200		mg/L		09/18/24 09:00	09/19/24 13:47	1
Beryllium	<0.00400		0.00400		mg/L		09/18/24 09:00	09/23/24 18:32	4
Boron	70.4		4.00		mg/L		09/18/24 09:00	09/27/24 17:15	40
Cadmium	<0.000800		0.000800		mg/L		09/18/24 09:00	09/23/24 18:32	4
Calcium	531		10.0		mg/L		09/18/24 09:00	09/24/24 15:34	20
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 13:47	1
Cobalt	<0.0500		0.0500		mg/L		09/18/24 09:00	10/01/24 13:13	100
Copper	<0.100		0.100		mg/L		09/18/24 09:00	09/24/24 15:34	20
Iron	<0.400		0.400		mg/L		09/18/24 09:00	09/23/24 18:32	4
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 13:47	1
Lithium	0.330		0.0400		mg/L		09/18/24 09:00	09/23/24 18:32	4
Magnesium	48.2		10.0		mg/L		09/18/24 09:00	09/24/24 15:34	20
Manganese	0.458		0.200		mg/L		09/18/24 09:00	09/24/24 15:34	20
Molybdenum	0.775		0.0400		mg/L		09/18/24 09:00	09/24/24 15:34	20
Nickel	<0.0200		0.0200		mg/L		09/18/24 09:00	09/23/24 18:32	4
Selenium	<0.100		0.100		mg/L		09/18/24 09:00	09/24/24 15:34	20
Strontium	4.02		0.00400		mg/L		09/18/24 09:00	09/23/24 18:32	4
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 13:47	1
Vanadium	<0.100		0.100		mg/L		09/18/24 09:00	09/24/24 15:34	20
Zinc	<0.400		0.400		mg/L		09/18/24 09:00	09/24/24 15:34	20

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		09/26/24 13:00	09/26/24 16:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	3.25		1.88		mg/L			09/18/24 11:05	1
Total Dissolved Solids (SM 2540C)	7880		250		mg/L			09/18/24 19:55	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	8.8	HF	1.0		SU			09/17/24 10:34	1

Method: SW846 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.59		0.479	0.532	1.00	0.313	pCi/L	09/20/24 09:04	10/14/24 23:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.2		30 - 110					09/20/24 09:04	10/14/24 23:43	1

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Client Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: Leachate

Lab Sample ID: 310-290691-4

Date Collected: 09/12/24 12:35

Matrix: Water

Date Received: 09/17/24 08:30

Method: SW846 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.95	G	1.02	1.03	1.00	1.44	pCi/L	09/20/24 09:10	10/09/24 12:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.2		30 - 110					09/20/24 09:10	10/09/24 12:05	1
Y Carrier	76.6		30 - 110					09/20/24 09:10	10/09/24 12:05	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	4.54		1.13	1.16	5.00	1.44	pCi/L		10/15/24 11:30	1



Definitions/Glossary

Client: Muscatine Power & Water
Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

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
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
DLC	Decision Level Concentration (Radiochemistry)
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
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-434244/3
Matrix: Water
Analysis Batch: 434244

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			09/24/24 09:27	1
Fluoride	<0.200		0.200		mg/L			09/24/24 09:27	1
Sulfate	<1.00		1.00		mg/L			09/24/24 09:27	1

Lab Sample ID: LCS 310-434244/4
Matrix: Water
Analysis Batch: 434244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.690		mg/L		97	90 - 110
Fluoride	2.00	1.889		mg/L		94	90 - 110
Sulfate	10.0	10.00		mg/L		100	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-433443/1-A
Matrix: Water
Analysis Batch: 433771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0500		0.0500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Antimony	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Arsenic	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Barium	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Beryllium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Boron	<0.100		0.100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Calcium	<0.500		0.500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Chromium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Cobalt	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Copper	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Iron	<0.100		0.100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Lead	<0.000500		0.000500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Lithium	<0.0100		0.0100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Molybdenum	<0.00200		0.00200		mg/L		09/18/24 09:00	09/19/24 12:36	1
Selenium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Strontium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Thallium	<0.00100		0.00100		mg/L		09/18/24 09:00	09/19/24 12:36	1
Vanadium	<0.00500		0.00500		mg/L		09/18/24 09:00	09/19/24 12:36	1
Zinc	<0.0200		0.0200		mg/L		09/18/24 09:00	09/19/24 12:36	1

Lab Sample ID: MB 310-433443/1-A
Matrix: Water
Analysis Batch: 434059

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.000200		0.000200		mg/L		09/18/24 09:00	09/23/24 16:50	1
Magnesium	<0.500		0.500		mg/L		09/18/24 09:00	09/23/24 16:50	1
Manganese	<0.0100		0.0100		mg/L		09/18/24 09:00	09/23/24 16:50	1
Nickel	<0.00500		0.00500		mg/L		09/18/24 09:00	09/23/24 16:50	1

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QC Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

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

Lab Sample ID: LCS 310-433443/2-A
Matrix: Water
Analysis Batch: 433771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2147		mg/L		107	80 - 120
Antimony	0.200	0.2206		mg/L		110	80 - 120
Arsenic	0.200	0.2209		mg/L		110	80 - 120
Barium	0.100	0.1070		mg/L		107	80 - 120
Beryllium	0.100	0.1064		mg/L		106	80 - 120
Boron	0.200	0.2112		mg/L		106	80 - 120
Calcium	2.00	2.075		mg/L		104	80 - 120
Chromium	0.100	0.09961		mg/L		100	80 - 120
Cobalt	0.100	0.1014		mg/L		101	80 - 120
Copper	0.200	0.2102		mg/L		105	80 - 120
Iron	0.200	0.2175		mg/L		109	80 - 120
Lead	0.200	0.2130		mg/L		106	80 - 120
Lithium	0.200	0.2218		mg/L		111	80 - 120
Molybdenum	0.200	0.2161		mg/L		108	80 - 120
Selenium	0.400	0.4106		mg/L		103	80 - 120
Strontium	0.200	0.2058		mg/L		103	80 - 120
Thallium	0.100	0.1031		mg/L		103	80 - 120
Vanadium	0.100	0.1062		mg/L		106	80 - 120
Zinc	0.200	0.2045		mg/L		102	80 - 120

Lab Sample ID: LCS 310-433443/2-A
Matrix: Water
Analysis Batch: 434059

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	0.100	0.09573		mg/L		96	80 - 120
Magnesium	2.00	2.144		mg/L		107	80 - 120
Manganese	0.100	0.1048		mg/L		105	80 - 120
Nickel	0.200	0.2031		mg/L		102	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-434284/1-A
Matrix: Water
Analysis Batch: 434462

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 434284

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	<0.000200		0.000200		mg/L		09/26/24 13:00	09/26/24 16:19	1

Lab Sample ID: LCS 310-434284/2-A
Matrix: Water
Analysis Batch: 434462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 434284

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001613		mg/L		97	80 - 120

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-433545/1
 Matrix: Water
 Analysis Batch: 433545

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00		mg/L			09/18/24 11:05	1

Lab Sample ID: LCS 310-433545/2
 Matrix: Water
 Analysis Batch: 433545

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	105.0		mg/L		105	81 - 116

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

Lab Sample ID: MB 310-433602/1
 Matrix: Water
 Analysis Batch: 433602

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			09/18/24 19:55	1

Lab Sample ID: LCS 310-433602/2
 Matrix: Water
 Analysis Batch: 433602

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	1038		mg/L		104	88 - 110

Lab Sample ID: 310-290691-1 DU
 Matrix: Water
 Analysis Batch: 433602

Client Sample ID: MW-4B
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	410		396.0		mg/L		3	16

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-433387/1
 Matrix: Water
 Analysis Batch: 433387

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.0		SU		100	98 - 102

Lab Sample ID: 310-290691-3 DU
 Matrix: Water
 Analysis Batch: 433387

Client Sample ID: MW-6A
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.5	HF	7.5		SU		0.1	20

QC Sample Results

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-680336/1-A
Matrix: Water
Analysis Batch: 683516

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680336

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	<0.137	U	0.0783	0.0784	1.00	0.137	pCi/L	09/20/24 09:04	10/14/24 09:12	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	89.6		30 - 110		09/20/24 09:04	10/14/24 09:12	1			

Lab Sample ID: LCS 160-680336/2-A
Matrix: Water
Analysis Batch: 683516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680336

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	9.58	10.16		1.13	1.00	0.189	pCi/L	106	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	84.6		30 - 110						

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-680337/1-A
Matrix: Water
Analysis Batch: 682743

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680337

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.6426		0.407	0.411	1.00	0.602	pCi/L	09/20/24 09:10	10/09/24 11:58	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	89.6		30 - 110		09/20/24 09:10	10/09/24 11:58	1			
Y Carrier	79.3		30 - 110		09/20/24 09:10	10/09/24 11:58	1			

Lab Sample ID: LCS 160-680337/2-A
Matrix: Water
Analysis Batch: 682743

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680337

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.44	9.823		1.39	1.00	0.594	pCi/L	116	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	84.6		30 - 110						
Y Carrier	79.6		30 - 110						

QC Association Summary

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

HPLC/IC

Analysis Batch: 434244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	9056A	
310-290691-2	MW-5B	Total/NA	Water	9056A	
310-290691-3	MW-6A	Total/NA	Water	9056A	
310-290691-4	Leachate	Total/NA	Water	9056A	
310-290691-4	Leachate	Total/NA	Water	9056A	
MB 310-434244/3	Method Blank	Total/NA	Water	9056A	
LCS 310-434244/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 433443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	3005A	
310-290691-2	MW-5B	Total/NA	Water	3005A	
310-290691-3	MW-6A	Total/NA	Water	3005A	
310-290691-4	Leachate	Total/NA	Water	3005A	
MB 310-433443/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-433443/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 433771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	6020B	433443
310-290691-2	MW-5B	Total/NA	Water	6020B	433443
310-290691-3	MW-6A	Total/NA	Water	6020B	433443
310-290691-4	Leachate	Total/NA	Water	6020B	433443
MB 310-433443/1-A	Method Blank	Total/NA	Water	6020B	433443
LCS 310-433443/2-A	Lab Control Sample	Total/NA	Water	6020B	433443

Analysis Batch: 434059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	6020B	433443
310-290691-2	MW-5B	Total/NA	Water	6020B	433443
310-290691-3	MW-6A	Total/NA	Water	6020B	433443
310-290691-4	Leachate	Total/NA	Water	6020B	433443
MB 310-433443/1-A	Method Blank	Total/NA	Water	6020B	433443
LCS 310-433443/2-A	Lab Control Sample	Total/NA	Water	6020B	433443

Analysis Batch: 434220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	6020B	433443
310-290691-2	MW-5B	Total/NA	Water	6020B	433443
310-290691-3	MW-6A	Total/NA	Water	6020B	433443
310-290691-4	Leachate	Total/NA	Water	6020B	433443

Prep Batch: 434284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	7470A	
310-290691-2	MW-5B	Total/NA	Water	7470A	
310-290691-3	MW-6A	Total/NA	Water	7470A	
310-290691-4	Leachate	Total/NA	Water	7470A	
MB 310-434284/1-A	Method Blank	Total/NA	Water	7470A	

Eurofins Cedar Falls

QC Association Summary

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Metals (Continued)

Prep Batch: 434284 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-434284/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 434462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	7470A	434284
310-290691-2	MW-5B	Total/NA	Water	7470A	434284
310-290691-3	MW-6A	Total/NA	Water	7470A	434284
310-290691-4	Leachate	Total/NA	Water	7470A	434284
MB 310-434284/1-A	Method Blank	Total/NA	Water	7470A	434284
LCS 310-434284/2-A	Lab Control Sample	Total/NA	Water	7470A	434284

Analysis Batch: 434612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-4	Leachate	Total/NA	Water	6020B	433443

Analysis Batch: 434925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-4	Leachate	Total/NA	Water	6020B	433443

General Chemistry

Analysis Batch: 433387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	SM 4500 H+ B	
310-290691-2	MW-5B	Total/NA	Water	SM 4500 H+ B	
310-290691-3	MW-6A	Total/NA	Water	SM 4500 H+ B	
310-290691-4	Leachate	Total/NA	Water	SM 4500 H+ B	
LCS 310-433387/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-290691-3 DU	MW-6A	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 433545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	I-3765-85	
310-290691-2	MW-5B	Total/NA	Water	I-3765-85	
310-290691-3	MW-6A	Total/NA	Water	I-3765-85	
310-290691-4	Leachate	Total/NA	Water	I-3765-85	
MB 310-433545/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-433545/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 433602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	SM 2540C	
310-290691-2	MW-5B	Total/NA	Water	SM 2540C	
310-290691-3	MW-6A	Total/NA	Water	SM 2540C	
310-290691-4	Leachate	Total/NA	Water	SM 2540C	
MB 310-433602/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-433602/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-290691-1 DU	MW-4B	Total/NA	Water	SM 2540C	

QC Association Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Rad

Prep Batch: 680336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	PrecSep-21	
310-290691-2	MW-5B	Total/NA	Water	PrecSep-21	
310-290691-3	MW-6A	Total/NA	Water	PrecSep-21	
310-290691-4	Leachate	Total/NA	Water	PrecSep-21	
MB 160-680336/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-680336/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 680337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-290691-1	MW-4B	Total/NA	Water	PrecSep_0	
310-290691-2	MW-5B	Total/NA	Water	PrecSep_0	
310-290691-3	MW-6A	Total/NA	Water	PrecSep_0	
310-290691-4	Leachate	Total/NA	Water	PrecSep_0	
MB 160-680337/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-680337/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-4B

Lab Sample ID: 310-290691-1

Date Collected: 09/12/24 10:55

Matrix: Water

Date Received: 09/17/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	434244	HE7K	EET CF	09/24/24 12:21
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434059	NFT2	EET CF	09/23/24 18:21
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	433771	NFT2	EET CF	09/19/24 13:41
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434220	NFT2	EET CF	09/24/24 15:28
Total/NA	Prep	7470A			434284	QTZ5	EET CF	09/26/24 13:00
Total/NA	Analysis	7470A		1	434462	QTZ5	EET CF	09/26/24 16:30
Total/NA	Analysis	I-3765-85		1	433545	DGU1	EET CF	09/18/24 11:05
Total/NA	Analysis	SM 2540C		1	433602	MDU9	EET CF	09/18/24 19:55
Total/NA	Analysis	SM 4500 H+ B		1	433387	W9YR	EET CF	09/17/24 10:36
Total/NA	Prep	PrecSep-21			680336	BCE	EET SL	09/20/24 09:04
Total/NA	Analysis	9315		1	683516	FLC	EET SL	10/14/24 23:43
Total/NA	Prep	PrecSep_0			680337	BCE	EET SL	09/20/24 09:10
Total/NA	Analysis	9320		1	682854	FLC	EET SL	10/09/24 12:05
Total/NA	Analysis	Ra226_Ra228		1	683555	EMH	EET SL	10/15/24 11:30

Client Sample ID: MW-5B

Lab Sample ID: 310-290691-2

Date Collected: 09/12/24 10:35

Matrix: Water

Date Received: 09/17/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	434244	HE7K	EET CF	09/24/24 12:33
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434059	NFT2	EET CF	09/23/24 18:24
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	433771	NFT2	EET CF	09/19/24 13:43
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434220	NFT2	EET CF	09/24/24 15:30
Total/NA	Prep	7470A			434284	QTZ5	EET CF	09/26/24 13:00
Total/NA	Analysis	7470A		1	434462	QTZ5	EET CF	09/26/24 16:32
Total/NA	Analysis	I-3765-85		1	433545	DGU1	EET CF	09/18/24 11:05
Total/NA	Analysis	SM 2540C		1	433602	MDU9	EET CF	09/18/24 19:55
Total/NA	Analysis	SM 4500 H+ B		1	433387	W9YR	EET CF	09/17/24 10:35
Total/NA	Prep	PrecSep-21			680336	BCE	EET SL	09/20/24 09:04
Total/NA	Analysis	9315		1	683516	FLC	EET SL	10/14/24 23:43
Total/NA	Prep	PrecSep_0			680337	BCE	EET SL	09/20/24 09:10
Total/NA	Analysis	9320		1	682854	FLC	EET SL	10/09/24 12:05
Total/NA	Analysis	Ra226_Ra228		1	683555	EMH	EET SL	10/15/24 11:30

Lab Chronicle

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: MW-6A
Date Collected: 09/12/24 11:20
Date Received: 09/17/24 08:30

Lab Sample ID: 310-290691-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	434244	HE7K	EET CF	09/24/24 12:44
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434059	NFT2	EET CF	09/23/24 18:28
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	433771	NFT2	EET CF	09/19/24 13:45
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	434220	NFT2	EET CF	09/24/24 15:32
Total/NA	Prep	7470A			434284	QTZ5	EET CF	09/26/24 13:00
Total/NA	Analysis	7470A		1	434462	QTZ5	EET CF	09/26/24 16:34
Total/NA	Analysis	I-3765-85		1	433545	DGU1	EET CF	09/18/24 11:05
Total/NA	Analysis	SM 2540C		1	433602	MDU9	EET CF	09/18/24 19:55
Total/NA	Analysis	SM 4500 H+ B		1	433387	W9YR	EET CF	09/17/24 10:32
Total/NA	Prep	PrecSep-21			680336	BCE	EET SL	09/20/24 09:04
Total/NA	Analysis	9315		1	683516	FLC	EET SL	10/14/24 23:43
Total/NA	Prep	PrecSep_0			680337	BCE	EET SL	09/20/24 09:10
Total/NA	Analysis	9320		1	682854	FLC	EET SL	10/09/24 12:05
Total/NA	Analysis	Ra226_Ra228		1	683555	EMH	EET SL	10/15/24 11:30

Client Sample ID: Leachate
Date Collected: 09/12/24 12:35
Date Received: 09/17/24 08:30

Lab Sample ID: 310-290691-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	434244	HE7K	EET CF	09/24/24 12:56
Total/NA	Analysis	9056A		50	434244	HE7K	EET CF	09/24/24 14:52
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		4	434059	NFT2	EET CF	09/23/24 18:32
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		40	434612	ZRI4	EET CF	09/27/24 17:15
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		100	434925	NFT2	EET CF	10/01/24 13:13
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		1	433771	NFT2	EET CF	09/19/24 13:47
Total/NA	Prep	3005A			433443	F5MW	EET CF	09/18/24 09:00
Total/NA	Analysis	6020B		20	434220	NFT2	EET CF	09/24/24 15:34
Total/NA	Prep	7470A			434284	QTZ5	EET CF	09/26/24 13:00
Total/NA	Analysis	7470A		1	434462	QTZ5	EET CF	09/26/24 16:36
Total/NA	Analysis	I-3765-85		1	433545	DGU1	EET CF	09/18/24 11:05
Total/NA	Analysis	SM 2540C		1	433602	MDU9	EET CF	09/18/24 19:55
Total/NA	Analysis	SM 4500 H+ B		1	433387	W9YR	EET CF	09/17/24 10:34
Total/NA	Prep	PrecSep-21			680336	BCE	EET SL	09/20/24 09:04
Total/NA	Analysis	9315		1	683516	FLC	EET SL	10/14/24 23:43

Lab Chronicle

Client: Muscatine Power & Water
Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Client Sample ID: Leachate

Lab Sample ID: 310-290691-4

Date Collected: 09/12/24 12:35

Matrix: Water

Date Received: 09/17/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep_0			680337	BCE	EET SL	09/20/24 09:10
Total/NA	Analysis	9320		1	682854	FLC	EET SL	10/09/24 12:05
Total/NA	Analysis	Ra226_Ra228		1	683555	EMH	EET SL	10/15/24 11:30

Laboratory References:

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

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



Accreditation/Certification Summary

Client: Muscatine Power & Water
Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Water	Lithium

Laboratory: Eurofins St. Louis

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	373	12-01-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9315	PrecSep-21	Water	Radium-226
9320	PrecSep_0	Water	Radium-228
Ra226_Ra228		Water	Combined Radium 226 + 228

Method Summary

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
SM 4500 H+ B	pH	SM	EET CF
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
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:

- 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.
- USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

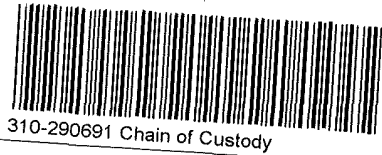
Laboratory References:

- EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401
- EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





Environment Testing
America



310-290691 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: Muscatine Power + Water			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE 9/17/24	TIME 0830	Received By: JJ
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: Y		Correction Factor (°C): 70	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): -0.3		Corrected Temp (°C): -0.3	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login.			
Additional Comments			



Eurofins Cedar Falls

3019 Venture Way
Cedar Falls IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

Client Information		Lab PM Michels, Bob		Carrier Tracking No(s):		COC No:	
Client Contact: Sam Bennett MP&W		E-Mail: bob.michels@et.eurofins.com		Page:		Job #:	
Company: Muscatine Power & Water		Address: 1700 Dick Drake Way		City: Muscatine		State, Zip: IA, 52761	
Phone: 244222		PO #: 244222		WO #:		Email: sbennett@mpw.org and neil.hoskins@mpw.org	
Project Name: Muscatine Power & Water CCR Landfill		Test/America Project #: 310-290523		Event: Fall 2024 Sampling		Site: Iowa	
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
Matrix (W=water, S=solid, O=waste/oil, BT=tit, A=air)		Preservation Code:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)	
MW-4B	9/12/24	1055	G	GW	X	X	X
MW-5B	9/12/24	1035	G	GW	X	X	X
MW-6A	9/12/24	1120	G	GW	X	X	X
MW-8			G	GW	X	X	X
MW-10			G	GW	X	X	X
MW-14A			G	GW	X	X	X
MW-15A			G	GW	X	X	X
MW-21			G	GW	X	X	X
MW-22			G	GW	X	X	X
MW-23			G	GW	X	X	X
MW-24			G	GW	X	X	X
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested I, II, III, IV, Other (specify)				Special Instructions/QC Requirements.			
Empty Kit Relinquished by		Date		Time		Method of Shipment:	
Relinquished by <i>Sam Bennett</i>		Date/Time: 9-16-24		Company: <i>MPW</i>		Received by: _____ Date/Time: _____ Company: _____	
Relinquished by _____		Date/Time: _____		Company: _____		Received by: _____ Date/Time: _____ Company: _____	
Relinquished by _____		Date/Time: _____		Company: _____		Received by: _____ Date/Time: 9/17/24 0830 Company: _____	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks:			



Eurofins Cedar Falls

3019 Venture Way
 Cedar Falls, IA 50613
 Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

Client Information		Lab PM	Carrier Tracking No(s):	COC No.										
Client Contact: Sam Bennett MP&W Phone: 563-262-3583		Sam Bennett Michels, Bob												
Company: Muscatine Power & Water Address: 1700 Dick Drake Way City: Muscatine State, Zip: IA, 52761 Phone: PO #: 244222 WO #: Email: sbennett@mpw.org and neil hoskins@mpw.org		E-Mail: bob.michels@et.eurofins.com												
Project Name: Muscatine Power & Water CCR Landfill Site: Iowa		Test/America Project #: 310-290523 Event: Fall 2024 Sampling												
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water/oil, BT=titus, A=alt)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A CCR Lab, 7470A Mercury	2540C TDS, SM4500_H+PH	9056A Chloride, Fluoride, Sulfate	Radium-226	Radium-228	Analysis Requested	Carrier Tracking No(s):	COC No.
MW-26			G	GW	X	X	X	X	X	X	X			
MW-27			G	GW	X	X	X	X	X	X	X			
QC1			G	GW	X	X	X	X	X	X	X			
QC2			G	GW	X	X	X	X	X	X	X			
Leachate	9/12/24	1235	G	GW	X	X	X	X	X	X	X			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested I, II, III, IV, Other (specify)														
Empty Kit Relinquished by: _____ Date: _____ Relinquished by: <i>Sam Bennett</i> Date/Time: <i>9-16-24 0900</i> Company: <i>MP&W</i> Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Δ <input type="checkbox"/> No <input type="checkbox"/> Δ <input type="checkbox"/> No <input type="checkbox"/> Δ <input type="checkbox"/> No <input type="checkbox"/> Δ <input type="checkbox"/> No Custody Seal No: _____														
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:														
Method of Shipment: _____ Received by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____ Received by: <i>W</i> Date/Time: <i>9/17/24 0830</i> Company: _____ Cooler Temperature(s) °C and Other Remarks:														



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:																																																																																								
Client Contact:		Phone:	Michels, Bob C		310-76413.1																																																																																								
Shipping/Receiving			E-Mail:	State of Origin:	Page:																																																																																								
Company:			Bob Michels@et.eurofins.com	Iowa	Page 1 of 1																																																																																								
TestAmerica Laboratories, Inc.			Accreditations Required (See note):	Job #:	310-290691-1																																																																																								
Address:		Due Date Requested:	Preservation Codes:																																																																																										
13715 Rider Trail North,		10/16/2024																																																																																											
City:		TAT Requested (days):	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">Analysis Requested</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>9320_Ra228/PreSep_0 Standard Target List</th> <th>Ra226Ra228_GFP/ (MOD) Local Method</th> <th>Total Number of Containers</th> <th>Special Instructions/Note:</th> </tr> <tr> <td>MW-4B (310-290691-1)</td> <td>Sample Date: 9/12/24</td> <td>Sample Time: 10:55 Central</td> <td>X</td> <td>X</td> <td>X</td> <td>2</td> <td></td> </tr> <tr> <td>MW-5B (310-290691-2)</td> <td>9/12/24</td> <td>10:35 Central</td> <td>X</td> <td>X</td> <td>X</td> <td>2</td> <td></td> </tr> <tr> <td>MW-6A (310-290691-3)</td> <td>9/12/24</td> <td>11:20 Central</td> <td>X</td> <td>X</td> <td>X</td> <td>2</td> <td></td> </tr> <tr> <td>Leachate (310-290691-4)</td> <td>9/12/24</td> <td>12:35 Central</td> <td>X</td> <td>X</td> <td>X</td> <td>2</td> <td></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>			Analysis Requested		Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9320_Ra228/PreSep_0 Standard Target List	Ra226Ra228_GFP/ (MOD) Local Method	Total Number of Containers	Special Instructions/Note:	MW-4B (310-290691-1)	Sample Date: 9/12/24	Sample Time: 10:55 Central	X	X	X	2		MW-5B (310-290691-2)	9/12/24	10:35 Central	X	X	X	2		MW-6A (310-290691-3)	9/12/24	11:20 Central	X	X	X	2		Leachate (310-290691-4)	9/12/24	12:35 Central	X	X	X	2																																																	
Analysis Requested		Field Filtered Sample (Yes or No)				Perform MS/MSD (Yes or No)	9320_Ra228/PreSep_0 Standard Target List	Ra226Ra228_GFP/ (MOD) Local Method	Total Number of Containers	Special Instructions/Note:																																																																																			
MW-4B (310-290691-1)	Sample Date: 9/12/24	Sample Time: 10:55 Central				X	X	X	2																																																																																				
MW-5B (310-290691-2)	9/12/24	10:35 Central				X	X	X	2																																																																																				
MW-6A (310-290691-3)	9/12/24	11:20 Central				X	X	X	2																																																																																				
Leachate (310-290691-4)	9/12/24	12:35 Central				X	X	X	2																																																																																				
State, Zip:		PO #:	Other:																																																																																										
MO, 63045																																																																																													
Phone:		WO #:																																																																																											
314-298-8566(Tel) 314-298-8757(Fax)																																																																																													
Email:		Project #:																																																																																											
		3107990																																																																																											
Project Name:		SSOW#:																																																																																											
MPW CCR - Landfill Fall 2024																																																																																													
Site:																																																																																													

Sample Identification - Client ID (Lab ID)

Sample ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Other)	Preservation Code:
MW-4B (310-290691-1)	9/12/24	10:55 Central	G	Water	
MW-5B (310-290691-2)	9/12/24	10:35 Central	G	Water	
MW-6A (310-290691-3)	9/12/24	11:20 Central	G	Water	
Leachate (310-290691-4)	9/12/24	12:35 Central	G	Water	

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: _____ Date: 9/17/24 12:45
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Received by: *Sara Worthington* Date/Time: **SEP 18 2024 09:30** Company: *ET*
 Received by: _____ Date/Time: _____ Company: _____
 Received by: _____ Date/Time: _____ Company: _____
 Cooler Temperature(s) °C and Other Remarks:



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-290691-1

Login Number: 290691

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Homolar, Dana J

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-290691-1

Login Number: 290691

List Number: 2

Creator: Worthington, Sierra M

List Source: Eurofins St. Louis

List Creation: 09/18/24 11:54 AM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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	

Tracer/Carrier Summary

Client: Muscatine Power & Water
 Project/Site: MPW CCR - Landfill Fall 2024

Job ID: 310-290691-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
310-290691-1	MW-4B	87.6	
310-290691-2	MW-5B	90.3	
310-290691-3	MW-6A	82.6	
310-290691-4	Leachate	79.2	
LCS 160-680336/2-A	Lab Control Sample	84.6	
MB 160-680336/1-A	Method Blank	89.6	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
310-290691-1	MW-4B	87.6	83.7
310-290691-2	MW-5B	90.3	78.9
310-290691-3	MW-6A	82.6	78.5
310-290691-4	Leachate	79.2	76.6
LCS 160-680337/2-A	Lab Control Sample	84.6	79.6
MB 160-680337/1-A	Method Blank	89.6	79.3
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			

Appendix C

Statistical Analysis

100% Non-Detects: Monitoring Wells (April 2024)

Analysis Run 11/5/2024 1:40 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Aluminum (mg/L)

MW-15A, MW-21, MW-24, MW-5B, MW-6A

Arsenic (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Beryllium (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Boron (mg/L)

MW-5B, MW-6A

Cobalt (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-5B, MW-6A

Copper (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-27, MW-4B, MW-5B, MW-6A

Fluoride (mg/L)

MW-26, MW-27

Iron (mg/L)

MW-15A, MW-21, MW-24

Lead (mg/L)

MW-14A, MW-15A, MW-24, MW-26, MW-6A

Manganese (mg/L)

MW-15A, MW-21

Molybdenum (mg/L)

MW-14A, MW-15A, MW-27, MW-6A

Nickel (mg/L)

MW-14A, MW-15A, MW-24, MW-26, MW-27, MW-5B, MW-6A

Selenium (mg/L)

MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Vanadium (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Zinc (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

100% Non-Detects: Monitoring Wells (September 2024)

Analysis Run 11/5/2024 1:45 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Aluminum (mg/L)

MW-15A, MW-21, MW-24, MW-5B, MW-6A

Arsenic (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Beryllium (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Boron (mg/L)

MW-5B, MW-6A

Cobalt (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-5B, MW-6A

Copper (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-27, MW-4B, MW-5B, MW-6A

Fluoride (mg/L)

MW-26, MW-27

Iron (mg/L)

MW-15A, MW-21, MW-24

Lead (mg/L)

MW-14A, MW-15A, MW-24, MW-26, MW-6A

Manganese (mg/L)

MW-15A, MW-21

Molybdenum (mg/L)

MW-14A, MW-15A, MW-27, MW-6A

Nickel (mg/L)

MW-14A, MW-15A, MW-24, MW-26, MW-27, MW-5B, MW-6A

Selenium (mg/L)

MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Vanadium (mg/L)

MW-14A, MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

Zinc (mg/L)

MW-15A, MW-21, MW-24, MW-26, MW-27, MW-4B, MW-5B, MW-6A

100% Non-Detects: Surface Water (April 2024)

Analysis Run 11/5/2024 1:52 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Aluminum (mg/L)
SW-24

Arsenic (mg/L)
SW-24, SW-25

Beryllium (mg/L)
SW-23, SW-24, SW-25, SW-26

Cobalt (mg/L)
SW-24

Copper (mg/L)
SW-24, SW-25, SW-26

Fluoride (mg/L)
SW-25

Lead (mg/L)
SW-24

Molybdenum (mg/L)
SW-24

Nickel (mg/L)
SW-23, SW-24, SW-25, SW-26

Selenium (mg/L)
SW-23, SW-24, SW-25, SW-26

Vanadium (mg/L)
SW-23, SW-24, SW-25, SW-26

Zinc (mg/L)
SW-23, SW-24, SW-25

100% Non-Detects: Surface Water (September 2024)

Analysis Run 11/5/2024 1:57 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Beryllium (mg/L)
SW-26

Copper (mg/L)
SW-26

Nickel (mg/L)
SW-26

Selenium (mg/L)
SW-26

Vanadium (mg/L)
SW-26

Interwell Prediction Limits - Monitoring Wells (April 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:03 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-14A	0.322	4/15/2024	15.2	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	4/15/2024	5.8	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	4/12/2024	2.31	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	4/12/2024	3.07	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	4/12/2024	1.01	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	4/15/2024	344	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	4/15/2024	39.3	Yes	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Magnesium (mg/L)	MW-14A	44.44	4/15/2024	135	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.44	4/15/2024	51.6	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.44	4/12/2024	50.5	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Sulfate (mg/L)	MW-14A	366	4/15/2024	1160	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2

Interwell Prediction Limits - Monitoring Wells (April 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:03 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bq N	Bq Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	MW-14A	0.552	4/15/2024	0.05ND	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-26	0.552	4/12/2024	0.05ND	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-27	0.552	4/12/2024	0.191	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-4B	0.552	4/15/2024	0.05ND	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	n/a	0.00784	n/a	9 future	n/a	71	n/a	n/a	57.75	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-14A	0.271	4/15/2024	0.0323	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-15A	0.271	4/15/2024	0.0353	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-21	0.271	4/12/2024	0.031	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-24	0.271	4/12/2024	0.0899	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-26	0.271	4/12/2024	0.0716	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-27	0.271	4/12/2024	0.0511	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-4B	0.271	4/15/2024	0.168	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-5B	0.271	4/15/2024	0.243	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-6A	0.271	4/15/2024	0.235	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	9 future	n/a	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-14A	0.322	4/15/2024	15.2	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	4/15/2024	5.8	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	4/12/2024	2.31	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-24	0.322	4/12/2024	0.1ND	No	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	4/12/2024	3.07	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	4/12/2024	1.01	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-4B	0.322	4/15/2024	0.1ND	No	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	4/15/2024	344	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-15A	152	4/15/2024	118	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-21	152	4/12/2024	59.9	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-24	152	4/12/2024	71.6	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-26	152	4/12/2024	134	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-27	152	4/12/2024	35.4	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-4B	152	4/15/2024	97.7	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5B	152	4/15/2024	112	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6A	152	4/15/2024	92.4	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-14A	30	4/15/2024	16.4	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-15A	30	4/15/2024	7.01	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-21	30	4/12/2024	5ND	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-24	30	4/12/2024	19.5	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-26	30	4/12/2024	17.4	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-27	30	4/12/2024	19.5	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-4B	30	4/15/2024	18.1	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	4/15/2024	39.3	Yes	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6A	30	4/15/2024	15.5	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Cobalt (mg/L)	MW-4B	0.00558	4/15/2024	0.00172	No	72	n/a	n/a	38.89	n/a	n/a	0.0003676	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-26	0.005	4/12/2024	0.005ND	No	44	n/a	n/a	100	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-14A	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-15A	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-21	1	4/12/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-24	1	4/12/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-4B	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-5B	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-6A	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Iron (mg/L)	MW-14A	4.38	4/15/2024	0.1ND	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-26	4.38	4/12/2024	0.1ND	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-27	4.38	4/12/2024	0.181	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-4B	4.38	4/15/2024	0.309	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-5B	4.38	4/15/2024	1.78	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-6A	4.38	4/15/2024	3.42	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-21	0.00204	4/12/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-27	0.00204	4/12/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-4B	0.00204	4/15/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-5B	0.00204	4/15/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	MW-14A	44.44	4/15/2024	135	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.44	4/15/2024	51.6	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-21	44.44	4/12/2024	24.9	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-24	44.44	4/12/2024	30.7	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.44	4/12/2024	50.5	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-27	44.44	4/12/2024	15.4	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-4B	44.44	4/15/2024	35.6	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-5B	44.44	4/15/2024	36.5	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-6A	44.44	4/15/2024	31	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2

Interwell Prediction Limits - Monitoring Wells (April 2024) - All Results Page 2

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:03 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Manganese (mg/L)	MW-14A	1.204	4/15/2024	0.005ND	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-24	1.204	4/12/2024	0.0156	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-26	1.204	4/12/2024	0.0697	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-27	1.204	4/12/2024	0.0376	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-4B	1.204	4/15/2024	0.395	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-5B	1.204	4/15/2024	0.506	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-6A	1.204	4/15/2024	0.114	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Molybdenum (mg/L)	MW-21	0.00822	4/12/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-24	0.00822	4/12/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-26	0.00822	4/12/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-4B	0.00822	4/15/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-5B	0.00822	4/15/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-21	0.00628	4/12/2024	0.005ND	No	44	n/a	n/a	97.73	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-4B	0.00628	4/15/2024	0.005ND	No	44	n/a	n/a	97.73	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-14A	0.005	4/15/2024	0.005ND	No	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-15A	0.005	4/15/2024	0.005ND	No	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-21	0.005	4/12/2024	0.005ND	No	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Strontium (mg/L)	MW-14A	0.3032	4/15/2024	0.301	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-15A	0.3032	4/15/2024	0.125	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-21	0.3032	4/12/2024	0.153	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-24	0.3032	4/12/2024	0.0703	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-26	0.3032	4/12/2024	0.147	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-27	0.3032	4/12/2024	0.069	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-4B	0.3032	4/15/2024	0.0951	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-5B	0.3032	4/15/2024	0.166	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-6A	0.3032	4/15/2024	0.19	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Sulfate (mg/L)	MW-14A	366	4/15/2024	1160	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-15A	366	4/15/2024	256	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-21	366	4/12/2024	138	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-24	366	4/12/2024	43.8	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-26	366	4/12/2024	309	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-27	366	4/12/2024	36.7	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-4B	366	4/15/2024	56.1	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5B	366	4/15/2024	46.3	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6A	366	4/15/2024	18.1	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.005	n/a	9 future	n/a	44	n/a	n/a	100	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Zinc (mg/L)	n/a	0.02	n/a	9 future	n/a	44	n/a	n/a	100	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2

Interwell Prediction Limits - Monitoring Wells (September 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:27 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-14A	0.322	9/11/2024	17.7	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	9/11/2024	8.5	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	9/10/2024	3.68	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	9/11/2024	4.19	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	9/11/2024	3.02	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	9/11/2024	327	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	9/12/2024	40.5	Yes	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Magnesium (mg/L)	MW-14A	44.62	9/11/2024	134	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.62	9/11/2024	53.8	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.62	9/11/2024	45.3	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Selenium (mg/L)	MW-21	0.005	9/10/2024	0.00666	Yes	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	MW-14A	366	9/11/2024	1110	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Zinc (mg/L)	MW-14A	0.02	9/11/2024	0.022	Yes	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2

Interwell Prediction Limits - Monitoring Wells (September 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:27 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bq N	Bq Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	MW-14A	0.552	9/11/2024	0.05ND	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-26	0.552	9/11/2024	0.05ND	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-27	0.552	9/11/2024	0.0529	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-4B	0.552	9/12/2024	0.05ND	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	n/a	0.00784	n/a	9 future	n/a	75	n/a	n/a	56	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-14A	0.271	9/11/2024	0.0338	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-15A	0.271	9/11/2024	0.0335	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-21	0.271	9/10/2024	0.0555	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-24	0.271	9/11/2024	0.0885	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-26	0.271	9/11/2024	0.0643	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-27	0.271	9/11/2024	0.0795	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-4B	0.271	9/12/2024	0.184	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-5B	0.271	9/12/2024	0.258	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-6A	0.271	9/12/2024	0.249	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	9 future	n/a	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-14A	0.322	9/11/2024	17.7	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	9/11/2024	8.5	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	9/10/2024	3.68	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-24	0.322	9/11/2024	0.1ND	No	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	9/11/2024	4.19	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	9/11/2024	3.02	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-4B	0.322	9/12/2024	0.1ND	No	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	9/11/2024	327	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-15A	152	9/11/2024	129	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-21	152	9/10/2024	96.6	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-24	152	9/11/2024	73.6	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-26	152	9/11/2024	126	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-27	152	9/11/2024	63.1	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-4B	152	9/12/2024	102	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5B	152	9/12/2024	123	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6A	152	9/12/2024	99.4	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-14A	30	9/11/2024	16.3	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-15A	30	9/11/2024	7.41	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-21	30	9/10/2024	13.5	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-24	30	9/11/2024	22.8	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-26	30	9/11/2024	17.3	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-27	30	9/11/2024	27.2	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-4B	30	9/12/2024	14.6	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	9/12/2024	40.5	Yes	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6A	30	9/12/2024	14.4	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Cobalt (mg/L)	MW-4B	0.00558	9/12/2024	0.0028	No	76	n/a	n/a	39.47	n/a	n/a	0.0003325	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-26	0.005	9/11/2024	0.005ND	No	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-14A	1	9/11/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-15A	1	9/11/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-21	1	9/10/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-24	1	9/11/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-4B	1	9/12/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-5B	1	9/12/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-6A	1	9/12/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Iron (mg/L)	MW-14A	4.38	9/11/2024	0.1ND	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-26	4.38	9/11/2024	0.1ND	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-27	4.38	9/11/2024	0.1ND	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-4B	4.38	9/12/2024	0.797	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-5B	4.38	9/12/2024	2.06	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-6A	4.38	9/12/2024	3.6	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-21	0.00204	9/10/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-27	0.00204	9/11/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-4B	0.00204	9/12/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-5B	0.00204	9/12/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	MW-14A	44.62	9/11/2024	134	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.62	9/11/2024	53.8	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-21	44.62	9/10/2024	41.3	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-24	44.62	9/11/2024	31	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.62	9/11/2024	45.3	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-27	44.62	9/11/2024	27.9	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-4B	44.62	9/12/2024	35.9	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-5B	44.62	9/12/2024	36.4	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-6A	44.62	9/12/2024	30.8	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2

Interwell Prediction Limits - Monitoring Wells (September 2024) - All Results Page 2

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:27 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Manganese (mg/L)	MW-14A	1.2	9/11/2024	0.005ND	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-24	1.2	9/11/2024	0.0111	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-26	1.2	9/11/2024	0.0458	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-27	1.2	9/11/2024	0.0168	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-4B	1.2	9/12/2024	0.491	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-5B	1.2	9/12/2024	0.554	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-6A	1.2	9/12/2024	0.118	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Molybdenum (mg/L)	MW-21	0.00822	9/10/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-24	0.00822	9/11/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-26	0.00822	9/11/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-4B	0.00822	9/12/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-5B	0.00822	9/12/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-21	0.00628	9/10/2024	0.005ND	No	48	n/a	n/a	97.92	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-4B	0.00628	9/12/2024	0.005ND	No	48	n/a	n/a	97.92	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-14A	0.005	9/11/2024	0.005ND	No	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-15A	0.005	9/11/2024	0.005ND	No	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-21	0.005	9/10/2024	0.00666	Yes	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Strontium (mg/L)	MW-14A	0.2991	9/11/2024	0.298	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-15A	0.2991	9/11/2024	0.117	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-21	0.2991	9/10/2024	0.181	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-24	0.2991	9/11/2024	0.0754	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-26	0.2991	9/11/2024	0.127	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-27	0.2991	9/11/2024	0.113	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-4B	0.2991	9/12/2024	0.103	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-5B	0.2991	9/12/2024	0.162	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-6A	0.2991	9/12/2024	0.188	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Sulfate (mg/L)	MW-14A	366	9/11/2024	1110	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-15A	366	9/11/2024	273	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-21	366	9/10/2024	248	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-24	366	9/11/2024	43.8	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-26	366	9/11/2024	234	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-27	366	9/11/2024	85	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-4B	366	9/12/2024	65.8	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5B	366	9/12/2024	50.4	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6A	366	9/12/2024	16.3	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.005	n/a	9 future	n/a	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Zinc (mg/L)	MW-14A	0.02	9/11/2024	0.022	Yes	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2

Trend Tests - Monitoring Wells Prediction Limit Exceedances - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:30 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-15A	-1.395	-198	-111	Yes	25	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-08 (bg)	-4.322	-114	-105	Yes	24	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-22 (bg)	-2.242	-77	-53	Yes	15	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-23 (bg)	1.058	56	48	Yes	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-5B	-4.247	-157	-111	Yes	25	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-21	-0.0008179	-128	-98	Yes	23	26.09	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-08 (bg)	-14.03	-178	-105	Yes	24	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-22 (bg)	7.15	81	53	Yes	15	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-23 (bg)	-1.122	-54	-48	Yes	14	0	n/a	n/a	0.01	NP

Trend Tests - Monitoring Wells Prediction Limit Exceedances - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:30 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-08 (bg)	0	3	105	No	24	95.83	n/a	n/a	0.01	NP
Boron (mg/L)	MW-10 (bg)	0	0	105	No	24	100	n/a	n/a	0.01	NP
Boron (mg/L)	MW-14A	0.2089	45	111	No	25	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-15A	-1.395	-198	-111	Yes	25	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-21	-0.2935	-72	-111	No	25	4	n/a	n/a	0.01	NP
Boron (mg/L)	MW-22 (bg)	0	19	53	No	15	60	n/a	n/a	0.01	NP
Boron (mg/L)	MW-23 (bg)	0	23	48	No	14	64.29	n/a	n/a	0.01	NP
Boron (mg/L)	MW-26	0.2662	10	25	No	9	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-27	0.2145	4	25	No	9	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-08 (bg)	-4.322	-114	-105	Yes	24	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-10 (bg)	0.2249	19	105	No	24	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-14A	-1.168	-20	-111	No	25	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-22 (bg)	0.1239	3	53	No	15	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-23 (bg)	-1.14	-32	-48	No	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-08 (bg)	0.2664	68	105	No	24	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-10 (bg)	0	18	105	No	24	87.5	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-22 (bg)	-2.242	-77	-53	Yes	15	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-23 (bg)	1.058	56	48	Yes	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-5B	-4.247	-157	-111	Yes	25	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-08 (bg)	-1.014	-25	-43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-10 (bg)	1.022	34	43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-14A	4.303	38	43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-15A	-3.028	-37	-43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-22 (bg)	0.2483	12	34	No	11	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-23 (bg)	0.1699	9	34	No	11	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-26	-0.8975	-12	-25	No	9	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-08 (bg)	0	0	98	No	23	100	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-10 (bg)	0	0	98	No	23	100	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-21	-0.0008179	-128	-98	Yes	23	26.09	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-22 (bg)	0	0	53	No	15	100	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-23 (bg)	0	0	48	No	14	100	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-08 (bg)	-14.03	-178	-105	Yes	24	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-10 (bg)	0.5948	28	105	No	24	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-14A	-4.303	-16	-111	No	25	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-22 (bg)	7.15	81	53	Yes	15	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-23 (bg)	-1.122	-54	-48	Yes	14	0	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-08 (bg)	0	0	43	No	13	100	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-10 (bg)	0	0	43	No	13	100	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-14A	0	12	43	No	13	92.31	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-22 (bg)	0	0	34	No	11	100	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-23 (bg)	0	0	34	No	11	100	n/a	n/a	0.01	NP

Interwell Prediction Limits - Monitoring Wells (April 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/5/2024, 1:54 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	SW-24	6.67	4/9/2024	7.91	Yes	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SW-24	221	4/9/2024	231	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-24	73.3	4/9/2024	85.8	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-24	0.285	4/9/2024	0.448	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-25	0.285	4/10/2024	0.293	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-24	554	4/9/2024	676	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2

Interwell Prediction Limits - Monitoring Wells (April 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/5/2024, 1:54 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	SW-23	3.286	4/10/2024	0.05ND	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Aluminum (mg/L)	SW-25	3.286	4/10/2024	0.05ND	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Aluminum (mg/L)	SW-26	3.286	4/9/2024	0.119	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Arsenic (mg/L)	SW-23	0.00367	4/10/2024	0.002ND	No	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	SW-26	0.00367	4/9/2024	0.00217	No	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Barium (mg/L)	SW-23	0.2213	4/10/2024	0.075	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Barium (mg/L)	SW-24	0.2213	4/9/2024	0.0262	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Barium (mg/L)	SW-25	0.2213	4/10/2024	0.0461	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Barium (mg/L)	SW-26	0.2213	4/9/2024	0.0701	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-23	6.67	4/10/2024	0.485	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-24	6.67	4/9/2024	7.91	Yes	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-25	6.67	4/10/2024	3.76	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-26	6.67	4/9/2024	0.484	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SW-23	221	4/10/2024	60	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Calcium (mg/L)	SW-24	221	4/9/2024	231	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Calcium (mg/L)	SW-25	221	4/10/2024	142	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Calcium (mg/L)	SW-26	221	4/9/2024	56.1	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Chloride (mg/L)	SW-23	22.81	4/10/2024	22.2	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Chloride (mg/L)	SW-24	22.81	4/9/2024	14.9	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Chloride (mg/L)	SW-25	22.81	4/10/2024	19.3	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Chloride (mg/L)	SW-26	22.81	4/9/2024	20.6	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Cobalt (mg/L)	SW-23	0.00116	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	SW-25	0.00116	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	SW-26	0.00116	4/9/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Copper (mg/L)	SW-23	0.005	4/10/2024	0.005ND	No	12	n/a	n/a	100	n/a	n/a	0.009707	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-23	1	4/10/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-24	1	4/9/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-26	1	4/9/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Iron (mg/L)	SW-23	2.016	4/10/2024	0.05ND	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Iron (mg/L)	SW-24	2.016	4/9/2024	0.05ND	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Iron (mg/L)	SW-25	2.016	4/10/2024	0.05ND	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Iron (mg/L)	SW-26	2.016	4/9/2024	0.178	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Lead (mg/L)	SW-23	0.00258	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Lead (mg/L)	SW-25	0.00258	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Lead (mg/L)	SW-26	0.00258	4/9/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	SW-23	73.3	4/10/2024	23	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-24	73.3	4/9/2024	85.8	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-25	73.3	4/10/2024	42.2	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-26	73.3	4/9/2024	20.8	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Manganese (mg/L)	SW-23	0.959	4/10/2024	0.0181	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Manganese (mg/L)	SW-24	0.959	4/9/2024	0.005ND	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Manganese (mg/L)	SW-25	0.959	4/10/2024	0.0148	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Manganese (mg/L)	SW-26	0.959	4/9/2024	0.0612	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Molybdenum (mg/L)	SW-23	0.00637	4/10/2024	0.002ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	SW-25	0.00637	4/10/2024	0.002ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	SW-26	0.00637	4/9/2024	0.002ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Nickel (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Selenium (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Strontium (mg/L)	SW-23	0.285	4/10/2024	0.137	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-24	0.285	4/9/2024	0.448	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-25	0.285	4/10/2024	0.293	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-26	0.285	4/9/2024	0.146	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-23	554	4/10/2024	40.2	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-24	554	4/9/2024	676	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-25	554	4/10/2024	292	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-26	554	4/9/2024	43.8	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.00682	n/a	4 future	n/a	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Zinc (mg/L)	SW-26	0.0312	4/9/2024	0.02ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2

Interwell Prediction Limits - Surface Water (September 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:34 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	SW-26	0.00367	9/12/2024	0.0371	Yes	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2

Interwell Prediction Limits - Surface Water (September 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:34 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	SW-26	3.286	9/12/2024	0.0588	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Arsenic (mg/L)	SW-26	0.00367	9/12/2024	0.0371	Yes	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Barium (mg/L)	SW-26	0.2213	9/12/2024	0.0808	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-26	6.67	9/12/2024	1.38	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SW-26	221	9/12/2024	57.3	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Chloride (mg/L)	SW-26	22.81	9/12/2024	18.5	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Cobalt (mg/L)	SW-26	0.00116	9/12/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Copper (mg/L)	n/a	0.005	n/a	4 future	n/a	12	n/a	n/a	100	n/a	n/a	0.009707	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-26	1	9/12/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Iron (mg/L)	SW-26	2.016	9/12/2024	0.2	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Lead (mg/L)	SW-26	0.00258	9/12/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	SW-26	73.3	9/12/2024	20.6	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Manganese (mg/L)	SW-26	0.959	9/12/2024	0.385	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Molybdenum (mg/L)	SW-26	0.00637	9/12/2024	0.00433	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Nickel (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Selenium (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Strontium (mg/L)	SW-26	0.285	9/12/2024	0.172	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-26	554	9/12/2024	52.2	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.00682	n/a	4 future	n/a	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Zinc (mg/L)	SW-26	0.0312	9/12/2024	0.02ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2

Trend Tests - Surface Water Prediction Limit Exceedances - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:37 PM

<u>Constituent</u>	<u>Well</u>	<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>	<u>Method</u>
Boron (mg/L)	SW-24	-0.4159	-64	-53	Yes	15	0	n/a	n/a	0.01	NP

Trend Tests - Surface Water Prediction Limit Exceedances - All Results

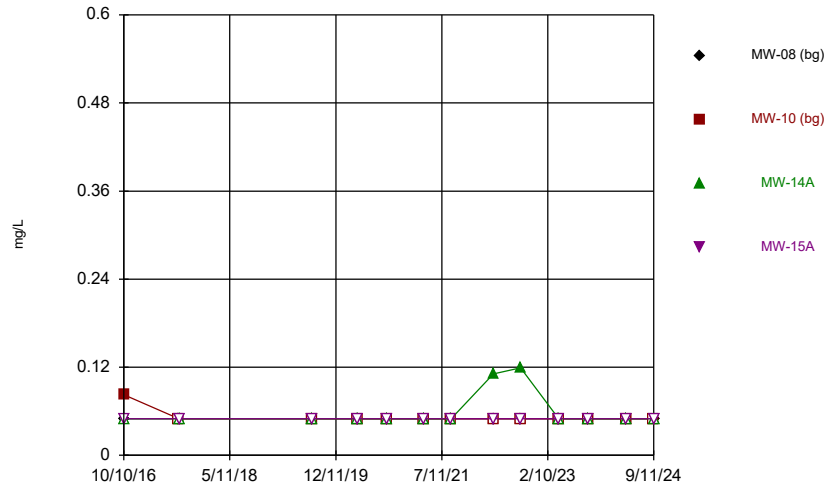
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:37 PM

<u>Constituent</u>	<u>Well</u>	<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>	<u>Method</u>
Arsenic (mg/L)	SW-22 (bg)	0	7	43	No	13	76.92	n/a	n/a	0.01	NP
Arsenic (mg/L)	SW-26	-0.000905	-8	-53	No	15	13.33	n/a	n/a	0.01	NP
Boron (mg/L)	SW-22 (bg)	0	-30	-48	No	14	71.43	n/a	n/a	0.01	NP
Boron (mg/L)	SW-24	-0.4159	-64	-53	Yes	15	0	n/a	n/a	0.01	NP
Calcium (mg/L)	SW-22 (bg)	-1.292	-15	-48	No	14	0	n/a	n/a	0.01	NP
Calcium (mg/L)	SW-24	-4.347	-43	-53	No	15	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	SW-22 (bg)	-0.4282	-9	-43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	SW-24	-1.166	-31	-48	No	14	0	n/a	n/a	0.01	NP
Strontium (mg/L)	SW-22 (bg)	-0.002505	-16	-43	No	13	0	n/a	n/a	0.01	NP
Strontium (mg/L)	SW-24	-0.009132	-29	-48	No	14	0	n/a	n/a	0.01	NP
Strontium (mg/L)	SW-25	-0.005334	-11	-48	No	14	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SW-22 (bg)	-2.076	-34	-48	No	14	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SW-24	-15.8	-32	-53	No	15	0	n/a	n/a	0.01	NP

FIGURE A.

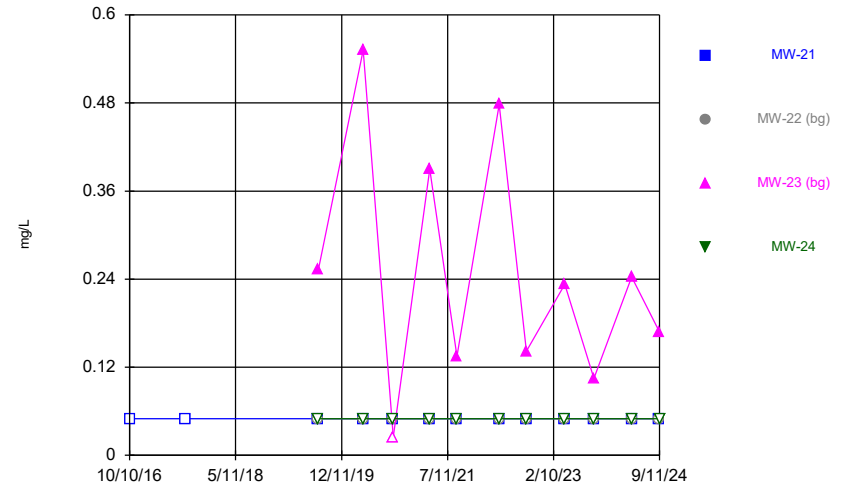
Monitoring Wells Time Series

Time Series



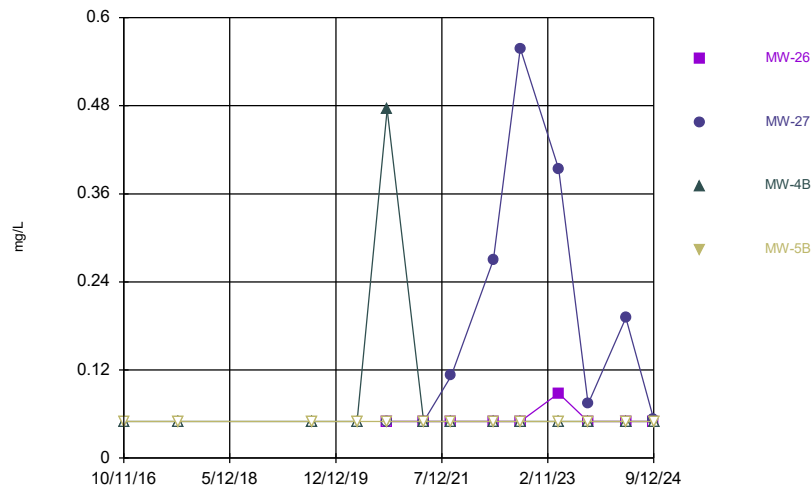
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 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



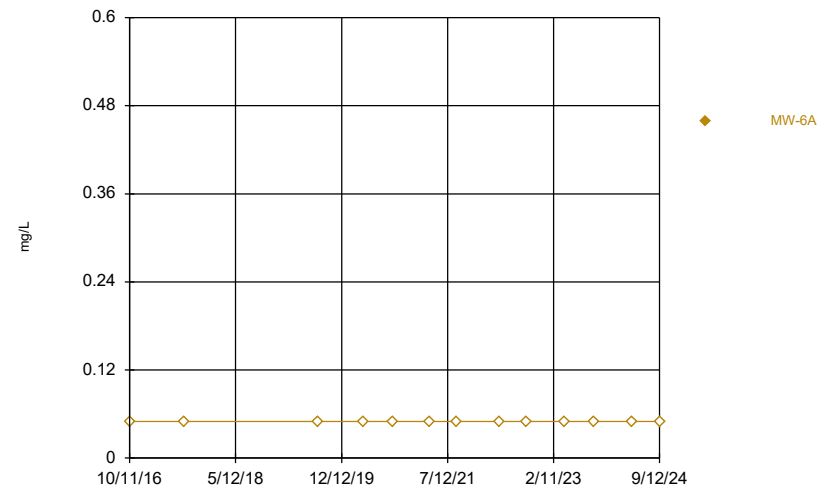
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 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



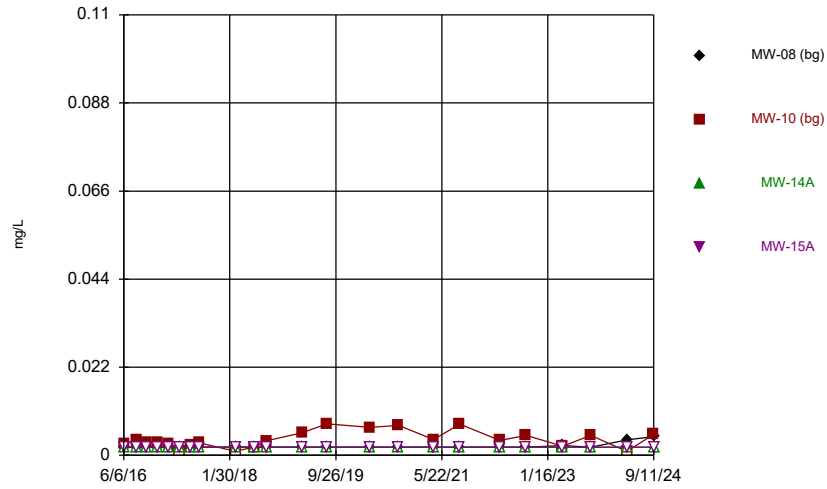
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Time Series



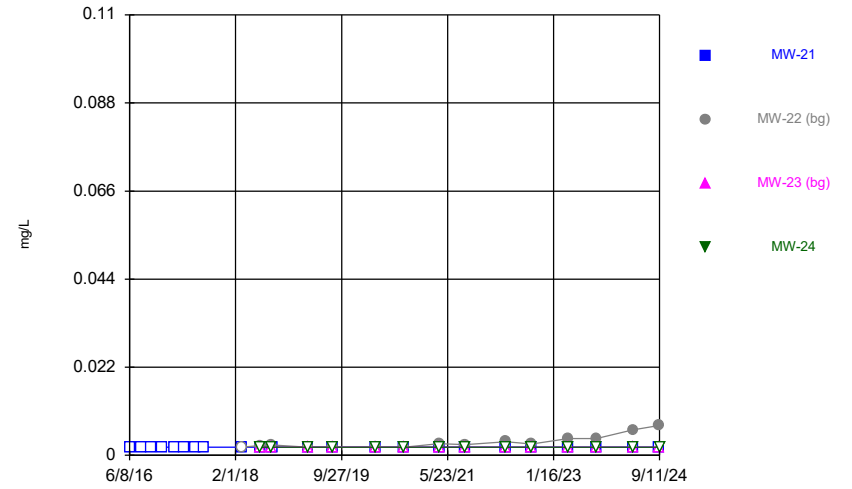
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Time Series



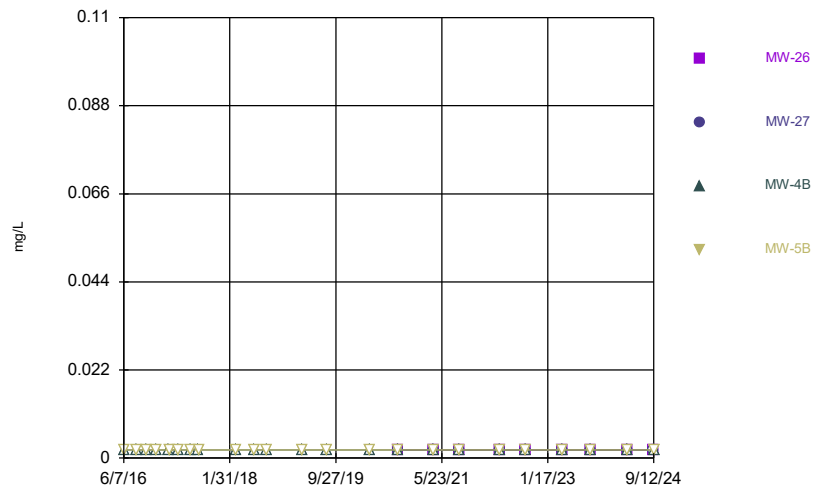
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Time Series



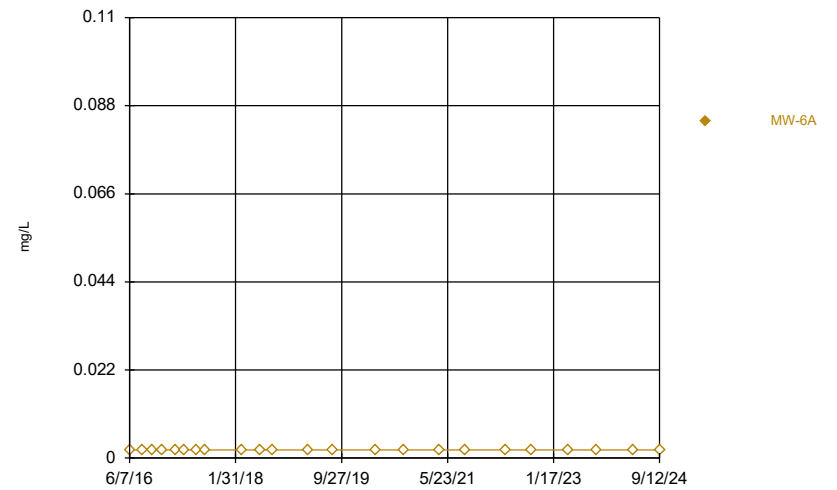
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Time Series



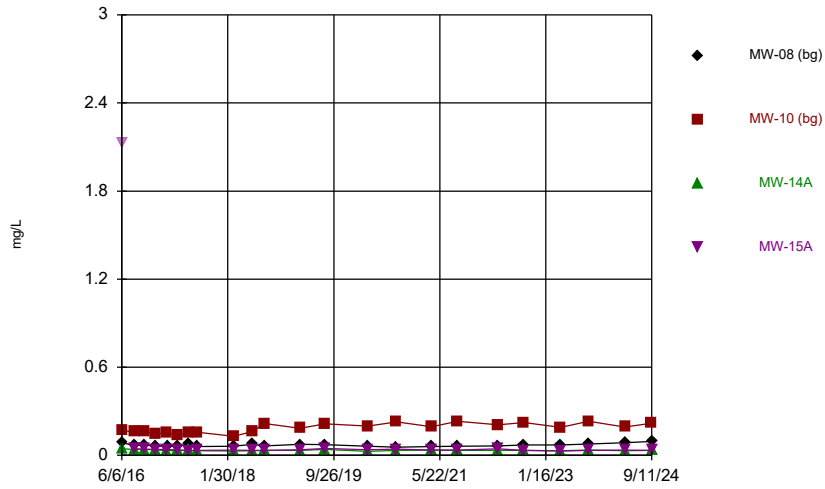
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Time Series



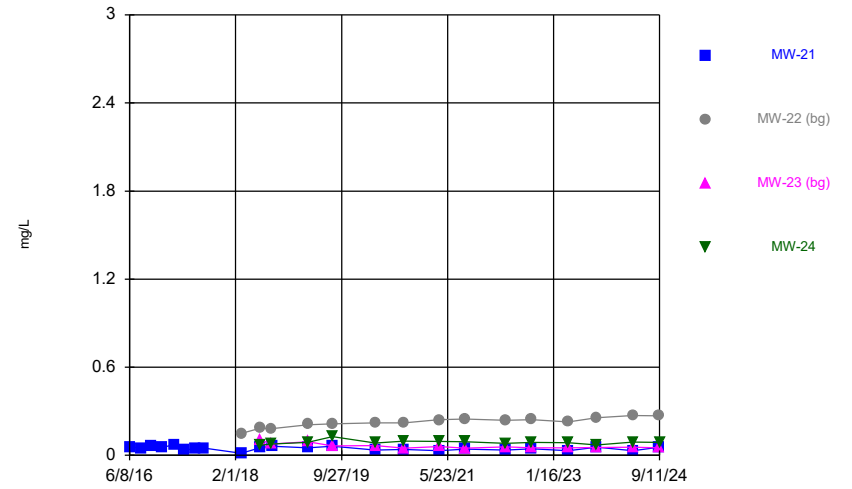
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Time Series



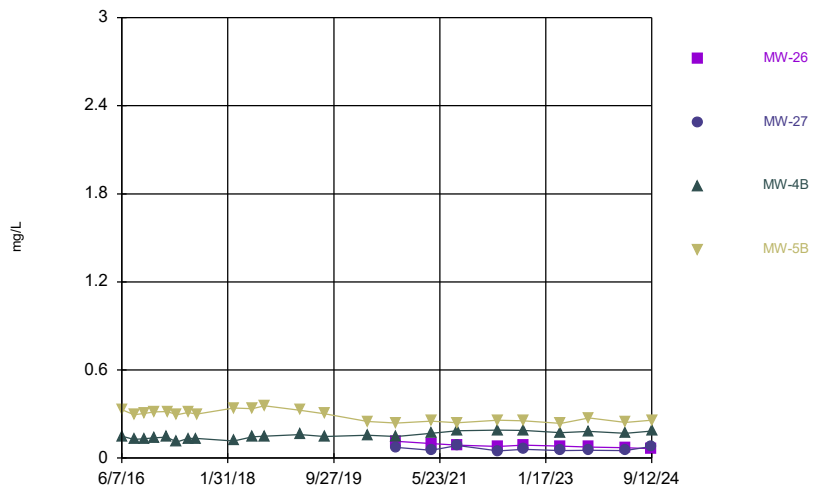
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Time Series



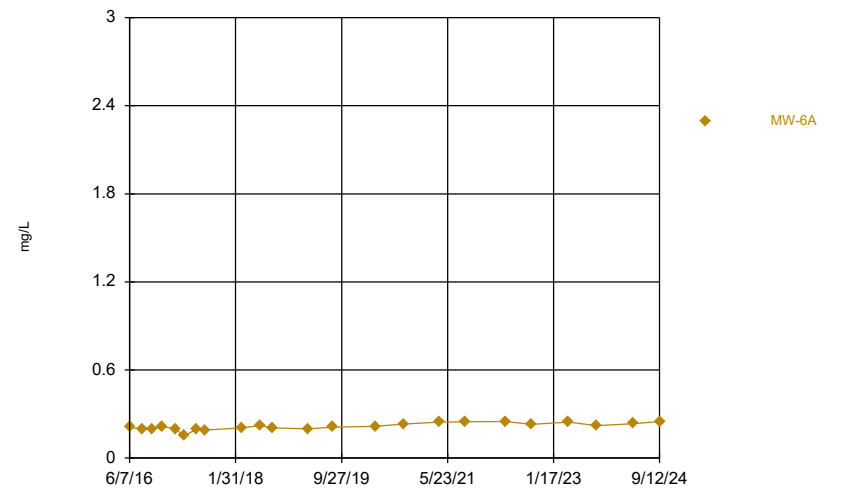
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Time Series



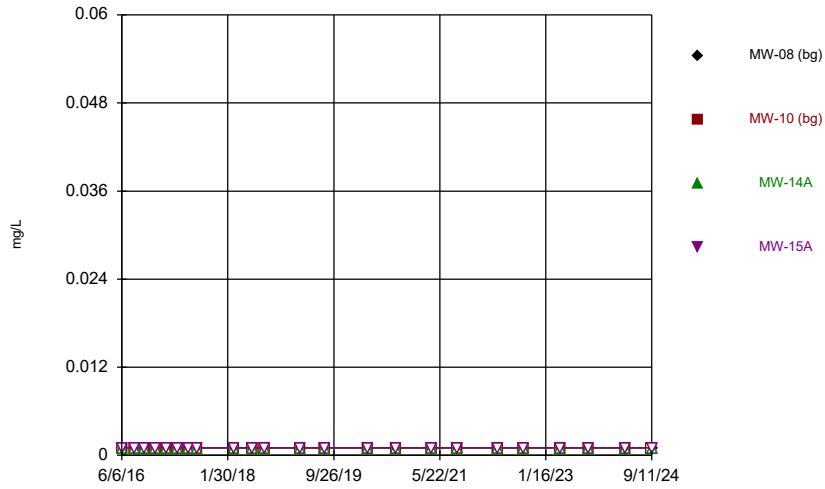
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Time Series



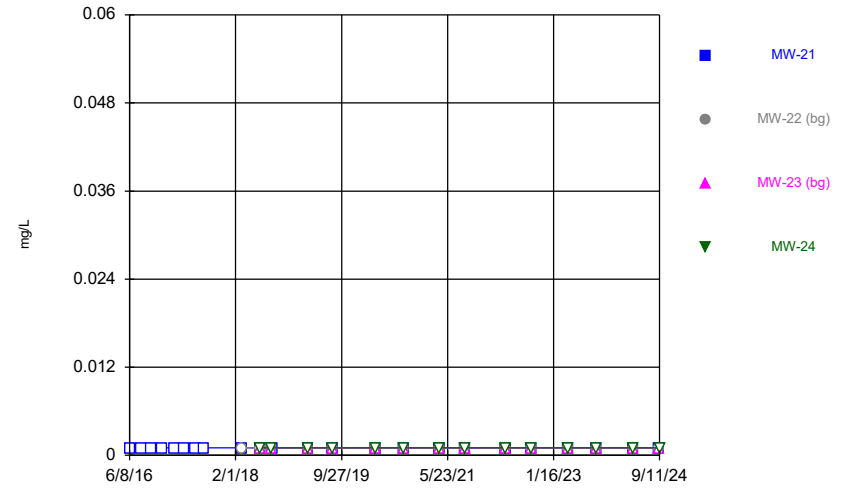
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Time Series



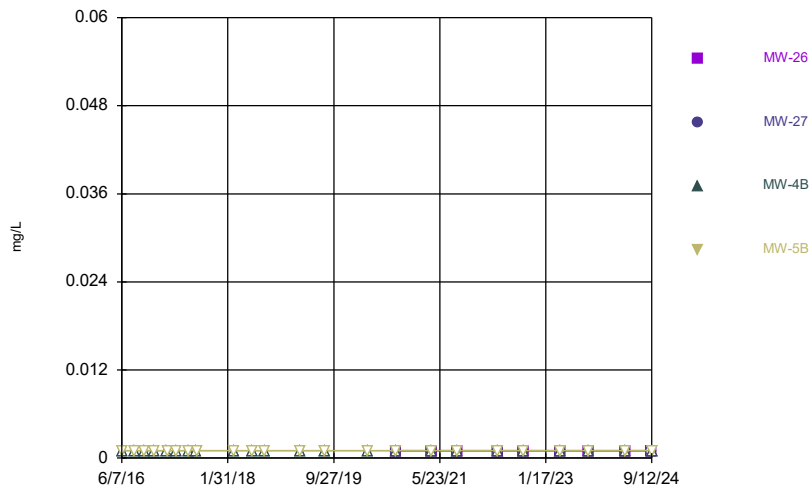
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Time Series



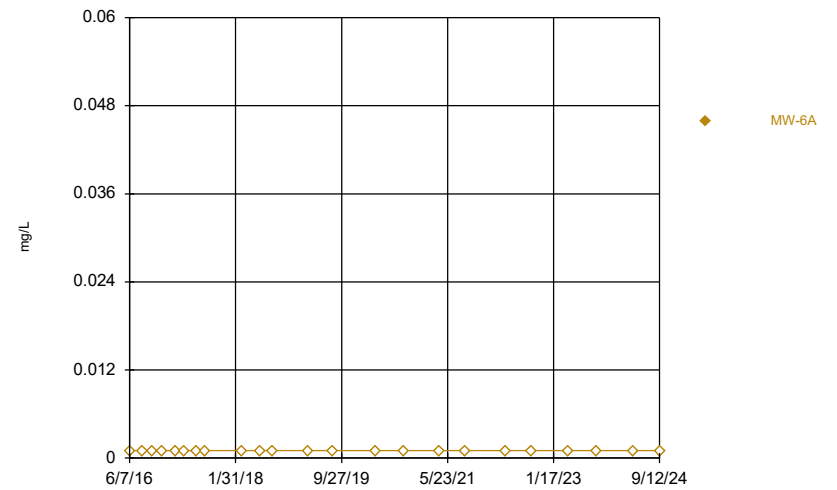
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Time Series



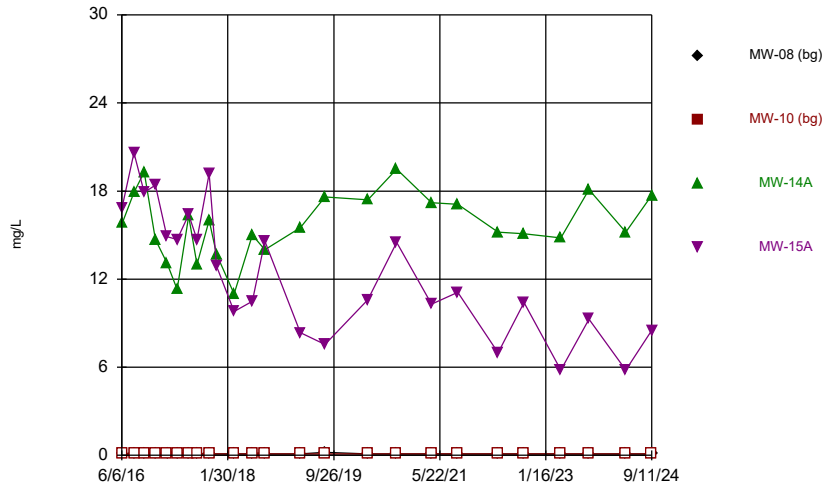
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Time Series



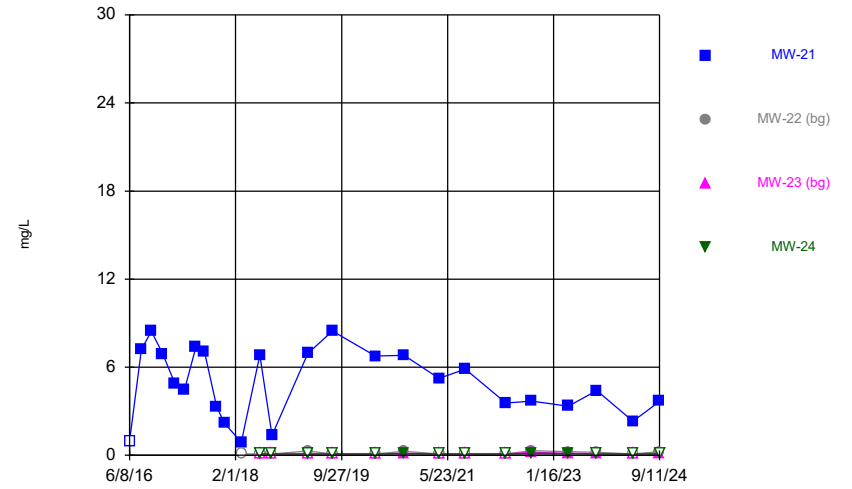
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Time Series



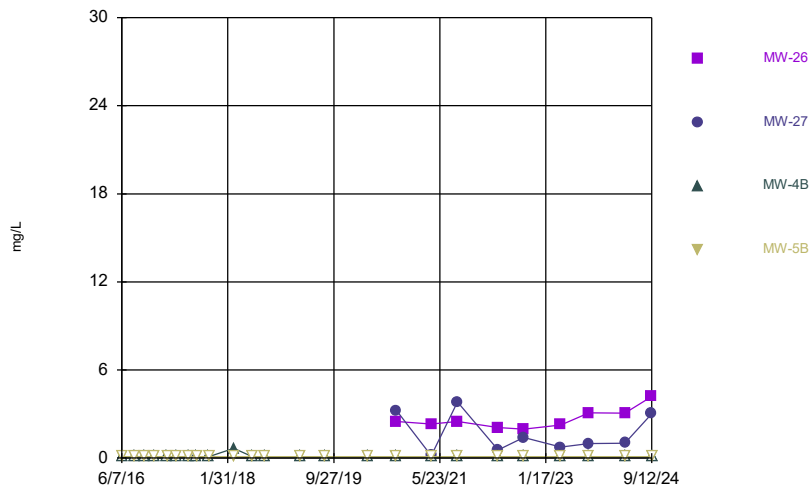
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Time Series

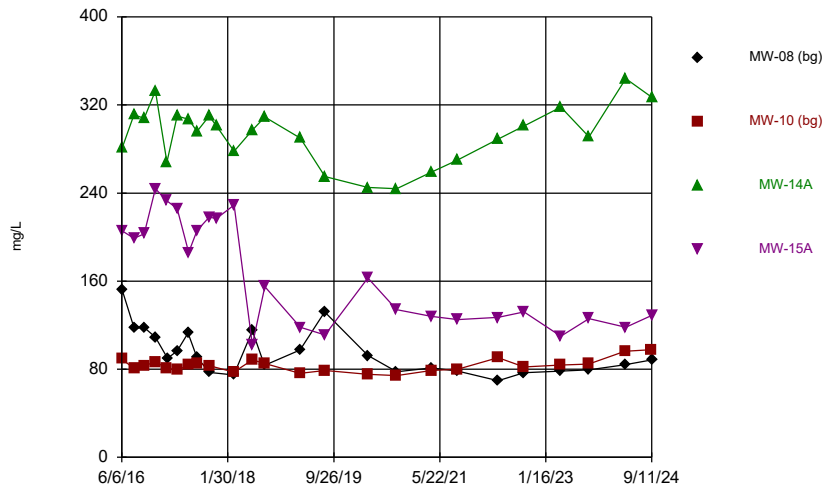


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Time Series

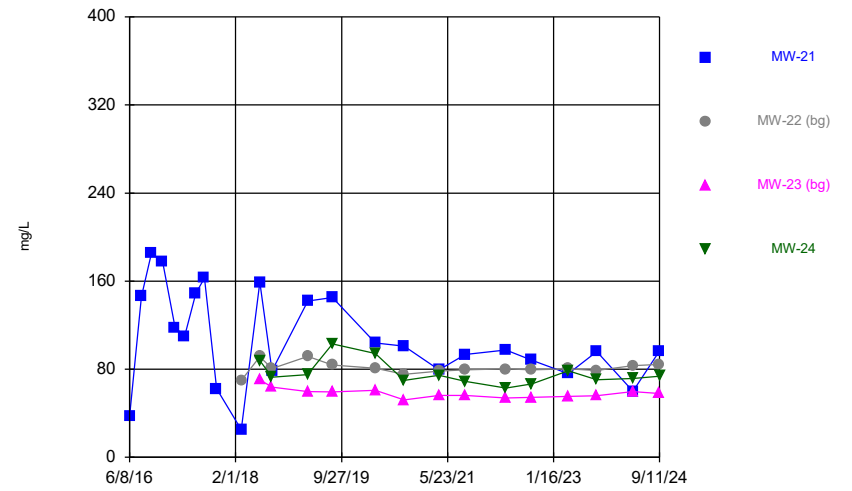


Time Series



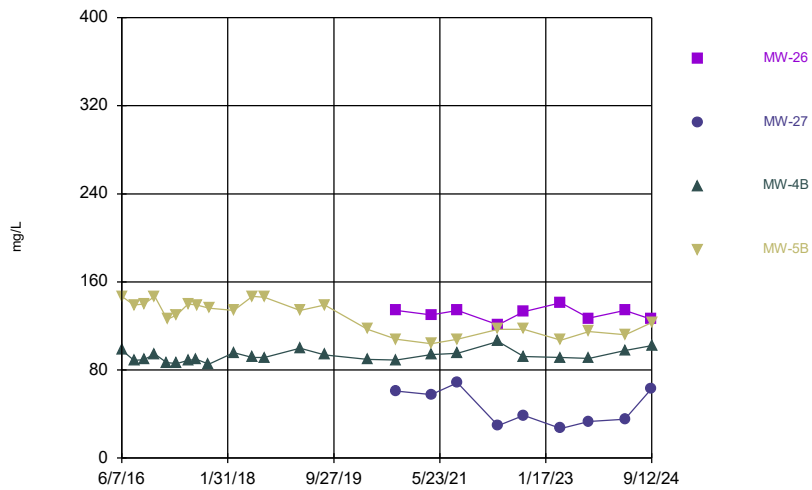
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Time Series



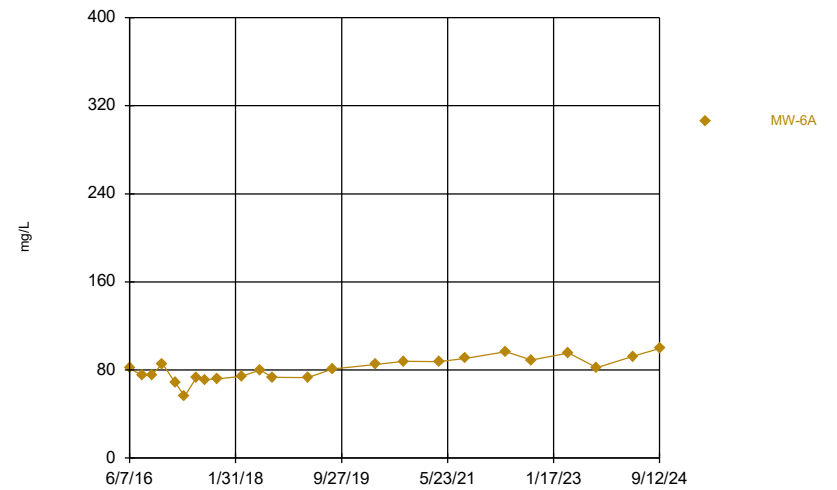
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Time Series



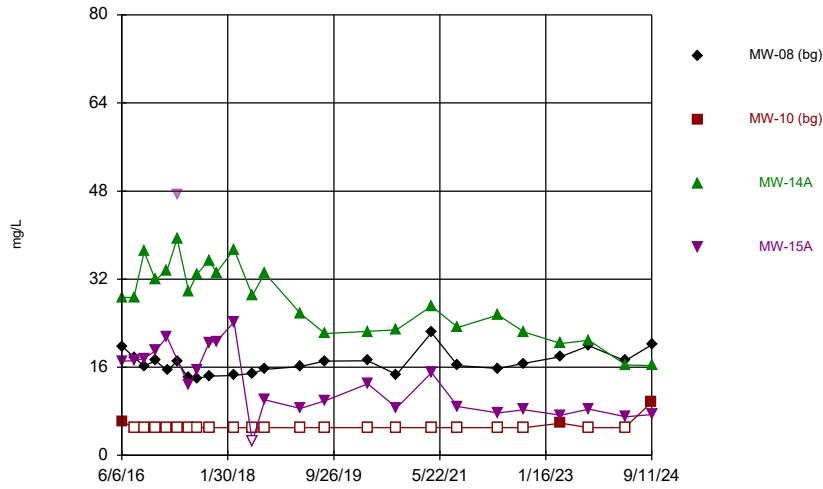
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Time Series



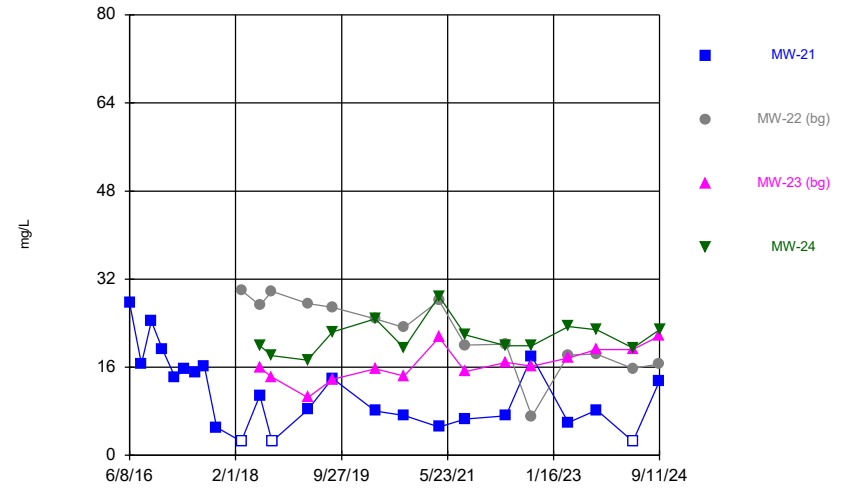
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Time Series



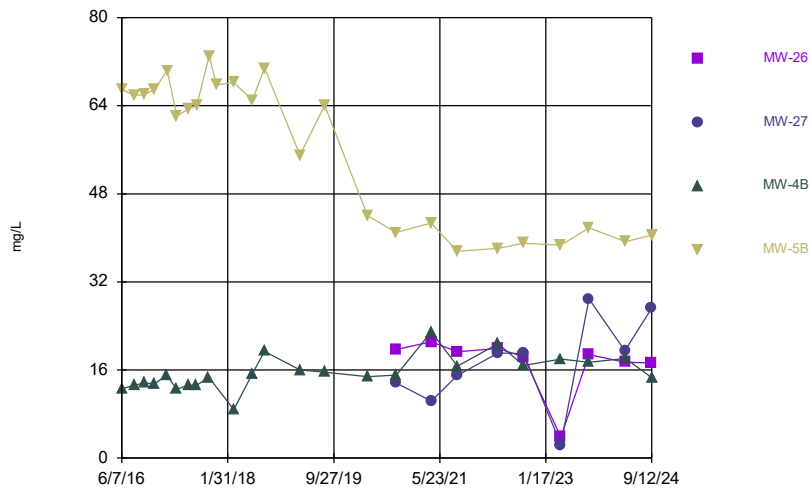
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Time Series



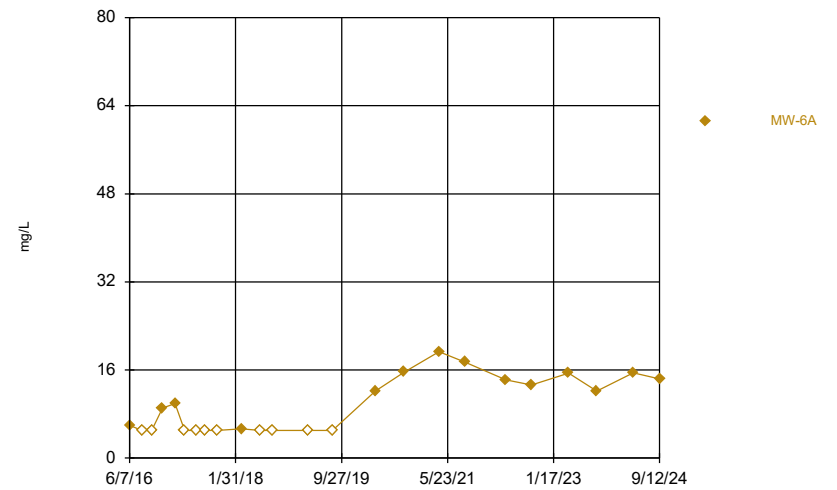
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Time Series



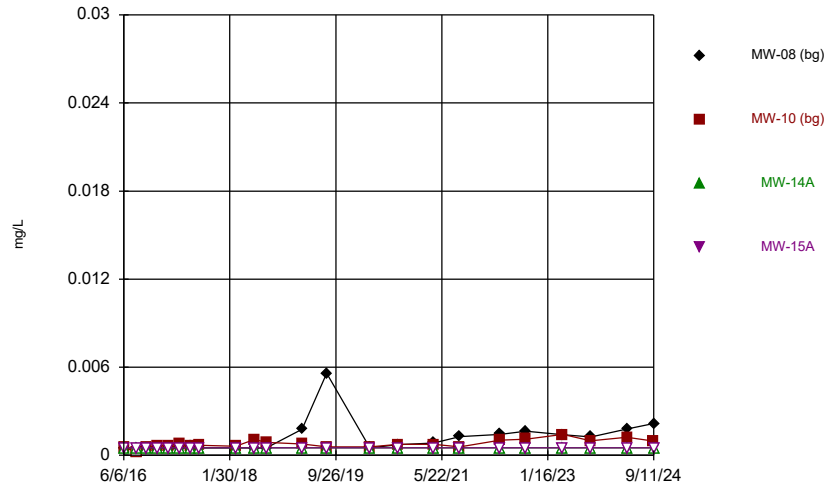
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Time Series



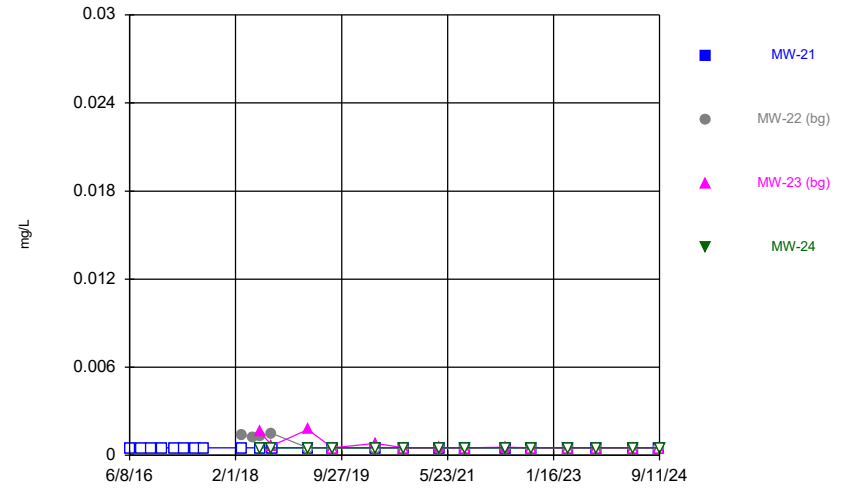
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Time Series



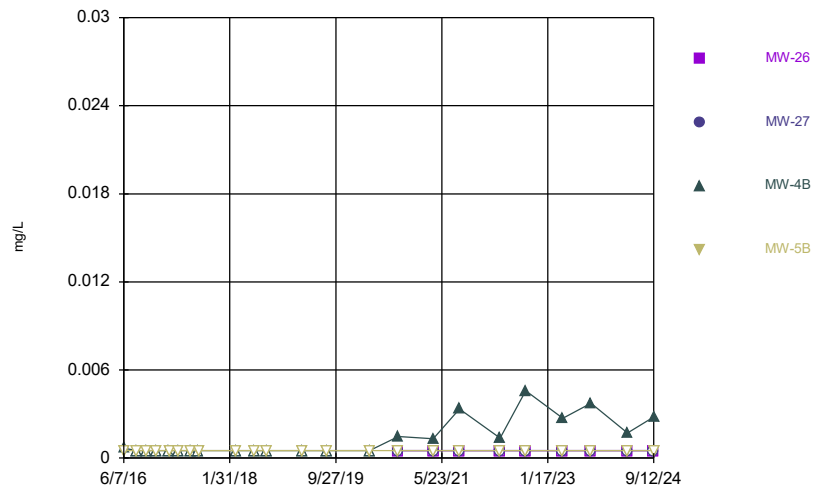
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Time Series



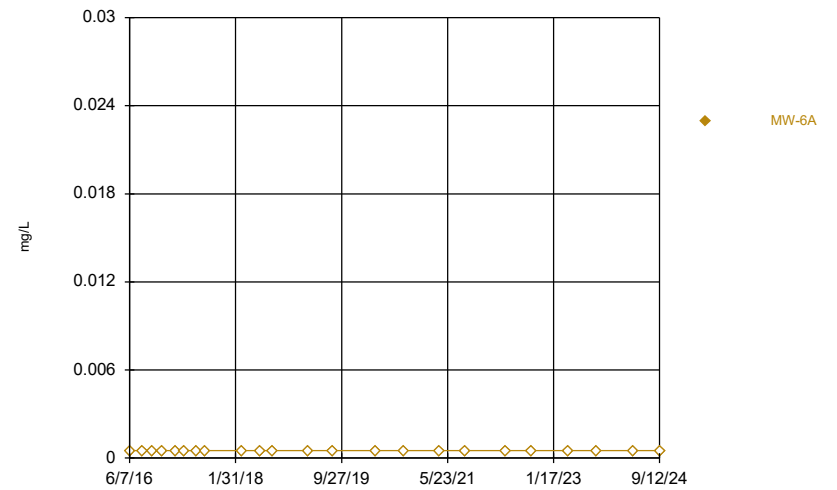
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Time Series



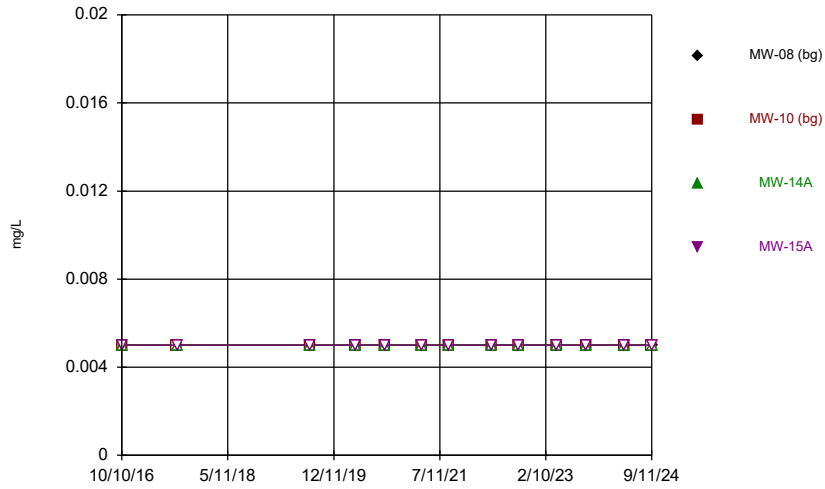
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Time Series



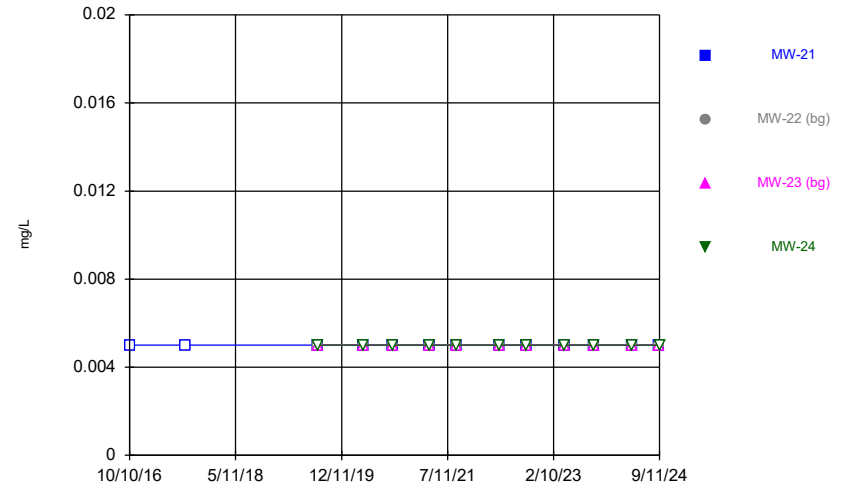
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Time Series



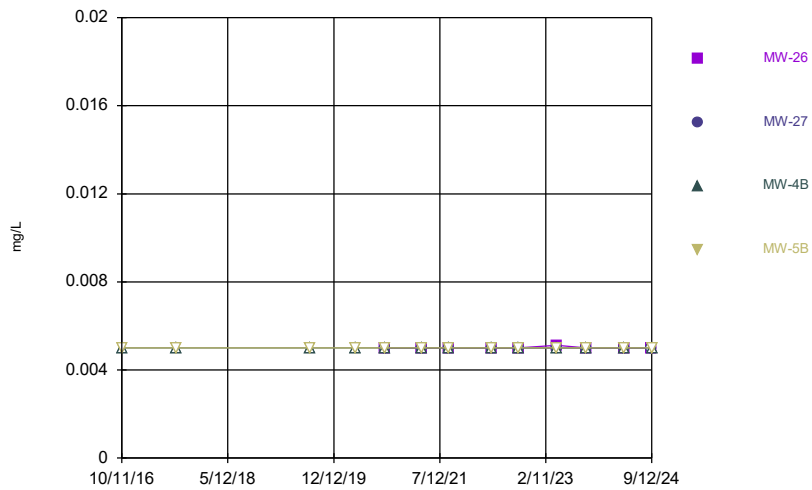
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Time Series



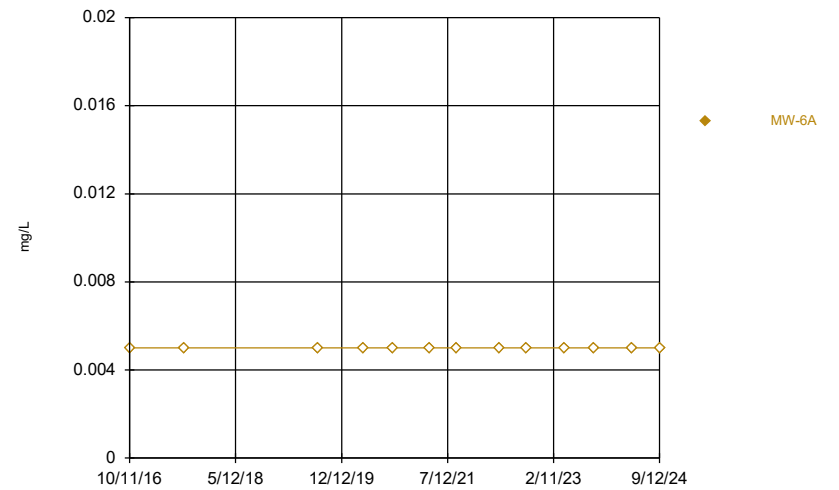
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Time Series



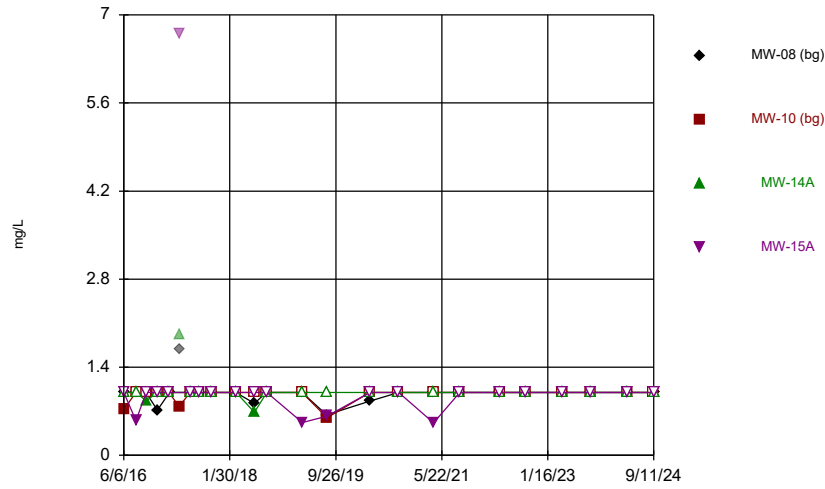
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Time Series



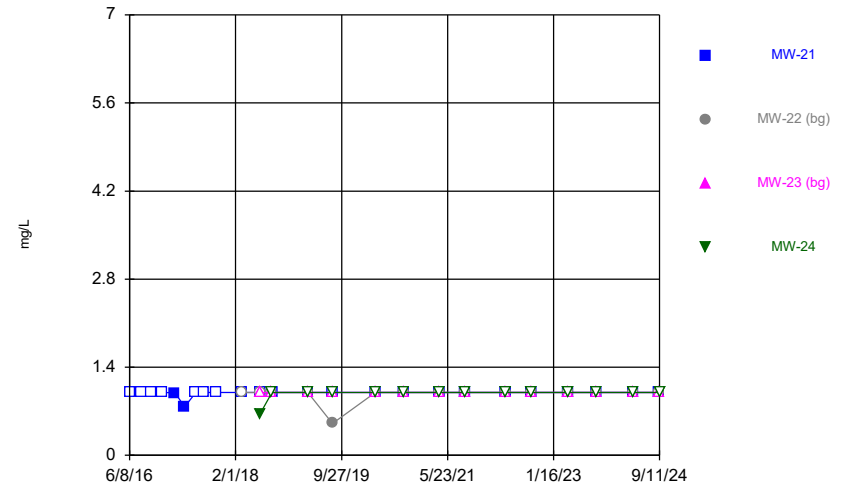
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Time Series



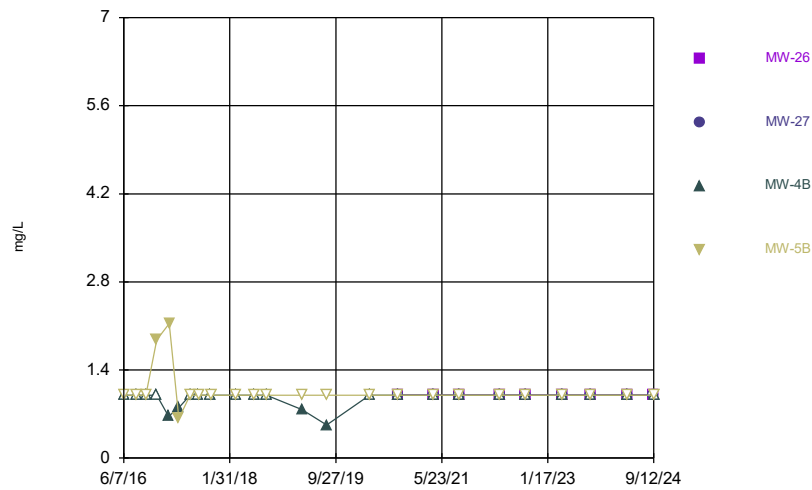
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Time Series



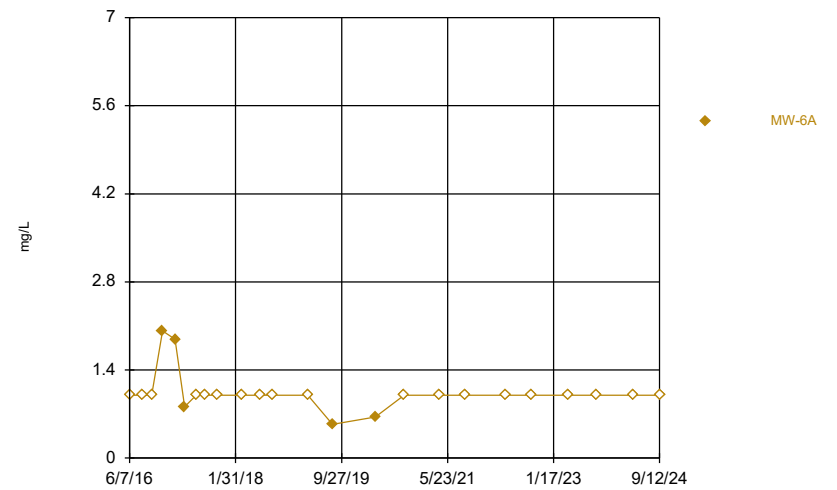
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Time Series



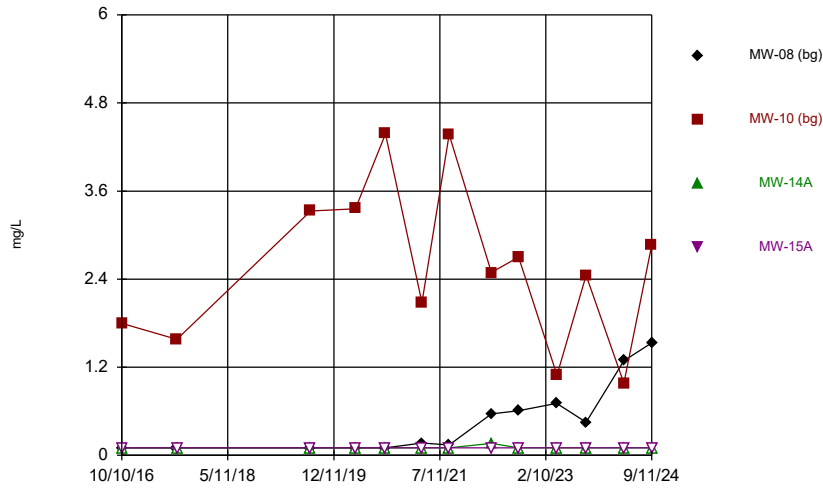
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Time Series



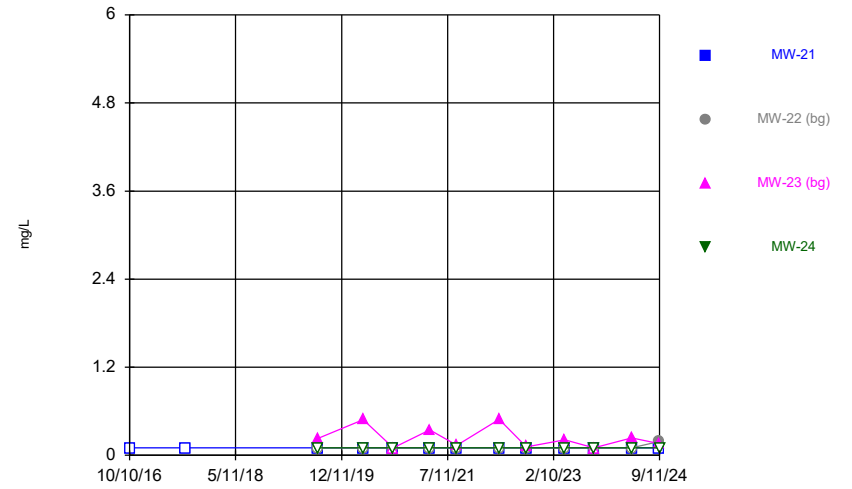
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Time Series



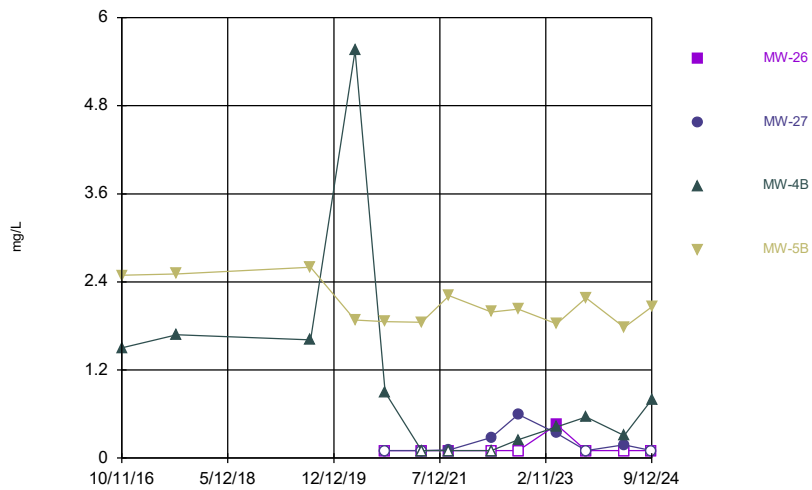
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Time Series



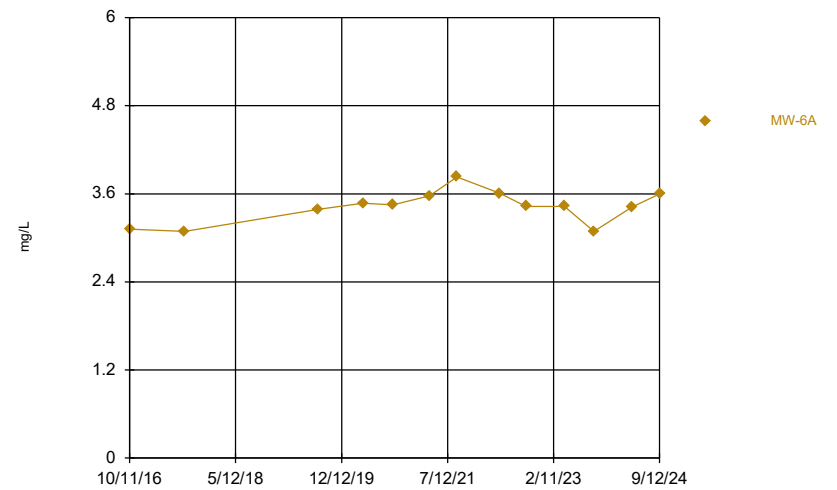
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Time Series



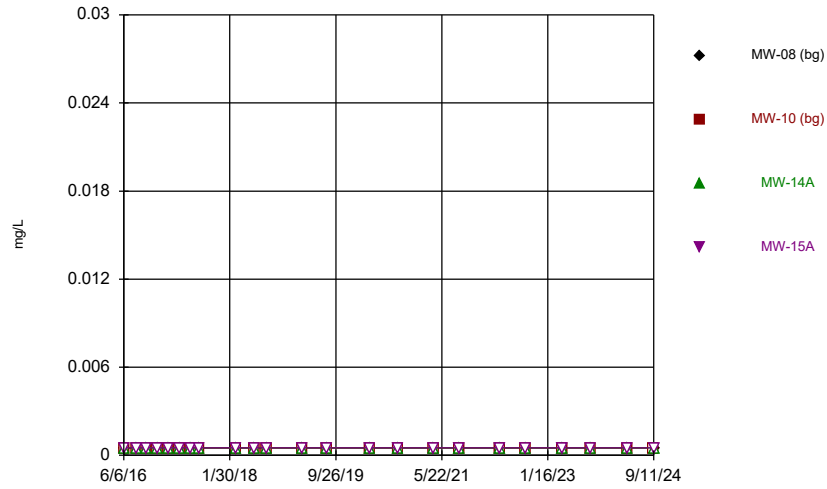
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Time Series



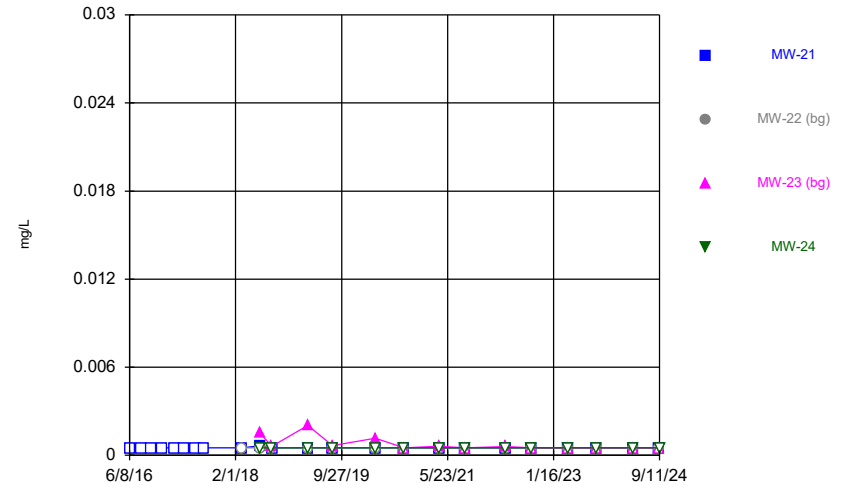
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Time Series



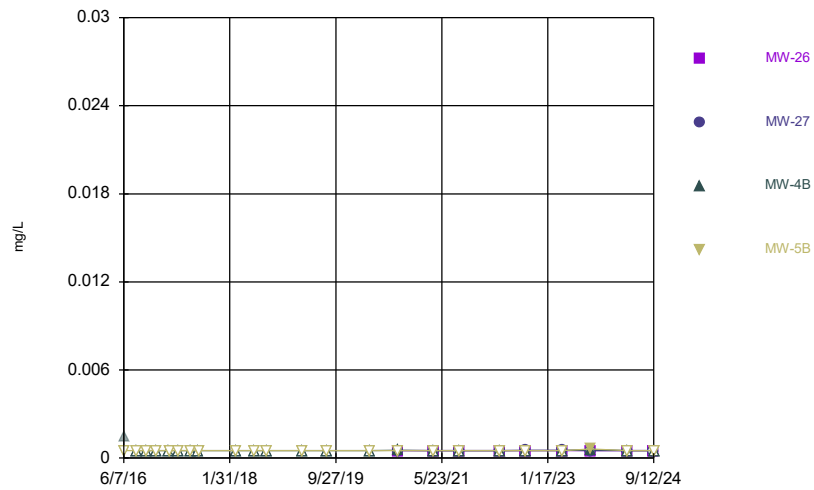
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Time Series



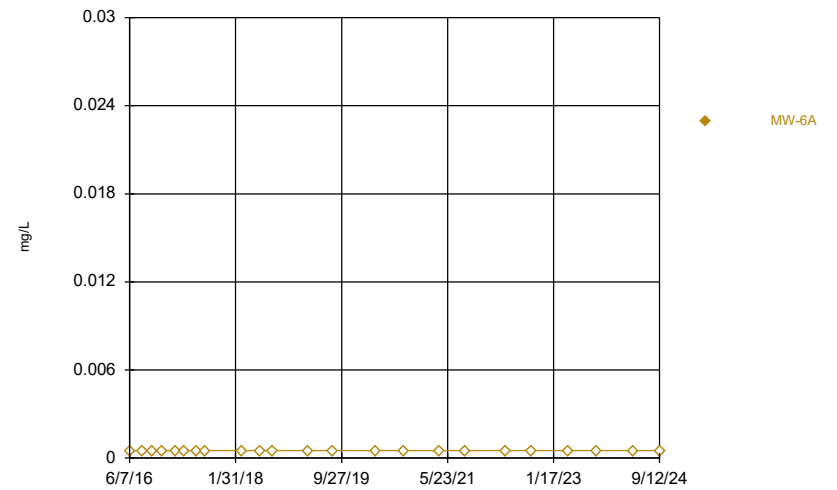
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Time Series



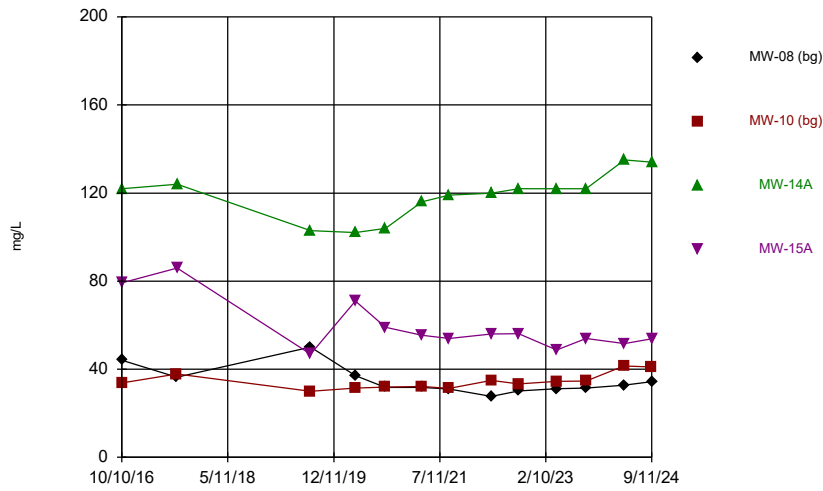
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



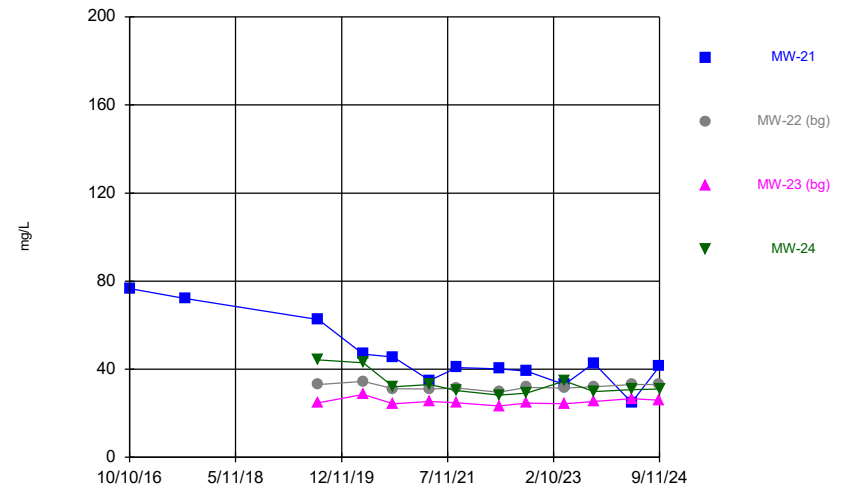
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



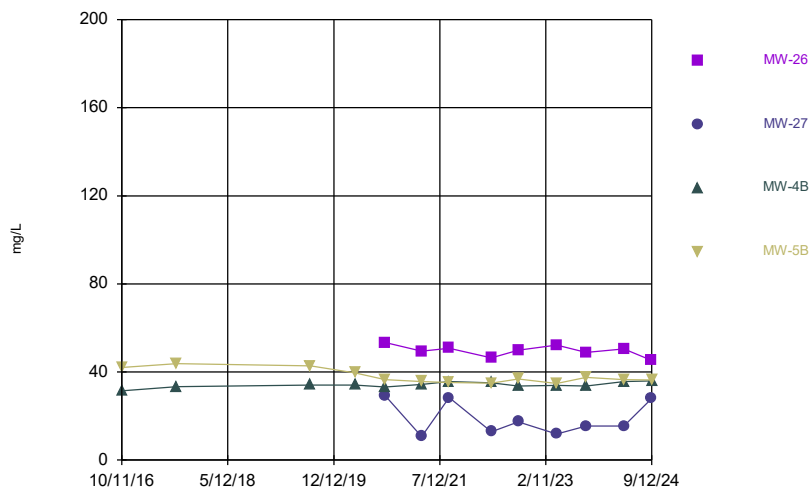
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



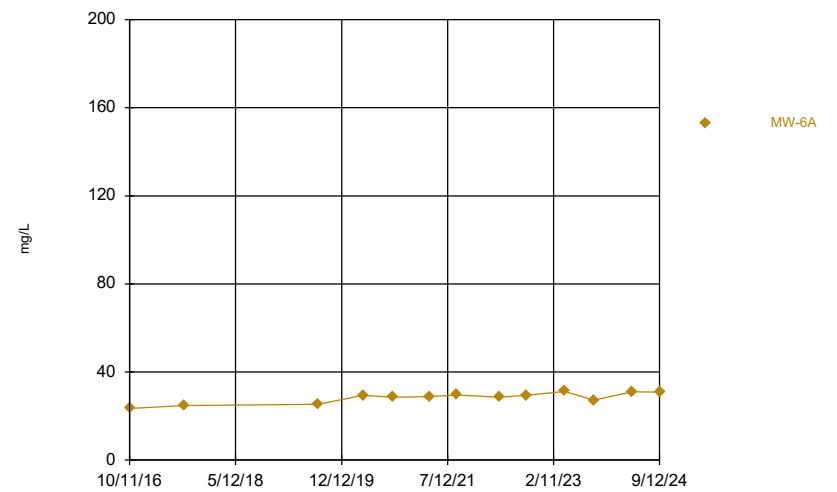
Constituent: Magnesium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



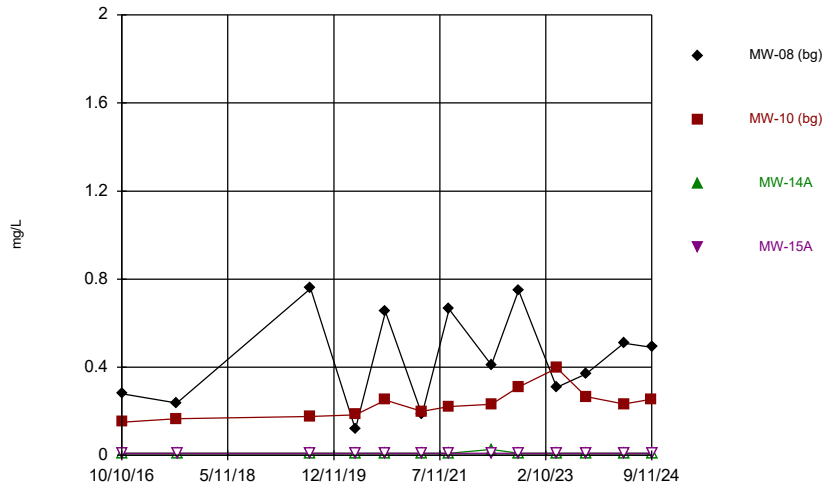
Constituent: Magnesium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



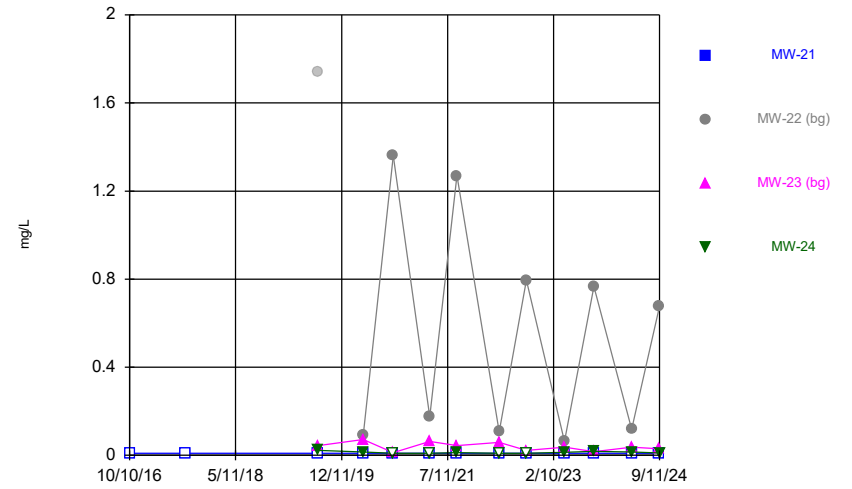
Constituent: Magnesium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



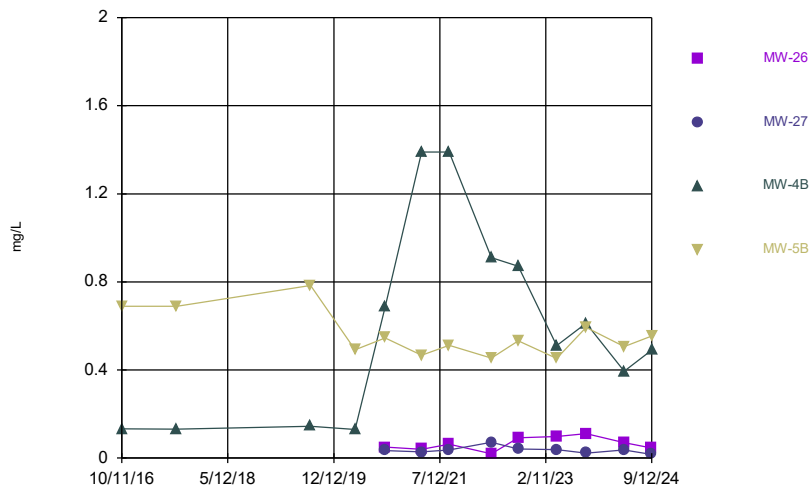
Constituent: Manganese Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



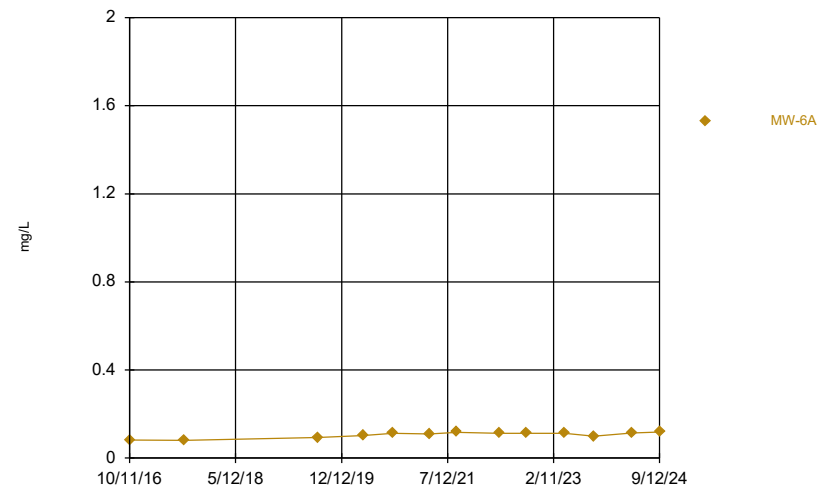
Constituent: Manganese Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



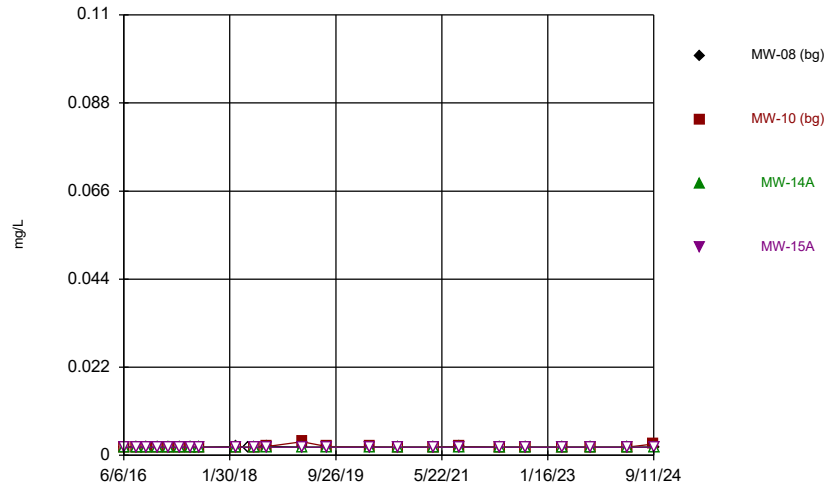
Constituent: Manganese Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



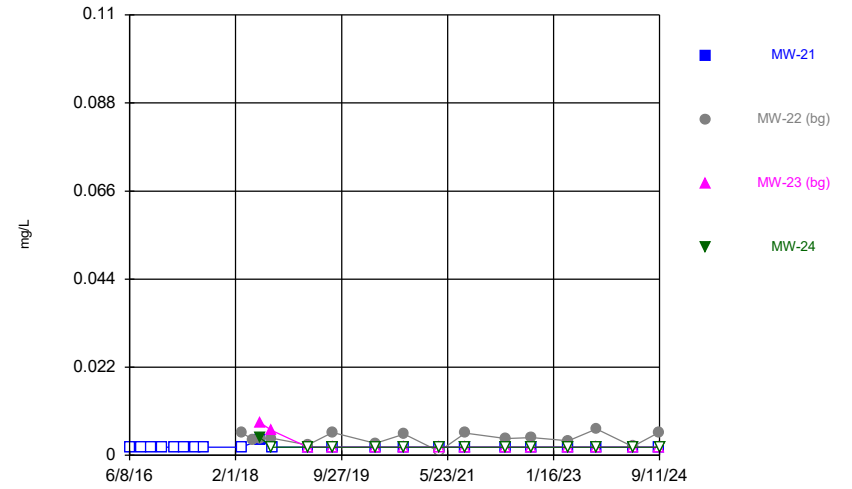
Constituent: Manganese Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



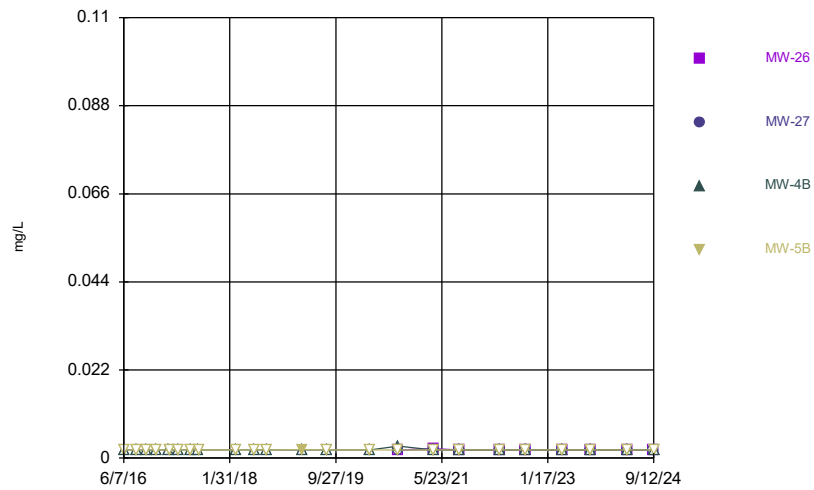
Constituent: Molybdenum Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



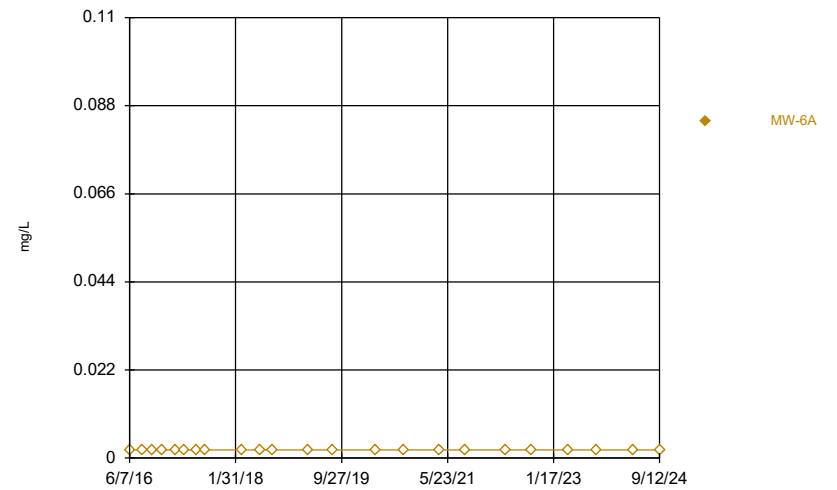
Constituent: Molybdenum Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



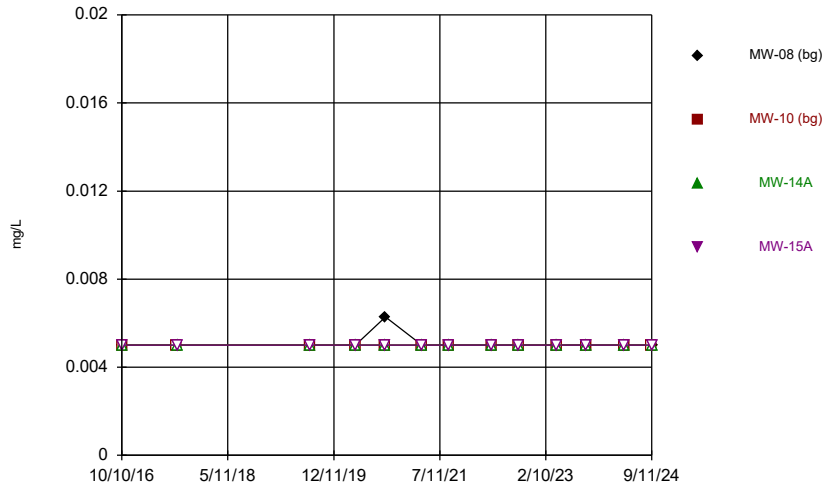
Constituent: Molybdenum Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



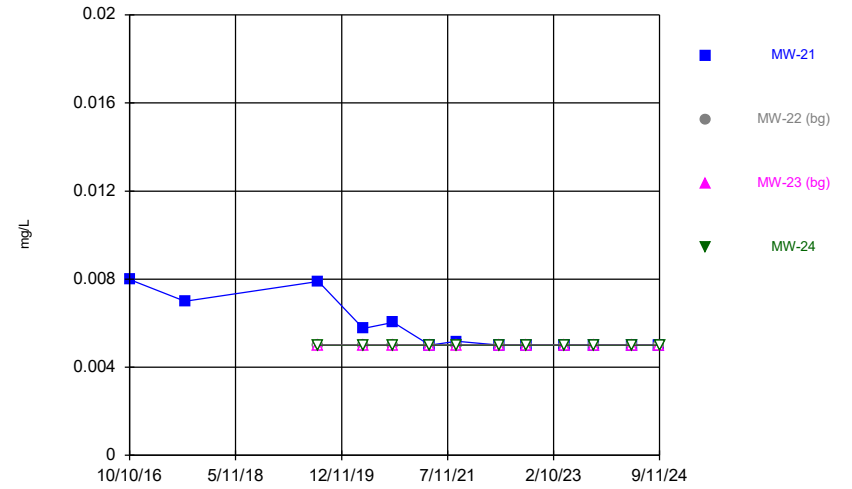
Constituent: Molybdenum Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



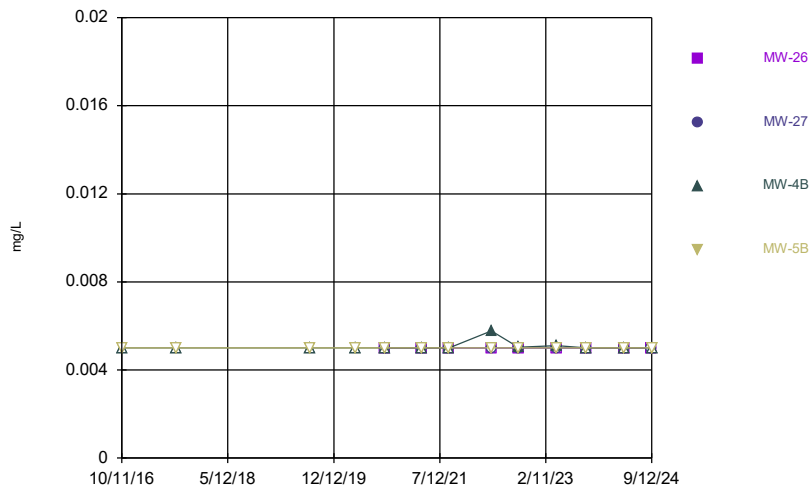
Constituent: Nickel Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



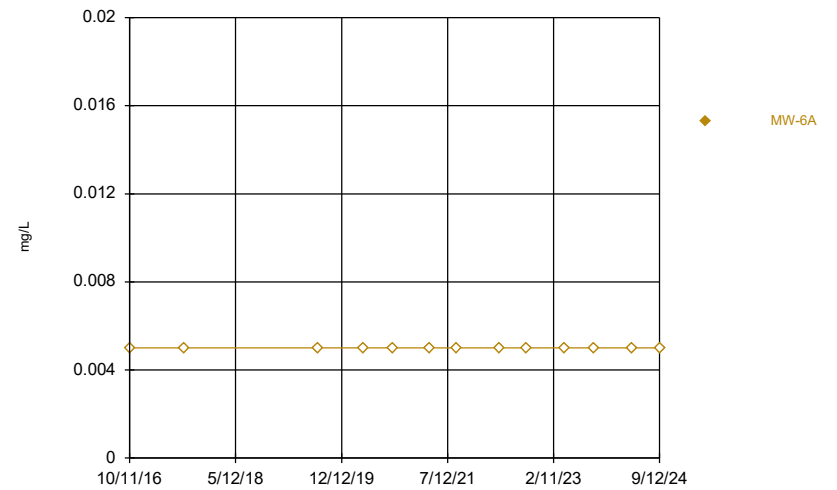
Constituent: Nickel Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



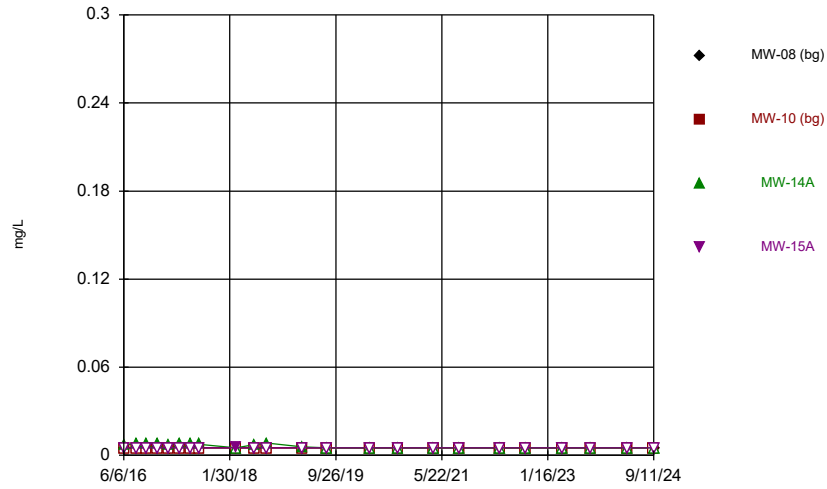
Constituent: Nickel Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



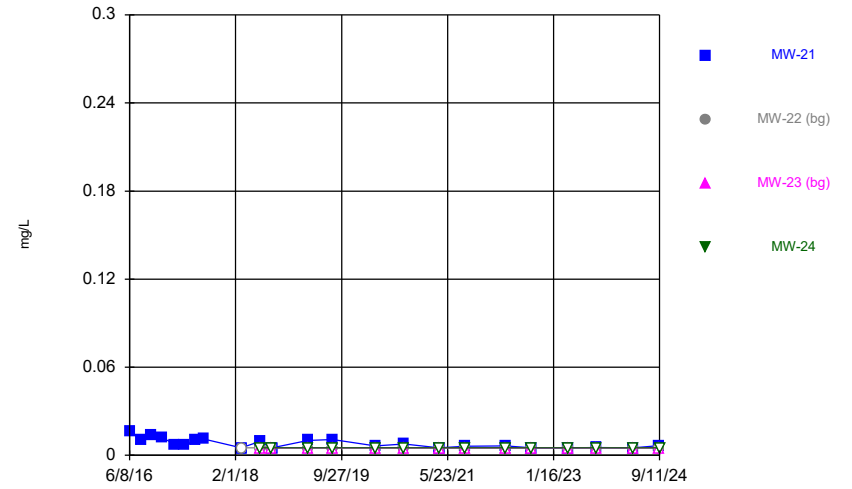
Constituent: Nickel Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



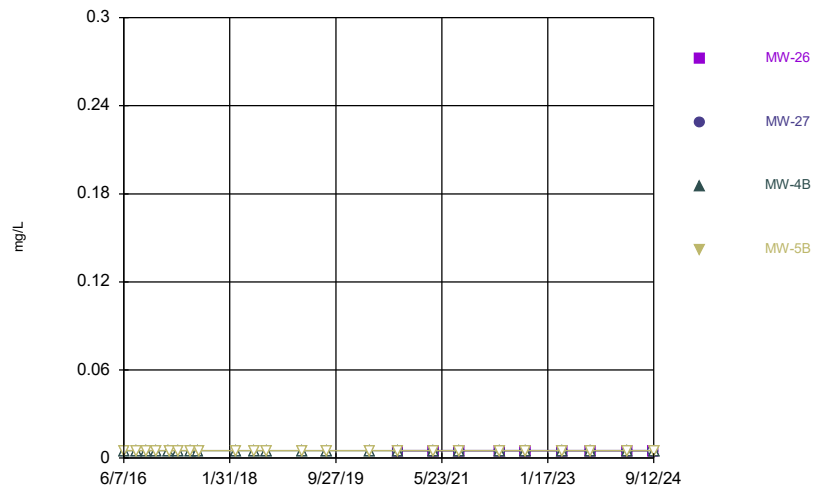
Constituent: Selenium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



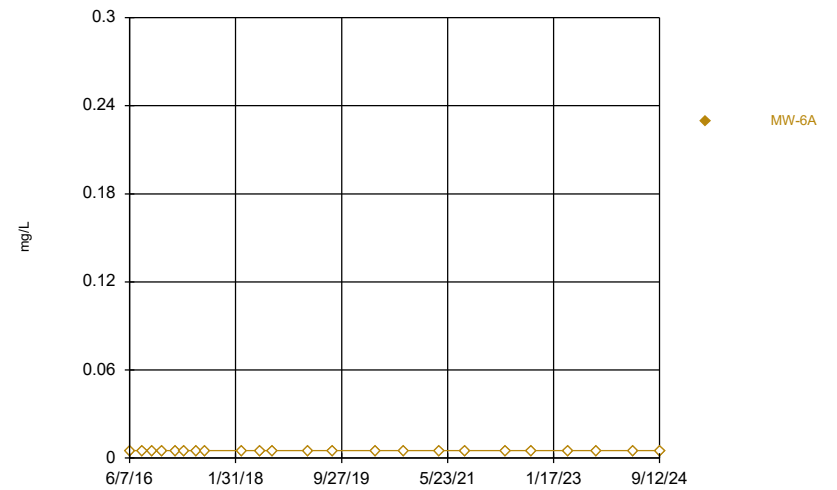
Constituent: Selenium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



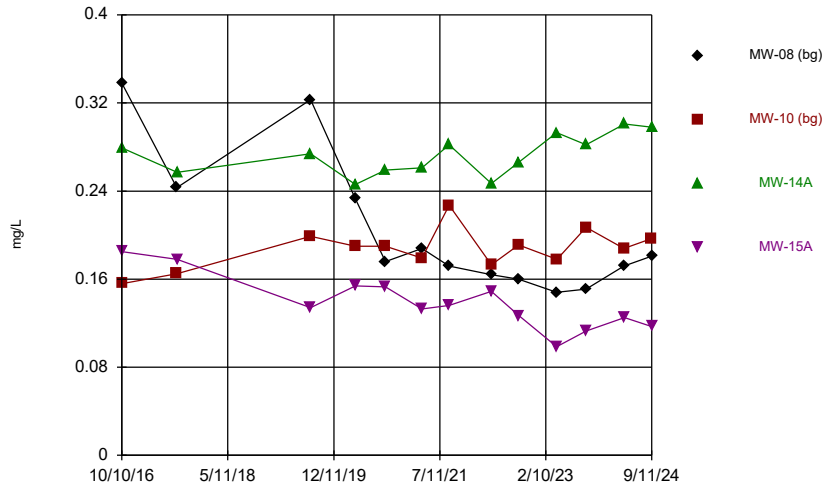
Constituent: Selenium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



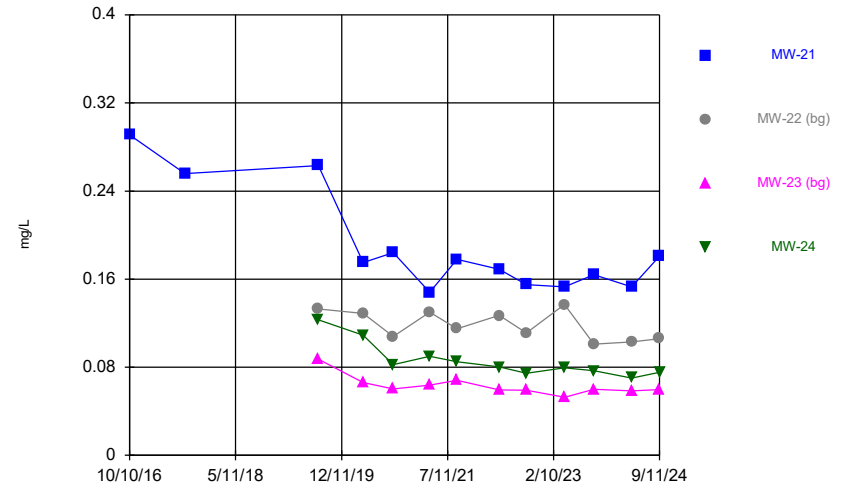
Constituent: Selenium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



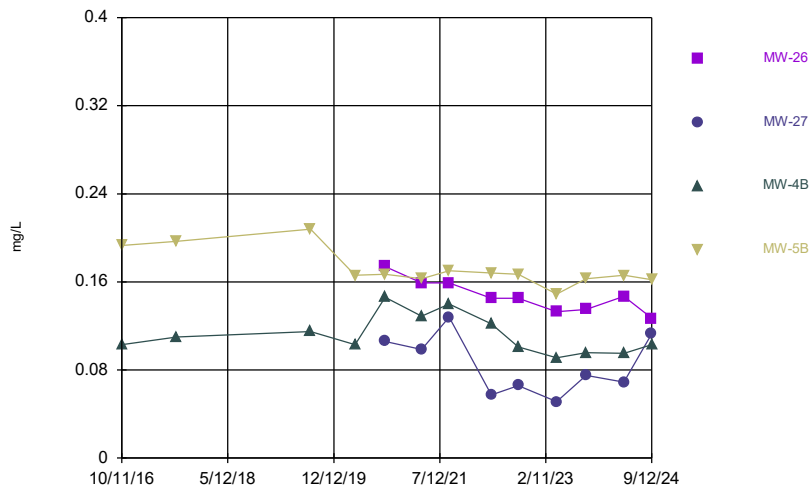
Constituent: Strontium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



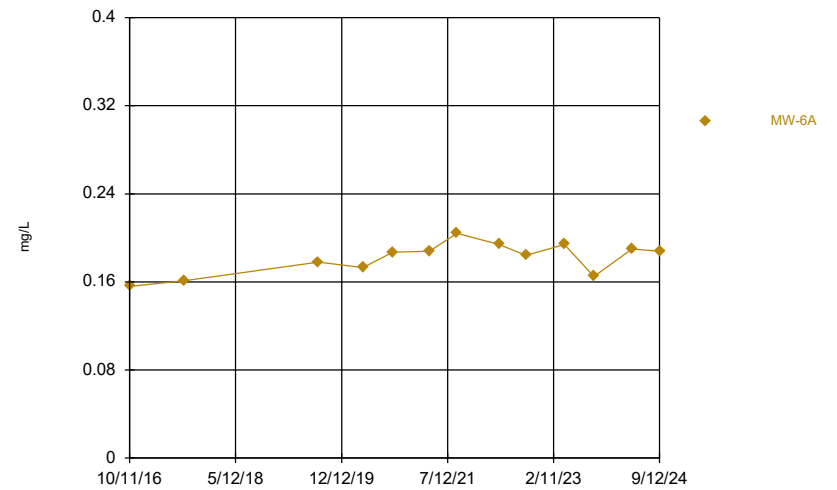
Constituent: Strontium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



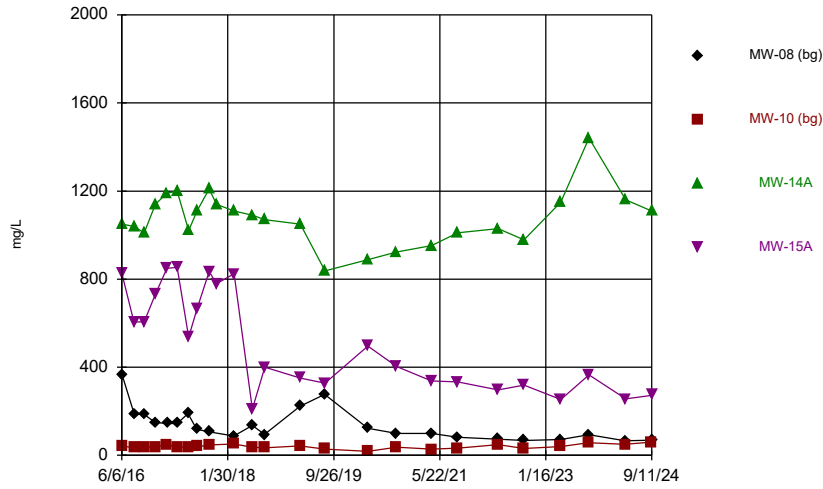
Constituent: Strontium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



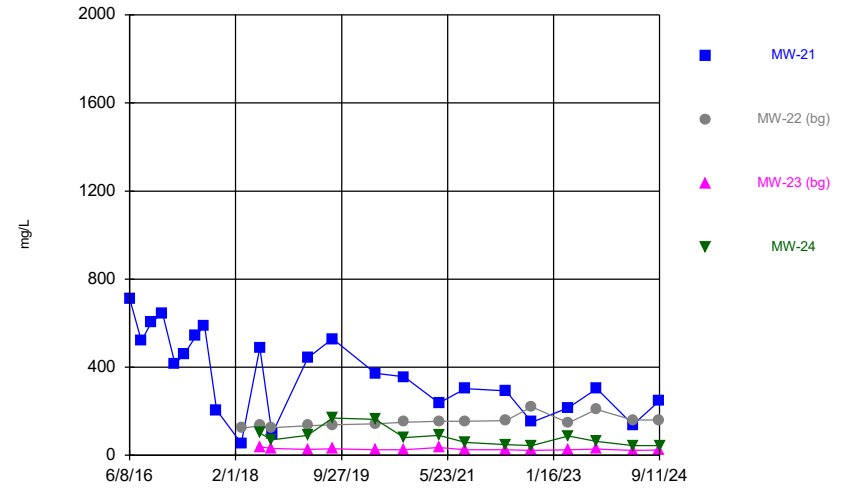
Constituent: Strontium Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



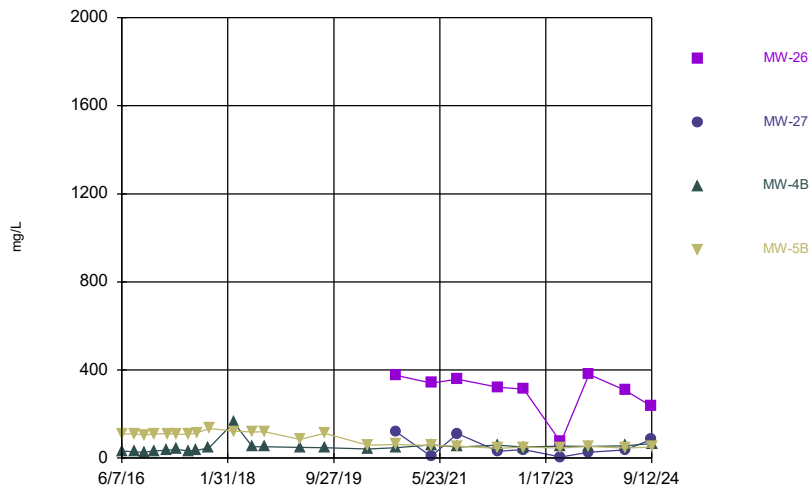
Constituent: Sulfate Analysis Run 11/7/2024 12:54 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



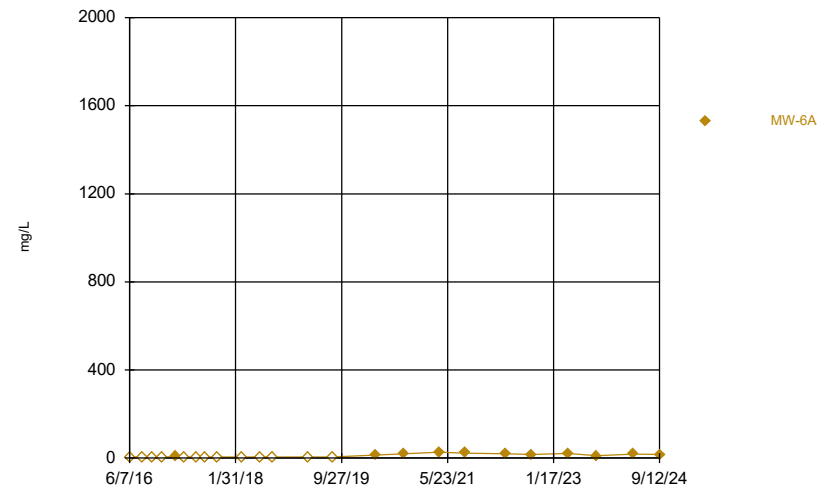
Constituent: Sulfate Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



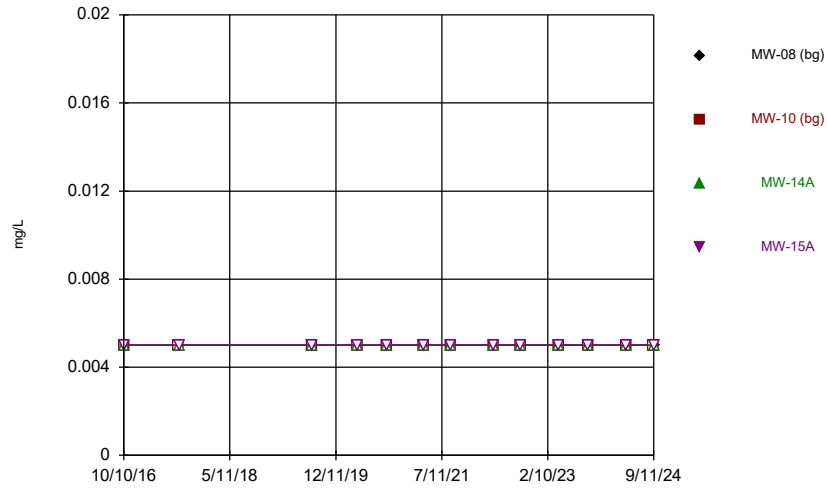
Constituent: Sulfate Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



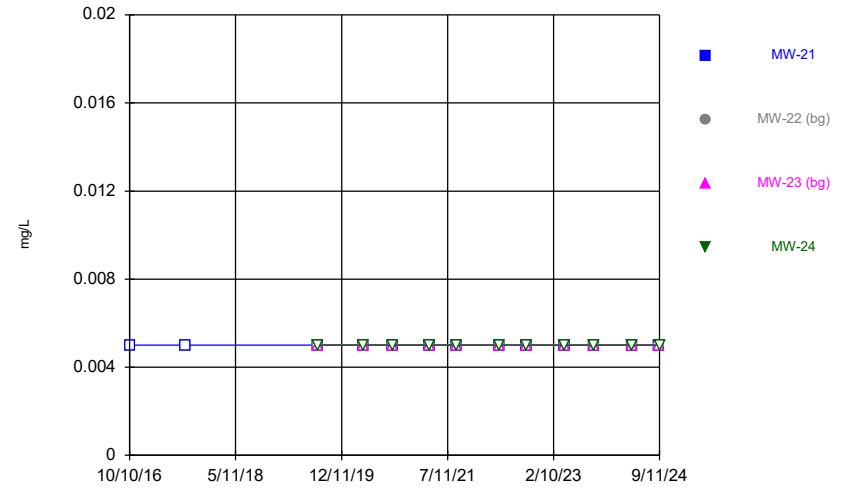
Constituent: Sulfate Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



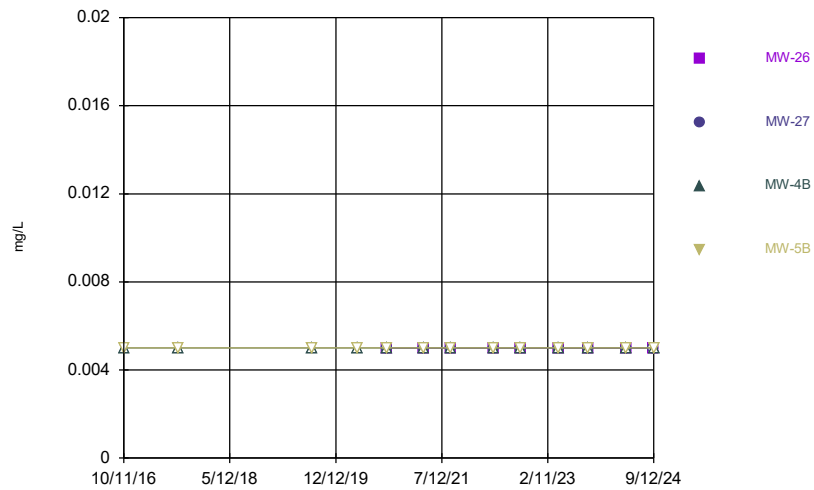
Constituent: Vanadium Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



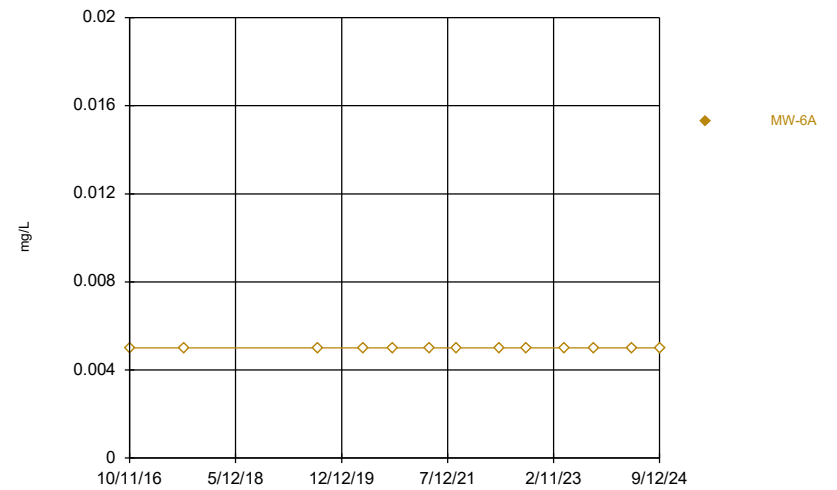
Constituent: Vanadium Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



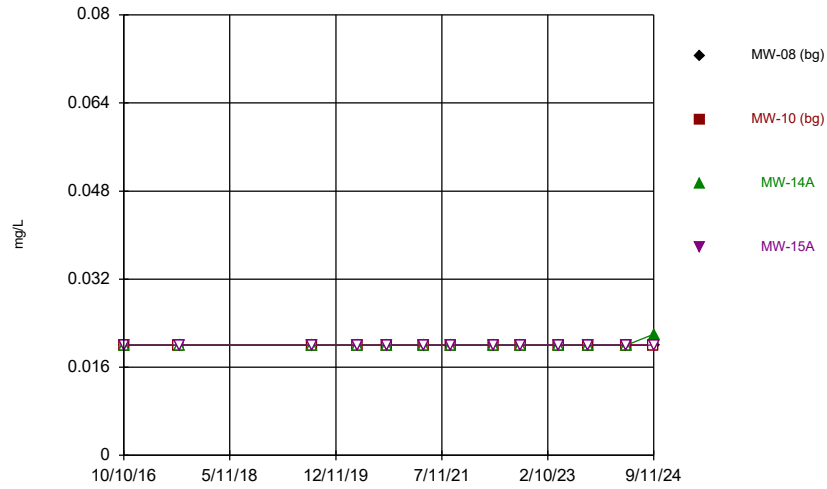
Constituent: Vanadium Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



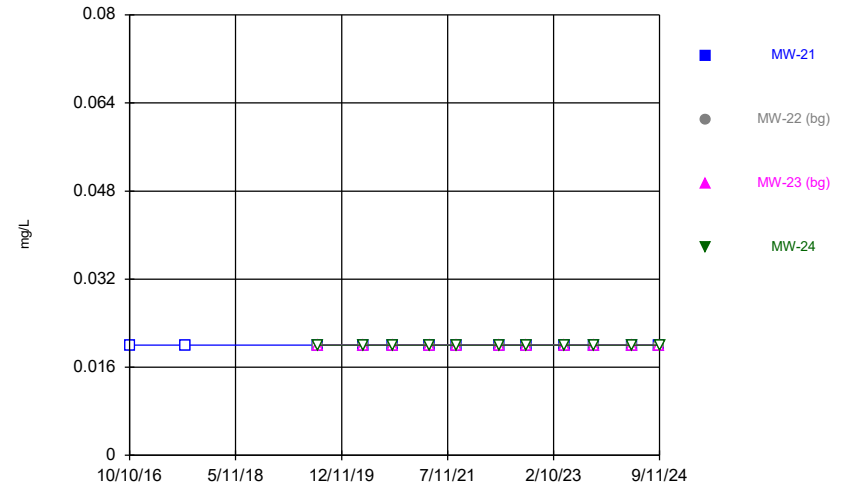
Constituent: Vanadium Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



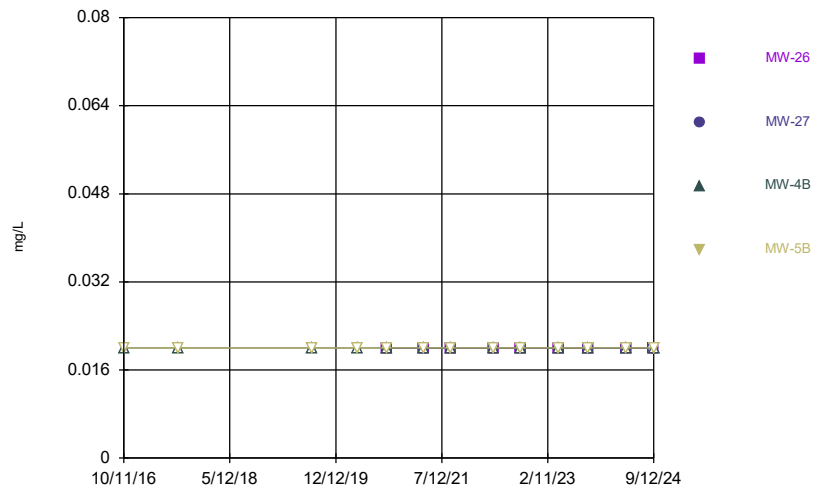
Constituent: Zinc Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



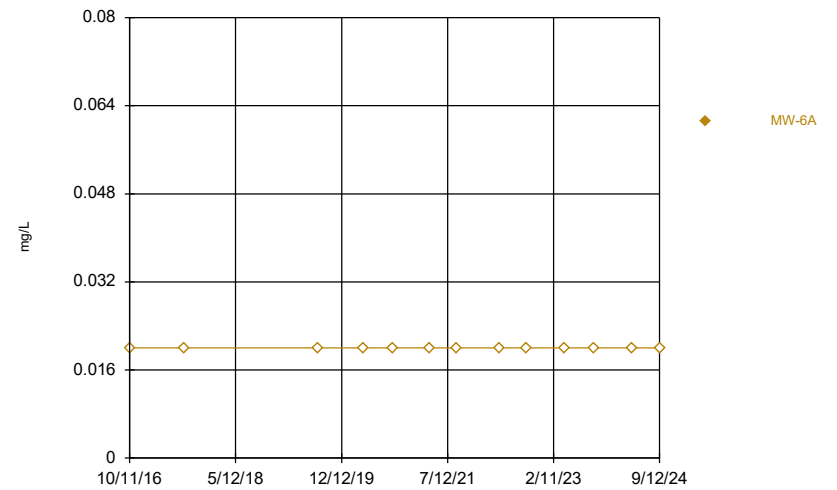
Constituent: Zinc Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



Constituent: Zinc Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



Constituent: Zinc Analysis Run 11/7/2024 12:55 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	<0.05	0.0826		
10/11/2016			<0.05	<0.05
8/7/2017	<0.05	<0.05		
8/8/2017			<0.05	<0.05
8/6/2019	<0.05			
8/7/2019		<0.05	<0.05	<0.05
4/7/2020	<0.05	<0.05	<0.05	<0.05
9/18/2020	<0.05	<0.05	<0.05	<0.05
4/5/2021	<0.05	<0.05	<0.05	<0.05
9/1/2021	<0.05	<0.05	<0.05	<0.05
4/20/2022	<0.05	<0.05	0.111	<0.05
9/14/2022	<0.05	<0.05	0.119	<0.05
4/11/2023	<0.05		<0.05	<0.05
4/12/2023		<0.05		
9/18/2023		<0.05		
9/19/2023	<0.05		<0.05	<0.05
4/11/2024		<0.05		
4/12/2024	<0.05			
4/15/2024			<0.05	<0.05
9/10/2024		<0.05		
9/11/2024	<0.05		<0.05	<0.05

Time Series

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	<0.05			
8/8/2017	<0.05			
8/6/2019		<0.05	0.253	<0.05
8/7/2019	<0.05			
4/7/2020	<0.05	<0.05	0.552	<0.05
9/18/2020	<0.05	<0.05	<0.05	<0.05
4/5/2021	<0.05	<0.05	0.39	<0.05
9/1/2021	<0.05	<0.05	0.135	<0.05
4/20/2022	<0.05	<0.05	0.478	<0.05
9/14/2022	<0.05	<0.05	0.142	<0.05
4/10/2023		<0.05		
4/11/2023	<0.05			<0.05
4/12/2023			0.233	
9/18/2023		<0.05	0.105	
9/19/2023	<0.05			<0.05
4/11/2024		<0.05	0.243	
4/12/2024	<0.05			<0.05
9/10/2024	<0.05	<0.05	0.168	
9/11/2024				<0.05

Time Series

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			<0.05	<0.05
8/7/2017			<0.05	
8/8/2017				<0.05
8/7/2019			<0.05	<0.05
4/7/2020			<0.05	<0.05
9/18/2020	<0.05	<0.05	0.475	<0.05
4/5/2021	<0.05	<0.05	<0.05	<0.05
9/1/2021	<0.05	0.112	<0.05	<0.05
4/20/2022	<0.05	0.27	<0.05	<0.05
9/14/2022	<0.05	0.558	<0.05	<0.05
4/12/2023	0.0884	0.394	<0.05	<0.05
9/20/2023	<0.05	0.0737	<0.05	<0.05
4/12/2024	<0.05	0.191		
4/15/2024			<0.05	<0.05
9/11/2024	<0.05	0.0529		
9/12/2024			<0.05	<0.05

Time Series

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	<0.05
8/8/2017	<0.05
8/7/2019	<0.05
4/7/2020	<0.05
9/18/2020	<0.05
4/5/2021	<0.05
9/1/2021	<0.05
4/20/2022	<0.05
9/14/2022	<0.05
4/12/2023	<0.05
9/20/2023	<0.05
4/15/2024	<0.05
9/12/2024	<0.05

Time Series

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		0.00298		<0.002
6/7/2016	<0.002			
6/8/2016			<0.002	
8/15/2016		0.00369	<0.002	<0.002
8/16/2016	<0.002			
10/10/2016	<0.002	0.00328		
10/11/2016			<0.002	<0.002
12/14/2016	<0.002	0.00312	<0.002	<0.002
2/17/2017		0.00298	<0.002	<0.002
2/21/2017	<0.002			
4/17/2017	<0.002	<0.002	<0.002	<0.002
6/19/2017	<0.002	0.00262		
6/21/2017			<0.002	<0.002
8/7/2017	<0.002	0.00317		
8/8/2017			<0.002	<0.002
3/5/2018		<0.002		
3/6/2018	<0.002			
3/7/2018			<0.002	<0.002
6/19/2018	<0.002	0.00211		
6/20/2018			<0.002	<0.002
8/27/2018	<0.002	0.0036		
8/29/2018			<0.002	<0.002
3/18/2019	<0.002			
3/19/2019		0.0056		
3/20/2019			<0.002	<0.002
8/6/2019	<0.002			
8/7/2019		0.00784	<0.002	<0.002
4/7/2020	<0.002	0.00697	<0.002	<0.002
9/18/2020	<0.002	0.00748	<0.002	<0.002
4/5/2021	<0.002	0.00393	<0.002	<0.002
9/1/2021	<0.002	0.00781	<0.002	<0.002
4/20/2022	<0.002	0.00371	<0.002	<0.002
9/14/2022	<0.002	0.00497	<0.002	<0.002
4/11/2023	0.00247		<0.002	<0.002
4/12/2023		0.00224		
9/18/2023		0.00501		
9/19/2023	<0.002		<0.002	<0.002
4/11/2024		<0.002		
4/12/2024	0.0039			
4/15/2024			<0.002	<0.002
9/10/2024		0.00525		
9/11/2024	0.00466		<0.002	<0.002

Time Series

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<0.002			
8/15/2016	<0.002			
10/10/2016	<0.002			
12/12/2016	<0.002			
2/21/2017	<0.002			
4/18/2017	<0.002			
6/20/2017	<0.002			
8/8/2017	<0.002			
3/6/2018	<0.002	<0.002		
6/19/2018	<0.002	0.00245		
6/20/2018			<0.002	<0.002
8/27/2018		0.00261	<0.002	<0.002
8/28/2018	<0.002			
3/18/2019				<0.002
3/19/2019		<0.002	<0.002	
3/20/2019	<0.002			
8/6/2019		<0.002	<0.002	<0.002
8/7/2019	<0.002			
4/7/2020	<0.002	<0.002	<0.002	<0.002
9/18/2020	<0.002	<0.002	<0.002	<0.002
4/5/2021	<0.002	0.00289	<0.002	<0.002
9/1/2021	<0.002	0.00267	<0.002	<0.002
4/20/2022	<0.002	0.0034	<0.002	<0.002
9/14/2022	<0.002	0.00285	<0.002	<0.002
4/10/2023		0.00421		
4/11/2023	<0.002			<0.002
4/12/2023			<0.002	
9/18/2023		0.00421	<0.002	
9/19/2023	<0.002			<0.002
4/11/2024		0.00634	<0.002	
4/12/2024	<0.002			<0.002
9/10/2024	<0.002	0.00749	<0.002	
9/11/2024				<0.002

Time Series

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			<0.002	<0.002
8/16/2016			<0.002	<0.002
10/11/2016			<0.002	<0.002
12/12/2016			<0.002	<0.002
2/17/2017			<0.002	
2/21/2017				<0.002
4/17/2017			<0.002	<0.002
6/20/2017			<0.002	<0.002
8/7/2017			<0.002	
8/8/2017				<0.002
3/6/2018			<0.002	<0.002
6/21/2018			<0.002	<0.002
8/28/2018			<0.002	
8/29/2018				<0.002
3/19/2019			<0.002	<0.002
8/7/2019			<0.002	<0.002
4/7/2020			<0.002	<0.002
9/18/2020	<0.002	<0.002	<0.002	<0.002
4/5/2021	<0.002	<0.002	<0.002	<0.002
9/1/2021	<0.002	<0.002	<0.002	<0.002
4/20/2022	<0.002	<0.002	<0.002	<0.002
9/14/2022	<0.002	<0.002	<0.002	<0.002
4/12/2023	<0.002	<0.002	<0.002	<0.002
9/20/2023	<0.002	<0.002	<0.002	<0.002
4/12/2024	<0.002	<0.002		
4/15/2024			<0.002	<0.002
9/11/2024	<0.002	<0.002		
9/12/2024			<0.002	<0.002

Time Series

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.002
8/16/2016	<0.002
10/11/2016	<0.002
12/12/2016	<0.002
2/21/2017	<0.002
4/17/2017	<0.002
6/21/2017	<0.002
8/8/2017	<0.002
3/6/2018	<0.002
6/21/2018	<0.002
8/29/2018	<0.002
3/19/2019	<0.002
8/7/2019	<0.002
4/7/2020	<0.002
9/18/2020	<0.002
4/5/2021	<0.002
9/1/2021	<0.002
4/20/2022	<0.002
9/14/2022	<0.002
4/12/2023	<0.002
9/20/2023	<0.002
4/15/2024	<0.002
9/12/2024	<0.002

Time Series

Constituent: Barium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		0.168		2.13 (o)
6/7/2016	0.0861			
6/8/2016			0.0443	
8/15/2016		0.161	0.0402	0.044
8/16/2016	0.0671			
10/10/2016	0.0706	0.163		
10/11/2016			0.0391	0.0426
12/14/2016	0.0645	0.15	0.0383	0.0406
2/17/2017		0.151	0.0306	0.0402
2/21/2017	0.0594 (F1)			
4/17/2017	0.0636	0.138	0.0341	0.0364
6/19/2017	0.076	0.154		
6/21/2017			0.0338	0.0327
8/7/2017	0.0596	0.157		
8/8/2017			0.031	0.0338
3/5/2018		0.129		
3/6/2018	0.0617			
3/7/2018			0.0285	0.0352
6/19/2018	0.0761	0.162		
6/20/2018			0.0314	0.0338
8/27/2018	0.0649	0.216		
8/29/2018			0.0344	0.0335
3/18/2019	0.0751			
3/19/2019		0.185		
3/20/2019			0.0328	0.037
8/6/2019	0.0733			
8/7/2019		0.215	0.0398	0.047
4/7/2020	0.0613	0.199	0.0266	0.0389
9/18/2020	0.0549	0.227	0.0328	0.0416
4/5/2021	0.0596	0.196	0.0355	0.0365
9/1/2021	0.0623	0.233	0.0345	0.0355
4/20/2022	0.0631	0.208	0.0327	0.0443
9/14/2022	0.0703	0.223	0.034	0.0327
4/11/2023	0.07		0.032	0.0299
4/12/2023		0.19		
9/18/2023		0.233		
9/19/2023	0.0782		0.0348	0.0338
4/11/2024		0.193		
4/12/2024	0.0857			
4/15/2024			0.0323	0.0353
9/10/2024		0.219		
9/11/2024	0.0944		0.0338	0.0335

Time Series

Constituent: Barium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	0.0573			
8/15/2016	0.0482			
10/10/2016	0.0606			
12/12/2016	0.056			
2/21/2017	0.0735			
4/18/2017	0.0356			
6/20/2017	0.0461			
8/8/2017	0.0499			
3/6/2018	0.0148	0.15		
6/19/2018	0.0515	0.184		
6/20/2018			0.106	0.0695
8/27/2018		0.181	0.0779	0.0776
8/28/2018	0.0622			
3/18/2019				0.0889
3/19/2019		0.209	0.0922	
3/20/2019	0.0511			
8/6/2019		0.215	0.0635	0.128
8/7/2019	0.0624			
4/7/2020	0.0352	0.222	0.0654	0.084
9/18/2020	0.0407	0.222	0.0491	0.0969
4/5/2021	0.0309	0.242	0.0608	0.0936
9/1/2021	0.0434	0.247	0.0497	0.0922
4/20/2022	0.036	0.239	0.0572	0.0826
9/14/2022	0.0447	0.243	0.0507	0.0887
4/10/2023		0.227		
4/11/2023	0.031			0.0863
4/12/2023			0.0518	
9/18/2023		0.256	0.0533	
9/19/2023	0.0559			0.0698
4/11/2024		0.271	0.0547	
4/12/2024	0.031			0.0899
9/10/2024	0.0555	0.268	0.0521	
9/11/2024				0.0885

Time Series

Constituent: Barium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			0.15	0.331
8/16/2016			0.128	0.295
10/11/2016			0.131	0.304
12/12/2016			0.139	0.315
2/17/2017			0.143	
2/21/2017				0.316
4/17/2017			0.111	0.296
6/20/2017			0.133	0.31
8/7/2017			0.133	
8/8/2017				0.3
3/6/2018			0.117	0.341
6/21/2018			0.144	0.336
8/28/2018			0.149	
8/29/2018				0.357
3/19/2019			0.161	0.326
8/7/2019			0.147	0.301
4/7/2020			0.156	0.25
9/18/2020	0.114	0.0738	0.147	0.239
4/5/2021	0.0989	0.0534	0.169	0.252
9/1/2021	0.0889	0.0862	0.186	0.241
4/20/2022	0.0802	0.0498	0.191	0.258
9/14/2022	0.0876	0.0594	0.188	0.253
4/12/2023	0.0815	0.0508	0.173	0.237
9/20/2023	0.0755	0.053	0.181	0.274
4/12/2024	0.0716	0.0511		
4/15/2024			0.168	0.243
9/11/2024	0.0643	0.0795		
9/12/2024			0.184	0.258

Time Series

Constituent: Barium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	0.209
8/16/2016	0.199
10/11/2016	0.196
12/12/2016	0.216
2/21/2017	0.197
4/17/2017	0.152
6/21/2017	0.197
8/8/2017	0.19
3/6/2018	0.206
6/21/2018	0.222
8/29/2018	0.206
3/19/2019	0.2
8/7/2019	0.211
4/7/2020	0.216
9/18/2020	0.231
4/5/2021	0.245
9/1/2021	0.248
4/20/2022	0.249
9/14/2022	0.229
4/12/2023	0.246
9/20/2023	0.222
4/15/2024	0.235
9/12/2024	0.249

Time Series

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		<0.001		<0.001
6/7/2016	<0.001			
6/8/2016			<0.001	
8/15/2016		<0.001	<0.001	<0.001
8/16/2016	<0.001			
10/10/2016	<0.001	<0.001		
10/11/2016			<0.001	<0.001
12/14/2016	<0.001	<0.001	<0.001	<0.001
2/17/2017		<0.001	<0.001	<0.001
2/21/2017	<0.001			
4/17/2017	<0.001	<0.001	<0.001	<0.001
6/19/2017	<0.001	<0.001		
6/21/2017			<0.001	<0.001
8/7/2017	<0.001	<0.001		
8/8/2017			<0.001	<0.001
3/5/2018		<0.001		
3/6/2018	<0.001			
3/7/2018			<0.001	<0.001
6/19/2018	<0.001	<0.001		
6/20/2018			<0.001	<0.001
8/27/2018	<0.001	<0.001		
8/29/2018			<0.001	<0.001
3/18/2019	<0.001			
3/19/2019		<0.001		
3/20/2019			<0.001	<0.001
8/6/2019	<0.001			
8/7/2019		<0.001	<0.001	<0.001
4/7/2020	<0.001	<0.001	<0.001	<0.001
9/18/2020	<0.001	<0.001	<0.001	<0.001
4/5/2021	<0.001	<0.001	<0.001	<0.001
9/1/2021	<0.001	<0.001	<0.001	<0.001
4/20/2022	<0.001	<0.001	<0.001	<0.001
9/14/2022	<0.001	<0.001	<0.001	<0.001
4/11/2023	<0.001		<0.001	<0.001
4/12/2023		<0.001		
9/18/2023		<0.001		
9/19/2023	<0.001		<0.001	<0.001
4/11/2024		<0.001		
4/12/2024	<0.001			
4/15/2024			<0.001	<0.001
9/10/2024		<0.001		
9/11/2024	<0.001		<0.001	<0.001

Time Series

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<0.001			
8/15/2016	<0.001			
10/10/2016	<0.001			
12/12/2016	<0.001			
2/21/2017	<0.001			
4/18/2017	<0.001			
6/20/2017	<0.001			
8/8/2017	<0.001			
3/6/2018	<0.001	<0.001		
6/19/2018	<0.001	<0.001		
6/20/2018			<0.001	<0.001
8/27/2018		<0.001	<0.001	<0.001
8/28/2018	<0.001			
3/18/2019				<0.001
3/19/2019		<0.001	<0.001	
3/20/2019	<0.001			
8/6/2019		<0.001	<0.001	<0.001
8/7/2019	<0.001			
4/7/2020	<0.001	<0.001	<0.001	<0.001
9/18/2020	<0.001	<0.001	<0.001	<0.001
4/5/2021	<0.001	<0.001	<0.001	<0.001
9/1/2021	<0.001	<0.001	<0.001	<0.001
4/20/2022	<0.001	<0.001	<0.001	<0.001
9/14/2022	<0.001	<0.001	<0.001	<0.001
4/10/2023		<0.001		
4/11/2023	<0.001			<0.001
4/12/2023			<0.001	
9/18/2023		<0.001	<0.001	
9/19/2023	<0.001			<0.001
4/11/2024		<0.001	<0.001	
4/12/2024	<0.001			<0.001
9/10/2024	<0.001	<0.001	<0.001	
9/11/2024				<0.001

Time Series

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			<0.001	<0.001
8/16/2016			<0.001	<0.001
10/11/2016			<0.001	<0.001
12/12/2016			<0.001	<0.001
2/17/2017			<0.001	
2/21/2017				<0.001
4/17/2017			<0.001	<0.001
6/20/2017			<0.001	<0.001
8/7/2017			<0.001	
8/8/2017				<0.001
3/6/2018			<0.001	<0.001
6/21/2018			<0.001	<0.001
8/28/2018			<0.001	
8/29/2018				<0.001
3/19/2019			<0.001	<0.001
8/7/2019			<0.001	<0.001
4/7/2020			<0.001	<0.001
9/18/2020	<0.001	<0.001	<0.001	<0.001
4/5/2021	<0.001	<0.001	<0.001	<0.001
9/1/2021	<0.001	<0.001	<0.001	<0.001
4/20/2022	<0.001	<0.001	<0.001	<0.001
9/14/2022	<0.001	<0.001	<0.001	<0.001
4/12/2023	<0.001	<0.001	<0.001	<0.001
9/20/2023	<0.001	<0.001	<0.001	<0.001
4/12/2024	<0.001	<0.001		
4/15/2024			<0.001	<0.001
9/11/2024	<0.001	<0.001		
9/12/2024			<0.001	<0.001

Time Series

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.001
8/16/2016	<0.001
10/11/2016	<0.001
12/12/2016	<0.001
2/21/2017	<0.001
4/17/2017	<0.001
6/21/2017	<0.001
8/8/2017	<0.001
3/6/2018	<0.001
6/21/2018	<0.001
8/29/2018	<0.001
3/19/2019	<0.001
8/7/2019	<0.001
4/7/2020	<0.001
9/18/2020	<0.001
4/5/2021	<0.001
9/1/2021	<0.001
4/20/2022	<0.001
9/14/2022	<0.001
4/12/2023	<0.001
9/20/2023	<0.001
4/15/2024	<0.001
9/12/2024	<0.001

Time Series

Constituent: Boron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		<0.1		16.8
6/7/2016	<0.1			
6/8/2016			15.8	
8/15/2016		<0.1	17.9	20.6
8/16/2016	<0.1			
10/10/2016	<0.1	<0.1		
10/11/2016			19.3	17.9
12/14/2016	<0.1	<0.1	14.7	18.4
2/17/2017		<0.1	13.1	14.9
2/21/2017	<0.1			
4/17/2017	<0.1	<0.1	11.3	14.7
6/19/2017	<0.1	<0.1		
6/21/2017			16.3	16.4
8/7/2017	<0.1	<0.1		
8/8/2017			13	14.7
10/16/2017	<0.1	<0.1		
10/17/2017			16	19.2
11/28/2017			13.7 (R)	12.9 (R)
3/5/2018		<0.1		
3/6/2018	<0.1			
3/7/2018			11	9.8
6/19/2018	<0.1	<0.1		
6/20/2018			15	10.5
8/27/2018	<0.1	<0.1		
8/29/2018			14	14.6
3/18/2019	<0.1			
3/19/2019		<0.1		
3/20/2019			15.5	8.35
8/6/2019	0.205			
8/7/2019		<0.1	17.6	7.56
4/7/2020	<0.1	<0.1	17.4	10.6
9/18/2020	<0.1	<0.1	19.5	14.5
4/5/2021	<0.1	<0.1	17.2	10.3
9/1/2021	<0.1	<0.1	17.1	11.1
4/20/2022	<0.1	<0.1	15.2	6.98
9/14/2022	<0.1	<0.1	15.1	10.4
4/11/2023	<0.1		14.8	5.8
4/12/2023		<0.1		
9/18/2023		<0.1		
9/19/2023	<0.1		18.1	9.28
4/11/2024		<0.1		
4/12/2024	<0.1			
4/15/2024			15.2	5.8
9/10/2024		<0.1		
9/11/2024	<0.1		17.7	8.5

Time Series

Constituent: Boron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<2			
8/15/2016	7.23			
10/10/2016	8.45			
12/12/2016	6.93			
2/21/2017	4.87			
4/18/2017	4.49			
6/20/2017	7.36			
8/8/2017	7.05			
10/16/2017	3.33			
11/28/2017	2.24 (R)			
3/6/2018	0.885	<0.1		
6/19/2018	6.84	<0.1		
6/20/2018			<0.1	<0.1
8/27/2018		<0.1	<0.1	<0.1
8/28/2018	1.36			
3/18/2019				<0.1
3/19/2019		0.299	<0.1	
3/20/2019	6.95			
8/6/2019		<0.1	<0.1	<0.1
8/7/2019	8.46			
4/7/2020	6.76	<0.1	<0.1	<0.1
9/18/2020	6.82	0.263	0.15	0.109
4/5/2021	5.24	<0.1	<0.1	<0.1
9/1/2021	5.88	<0.1	<0.1	<0.1
4/20/2022	3.57	<0.1	<0.1	<0.1
9/14/2022	3.69	0.322	0.204	0.134
4/10/2023		0.247		
4/11/2023	3.35			0.114
4/12/2023			0.145	
9/18/2023		0.207	0.128	
9/19/2023	4.42			<0.1
4/11/2024		<0.1	<0.1	
4/12/2024	2.31			<0.1
9/10/2024	3.68	0.243	0.126	
9/11/2024				<0.1

Time Series

Constituent: Boron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			<0.1	<0.1
8/16/2016			<0.1	<0.1
10/11/2016			<0.1	<0.1
12/12/2016			<0.1	<0.1
2/17/2017			<0.1	
2/21/2017				<0.1
4/17/2017			<0.1	<0.1
6/20/2017			<0.1	<0.1
8/7/2017			<0.1	
8/8/2017				<0.1
10/16/2017			<0.1	
10/17/2017				<0.1
3/6/2018			0.66	<0.1
6/21/2018			<0.1	<0.1
8/28/2018			<0.1	
8/29/2018				<0.1
3/19/2019			<0.1	<0.1
8/7/2019			<0.1	<0.1
4/7/2020			<0.1	<0.1
9/18/2020	2.5	3.25	<0.1	<0.1
4/5/2021	2.33	0.17	<0.1	<0.1
9/1/2021	2.49	3.82	<0.1	<0.1
4/20/2022	2.07	0.549	<0.1	<0.1
9/14/2022	1.97	1.41	<0.1	<0.1
4/12/2023	2.26	0.741	<0.1	<0.1
9/20/2023	3.08	1	<0.1	<0.1
4/12/2024	3.07	1.01		
4/15/2024			<0.1	<0.1
9/11/2024	4.19	3.02		
9/12/2024			<0.1	<0.1

Time Series

Constituent: Boron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.1
8/16/2016	<0.1
10/11/2016	<0.1
12/12/2016	<0.1
2/21/2017	<0.1
4/17/2017	<0.1
6/21/2017	<0.1
8/8/2017	<0.1
10/17/2017	<0.1
3/6/2018	<0.1
6/21/2018	<0.1
8/29/2018	<0.1
3/19/2019	<0.1
8/7/2019	<0.1
4/7/2020	<0.1
9/18/2020	<0.1
4/5/2021	<0.1
9/1/2021	<0.1
4/20/2022	<0.1
9/14/2022	<0.1
4/12/2023	<0.1
9/20/2023	<0.1
4/15/2024	<0.1
9/12/2024	<0.1

Time Series

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		89.3		206
6/7/2016	152			
6/8/2016			281	
8/15/2016		80.7	311	199
8/16/2016	117			
10/10/2016	118	83.3		
10/11/2016			308	203
12/14/2016	109	86.5	333	244
2/17/2017		81.2	268	233
2/21/2017	89.9			
4/17/2017	96.5	79.2	310	226
6/19/2017	113	83.6		
6/21/2017			307	186
8/7/2017	91.3	85.5		
8/8/2017			296	206
10/16/2017	77	83.3		
10/17/2017			310	218
11/28/2017			301 (R)	217 (R)
3/5/2018		77.3		
3/6/2018	74.7			
3/7/2018			278	229
6/19/2018	115	88.5		
6/20/2018			297	102
8/27/2018	83.6	85.4		
8/29/2018			309	155
3/18/2019	97.6			
3/19/2019		76.3		
3/20/2019			290	118
8/6/2019	132			
8/7/2019		78.9	255	111
4/7/2020	92.4	75.4	245	163
9/18/2020	77.7	74.2	244	134
4/5/2021	81.2	78.8	259	128
9/1/2021	78.3	80	270	125
4/20/2022	69.6	90.4	289	127
9/14/2022	76.8	82	301	132
4/11/2023	78.2		318	110
4/12/2023		83.7		
9/18/2023		84.7		
9/19/2023	79.4		291	126
4/11/2024		96.2		
4/12/2024	84.2			
4/15/2024			344	118
9/10/2024		97.8		
9/11/2024	88.6		327	129

Time Series

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	37.2			
8/15/2016	146			
10/10/2016	185			
12/12/2016	178			
2/21/2017	118			
4/18/2017	110			
6/20/2017	149			
8/8/2017	163			
10/16/2017	62.3			
3/6/2018	25.1	69.8		
6/19/2018	159	91.5		
6/20/2018			70.5	88
8/27/2018		80.7	63.9	72.8
8/28/2018	78.7			
3/18/2019				75
3/19/2019		91.6	59.7	
3/20/2019	142			
8/6/2019		83.8	59.5	103
8/7/2019	145			
4/7/2020	104	80.9	61	94.3
9/18/2020	101	75.5	52.1	69.9
4/5/2021	79.5	78.4	56.3	74.6
9/1/2021	93.5	79.4	56.1	69
4/20/2022	97.5	80.2	54	62.8
9/14/2022	88.2	79.6	54.5	66.8
4/10/2023		80.4		
4/11/2023	76			78.6
4/12/2023			55.3	
9/18/2023		79	56	
9/19/2023	96			70.5
4/11/2024		83.1	59.7	
4/12/2024	59.9			71.6
9/10/2024	96.6	84.3	58	
9/11/2024				73.6

Time Series

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			98.2	147
8/16/2016			88.8	139
10/11/2016			89.3	140
12/12/2016			94.5	147
2/17/2017			86.8	
2/21/2017				126
4/17/2017			85.9	130
6/20/2017			88.7	140
8/7/2017			89.7	
8/8/2017				139
10/16/2017			85.3	
10/17/2017				136
3/6/2018			95.8	134
6/21/2018			91.4	147
8/28/2018			91.3	
8/29/2018				146
3/19/2019			99.7	134
8/7/2019			93.8	139
4/7/2020			89.6	117
9/18/2020	134	61	89	108
4/5/2021	130	57.6	94.1	104
9/1/2021	134	68.4	95.1	108
4/20/2022	121	29.6	106	117
9/14/2022	133	38.7	92.3	117
4/12/2023	141	26.8	91.3	107
9/20/2023	127	33.4	90.4	115
4/12/2024	134	35.4		
4/15/2024			97.7	112
9/11/2024	126	63.1		
9/12/2024			102	123

Time Series

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	81.4
8/16/2016	75.4
10/11/2016	75.7
12/12/2016	85.6
2/21/2017	68.8
4/17/2017	56.3
6/21/2017	72.9
8/8/2017	71.2
10/17/2017	71.9
3/6/2018	74.1
6/21/2018	80.1
8/29/2018	73.3
3/19/2019	73.2
8/7/2019	80.9
4/7/2020	85.1
9/18/2020	87.9
4/5/2021	87.6
9/1/2021	90.6
4/20/2022	96.5
9/14/2022	89
4/12/2023	95.4
9/20/2023	82.1
4/15/2024	92.4
9/12/2024	99.4

Time Series

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		6.22		17.1
6/7/2016	19.8			
6/8/2016			28.7	
8/15/2016		<5	28.7	17.2
8/16/2016	17.8			
10/10/2016	16.2	<5		
10/11/2016			37	17.6
12/14/2016	17.2	<5	31.9	19
2/17/2017		<5	33.5	21.5
2/21/2017	15.4			
4/17/2017	17.1	<5	39.4	47.4 (o)
6/19/2017	14.1	<5		
6/21/2017			29.7	12.8
8/7/2017	14	<5		
8/8/2017			32.9	15.4
10/16/2017	14.4	<5		
10/17/2017			35.4	20.5
11/28/2017			33.2 (R)	20.7 (R)
3/5/2018		<5		
3/6/2018	14.5			
3/7/2018			37.4	24.2
6/19/2018	14.9	<5		
6/20/2018			29	<5
8/27/2018	15.6	<5		
8/29/2018			33.1	10.1
3/18/2019	16.1			
3/19/2019		<5		
3/20/2019			25.8	8.54
8/6/2019	17.1			
8/7/2019		<5	22.1	9.91
4/7/2020	17.2	<5	22.5	13
9/18/2020	14.7	<5	22.8	8.63
4/5/2021	22.3	<5	27.1	15
9/1/2021	16.3	<5	23.2	8.86
4/20/2022	15.8	<5	25.5	7.71
9/14/2022	16.7	<5	22.4	8.29
4/11/2023	17.9		20.3	7.3
4/12/2023		5.86		
9/18/2023		<5		
9/19/2023	19.9		20.9	8.41
4/11/2024		<5		
4/12/2024	17.2			
4/15/2024			16.4	7.01
9/10/2024		9.65		
9/11/2024	20.1		16.3	7.41

Time Series

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	27.7			
8/15/2016	16.6			
10/10/2016	24.4			
12/12/2016	19.2			
2/21/2017	14.2			
4/18/2017	15.6			
6/20/2017	15.1			
8/8/2017	16.1			
10/16/2017	5.09			
3/6/2018	<5	30		
6/19/2018	10.9	27.2		
6/20/2018			15.9	19.9
8/27/2018		29.8	14.2	18.1
8/28/2018	<5			
3/18/2019				17.3
3/19/2019		27.6	10.5	
3/20/2019	8.3			
8/6/2019		26.9	13.8	22.4
8/7/2019	14			
4/7/2020	8.05	24.8	15.7	24.8
9/18/2020	7.21	23.2	14.4	19.5
4/5/2021	5.14	28.1	21.4	28.9
9/1/2021	6.58	20	15.2	21.9
4/20/2022	7.19	20.2	16.9	19.9
9/14/2022	18	7.04	16.2	19.9
4/10/2023		18.2		
4/11/2023	5.93			23.4
4/12/2023			17.7	
9/18/2023		18.4	19.2	
9/19/2023	8.23			22.8
4/11/2024		15.8	19.2	
4/12/2024	<5			19.5
9/10/2024	13.5	16.6	21.7	
9/11/2024				22.8

Time Series

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			12.6	67
8/16/2016			13.2	65.9
10/11/2016			13.6	66
12/12/2016			13.5	67
2/17/2017			15.1	
2/21/2017				70.4
4/17/2017			12.5	62.1
6/20/2017			13.2	63.4
8/7/2017			13.2	
8/8/2017				64
10/16/2017			14.7	
10/17/2017				73
11/28/2017				67.8 (R)
3/6/2018			8.81	68.2
6/21/2018			15.3	65
8/28/2018			19.4	
8/29/2018				70.8
3/19/2019			16	55
8/7/2019			15.6	64.1
4/7/2020			14.8	44
9/18/2020	19.7	13.6	15.1	41
4/5/2021	21.1	10.4	22.9	42.7
9/1/2021	19.3	15	16.7	37.6
4/20/2022	19.9	19.1	20.8	38.1
9/14/2022	18.4	19	16.8	39
4/12/2023	3.83	2.45	18	38.7
9/20/2023	18.8	28.9	17.4	41.8
4/12/2024	17.4	19.5		
4/15/2024			18.1	39.3
9/11/2024	17.3	27.2		
9/12/2024			14.6	40.5

Time Series

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	5.97
8/16/2016	<5
10/11/2016	<5
12/12/2016	9.08
2/21/2017	9.93
4/17/2017	<5
6/21/2017	<5
8/8/2017	<5
10/17/2017	<5
3/6/2018	5.33
6/21/2018	<5
8/29/2018	<5
3/19/2019	<5
8/7/2019	<5
4/7/2020	12.2
9/18/2020	15.6
4/5/2021	19.3
9/1/2021	17.4
4/20/2022	14.2
9/14/2022	13.3
4/12/2023	15.4
9/20/2023	12.2
4/15/2024	15.5
9/12/2024	14.4

Time Series

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		0.000555		<0.0005
6/7/2016	<0.0005			
6/8/2016			<0.0005	
8/15/2016		<0.0005	<0.0005	<0.0005
8/16/2016	<0.0005			
10/10/2016	<0.0005	0.000523		
10/11/2016			<0.0005	<0.0005
12/14/2016	<0.0005	0.000638	<0.0005	<0.0005
2/17/2017		0.000663	<0.0005	<0.0005
2/21/2017	<0.0005			
4/17/2017	<0.0005	0.000779	<0.0005	<0.0005
6/19/2017	0.000601	0.000621		
6/21/2017			<0.0005	<0.0005
8/7/2017	0.00051	0.000695		
8/8/2017			<0.0005	<0.0005
3/5/2018		0.000627		
3/6/2018	<0.0005			
3/7/2018			<0.0005	<0.0005
6/19/2018	<0.0005	0.00107		
6/20/2018			<0.0005	<0.0005
8/27/2018	<0.0005	0.00088		
8/29/2018			<0.0005	<0.0005
3/18/2019	0.00177			
3/19/2019		0.000783		
3/20/2019			<0.0005	<0.0005
8/6/2019	0.00558			
8/7/2019		0.000572	<0.0005	<0.0005
4/7/2020	0.000517	0.000581	<0.0005	<0.0005
9/18/2020	0.000738	0.000751	<0.0005	<0.0005
4/5/2021	0.000839	0.000752	<0.0005	<0.0005
9/1/2021	0.00127	0.000576	<0.0005	<0.0005
4/20/2022	0.00143	0.00104	<0.0005	<0.0005
9/14/2022	0.00164	0.00109	<0.0005	<0.0005
4/11/2023	0.0014		<0.0005	<0.0005
4/12/2023		0.00142		
9/18/2023		0.000995		
9/19/2023	0.00126		<0.0005	<0.0005
4/11/2024		0.00122		
4/12/2024	0.0018			
4/15/2024			<0.0005	<0.0005
9/10/2024		0.000977		
9/11/2024	0.00216		<0.0005	<0.0005

Time Series

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<0.0005			
8/15/2016	<0.0005			
10/10/2016	<0.0005			
12/12/2016	<0.0005			
2/21/2017	<0.0005			
4/18/2017	<0.0005			
6/20/2017	<0.0005			
8/8/2017	<0.0005			
3/6/2018	<0.0005	0.00142		
5/14/2018		0.0012		
6/19/2018	<0.0005	0.00129		
6/20/2018			0.00161	<0.0005
8/27/2018		0.00149	0.00066	<0.0005
8/28/2018	<0.0005			
3/18/2019				<0.0005
3/19/2019		<0.0005	0.00176	
3/20/2019	<0.0005			
8/6/2019		<0.0005	<0.0005	<0.0005
8/7/2019	<0.0005			
4/7/2020	<0.0005	<0.0005	0.000817	<0.0005
9/18/2020	<0.0005	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	0.000517	<0.0005
9/1/2021	<0.0005	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	0.000561	<0.0005
9/14/2022	<0.0005	<0.0005	<0.0005	<0.0005
4/10/2023		<0.0005		
4/11/2023	<0.0005			<0.0005
4/12/2023			<0.0005	
9/18/2023		<0.0005	<0.0005	
9/19/2023	<0.0005			<0.0005
4/11/2024		<0.0005	<0.0005	
4/12/2024	<0.0005			<0.0005
9/10/2024	<0.0005	<0.0005	<0.0005	
9/11/2024				<0.0005

Time Series

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			0.000681	<0.0005
8/16/2016			<0.0005	<0.0005
10/11/2016			<0.0005	<0.0005
12/12/2016			<0.0005	<0.0005
2/17/2017			<0.0005	
2/21/2017				<0.0005
4/17/2017			<0.0005	<0.0005
6/20/2017			<0.0005	<0.0005
8/7/2017			<0.0005	
8/8/2017				<0.0005
3/6/2018			<0.0005	<0.0005
6/21/2018			<0.0005	<0.0005
8/28/2018			<0.0005	
8/29/2018				<0.0005
3/19/2019			<0.0005	<0.0005
8/7/2019			<0.0005	<0.0005
4/7/2020			<0.0005	<0.0005
9/18/2020	<0.0005	<0.0005	0.00147	<0.0005
4/5/2021	<0.0005	<0.0005	0.00132	<0.0005
9/1/2021	<0.0005	<0.0005	0.00335	<0.0005
4/20/2022	<0.0005	<0.0005	0.00135	<0.0005
9/14/2022	<0.0005	<0.0005	0.00459	<0.0005
4/12/2023	<0.0005	<0.0005	0.00271	<0.0005
9/20/2023	<0.0005	<0.0005	0.00374	<0.0005
4/12/2024	<0.0005	<0.0005		
4/15/2024			0.00172	<0.0005
9/11/2024	<0.0005	<0.0005		
9/12/2024			0.0028	<0.0005

Time Series

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.0005
8/16/2016	<0.0005
10/11/2016	<0.0005
12/12/2016	<0.0005
2/21/2017	<0.0005
4/17/2017	<0.0005
6/21/2017	<0.0005
8/8/2017	<0.0005
3/6/2018	<0.0005
6/21/2018	<0.0005
8/29/2018	<0.0005
3/19/2019	<0.0005
8/7/2019	<0.0005
4/7/2020	<0.0005
9/18/2020	<0.0005
4/5/2021	<0.0005
9/1/2021	<0.0005
4/20/2022	<0.0005
9/14/2022	<0.0005
4/12/2023	<0.0005
9/20/2023	<0.0005
4/15/2024	<0.0005
9/12/2024	<0.0005

Time Series

Constituent: Copper (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	<0.005	<0.005		
10/11/2016			<0.005	<0.005
8/7/2017	<0.005	<0.005		
8/8/2017			<0.005	<0.005
8/6/2019	<0.005			
8/7/2019		<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/11/2023	<0.005		<0.005	<0.005
4/12/2023		<0.005		
9/18/2023		<0.005		
9/19/2023	<0.005		<0.005	<0.005
4/11/2024		<0.005		
4/12/2024	<0.005			
4/15/2024			<0.005	<0.005
9/10/2024		<0.005		
9/11/2024	<0.005		<0.005	<0.005

Time Series

Constituent: Copper (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	<0.005			
8/8/2017	<0.005			
8/6/2019		<0.005	<0.005	<0.005
8/7/2019	<0.005			
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/10/2023		<0.005		
4/11/2023	<0.005			<0.005
4/12/2023			<0.005	
9/18/2023		<0.005	<0.005	
9/19/2023	<0.005			<0.005
4/11/2024		<0.005	<0.005	
4/12/2024	<0.005			<0.005
9/10/2024	<0.005	<0.005	<0.005	
9/11/2024				<0.005

Time Series

Constituent: Copper (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			<0.005	<0.005
8/7/2017			<0.005	
8/8/2017				<0.005
8/7/2019			<0.005	<0.005
4/7/2020			<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/12/2023	0.00512	<0.005	<0.005	<0.005
9/20/2023	<0.005	<0.005	<0.005	<0.005
4/12/2024	<0.005	<0.005		
4/15/2024			<0.005	<0.005
9/11/2024	<0.005	<0.005		
9/12/2024			<0.005	<0.005

Time Series

Constituent: Copper (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	<0.005
8/8/2017	<0.005
8/7/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
9/14/2022	<0.005
4/12/2023	<0.005
9/20/2023	<0.005
4/15/2024	<0.005
9/12/2024	<0.005

Time Series

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		0.731		<1
6/7/2016	<1			
6/8/2016			<1	
8/15/2016		<1	<1	0.549
8/16/2016	<1			
10/10/2016	<1	<1		
10/11/2016			0.867	<1
12/14/2016	0.72	<1	<1	<1
2/17/2017		<1	<1	<1
2/21/2017	<1			
4/17/2017	1.69 (o)	0.774	1.93 (o)	6.7 (o)
6/19/2017	<1	<1		
6/21/2017			<1	<1
8/7/2017	<1	<1		
8/8/2017			<1	<1
10/16/2017	<1	<1		
10/17/2017			<1	<1
3/5/2018		<1		
3/6/2018	<1			
3/7/2018			<1	<1
6/19/2018	0.826	<1		
6/20/2018			0.684	<1
8/27/2018	<1	<1		
8/29/2018			<1	<1
3/18/2019	<1			
3/19/2019		<1		
3/20/2019			<1	0.523
8/6/2019	0.643			
8/7/2019		0.596	<1	0.625
4/7/2020	0.864	<1	<1	<1
9/18/2020	<1	<1	<1	<1
4/5/2021	<1	<1	<1	0.516
9/1/2021	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1
9/14/2022	<1	<1	<1	<1
4/11/2023	<1		<1	<1
4/12/2023		<1		
9/18/2023		<1		
9/19/2023	<1		<1	<1
4/11/2024		<1		
4/12/2024	<1			
4/15/2024			<1	<1
9/10/2024		<1		
9/11/2024	<1		<1	<1

Time Series

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<1			
8/15/2016	<1			
10/10/2016	<1			
12/12/2016	<1			
2/21/2017	0.993			
4/18/2017	0.768			
6/20/2017	<1			
8/8/2017	<1			
10/16/2017	<1			
3/6/2018	<1	<1		
6/19/2018	<1	<1		
6/20/2018			<1	0.653
8/27/2018		<1	<1	<1
8/28/2018	<1			
3/18/2019				<1
3/19/2019		<1	<1	
3/20/2019	<1			
8/6/2019		0.507	<1	<1
8/7/2019	<1			
4/7/2020	<1	<1	<1	<1
9/18/2020	<1	<1	<1	<1
4/5/2021	<1	<1	<1	<1
9/1/2021	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1
9/14/2022	<1	<1	<1	<1
4/10/2023		<1		
4/11/2023	<1			<1
4/12/2023			<1	
9/18/2023		<1	<1	
9/19/2023	<1			<1
4/11/2024		<1	<1	
4/12/2024	<1			<1
9/10/2024	<1	<1	<1	
9/11/2024				<1

Time Series

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			<1	<1
8/16/2016			<1	<1
10/11/2016			<1	<1
12/12/2016			<1	1.88
2/17/2017			0.664	
2/21/2017				2.14
4/17/2017			0.801	0.627
6/20/2017			<1	<1
8/7/2017			<1	
8/8/2017				<1
10/16/2017			<1	
10/17/2017				<1
3/6/2018			<1	<1
6/21/2018			<1	<1
8/28/2018			<1	
8/29/2018				<1
3/19/2019			0.771	<1
8/7/2019			0.525	<1
4/7/2020			<1	<1
9/18/2020	<1	<1	<1	<1
4/5/2021	<1	<1	<1	<1
9/1/2021	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1
9/14/2022	<1	<1	<1	<1
4/12/2023	<1	<1	<1	<1
9/20/2023	<1	<1	<1	<1
4/12/2024	<1	<1		
4/15/2024			<1	<1
9/11/2024	<1	<1		
9/12/2024			<1	<1

Time Series

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<1
8/16/2016	<1
10/11/2016	<1
12/12/2016	2.02
2/21/2017	1.89
4/17/2017	0.814
6/21/2017	<1
8/8/2017	<1
10/17/2017	<1
3/6/2018	<1
6/21/2018	<1
8/29/2018	<1
3/19/2019	<1
8/7/2019	0.535
4/7/2020	0.652
9/18/2020	<1
4/5/2021	<1
9/1/2021	<1
4/20/2022	<1
9/14/2022	<1
4/12/2023	<1
9/20/2023	<1
4/15/2024	<1
9/12/2024	<1

Time Series

Constituent: Iron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	<0.1	1.8		
10/11/2016			<0.1	<0.1
8/7/2017	<0.1	1.58		
8/8/2017			<0.1	<0.1
8/6/2019	<0.1			
8/7/2019		3.33	<0.1	<0.1
4/7/2020	<0.1	3.36	<0.1	<0.1
9/18/2020	<0.1	4.38	<0.1	<0.1
4/5/2021	0.167	2.08	<0.1	<0.1
9/1/2021	0.141	4.37	<0.1	<0.1
4/20/2022	0.565	2.49	0.165	<0.1
9/14/2022	0.609	2.7	<0.1	<0.1
4/11/2023	0.708		<0.1	<0.1
4/12/2023		1.09		
9/18/2023		2.45		
9/19/2023	0.451		<0.1	<0.1
4/11/2024		0.982		
4/12/2024	1.29			
4/15/2024			<0.1	<0.1
9/10/2024		2.86		
9/11/2024	1.53		<0.1	<0.1

Time Series

Constituent: Iron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	<0.1			
8/8/2017	<0.1			
8/6/2019		<0.1	0.231	<0.1
8/7/2019	<0.1			
4/7/2020	<0.1	<0.1	0.485	<0.1
9/18/2020	<0.1	<0.1	<0.1	<0.1
4/5/2021	<0.1	<0.1	0.348	<0.1
9/1/2021	<0.1	<0.1	0.136	<0.1
4/20/2022	<0.1	<0.1	0.492	<0.1
9/14/2022	<0.1	<0.1	0.117	<0.1
4/10/2023		<0.1		
4/11/2023	<0.1			<0.1
4/12/2023			0.21	
9/18/2023		<0.1	<0.1	
9/19/2023	<0.1			<0.1
4/11/2024		<0.1	0.239	
4/12/2024	<0.1			<0.1
9/10/2024	<0.1	0.189	0.16	
9/11/2024				<0.1

Time Series

Constituent: Iron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			1.5	2.49
8/7/2017			1.68	
8/8/2017				2.51
8/7/2019			1.61	2.6
4/7/2020			5.55	1.88
9/18/2020	<0.1	<0.1	0.895	1.86
4/5/2021	<0.1	<0.1	<0.1	1.85
9/1/2021	<0.1	0.11	<0.1	2.21
4/20/2022	<0.1	0.281	<0.1	1.99
9/14/2022	<0.1	0.594	0.25	2.03
4/12/2023	0.456	0.338	0.423	1.83
9/20/2023	<0.1	<0.1	0.559	2.18
4/12/2024	<0.1	0.181		
4/15/2024			0.309	1.78
9/11/2024	<0.1	<0.1		
9/12/2024			0.797	2.06

Time Series

Constituent: Iron (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	3.12
8/8/2017	3.09
8/7/2019	3.39
4/7/2020	3.47
9/18/2020	3.45
4/5/2021	3.57
9/1/2021	3.83
4/20/2022	3.61
9/14/2022	3.43
4/12/2023	3.43
9/20/2023	3.09
4/15/2024	3.42
9/12/2024	3.6

Time Series

Constituent: Lead (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		<0.0005		<0.0005
6/7/2016	<0.0005			
6/8/2016			<0.0005	
8/15/2016		<0.0005	<0.0005	<0.0005
8/16/2016	<0.0005			
10/10/2016	<0.0005	<0.0005		
10/11/2016			<0.0005	<0.0005
12/14/2016	<0.0005	<0.0005	<0.0005	<0.0005
2/17/2017		<0.0005	<0.0005	<0.0005
2/21/2017	<0.0005			
4/17/2017	<0.0005	<0.0005	<0.0005	<0.0005
6/19/2017	<0.0005	<0.0005		
6/21/2017			<0.0005	<0.0005
8/7/2017	<0.0005	<0.0005		
8/8/2017			<0.0005	<0.0005
3/5/2018		<0.0005		
3/6/2018	<0.0005			
3/7/2018			<0.0005	<0.0005
6/19/2018	<0.0005	<0.0005		
6/20/2018			<0.0005	<0.0005
8/27/2018	<0.0005	<0.0005		
8/29/2018			<0.0005	<0.0005
3/18/2019	<0.0005			
3/19/2019		<0.0005		
3/20/2019			<0.0005	<0.0005
8/6/2019	<0.0005			
8/7/2019		<0.0005	<0.0005	<0.0005
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005
9/18/2020	<0.0005	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	<0.0005	<0.0005
9/1/2021	<0.0005	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	<0.0005	<0.0005
9/14/2022	<0.0005	<0.0005	<0.0005	<0.0005
4/11/2023	<0.0005		<0.0005	<0.0005
4/12/2023		<0.0005		
9/18/2023		<0.0005		
9/19/2023	<0.0005		<0.0005	<0.0005
4/11/2024		<0.0005		
4/12/2024	<0.0005			
4/15/2024			<0.0005	<0.0005
9/10/2024		<0.0005		
9/11/2024	<0.0005		<0.0005	<0.0005

Time Series

Constituent: Lead (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<0.0005			
8/15/2016	<0.0005			
10/10/2016	<0.0005			
12/12/2016	<0.0005			
2/21/2017	<0.0005			
4/18/2017	<0.0005			
6/20/2017	<0.0005			
8/8/2017	<0.0005			
3/6/2018	<0.0005	<0.0005		
6/19/2018	0.000633	<0.0005		
6/20/2018			0.00151	<0.0005
8/27/2018		<0.0005	0.000626	<0.0005
8/28/2018	<0.0005			
3/18/2019				<0.0005
3/19/2019		<0.0005	0.00204	
3/20/2019	<0.0005			
8/6/2019		<0.0005	0.000663	<0.0005
8/7/2019	<0.0005			
4/7/2020	<0.0005	<0.0005	0.00116	<0.0005
9/18/2020	<0.0005	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	0.000624	<0.0005
9/1/2021	<0.0005	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	0.000596	<0.0005
9/14/2022	<0.0005	<0.0005	<0.0005	<0.0005
4/10/2023		<0.0005		
4/11/2023	<0.0005			<0.0005
4/12/2023			<0.0005	
9/18/2023		<0.0005	<0.0005	
9/19/2023	<0.0005			<0.0005
4/11/2024		<0.0005	<0.0005	
4/12/2024	<0.0005			<0.0005
9/10/2024	<0.0005	<0.0005	<0.0005	
9/11/2024				<0.0005

Time Series

Constituent: Lead (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			0.00147 (o)	<0.0005
8/16/2016			<0.0005	<0.0005
10/11/2016			<0.0005	<0.0005
12/12/2016			<0.0005	<0.0005
2/17/2017			<0.0005	
2/21/2017				<0.0005
4/17/2017			<0.0005	<0.0005
6/20/2017			<0.0005	<0.0005
8/7/2017			<0.0005	
8/8/2017				<0.0005
3/6/2018			<0.0005	<0.0005
6/21/2018			<0.0005	<0.0005
8/28/2018			<0.0005	
8/29/2018				<0.0005
3/19/2019			<0.0005	<0.0005
8/7/2019			<0.0005	<0.0005
4/7/2020			<0.0005	<0.0005
9/18/2020	<0.0005	<0.0005	0.000532	<0.0005
4/5/2021	<0.0005	<0.0005	<0.0005	<0.0005
9/1/2021	<0.0005	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	<0.0005	<0.0005
9/14/2022	<0.0005	0.000536	<0.0005	<0.0005
4/12/2023	<0.0005	0.000528	<0.0005	<0.0005
9/20/2023	<0.0005	<0.0005	0.000576	0.000627
4/12/2024	<0.0005	<0.0005		
4/15/2024			<0.0005	<0.0005
9/11/2024	<0.0005	<0.0005		
9/12/2024			<0.0005	<0.0005

Time Series

Constituent: Lead (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.0005
8/16/2016	<0.0005
10/11/2016	<0.0005
12/12/2016	<0.0005
2/21/2017	<0.0005
4/17/2017	<0.0005
6/21/2017	<0.0005
8/8/2017	<0.0005
3/6/2018	<0.0005
6/21/2018	<0.0005
8/29/2018	<0.0005
3/19/2019	<0.0005
8/7/2019	<0.0005
4/7/2020	<0.0005
9/18/2020	<0.0005
4/5/2021	<0.0005
9/1/2021	<0.0005
4/20/2022	<0.0005
9/14/2022	<0.0005
4/12/2023	<0.0005
9/20/2023	<0.0005
4/15/2024	<0.0005
9/12/2024	<0.0005

Time Series

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	44.1	33.8		
10/11/2016			122	79.3
8/7/2017	36.4	37.8		
8/8/2017			124	86
8/6/2019	50.1			
8/7/2019		30	103	46.9
4/7/2020	37.1	31.4	102	71
9/18/2020	31.8	31.9	104	59
4/5/2021	31.8	32.2	116	55.4
9/1/2021	31	31.3	119	54
4/20/2022	27.7	35	120	56
9/14/2022	30.1	33.3	122	56.1
4/11/2023	31.1		122	48.7
4/12/2023		34.5		
9/18/2023		34.7		
9/19/2023	31.5		122	54
4/11/2024		41.5		
4/12/2024	32.7			
4/15/2024			135	51.6
9/10/2024		41.1		
9/11/2024	34.3		134	53.8

Time Series

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	76.6			
8/8/2017	72.1			
8/6/2019		33	24.7	44.2
8/7/2019	62.5			
4/7/2020	46.9	34.5	28.5	43
9/18/2020	45.6	31.1	24.3	32
4/5/2021	34.9	31	25.3	33
9/1/2021	40.8	31.4	24.8	30.3
4/20/2022	40.2	29.6	23.3	28.3
9/14/2022	39.1	31.8	24.6	29.1
4/10/2023		31.5		
4/11/2023	33			34.7
4/12/2023			24.4	
9/18/2023		32	25.4	
9/19/2023	42.8			29.9
4/11/2024		33	26.6	
4/12/2024	24.9			30.7
9/10/2024	41.3	33.1	25.9	
9/11/2024				31

Time Series

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			31.4	42
8/7/2017			33.4	
8/8/2017				43.8
8/7/2019			34	42.8
4/7/2020			34	39.6
9/18/2020	53.4	29.2	33.2	36.6
4/5/2021	49.5	10.7	34.3	35.7
9/1/2021	50.8	28.4	35.6	35.2
4/20/2022	46.4	12.9	35.1	35
9/14/2022	49.9	17.3	33.6	36.8
4/12/2023	52.3	11.9	33.9	34.8
9/20/2023	48.9	15.5	33.6	37.6
4/12/2024	50.5	15.4		
4/15/2024			35.6	36.5
9/11/2024	45.3	27.9		
9/12/2024			35.9	36.4

Time Series

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	23.5
8/8/2017	24.7
8/7/2019	25.4
4/7/2020	29.4
9/18/2020	28.5
4/5/2021	28.8
9/1/2021	29.6
4/20/2022	28.6
9/14/2022	29.4
4/12/2023	31.2
9/20/2023	27.2
4/15/2024	31
9/12/2024	30.8

Time Series

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	0.28	0.151		
10/11/2016			<0.01	<0.01
8/7/2017	0.237	0.166		
8/8/2017			<0.01	<0.01
8/6/2019	0.758			
8/7/2019		0.177	<0.01	<0.01
4/7/2020	0.119	0.184	<0.01	<0.01
9/18/2020	0.652	0.251	<0.01	<0.01
4/5/2021	0.185	0.199	<0.01	<0.01
9/1/2021	0.663	0.221	<0.01	<0.01
4/20/2022	0.411	0.231	0.0264	<0.01
9/14/2022	0.749	0.31	<0.01	<0.01
4/11/2023	0.309		<0.01	<0.01
4/12/2023		0.396		
9/18/2023		0.266		
9/19/2023	0.37		<0.01	<0.01
4/11/2024		0.233		
4/12/2024	0.509			
4/15/2024			<0.01	<0.01
9/10/2024		0.255		
9/11/2024	0.491		<0.01	<0.01

Time Series

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	<0.01			
8/8/2017	<0.01			
8/6/2019		1.74 (o)	0.0443	0.0223
8/7/2019	<0.01			
4/7/2020	<0.01	0.0896	0.0718	0.0156
9/18/2020	<0.01	1.36	0.0127	<0.01
4/5/2021	<0.01	0.175	0.0634	<0.01
9/1/2021	<0.01	1.27	0.0444	0.0126
4/20/2022	<0.01	0.106	0.0588	<0.01
9/14/2022	<0.01	0.795	0.0222	<0.01
4/10/2023		0.0633		
4/11/2023	<0.01			0.0144
4/12/2023			0.0372	
9/18/2023		0.767	0.0169	
9/19/2023	<0.01			0.0183
4/11/2024		0.118	0.037	
4/12/2024	<0.01			0.0156
9/10/2024	<0.01	0.677	0.0301	
9/11/2024				0.0111

Time Series

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			0.133	0.69
8/7/2017			0.132	
8/8/2017				0.689
8/7/2019			0.145	0.784
4/7/2020			0.13	0.492
9/18/2020	0.0501	0.0345	0.686	0.546
4/5/2021	0.0395	0.0278	1.39	0.467
9/1/2021	0.0629	0.0375	1.39	0.512
4/20/2022	0.019	0.0722	0.91	0.454
9/14/2022	0.0917	0.0406	0.871	0.532
4/12/2023	0.0983	0.0378	0.51	0.453
9/20/2023	0.111	0.0231	0.612	0.594
4/12/2024	0.0697	0.0376		
4/15/2024			0.395	0.506
9/11/2024	0.0458	0.0168		
9/12/2024			0.491	0.554

Time Series

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	0.0818
8/8/2017	0.0802
8/7/2019	0.0941
4/7/2020	0.103
9/18/2020	0.113
4/5/2021	0.109
9/1/2021	0.117
4/20/2022	0.112
9/14/2022	0.112
4/12/2023	0.113
9/20/2023	0.0995
4/15/2024	0.114
9/12/2024	0.118

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		<0.002		<0.002
6/7/2016	<0.002			
6/8/2016			<0.002	
8/15/2016		<0.002	<0.002	<0.002
8/16/2016	<0.002			
10/10/2016	<0.002	<0.002		
10/11/2016			<0.002	<0.002
12/14/2016	<0.002	<0.002	<0.002	<0.002
2/17/2017		<0.002	<0.002	<0.002
2/21/2017	<0.002			
4/17/2017	<0.002	<0.002	<0.002	<0.002
6/19/2017	<0.002	<0.002		
6/21/2017			<0.002	<0.002
8/7/2017	<0.002	<0.002		
8/8/2017			<0.002	<0.002
3/5/2018		<0.002		
3/6/2018	0.0022			
3/7/2018			<0.002	<0.002
5/14/2018	<0.002			
6/19/2018	<0.002	<0.002		
6/20/2018			<0.002	<0.002
8/27/2018	0.00224	0.0022		
8/29/2018			<0.002	<0.002
3/18/2019	<0.002			
3/19/2019		0.00341		
3/20/2019			<0.002	<0.002
8/6/2019	<0.002			
8/7/2019		0.00219	<0.002	<0.002
4/7/2020	<0.002	0.00215	<0.002	<0.002
9/18/2020	<0.002	<0.002	<0.002	<0.002
4/5/2021	<0.002	<0.002	<0.002	<0.002
9/1/2021	0.00218	0.00217	<0.002	<0.002
4/20/2022	<0.002	<0.002	<0.002	<0.002
9/14/2022	<0.002	<0.002	<0.002	<0.002
4/11/2023	<0.002		<0.002	<0.002
4/12/2023		<0.002		
9/18/2023		<0.002		
9/19/2023	<0.002		<0.002	<0.002
4/11/2024		<0.002		
4/12/2024	<0.002			
4/15/2024			<0.002	<0.002
9/10/2024		0.00287		
9/11/2024	0.00205		<0.002	<0.002

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	<0.002			
8/15/2016	<0.002			
10/10/2016	<0.002			
12/12/2016	<0.002			
2/21/2017	<0.002			
4/18/2017	<0.002			
6/20/2017	<0.002			
8/8/2017	<0.002			
3/6/2018	<0.002	0.00568		
5/14/2018		0.00385		
6/19/2018	0.00383	0.00423		
6/20/2018			0.00822	0.00447
8/27/2018		0.00424	0.00617	<0.002
8/28/2018	<0.002			
3/18/2019				<0.002
3/19/2019		0.00263	<0.002	
3/20/2019	<0.002			
8/6/2019		0.00574	<0.002	<0.002
8/7/2019	<0.002			
4/7/2020	<0.002	0.00297	<0.002	<0.002
9/18/2020	<0.002	0.00529	<0.002	<0.002
4/5/2021	<0.002	<0.002	<0.002	<0.002
9/1/2021	<0.002	0.00558	<0.002	<0.002
4/20/2022	<0.002	0.0042	<0.002	<0.002
9/14/2022	<0.002	0.00446	<0.002	<0.002
4/10/2023		0.00364		
4/11/2023	<0.002			<0.002
4/12/2023			<0.002	
9/18/2023		0.00661	<0.002	
9/19/2023	<0.002			<0.002
4/11/2024		0.00217	<0.002	
4/12/2024	<0.002			<0.002
9/10/2024	<0.002	0.00578	<0.002	
9/11/2024				<0.002

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			<0.002	<0.002
8/16/2016			<0.002	<0.002
10/11/2016			<0.002	<0.002
12/12/2016			<0.002	<0.002
2/17/2017			<0.002	
2/21/2017				<0.002
4/17/2017			<0.002	<0.002
6/20/2017			<0.002	<0.002
8/7/2017			<0.002	
8/8/2017				<0.002
3/6/2018			<0.002	<0.002
6/21/2018			<0.002	<0.002
8/28/2018			<0.002	
8/29/2018				<0.002
3/19/2019			<0.002	0.00212
8/7/2019			<0.002	<0.002
4/7/2020			<0.002	<0.002
9/18/2020	<0.002	<0.002	0.00296	<0.002
4/5/2021	0.00239	<0.002	<0.002	<0.002
9/1/2021	<0.002	<0.002	<0.002	<0.002
4/20/2022	<0.002	<0.002	<0.002	<0.002
9/14/2022	<0.002	<0.002	<0.002	<0.002
4/12/2023	<0.002	<0.002	<0.002	<0.002
9/20/2023	<0.002	<0.002	<0.002	<0.002
4/12/2024	<0.002	<0.002		
4/15/2024			<0.002	<0.002
9/11/2024	<0.002	<0.002		
9/12/2024			<0.002	<0.002

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.002
8/16/2016	<0.002
10/11/2016	<0.002
12/12/2016	<0.002
2/21/2017	<0.002
4/17/2017	<0.002
6/21/2017	<0.002
8/8/2017	<0.002
3/6/2018	<0.002
6/21/2018	<0.002
8/29/2018	<0.002
3/19/2019	<0.002
8/7/2019	<0.002
4/7/2020	<0.002
9/18/2020	<0.002
4/5/2021	<0.002
9/1/2021	<0.002
4/20/2022	<0.002
9/14/2022	<0.002
4/12/2023	<0.002
9/20/2023	<0.002
4/15/2024	<0.002
9/12/2024	<0.002

Time Series

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	<0.005	<0.005		
10/11/2016			<0.005	<0.005
8/7/2017	<0.005	<0.005		
8/8/2017			<0.005	<0.005
8/6/2019	<0.005			
8/7/2019		<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	0.00628	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/11/2023	<0.005		<0.005	<0.005
4/12/2023		<0.005		
9/18/2023		<0.005		
9/19/2023	<0.005		<0.005	<0.005
4/11/2024		<0.005		
4/12/2024	<0.005			
4/15/2024			<0.005	<0.005
9/10/2024		<0.005		
9/11/2024	<0.005		<0.005	<0.005

Time Series

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	0.00799			
8/8/2017	0.00699			
8/6/2019		<0.005	<0.005	<0.005
8/7/2019	0.0079			
4/7/2020	0.00576	<0.005	<0.005	<0.005
9/18/2020	0.00604	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	0.00518	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/10/2023		<0.005		
4/11/2023	<0.005			<0.005
4/12/2023			<0.005	
9/18/2023		<0.005	<0.005	
9/19/2023	<0.005			<0.005
4/11/2024		<0.005	<0.005	
4/12/2024	<0.005			<0.005
9/10/2024	<0.005	<0.005	<0.005	
9/11/2024				<0.005

Time Series

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			<0.005	<0.005
8/7/2017			<0.005	
8/8/2017				<0.005
8/7/2019			<0.005	<0.005
4/7/2020			<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	0.00578	<0.005
9/14/2022	<0.005	<0.005	0.00503	<0.005
4/12/2023	<0.005	<0.005	0.0051	<0.005
9/20/2023	<0.005	<0.005	<0.005	<0.005
4/12/2024	<0.005	<0.005		
4/15/2024			<0.005	<0.005
9/11/2024	<0.005	<0.005		
9/12/2024			<0.005	<0.005

Time Series

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	<0.005
8/8/2017	<0.005
8/7/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
9/14/2022	<0.005
4/12/2023	<0.005
9/20/2023	<0.005
4/15/2024	<0.005
9/12/2024	<0.005

Time Series

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		<0.005		<0.005
6/7/2016	<0.005			
6/8/2016			0.0071	
8/15/2016		<0.005	0.00811	<0.005
8/16/2016	<0.005			
10/10/2016	<0.005	<0.005		
10/11/2016			0.00821	<0.005
12/14/2016	<0.005	<0.005	0.00834	<0.005
2/17/2017		<0.005	0.00752	<0.005
2/21/2017	<0.005			
4/17/2017	<0.005	<0.005	0.00823	<0.005
6/19/2017	<0.005	<0.005		
6/21/2017			0.00829	<0.005
8/7/2017	<0.005	<0.005		
8/8/2017			0.00759	<0.005
3/5/2018		<0.005		
3/6/2018	<0.005			
3/7/2018			<0.005	0.00502
6/19/2018	<0.005	<0.005		
6/20/2018			0.00739	<0.005
8/27/2018	<0.005	<0.005		
8/29/2018			0.00827	<0.005
3/18/2019	<0.005			
3/19/2019		<0.005		
3/20/2019			0.00569	<0.005
8/6/2019	<0.005			
8/7/2019		<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/11/2023	<0.005		<0.005	<0.005
4/12/2023		<0.005		
9/18/2023		<0.005		
9/19/2023	<0.005		<0.005	<0.005
4/11/2024		<0.005		
4/12/2024	<0.005			
4/15/2024			<0.005	<0.005
9/10/2024		<0.005		
9/11/2024	<0.005		<0.005	<0.005

Time Series

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	0.0165			
8/15/2016	0.0103			
10/10/2016	0.0137			
12/12/2016	0.0119			
2/21/2017	0.0074			
4/18/2017	0.00674			
6/20/2017	0.0106			
8/8/2017	0.0109			
3/6/2018	<0.005	<0.005		
6/19/2018	0.00939	<0.005		
6/20/2018			<0.005	<0.005
8/27/2018		<0.005	<0.005	<0.005
8/28/2018	<0.005			
3/18/2019				<0.005
3/19/2019		<0.005	<0.005	
3/20/2019	0.0102			
8/6/2019		<0.005	<0.005	<0.005
8/7/2019	0.0108			
4/7/2020	0.00632	<0.005	<0.005	<0.005
9/18/2020	0.00762	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	0.00617	<0.005	<0.005	<0.005
4/20/2022	0.00634	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/10/2023		<0.005		
4/11/2023	<0.005			<0.005
4/12/2023			<0.005	
9/18/2023		<0.005	<0.005	
9/19/2023	0.0053			<0.005
4/11/2024		<0.005	<0.005	
4/12/2024	<0.005			<0.005
9/10/2024	0.00666	<0.005	<0.005	
9/11/2024				<0.005

Time Series

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			<0.005	<0.005
8/16/2016			<0.005	<0.005
10/11/2016			<0.005	<0.005
12/12/2016			<0.005	<0.005
2/17/2017			<0.005	
2/21/2017				<0.005
4/17/2017			<0.005	<0.005
6/20/2017			<0.005	<0.005
8/7/2017			<0.005	
8/8/2017				<0.005
3/6/2018			<0.005	<0.005
6/21/2018			<0.005	<0.005
8/28/2018			<0.005	
8/29/2018				<0.005
3/19/2019			<0.005	<0.005
8/7/2019			<0.005	<0.005
4/7/2020			<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/12/2023	<0.005	<0.005	<0.005	<0.005
9/20/2023	<0.005	<0.005	<0.005	<0.005
4/12/2024	<0.005	<0.005		
4/15/2024			<0.005	<0.005
9/11/2024	<0.005	<0.005		
9/12/2024			<0.005	<0.005

Time Series

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<0.005
8/16/2016	<0.005
10/11/2016	<0.005
12/12/2016	<0.005
2/21/2017	<0.005
4/17/2017	<0.005
6/21/2017	<0.005
8/8/2017	<0.005
3/6/2018	<0.005
6/21/2018	<0.005
8/29/2018	<0.005
3/19/2019	<0.005
8/7/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
9/14/2022	<0.005
4/12/2023	<0.005
9/20/2023	<0.005
4/15/2024	<0.005
9/12/2024	<0.005

Time Series

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	0.338	0.156		
10/11/2016			0.279	0.185
8/7/2017	0.243	0.165		
8/8/2017			0.257	0.178
8/6/2019	0.323			
8/7/2019		0.199	0.274	0.134
4/7/2020	0.233	0.19	0.246	0.154
9/18/2020	0.176	0.19	0.259	0.153
4/5/2021	0.188	0.179	0.261	0.133
9/1/2021	0.172	0.227	0.282	0.136
4/20/2022	0.164	0.173	0.247	0.149
9/14/2022	0.16	0.191	0.266	0.127
4/11/2023	0.148		0.293	0.0985
4/12/2023		0.178		
9/18/2023		0.207		
9/19/2023	0.151		0.282	0.113
4/11/2024		0.188		
4/12/2024	0.172			
4/15/2024			0.301	0.125
9/10/2024		0.197		
9/11/2024	0.181		0.298	0.117

Time Series

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	0.291			
8/8/2017	0.256			
8/6/2019		0.133	0.0872	0.123
8/7/2019	0.263			
4/7/2020	0.175	0.129	0.0661	0.109
9/18/2020	0.184	0.108	0.0602	0.0824
4/5/2021	0.148	0.13	0.0639	0.0899
9/1/2021	0.178	0.115	0.068	0.085
4/20/2022	0.169	0.127	0.0595	0.0802
9/14/2022	0.155	0.111	0.0592	0.0746
4/10/2023		0.137		
4/11/2023	0.153			0.0795
4/12/2023			0.0526	
9/18/2023		0.101	0.0601	
9/19/2023	0.164			0.0768
4/11/2024		0.103	0.0585	
4/12/2024	0.153			0.0703
9/10/2024	0.181	0.106	0.0598	
9/11/2024				0.0754

Time Series

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			0.103	0.193
8/7/2017			0.11	
8/8/2017				0.197
8/7/2019			0.115	0.208
4/7/2020			0.103	0.166
9/18/2020	0.174	0.106	0.146	0.167
4/5/2021	0.159	0.0986	0.129	0.163
9/1/2021	0.159	0.128	0.14	0.17
4/20/2022	0.145	0.0575	0.122	0.168
9/14/2022	0.145	0.0659	0.101	0.167
4/12/2023	0.133	0.0512	0.091	0.149
9/20/2023	0.135	0.0752	0.0958	0.163
4/12/2024	0.147	0.069		
4/15/2024			0.0951	0.166
9/11/2024	0.127	0.113		
9/12/2024			0.103	0.162

Time Series

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	0.156
8/8/2017	0.161
8/7/2019	0.178
4/7/2020	0.173
9/18/2020	0.187
4/5/2021	0.188
9/1/2021	0.204
4/20/2022	0.194
9/14/2022	0.184
4/12/2023	0.194
9/20/2023	0.165
4/15/2024	0.19
9/12/2024	0.188

Time Series

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
6/6/2016		42.1		827
6/7/2016	366			
6/8/2016			1050	
8/15/2016		33.8	1040	605
8/16/2016	187			
10/10/2016	187	36.4		
10/11/2016			1010	607
12/14/2016	149	38.4	1140	732
2/17/2017		47.3	1190	849
2/21/2017	145			
4/17/2017	145	38.3	1200	853
6/19/2017	190	35.4		
6/21/2017			1020	537
8/7/2017	119	39		
8/8/2017			1110	664
10/16/2017	106	46.9		
10/17/2017			1210	835
11/28/2017			1140 (R)	779 (R)
3/5/2018		51.4		
3/6/2018	87.3			
3/7/2018			1110	824
6/19/2018	136	37.3		
6/20/2018			1090	210
8/27/2018	94.7	34.3		
8/29/2018			1070	400
3/18/2019	223			
3/19/2019		42.8		
3/20/2019			1050	351
8/6/2019	276			
8/7/2019		28.8	837	327
4/7/2020	123	18.6	888	496
9/18/2020	100	36.5	924	403
4/5/2021	99.7	27.6	952	338
9/1/2021	82.7	32.3	1010	333
4/20/2022	72.8	48.3	1030	297
9/14/2022	67.1	31.2	978	319
4/11/2023	72.2		1150	254
4/12/2023		39.8		
9/18/2023		57.4		
9/19/2023	94.2		1440	365
4/11/2024		49.6		
4/12/2024	65.7			
4/15/2024			1160	256
9/10/2024		59.9		
9/11/2024	68.9		1110	273

Time Series

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
6/8/2016	713			
8/15/2016	520			
10/10/2016	603			
12/12/2016	645			
2/21/2017	415			
4/18/2017	461			
6/20/2017	541			
8/8/2017	590			
10/16/2017	206			
3/6/2018	53.7	123		
6/19/2018	489	134		
6/20/2018			38.4	101
8/27/2018		125	31.7	70
8/28/2018	96.6			
3/18/2019				90.8
3/19/2019		134	26.2	
3/20/2019	442			
8/6/2019		139	29.7	169
8/7/2019	529			
4/7/2020	373	143	25.5	164
9/18/2020	356	151	25.8	81
4/5/2021	237	154	35.5	91.2
9/1/2021	303	154	25.8	59.3
4/20/2022	293	158	25.4	48.5
9/14/2022	151	220	23	44.5
4/10/2023		147		
4/11/2023	215			87.8
4/12/2023			25	
9/18/2023		208	28.6	
9/19/2023	303			62.9
4/11/2024		160	21.8	
4/12/2024	138			43.8
9/10/2024	248	161	23.8	
9/11/2024				43.8

Time Series

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
6/7/2016			32.2	109
8/16/2016			28.4	109
10/11/2016			27.2	105
12/12/2016			32.7	109
2/17/2017			36	
2/21/2017				111
4/17/2017			39.5	108
6/20/2017			33	108
8/7/2017			35.3	
8/8/2017				114
10/16/2017			45.4	
10/17/2017				135
3/6/2018			162	122
6/21/2018			51.3	119
8/28/2018			52.2	
8/29/2018				120
3/19/2019			48	85
8/7/2019			47	112
4/7/2020			41.5	58.9
9/18/2020	376	119	46.9	61.9
4/5/2021	341	7.63	60.1	57.4
9/1/2021	358	111	50.2	53.7
4/20/2022	322	30.7	58.4	44.7
9/14/2022	313	38.2	49.5	49.9
4/12/2023	72.5	5.13	54	45.8
9/20/2023	380	27	53.1	53.4
4/12/2024	309	36.7		
4/15/2024			56.1	46.3
9/11/2024	234	85		
9/12/2024			65.8	50.4

Time Series

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
6/7/2016	<5
8/16/2016	<5
10/11/2016	<5
12/12/2016	<5
2/21/2017	5.94
4/17/2017	<5
6/21/2017	<5
8/8/2017	<5
10/17/2017	<5
3/6/2018	<5
6/21/2018	<5
8/29/2018	<5
3/19/2019	<5
8/7/2019	<5
4/7/2020	13.6
9/18/2020	19.1
4/5/2021	27.3
9/1/2021	22.7
4/20/2022	18.9
9/14/2022	16.4
4/12/2023	20.5
9/20/2023	10.1
4/15/2024	18.1
9/12/2024	16.3

Time Series

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	<0.005	<0.005		
10/11/2016			<0.005	<0.005
8/7/2017	<0.005	<0.005		
8/8/2017			<0.005	<0.005
8/6/2019	<0.005			
8/7/2019		<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/11/2023	<0.005		<0.005	<0.005
4/12/2023		<0.005		
9/18/2023		<0.005		
9/19/2023	<0.005		<0.005	<0.005
4/11/2024		<0.005		
4/12/2024	<0.005			
4/15/2024			<0.005	<0.005
9/10/2024		<0.005		
9/11/2024	<0.005		<0.005	<0.005

Time Series

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	<0.005			
8/8/2017	<0.005			
8/6/2019		<0.005	<0.005	<0.005
8/7/2019	<0.005			
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/10/2023		<0.005		
4/11/2023	<0.005			<0.005
4/12/2023			<0.005	
9/18/2023		<0.005	<0.005	
9/19/2023	<0.005			<0.005
4/11/2024		<0.005	<0.005	
4/12/2024	<0.005			<0.005
9/10/2024	<0.005	<0.005	<0.005	
9/11/2024				<0.005

Time Series

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			<0.005	<0.005
8/7/2017			<0.005	
8/8/2017				<0.005
8/7/2019			<0.005	<0.005
4/7/2020			<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/12/2023	<0.005	<0.005	<0.005	<0.005
9/20/2023	<0.005	<0.005	<0.005	<0.005
4/12/2024	<0.005	<0.005		
4/15/2024			<0.005	<0.005
9/11/2024	<0.005	<0.005		
9/12/2024			<0.005	<0.005

Time Series

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	<0.005
8/8/2017	<0.005
8/7/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
9/14/2022	<0.005
4/12/2023	<0.005
9/20/2023	<0.005
4/15/2024	<0.005
9/12/2024	<0.005

Time Series

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-15A
10/10/2016	<0.02	<0.02		
10/11/2016			<0.02	<0.02
8/7/2017	<0.02	<0.02		
8/8/2017			<0.02	<0.02
8/6/2019	<0.02			
8/7/2019		<0.02	<0.02	<0.02
4/7/2020	<0.02	<0.02	<0.02	<0.02
9/18/2020	<0.02	<0.02	<0.02	<0.02
4/5/2021	<0.02	<0.02	<0.02	<0.02
9/1/2021	<0.02	<0.02	<0.02	<0.02
4/20/2022	<0.02	<0.02	<0.02	<0.02
9/14/2022	<0.02	<0.02	<0.02	<0.02
4/11/2023	<0.02		<0.02	<0.02
4/12/2023		<0.02		
9/18/2023		<0.02		
9/19/2023	<0.02		<0.02	<0.02
4/11/2024		<0.02		
4/12/2024	<0.02			
4/15/2024			<0.02	<0.02
9/10/2024		<0.02		
9/11/2024	<0.02		0.022	<0.02

Time Series

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-21	MW-22 (bg)	MW-23 (bg)	MW-24
10/10/2016	<0.02			
8/8/2017	<0.02			
8/6/2019		<0.02	<0.02	<0.02
8/7/2019	<0.02			
4/7/2020	<0.02	<0.02	<0.02	<0.02
9/18/2020	<0.02	<0.02	<0.02	<0.02
4/5/2021	<0.02	<0.02	<0.02	<0.02
9/1/2021	<0.02	<0.02	<0.02	<0.02
4/20/2022	<0.02	<0.02	<0.02	<0.02
9/14/2022	<0.02	<0.02	<0.02	<0.02
4/10/2023		<0.02		
4/11/2023	<0.02			<0.02
4/12/2023			<0.02	
9/18/2023		<0.02	<0.02	
9/19/2023	<0.02			<0.02
4/11/2024		<0.02	<0.02	
4/12/2024	<0.02			<0.02
9/10/2024	<0.02	<0.02	<0.02	
9/11/2024				<0.02

Time Series

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27	MW-4B	MW-5B
10/11/2016			<0.02	<0.02
8/7/2017			<0.02	
8/8/2017				<0.02
8/7/2019			<0.02	<0.02
4/7/2020			<0.02	<0.02
9/18/2020	<0.02	<0.02	<0.02	<0.02
4/5/2021	<0.02	<0.02	<0.02	<0.02
9/1/2021	<0.02	<0.02	<0.02	<0.02
4/20/2022	<0.02	<0.02	<0.02	<0.02
9/14/2022	<0.02	<0.02	<0.02	<0.02
4/12/2023	<0.02	<0.02	<0.02	<0.02
9/20/2023	<0.02	<0.02	<0.02	<0.02
4/12/2024	<0.02	<0.02		
4/15/2024			<0.02	<0.02
9/11/2024	<0.02	<0.02		
9/12/2024			<0.02	<0.02

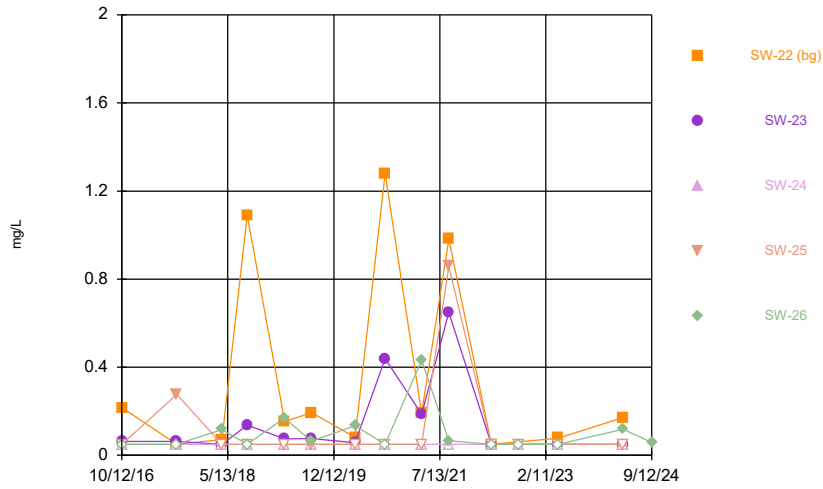
Time Series

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 12:56 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-6A
10/11/2016	<0.02
8/8/2017	<0.02
8/7/2019	<0.02
4/7/2020	<0.02
9/18/2020	<0.02
4/5/2021	<0.02
9/1/2021	<0.02
4/20/2022	<0.02
9/14/2022	<0.02
4/12/2023	<0.02
9/20/2023	<0.02
4/15/2024	<0.02
9/12/2024	<0.02

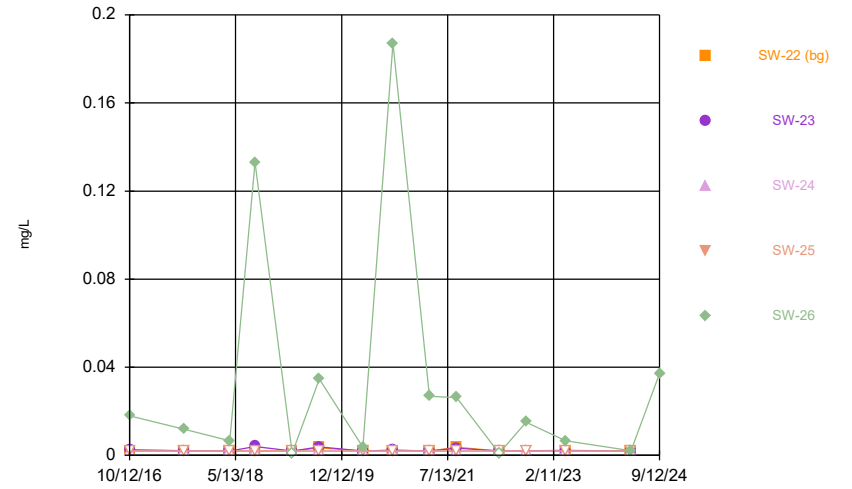
Surface Water Time Series

Time Series



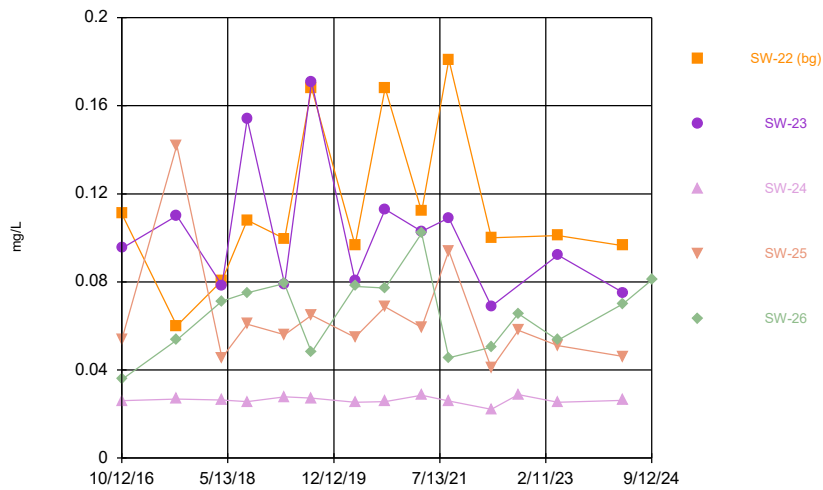
Constituent: Aluminum Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



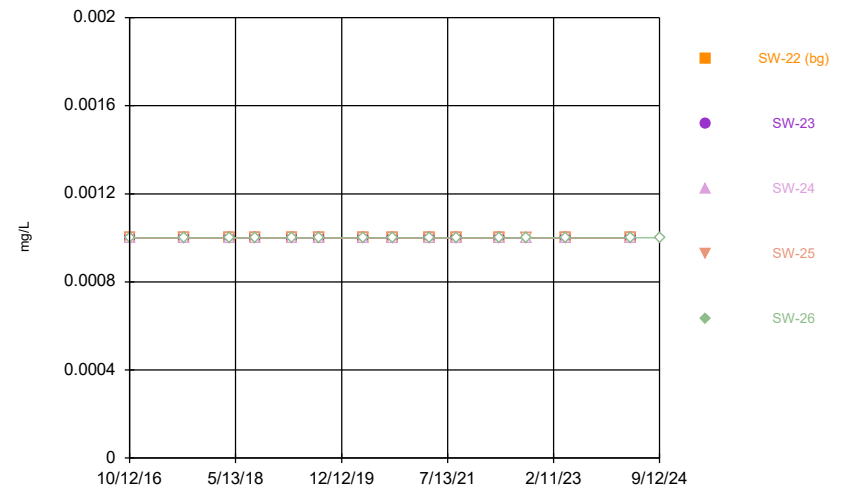
Constituent: Arsenic Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



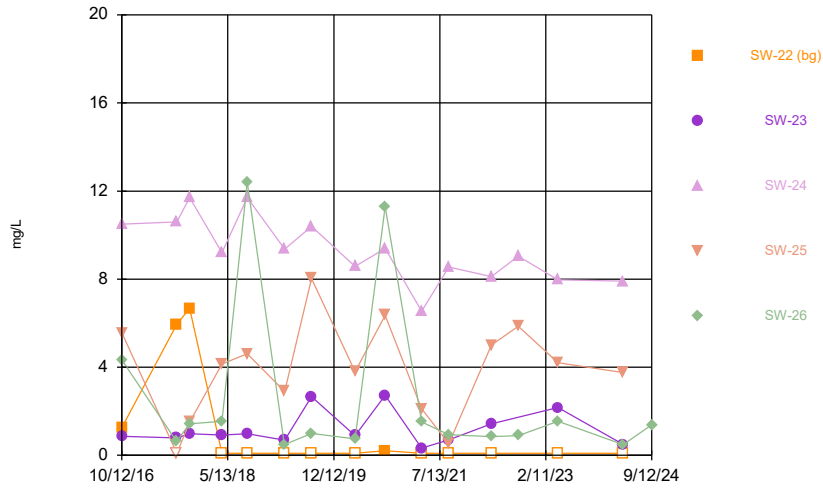
Constituent: Barium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



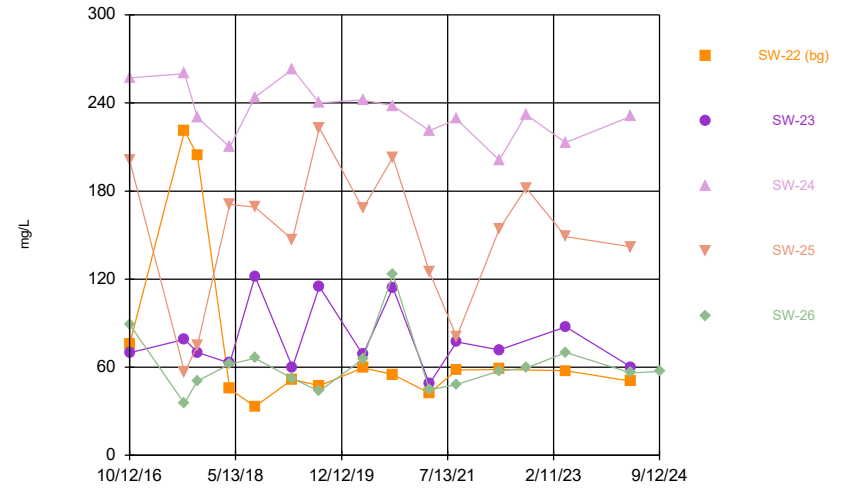
Constituent: Beryllium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



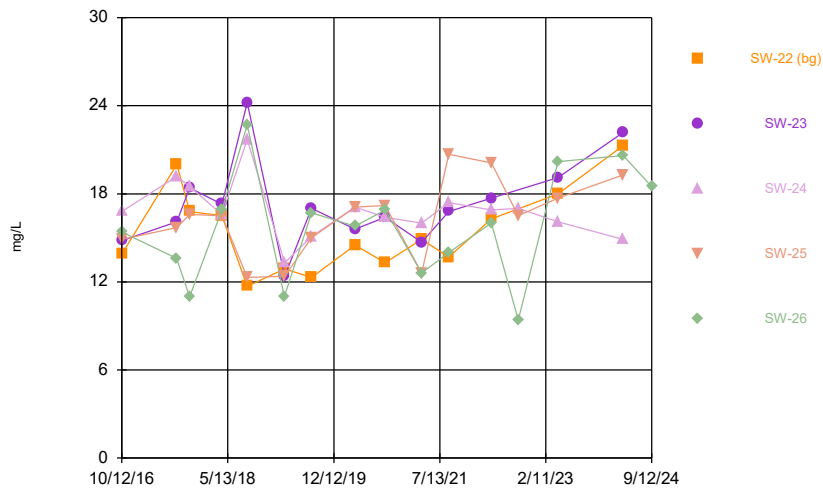
Constituent: Boron Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



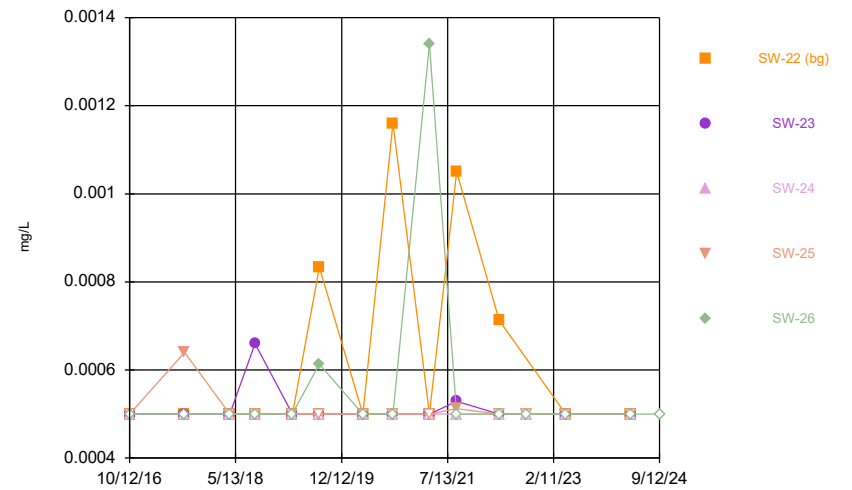
Constituent: Calcium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



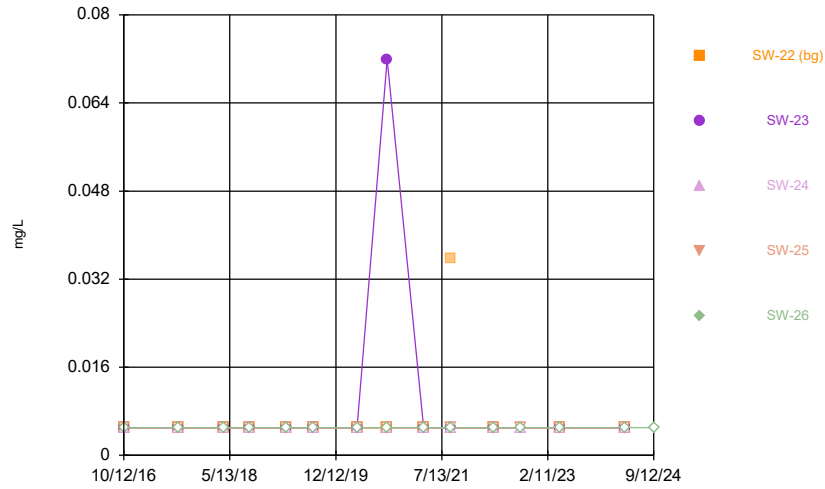
Constituent: Chloride Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



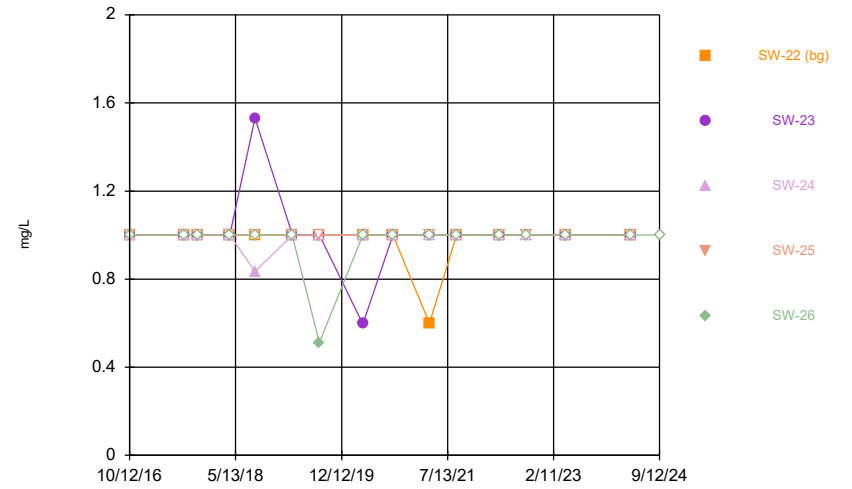
Constituent: Cobalt Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



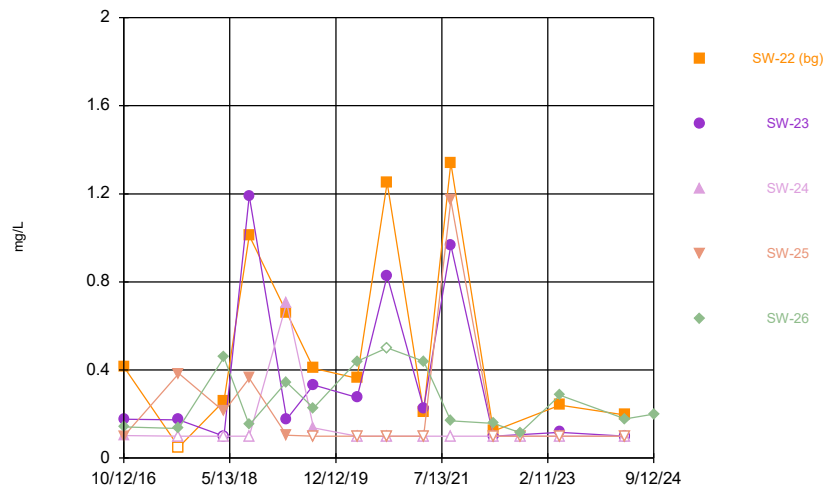
Constituent: Copper Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



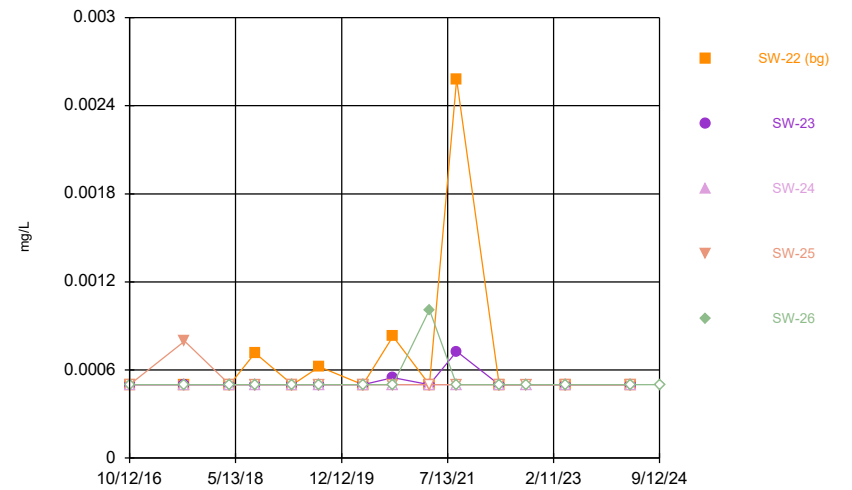
Constituent: Fluoride Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



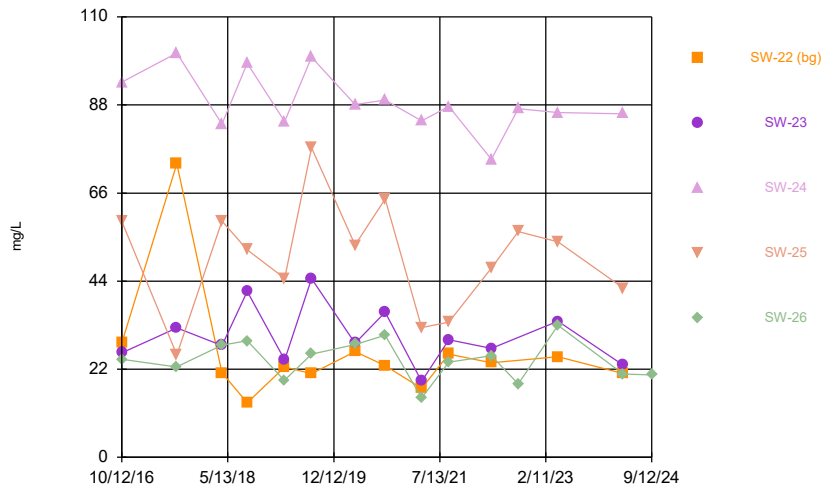
Constituent: Iron Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



Constituent: Lead Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

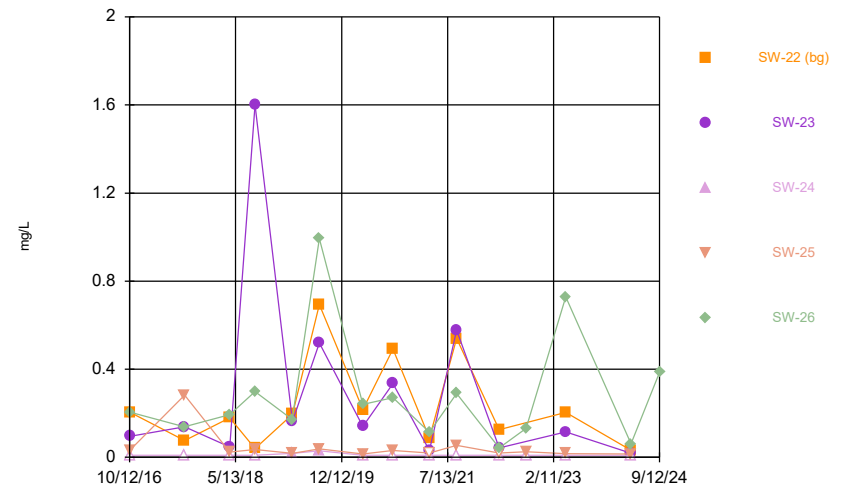
Time Series



Constituent: Magnesium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Hollow symbols indicate censored values.

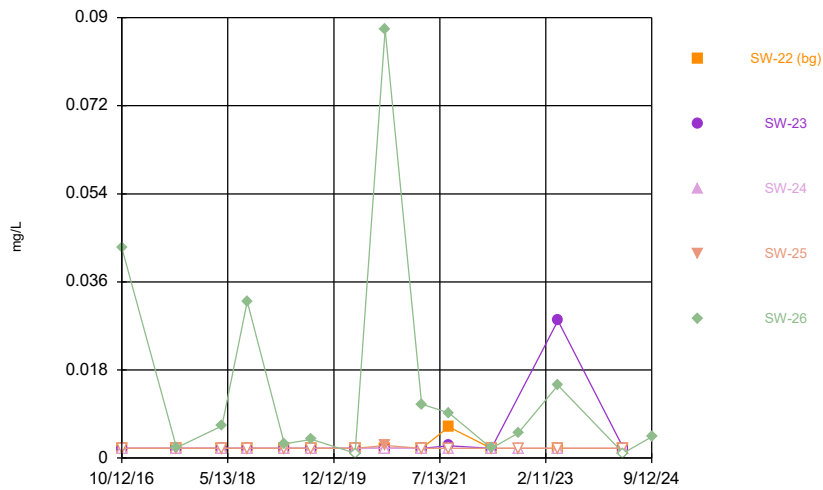
Time Series



Constituent: Manganese Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Hollow symbols indicate censored values.

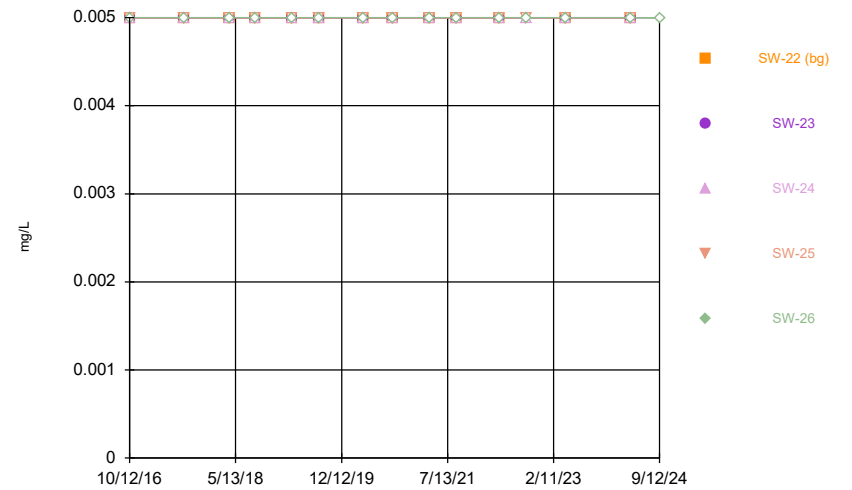
Time Series



Constituent: Molybdenum Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

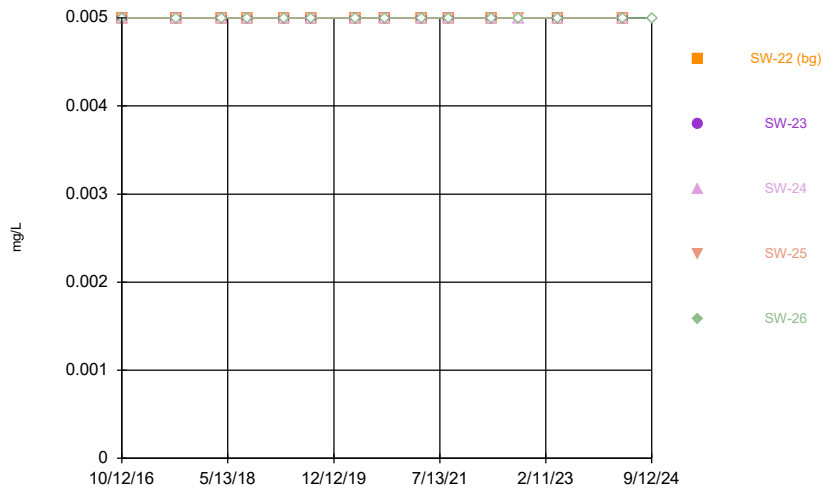
Hollow symbols indicate censored values.

Time Series



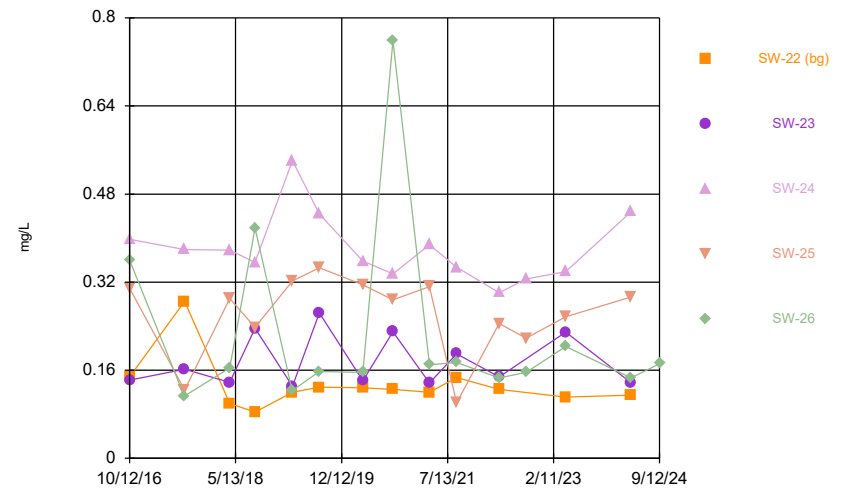
Constituent: Nickel Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



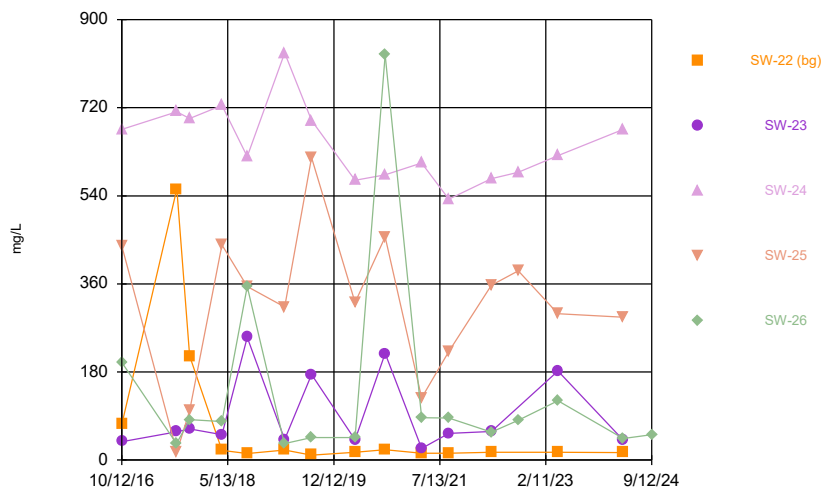
Constituent: Selenium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



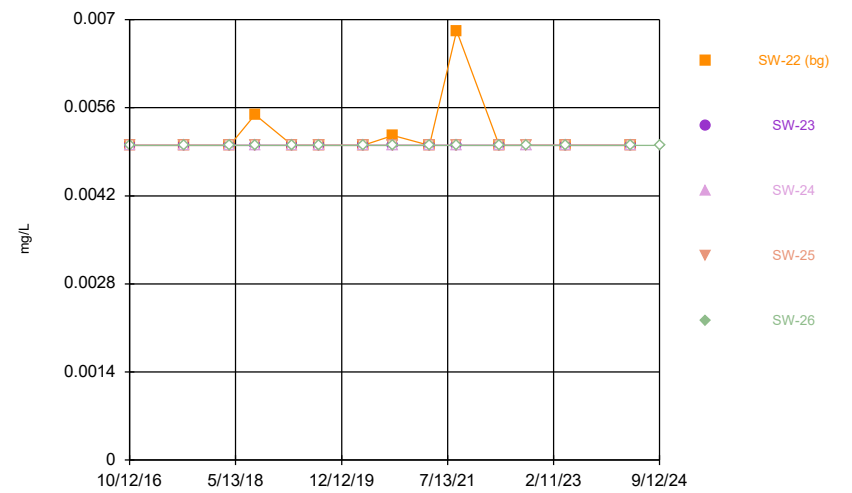
Constituent: Strontium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



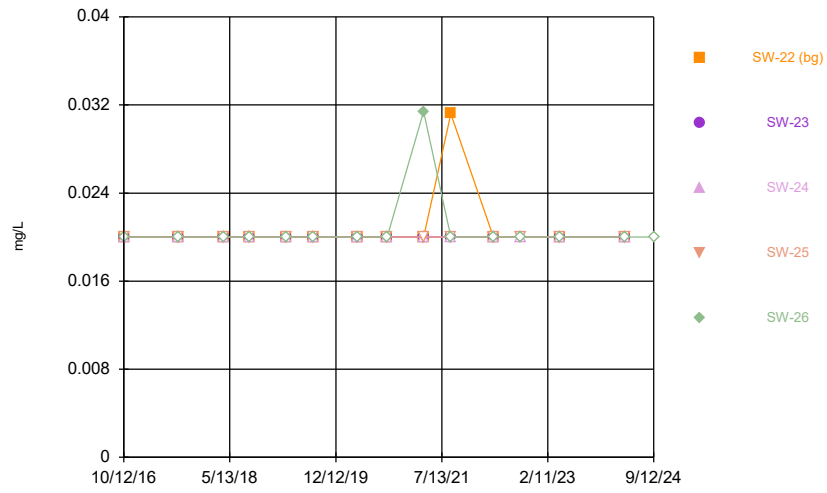
Constituent: Sulfate Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



Constituent: Vanadium Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series



Constituent: Zinc Analysis Run 11/7/2024 1:38 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Time Series

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	0.217	0.0624	<0.05	<0.05	<0.05
8/7/2017					<0.05
8/9/2017	<0.05	0.0626	<0.05	0.276	
4/11/2018	0.0713	<0.05	<0.05	<0.05	0.117
8/27/2018	1.09	0.137	<0.05	<0.05	<0.05
3/18/2019					0.169
3/20/2019	0.153	0.0744	<0.05	<0.05	
8/13/2019	0.194	0.0761	<0.05	<0.05	0.0646
4/7/2020	0.0821	0.0578	<0.05	<0.05	0.134
9/18/2020	1.28	0.44	<0.05	<0.05	<0.05
4/5/2021	0.191	0.187	<0.05	<0.05	0.432
9/1/2021	0.982	0.648	<0.05	0.858	0.0654
4/20/2022	<0.05	<0.05	<0.05	<0.05	<0.05
9/14/2022			<0.05	<0.05	<0.05
4/19/2023	0.0782	<0.05	<0.05	<0.05	<0.05
4/9/2024			<0.05		0.119
4/10/2024	0.172	<0.05		<0.05	
9/12/2024					0.0588

Time Series

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.002	0.00257	<0.002	<0.002	0.018
8/7/2017					0.0118
8/9/2017	<0.002	0.00211	<0.002	<0.002	
4/11/2018	<0.002	<0.002	<0.002	<0.002	0.00661
8/27/2018	<0.002	0.00401	<0.002	<0.002	0.133
3/18/2019					<0.002
3/20/2019	<0.002	<0.002	<0.002	<0.002	
8/13/2019	0.00342	0.00378	<0.002	<0.002	0.0347
4/7/2020	<0.002	<0.002	<0.002	<0.002	0.00368
9/18/2020	0.00217	0.00236	<0.002	<0.002	0.187
4/5/2021	<0.002	<0.002	<0.002	<0.002	0.0268
9/1/2021	0.00367	0.00332	<0.002	<0.002	0.0262
4/20/2022	<0.002	<0.002	<0.002	<0.002	<0.002
9/14/2022			<0.002	<0.002	0.0151
4/19/2023	<0.002	0.00221	<0.002	<0.002	0.00664
4/9/2024			<0.002		0.00217
4/10/2024	<0.002	<0.002		<0.002	
9/12/2024					0.0371

Time Series

Constituent: Barium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	0.111	0.0953	0.0261	0.0538	0.0357
8/7/2017					0.0535
8/9/2017	0.0601	0.11	0.0268	0.142	
4/11/2018	0.0806	0.0785	0.0264	0.0456	0.0712
8/27/2018	0.108	0.154	0.0256	0.0608	0.0751
3/18/2019					0.0793
3/20/2019	0.0996	0.079	0.0278	0.056	
8/13/2019	0.168	0.171	0.0272	0.0648	0.048
4/7/2020	0.0967	0.0806	0.0254	0.0548	0.078
9/18/2020	0.168	0.113	0.0257	0.0686	0.0772
4/5/2021	0.112	0.103	0.0285	0.0594	0.102
9/1/2021	0.181	0.109	0.0259	0.0941	0.0455
4/20/2022	0.1	0.0689	0.0222	0.0407	0.0503
9/14/2022			0.0288	0.058	0.0656
4/19/2023	0.101	0.0922	0.0253	0.051	0.0536
4/9/2024			0.0262		0.0701
4/10/2024	0.0964	0.075		0.0461	
9/12/2024					0.0808

Time Series

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.001	<0.001	<0.001	<0.001	<0.001
8/7/2017					<0.001
8/9/2017	<0.001	<0.001	<0.001	<0.001	
4/11/2018	<0.001	<0.001	<0.001	<0.001	<0.001
8/27/2018	<0.001	<0.001	<0.001	<0.001	<0.001
3/18/2019					<0.001
3/20/2019	<0.001	<0.001	<0.001	<0.001	
8/13/2019	<0.001	<0.001	<0.001	<0.001	<0.001
4/7/2020	<0.001	<0.001	<0.001	<0.001	<0.001
9/18/2020	<0.001	<0.001	<0.001	<0.001	<0.001
4/5/2021	<0.001	<0.001	<0.001	<0.001	<0.001
9/1/2021	<0.001	<0.001	<0.001	<0.001	<0.001
4/20/2022	<0.001	<0.001	<0.001	<0.001	<0.001
9/14/2022			<0.001	<0.001	<0.001
4/19/2023	<0.001	<0.001	<0.001	<0.001	<0.001
4/9/2024			<0.001		<0.001
4/10/2024	<0.001	<0.001		<0.001	
9/12/2024					<0.001

Time Series

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	1.25	0.869	10.5	5.57	4.33
8/7/2017					0.631
8/9/2017	5.95	0.789	10.6	<0.2	
10/17/2017	6.67	0.981	11.7	1.51	1.43
4/11/2018	<0.1	0.922	9.21	4.15	1.54
8/27/2018	<0.1	0.983	11.7	4.61	12.4
3/18/2019					0.486
3/20/2019	<0.1	0.693	9.36	2.9	
8/13/2019	<0.1	2.66	10.4	8.03	1
4/7/2020	<0.1	0.898	8.58	3.8	0.745
9/18/2020	0.206	2.72	9.39	6.36	11.3
4/5/2021	<0.1	0.32	6.55	2.11	1.52
9/1/2021	<0.1	0.704	8.55	0.528	0.941
4/20/2022	<0.1	1.43	8.12	5	0.855
9/14/2022			9.05	5.86	0.892
4/19/2023	<0.1	2.17	7.97	4.2	1.54
4/9/2024			7.91		0.484
4/10/2024	<0.1	0.485		3.76	
9/12/2024					1.38

Time Series

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	75.5	69.8	257	201	89.3
8/7/2017					35.5
8/9/2017	221	79.1	260	56.3	
10/17/2017	204	70	230	74.8	50.6
4/11/2018	45.2	62.9	210	171	62.1
8/27/2018	33.3	122	244	169	66.1
3/18/2019					52.4
3/20/2019	51.8	60.1	263	147	
8/13/2019	47.4	115	240	223	43.6
4/7/2020	59.6	68.6	242	168	65.5
9/18/2020	55.1	114	238	203	123
4/5/2021	42.4	48.7	221	125	44.5
9/1/2021	58.1	77.3	229	80.5	48.3
4/20/2022	58.6	71.7	201	154	57.4
9/14/2022			232	182	59.4
4/19/2023	57.6	87.6	213	149	70
4/9/2024			231		56.1
4/10/2024	50.5	60		142	
9/12/2024					57.3

Time Series

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	13.9	14.8	16.8	14.9	15.4
8/7/2017					13.6
8/9/2017	20	16.1	19.2	15.7	
10/17/2017	16.8	18.4	18.5	16.6	11
4/11/2018	16.5	17.3	16.6	16.5	16.9
8/27/2018	11.7	24.2	21.7	12.3	22.7
3/18/2019					11
3/20/2019	12.9	12.4	13.3	12.4	
8/13/2019	12.3	17	15.1	15	16.7
4/7/2020	14.5	15.6	17.1	17.1	15.8
9/18/2020	13.3	16.4	16.4	17.2	16.9
4/5/2021	14.9	14.7	16	12.6	12.6
9/1/2021	13.7	16.8	17.4	20.7	14
4/20/2022	16.3	17.7	16.9	20.1	16
9/14/2022			17	16.5	9.4
4/19/2023	18	19.1	16.1	17.7	20.2
4/9/2024			14.9		20.6
4/10/2024	21.3	22.2		19.3	
9/12/2024					18.5

Time Series

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8/7/2017					<0.0005
8/9/2017	<0.0005	<0.0005	<0.0005	0.00064	
4/11/2018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8/27/2018	<0.0005	0.00066	<0.0005	<0.0005	<0.0005
3/18/2019					<0.0005
3/20/2019	<0.0005	<0.0005	<0.0005	<0.0005	
8/13/2019	0.000833	<0.0005	<0.0005	<0.0005	0.000613
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
9/18/2020	0.00116	<0.0005	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	<0.0005	<0.0005	0.00134
9/1/2021	0.00105	0.000529	<0.0005	0.000512	<0.0005
4/20/2022	0.000713	<0.0005	<0.0005	<0.0005	<0.0005
9/14/2022			<0.0005	<0.0005	<0.0005
4/19/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4/9/2024			<0.0005		<0.0005
4/10/2024	<0.0005	<0.0005		<0.0005	
9/12/2024					<0.0005

Time Series

Constituent: Copper (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.005	<0.005	<0.005	<0.005	<0.005
8/7/2017					<0.005
8/9/2017	<0.005	<0.005	<0.005	<0.005	
4/11/2018	<0.005	<0.005	<0.005	<0.005	<0.005
8/27/2018	<0.005	<0.005	<0.005	<0.005	<0.005
3/18/2019					<0.005
3/20/2019	<0.005	<0.005	<0.005	<0.005	
8/13/2019	<0.005	<0.005	<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	0.0719	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	0.0358 (o)	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005	<0.005
9/14/2022			<0.005	<0.005	<0.005
4/19/2023	<0.005	<0.005	<0.005	<0.005	<0.005
4/9/2024			<0.005		<0.005
4/10/2024	<0.005	<0.005		<0.005	
9/12/2024					<0.005

Time Series

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<1	<1	<1	<1	<1
8/7/2017					<1
8/9/2017	<1	<1	<1	<1	
10/17/2017	<1	<1	<1	<1	<1
4/11/2018	<1	<1	<1	<1	<1
8/27/2018	<1	1.53	0.834	<1	<1
3/18/2019					<1
3/20/2019	<1	<1	<1	<1	
8/13/2019	<1	<1	<1	<1	0.512
4/7/2020	<1	0.597	<1	<1	<1
9/18/2020	<1	<1	<1	<1	<1
4/5/2021	0.6	<1	<1	<1	<1
9/1/2021	<1	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1	<1
9/14/2022			<1	<1	<1
4/19/2023	<1	<1	<1	<1	<1
4/9/2024			<1		<1
4/10/2024	<1	<1		<1	
9/12/2024					<1

Time Series

Constituent: Iron (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	0.415	0.177	0.102	0.1	0.141
8/7/2017					0.135
8/9/2017	<0.1	0.173	<0.1	0.384	
4/11/2018	0.259	<0.1	<0.1	0.212	0.457
8/27/2018	1.01	1.19	<0.1	0.363	0.151
3/18/2019					0.345
3/20/2019	0.66	0.176	0.705	0.104	
8/13/2019	0.408	0.332	0.137	<0.1	0.227
4/7/2020	0.363	0.275	<0.1	<0.1	0.439
9/18/2020	1.25	0.827	<0.1	<0.1	<1
4/5/2021	0.21	0.228	<0.1	<0.1	0.439
9/1/2021	1.34	0.967	<0.1	1.17	0.169
4/20/2022	0.123	<0.1	<0.1	<0.1	0.157
9/14/2022			<0.1	<0.1	0.116
4/19/2023	0.24	0.117	<0.1	<0.1	0.286
4/9/2024			<0.1		0.178
4/10/2024	0.196	<0.1		<0.1	
9/12/2024					0.2

Time Series

Constituent: Lead (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8/7/2017					<0.0005
8/9/2017	<0.0005	<0.0005	<0.0005	0.000796	
4/11/2018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8/27/2018	0.000716	<0.0005	<0.0005	<0.0005	<0.0005
3/18/2019					<0.0005
3/20/2019	<0.0005	<0.0005	<0.0005	<0.0005	
8/13/2019	0.000623	<0.0005	<0.0005	<0.0005	<0.0005
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
9/18/2020	0.000829	0.000549	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	<0.0005	<0.0005	0.00101
9/1/2021	0.00258	0.000726	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
9/14/2022			<0.0005	<0.0005	<0.0005
4/19/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4/9/2024			<0.0005		<0.0005
4/10/2024	<0.0005	<0.0005		<0.0005	
9/12/2024					<0.0005

Time Series

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	28.6	26.1	93.7	58.9	24.5
8/7/2017					22.6
8/9/2017	73.3	32.3	101	25.6	
4/11/2018	21.1	27.9	83.2	59	28
8/27/2018	13.6	41.4	98.4	51.8	29.1
3/18/2019					19.2
3/20/2019	22.6	24.3	83.9	44.7	
8/13/2019	20.9	44.6	99.9	77.3	25.8
4/7/2020	26.4	28.5	88.1	53	28.2
9/18/2020	22.9	36.2	89.2	64.5	30.5
4/5/2021	17.2	19	84	32.4	14.8
9/1/2021	25.8	29.4	87.6	33.8	23.8
4/20/2022	23.6	27.2	74.4	47.3	25.4
9/14/2022			87.1	56.4	18.3
4/19/2023	25.1	34	86.1	53.8	33
4/9/2024			85.8		20.8
4/10/2024	20.9	23		42.2	
9/12/2024					20.6

Time Series

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	0.205	0.0951	<0.01	0.0315	0.205
8/7/2017					0.139
8/9/2017	0.0766	0.139	<0.01	0.282	
4/11/2018	0.18	0.0476	<0.01	0.0244	0.194
8/27/2018	0.0399	1.6	<0.01	0.0361	0.298
3/18/2019					0.172
3/20/2019	0.196	0.164	0.0179	0.0184	
8/13/2019	0.694	0.52	0.0304	0.0387	0.993
4/7/2020	0.217	0.14	<0.01	0.0156	0.241
9/18/2020	0.492	0.335	<0.01	0.0311	0.271
4/5/2021	0.0882	0.0311	<0.01	<0.04	0.114
9/1/2021	0.539	0.578	<0.01	0.054	0.29
4/20/2022	0.125	0.0426	<0.01	<0.04	0.0422
9/14/2022			<0.01	0.026	0.131
4/19/2023	0.204	0.115	<0.01	0.0169	0.728
4/9/2024			<0.01		0.0612
4/10/2024	0.0309	0.0181		0.0148	
9/12/2024					0.385

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.002	<0.002	<0.002	<0.002	0.043
8/7/2017					0.00214
8/9/2017	<0.002	<0.002	<0.002	<0.002	
4/11/2018	<0.002	<0.002	<0.002	<0.002	0.00659
8/27/2018	<0.002	<0.002	<0.002	<0.002	0.032
3/18/2019					0.00291
3/20/2019	<0.002	<0.002	<0.002	<0.002	
8/13/2019	<0.002	<0.002	<0.002	<0.002	0.00379
4/7/2020	<0.002	<0.002	<0.002	<0.002	<0.002
9/18/2020	<0.002	<0.002	<0.002	0.00256	0.0876
4/5/2021	<0.002	<0.002	<0.002	<0.002	0.011
9/1/2021	0.00637	0.00252	<0.002	<0.002	0.00925
4/20/2022	<0.002	<0.002	<0.002	<0.002	0.00202
9/14/2022			<0.002	<0.002	0.00514
4/19/2023	<0.002	0.0281	<0.002	<0.002	0.0149
4/9/2024			<0.002		<0.002
4/10/2024	<0.002	<0.002		<0.002	
9/12/2024					0.00433

Time Series

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.005	<0.005	<0.005	<0.005	<0.005
8/7/2017					<0.005
8/9/2017	<0.005	<0.005	<0.005	<0.005	
4/11/2018	<0.005	<0.005	<0.005	<0.005	<0.005
8/27/2018	<0.005	<0.005	<0.005	<0.005	<0.005
3/18/2019					<0.005
3/20/2019	<0.005	<0.005	<0.005	<0.005	
8/13/2019	<0.005	<0.005	<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005	<0.005
9/14/2022			<0.005	<0.005	<0.005
4/19/2023	<0.005	<0.005	<0.005	<0.005	<0.005
4/9/2024			<0.005		<0.005
4/10/2024	<0.005	<0.005		<0.005	
9/12/2024					<0.005

Time Series

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.005	<0.005	<0.005	<0.005	<0.005
8/7/2017					<0.005
8/9/2017	<0.005	<0.005	<0.005	<0.005	
4/11/2018	<0.005	<0.005	<0.005	<0.005	<0.005
8/27/2018	<0.005	<0.005	<0.005	<0.005	<0.005
3/18/2019					<0.005
3/20/2019	<0.005	<0.005	<0.005	<0.005	
8/13/2019	<0.005	<0.005	<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005	<0.005
9/14/2022			<0.005	<0.005	<0.005
4/19/2023	<0.005	<0.005	<0.005	<0.005	<0.005
4/9/2024			<0.005		<0.005
4/10/2024	<0.005	<0.005		<0.005	
9/12/2024					<0.005

Time Series

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	0.148	0.142	0.398	0.309	0.36
8/7/2017					0.113
8/9/2017	0.285	0.162	0.379	0.124	
4/11/2018	0.0998	0.138	0.378	0.29	0.164
8/27/2018	0.0842	0.236	0.356	0.238	0.418
3/18/2019					0.123
3/20/2019	0.12	0.131	0.541	0.322	
8/13/2019	0.129	0.264	0.444	0.346	0.158
4/7/2020	0.128	0.141	0.358	0.315	0.156
9/18/2020	0.125	0.23	0.335	0.288	0.759
4/5/2021	0.12	0.137	0.388	0.312	0.17
9/1/2021	0.147	0.19	0.347	0.101	0.174
4/20/2022	0.125	0.148	0.301	0.245	0.146
9/14/2022			0.326	0.218	0.156
4/19/2023	0.111	0.229	0.339	0.257	0.203
4/9/2024			0.448		0.146
4/10/2024	0.115	0.137		0.293	
9/12/2024					0.172

Time Series

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	73	37.7	676	438	200
8/7/2017					33.8
8/9/2017	554	58.1	712	16.9	
10/17/2017	213	63.7	698	101	82.5
4/11/2018	20.1	52	725	440	78.8
8/27/2018	13.2	251	620	355	355
3/18/2019					33.7
3/20/2019	20.4	42.2	832	313	
8/13/2019	10.1	175	694	618	46.3
4/7/2020	16.3	41.5	572	322	45.9
9/18/2020	21	218	583	456	828
4/5/2021	13.9	23.6	607	127	86.4
9/1/2021	14.3	54.3	533	222	85.9
4/20/2022	15.7	58.4	575	357	57.3
9/14/2022			588	387	81.4
4/19/2023	15.7	182	622	299	121
4/9/2024			676		43.8
4/10/2024	15.1	40.2		292	
9/12/2024					52.2

Time Series

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.005	<0.005	<0.005	<0.005	<0.005
8/7/2017					<0.005
8/9/2017	<0.005	<0.005	<0.005	<0.005	
4/11/2018	<0.005	<0.005	<0.005	<0.005	<0.005
8/27/2018	0.00549	<0.005	<0.005	<0.005	<0.005
3/18/2019					<0.005
3/20/2019	<0.005	<0.005	<0.005	<0.005	
8/13/2019	<0.005	<0.005	<0.005	<0.005	<0.005
4/7/2020	<0.005	<0.005	<0.005	<0.005	<0.005
9/18/2020	0.00516	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	0.00682	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005	<0.005
9/14/2022			<0.005	<0.005	<0.005
4/19/2023	<0.005	<0.005	<0.005	<0.005	<0.005
4/9/2024			<0.005		<0.005
4/10/2024	<0.005	<0.005		<0.005	
9/12/2024					<0.005

Time Series

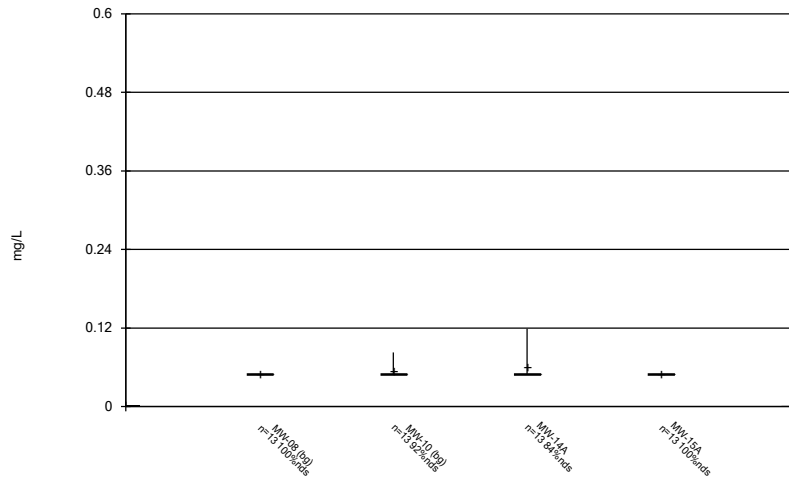
Constituent: Zinc (mg/L) Analysis Run 11/7/2024 1:39 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-24	SW-25	SW-26
10/12/2016	<0.02	<0.02	<0.02	<0.02	<0.02
8/7/2017					<0.02
8/9/2017	<0.02	<0.02	<0.02	<0.02	
4/11/2018	<0.02	<0.02	<0.02	<0.02	<0.02
8/27/2018	<0.02	<0.02	<0.02	<0.02	<0.02
3/18/2019					<0.02
3/20/2019	<0.02	<0.02	<0.02	<0.02	
8/13/2019	<0.02	<0.02	<0.02	<0.02	<0.02
4/7/2020	<0.02	<0.02	<0.02	<0.02	<0.02
9/18/2020	<0.02	<0.02	<0.02	<0.02	<0.02
4/5/2021	<0.02	<0.02	<0.02	<0.02	0.0314
9/1/2021	0.0312	<0.02	<0.02	<0.02	<0.02
4/20/2022	<0.02	<0.02	<0.02	<0.02	<0.02
9/14/2022			<0.02	<0.02	<0.02
4/19/2023	<0.02	<0.02	<0.02	<0.02	<0.02
4/9/2024			<0.02		<0.02
4/10/2024	<0.02	<0.02		<0.02	
9/12/2024					<0.02

FIGURE B.

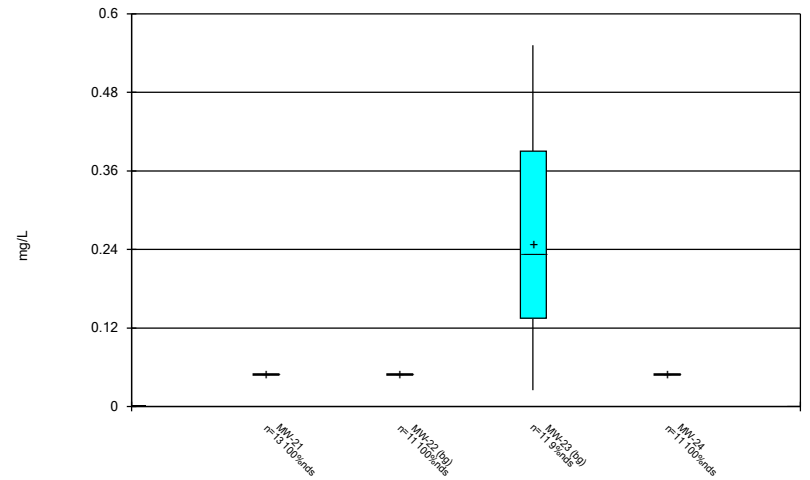
Monitoring Wells Box Plots

Box & Whiskers Plot



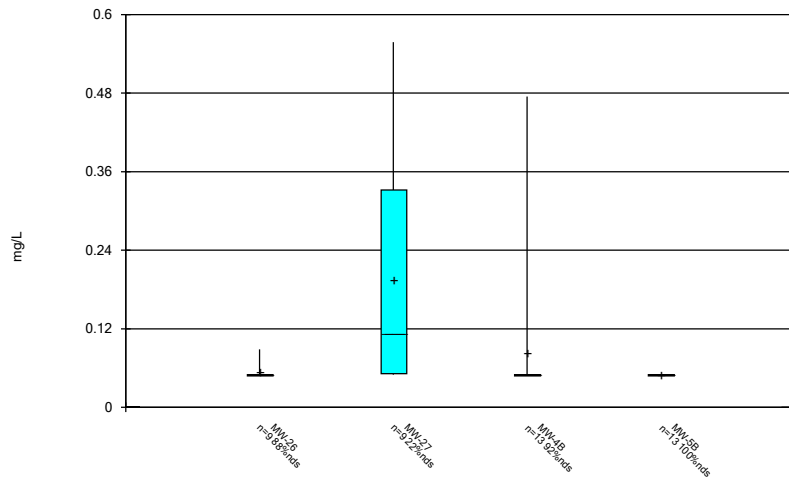
Constituent: Aluminum Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



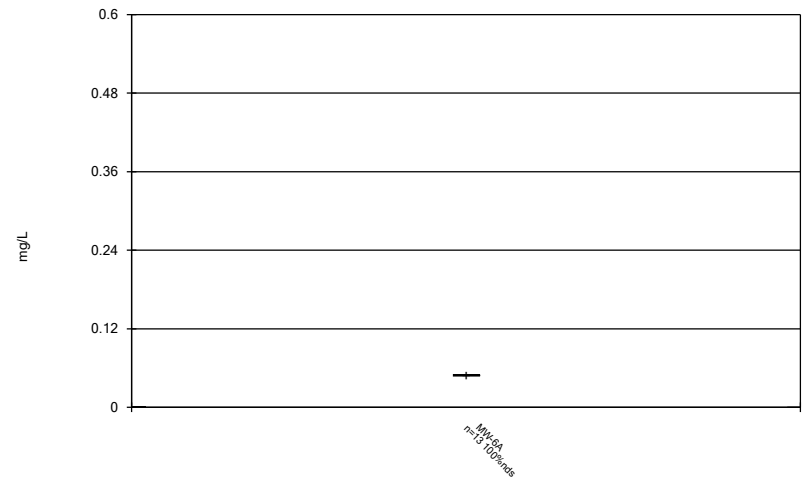
Constituent: Aluminum Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



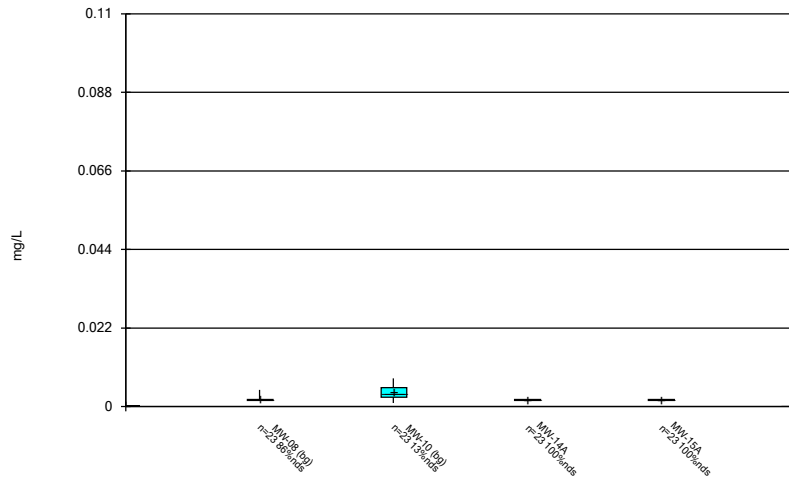
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



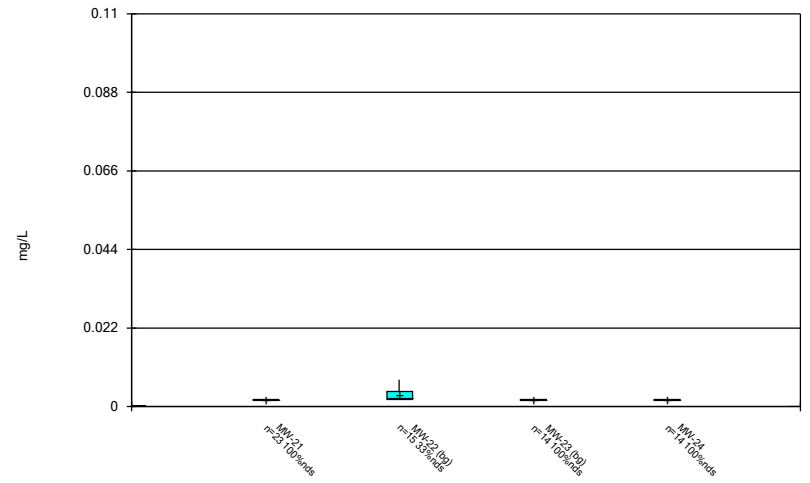
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



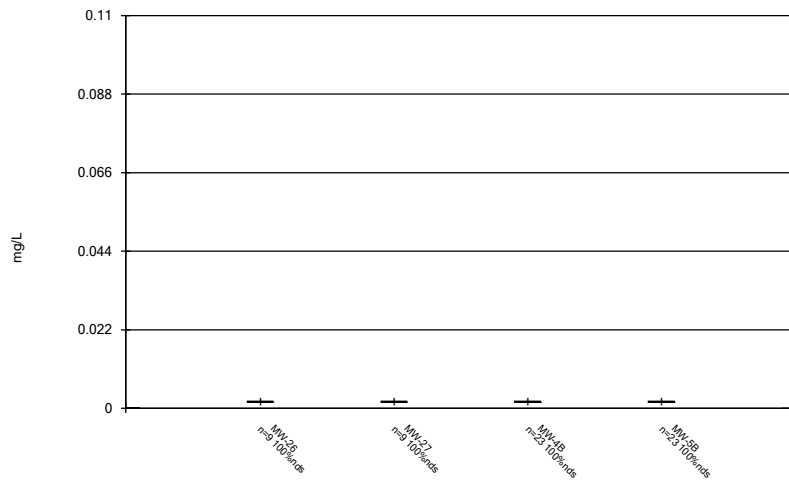
Constituent: Arsenic Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



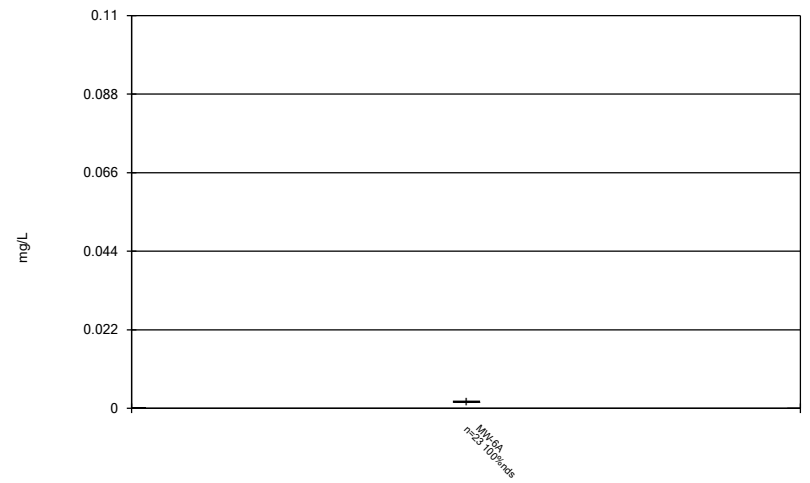
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



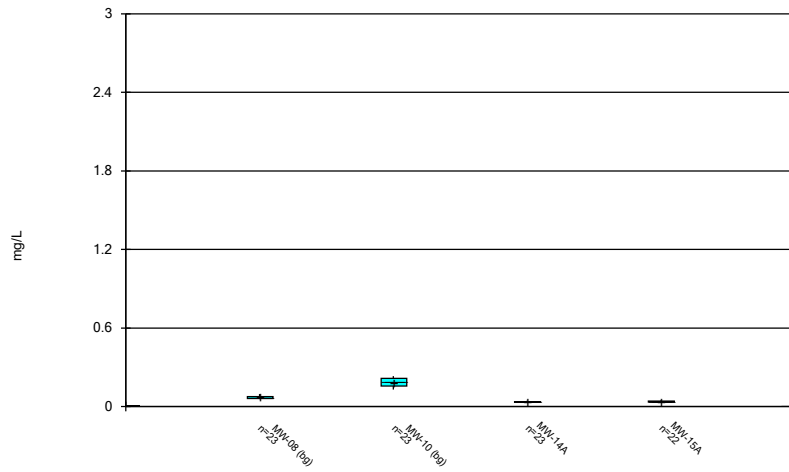
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



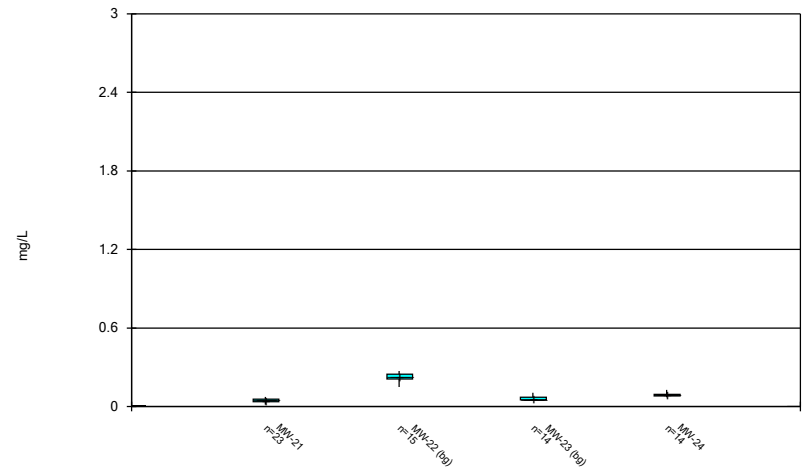
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



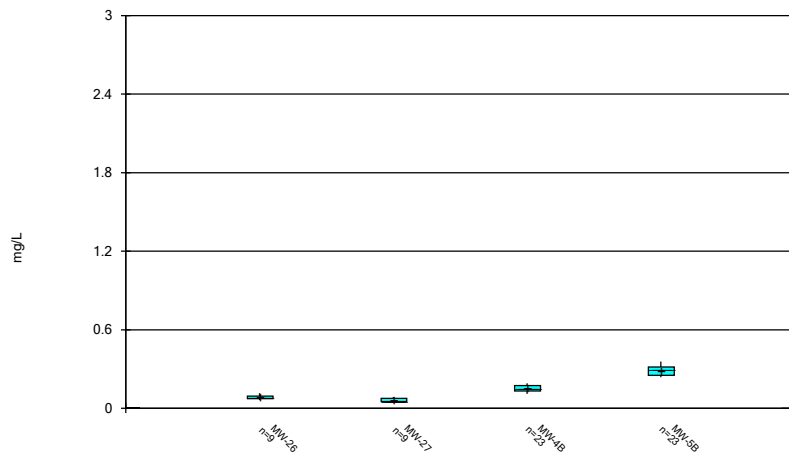
Constituent: Barium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Barium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



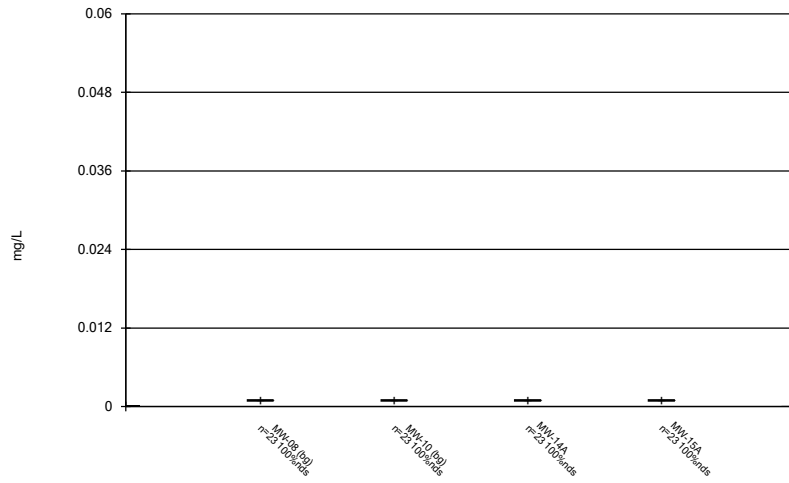
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



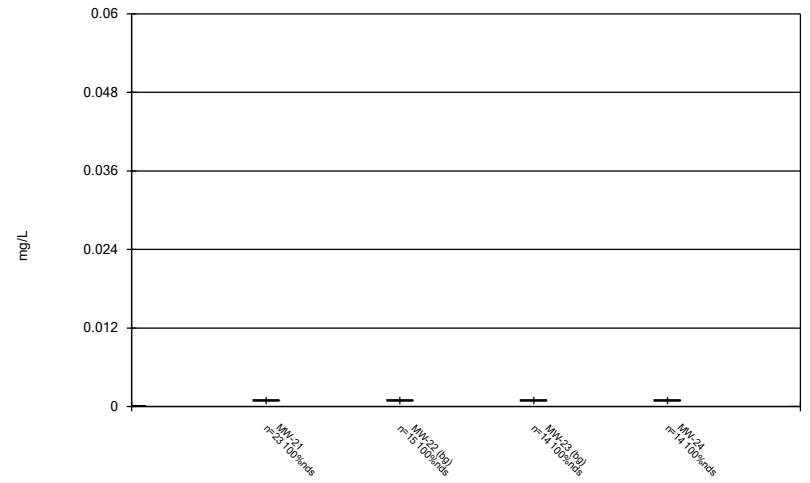
Constituent: Barium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



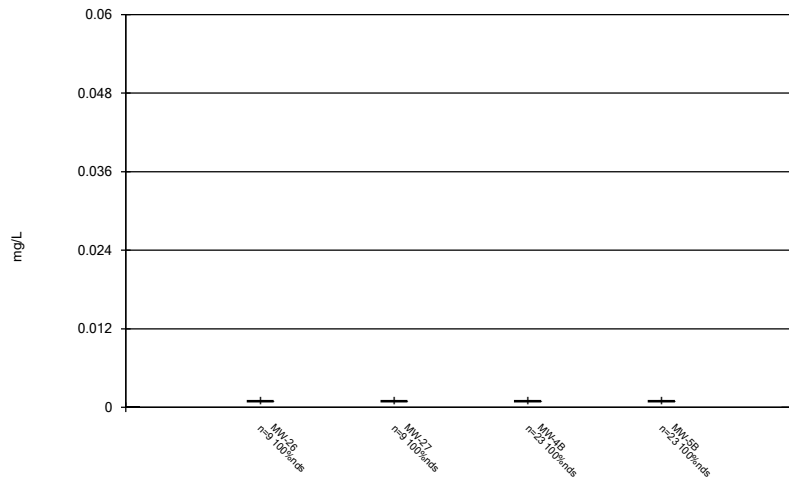
Constituent: Beryllium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



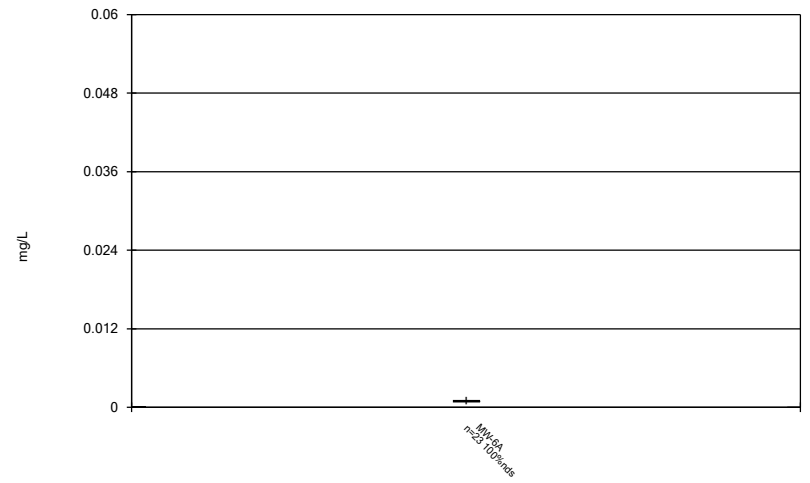
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



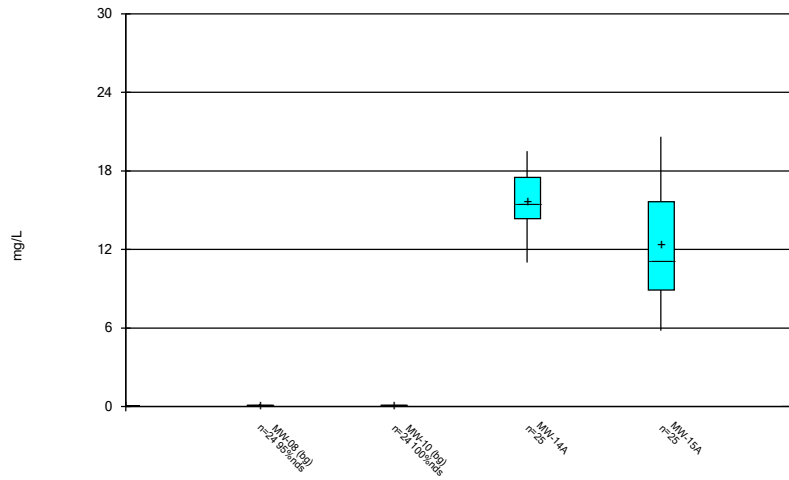
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



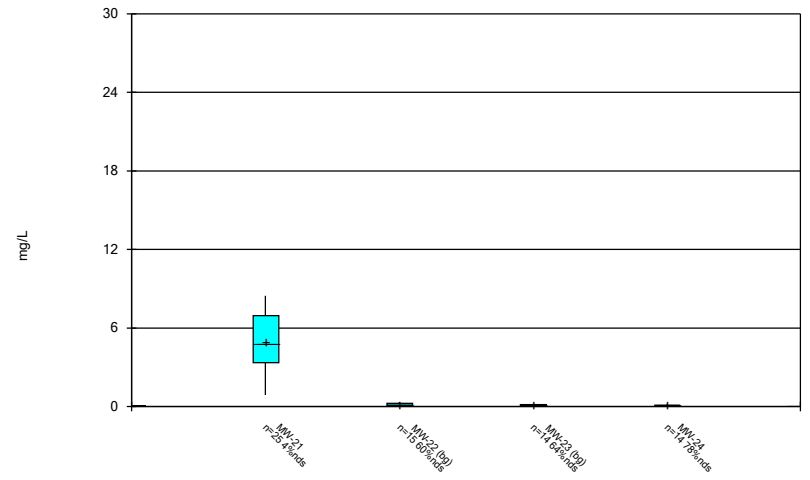
Constituent: Beryllium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



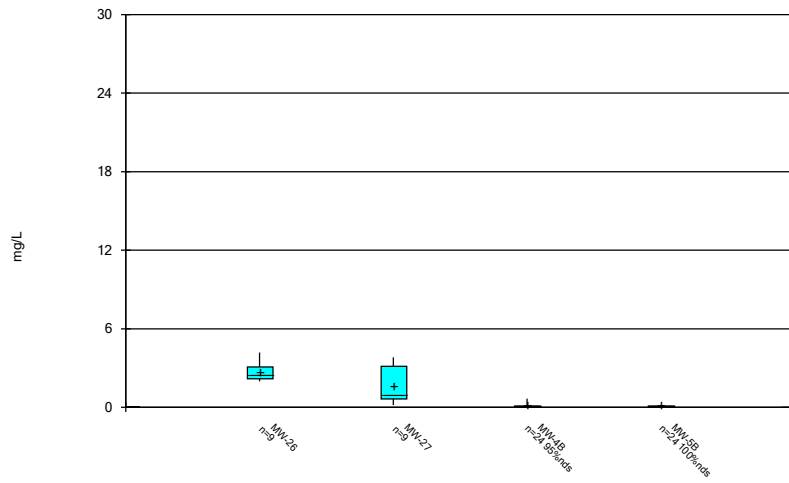
Constituent: Boron Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



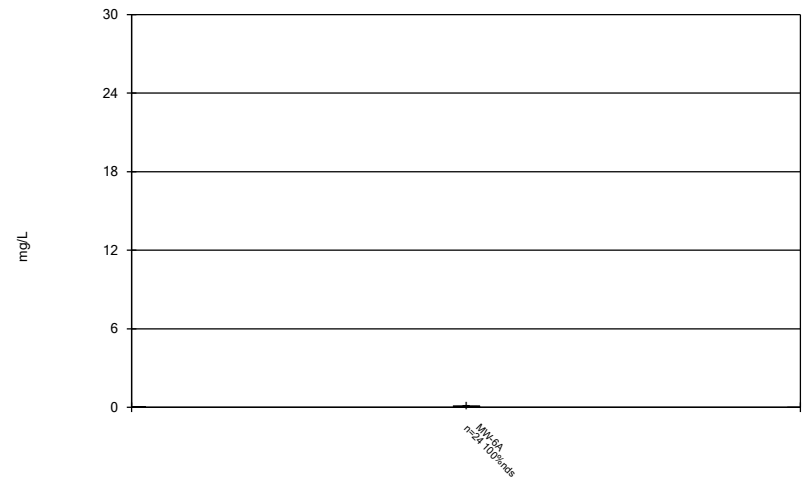
Constituent: Boron Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



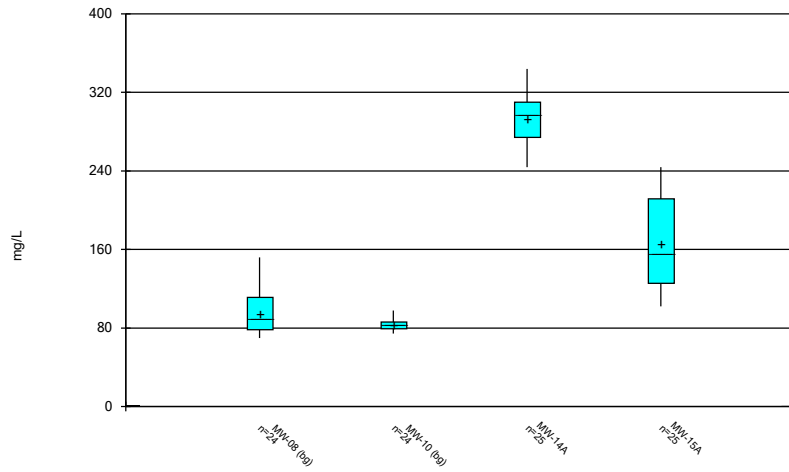
Constituent: Boron Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



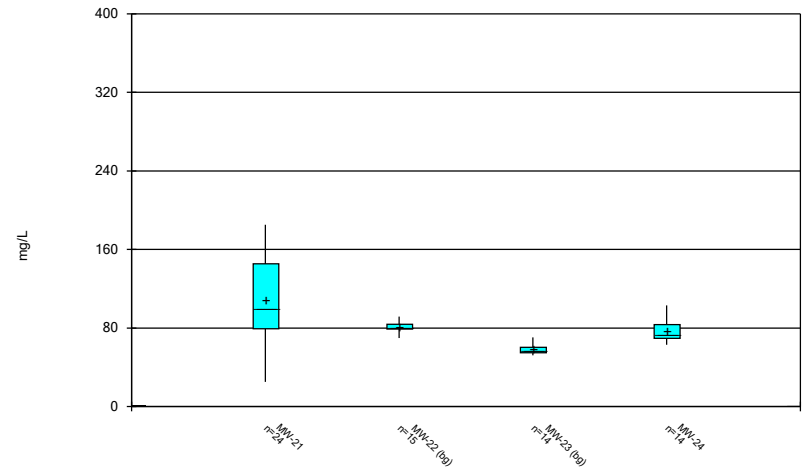
Constituent: Boron Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



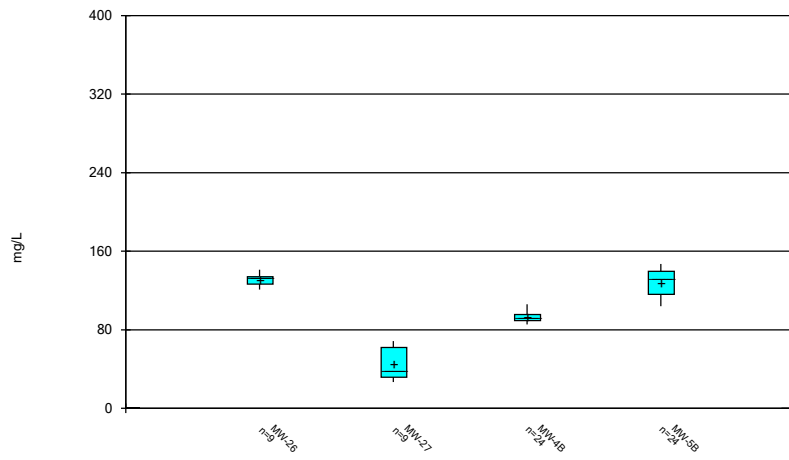
Constituent: Calcium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



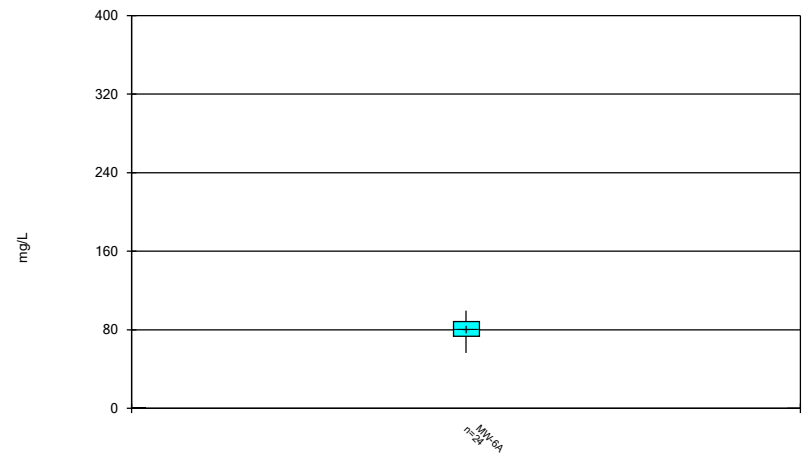
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



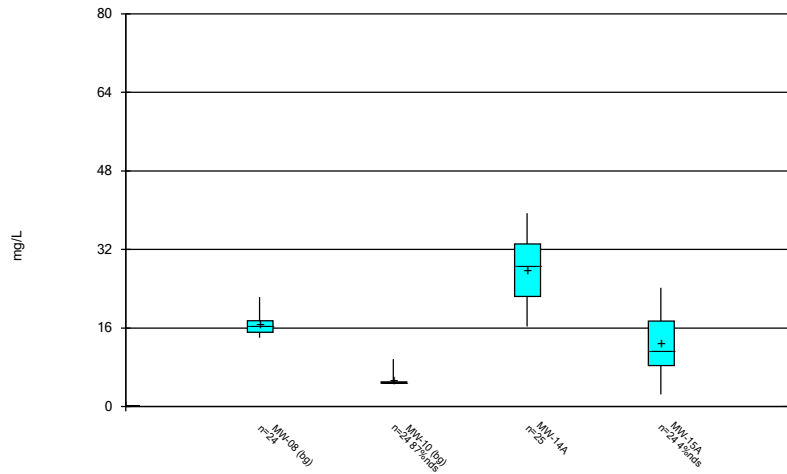
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Box & Whiskers Plot



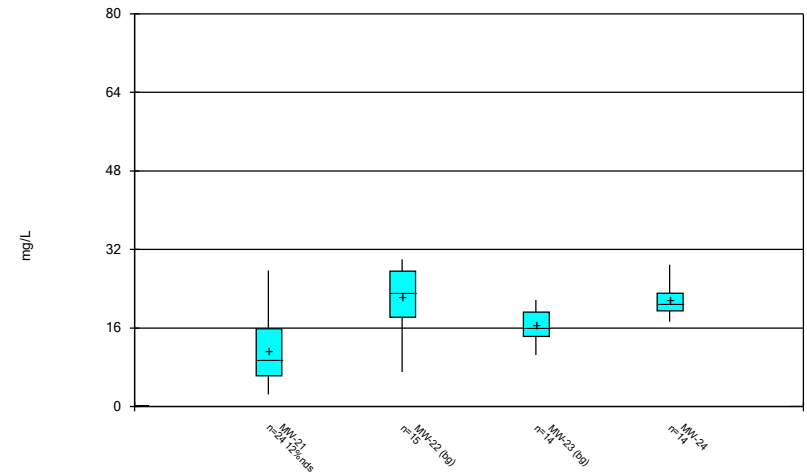
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Box & Whiskers Plot



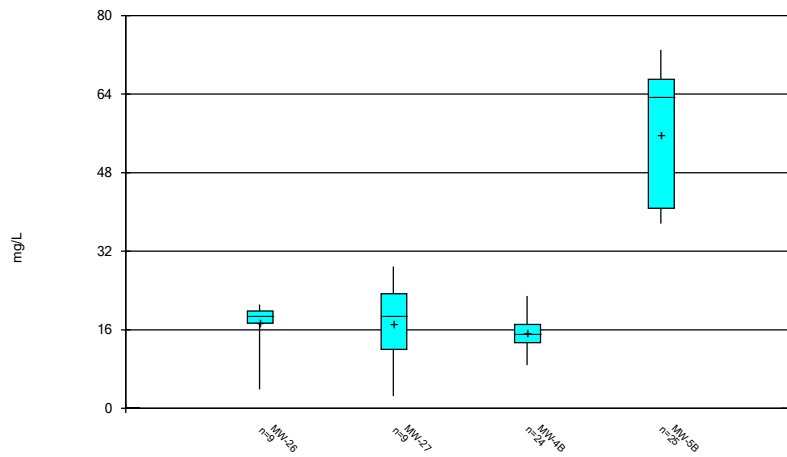
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Box & Whiskers Plot



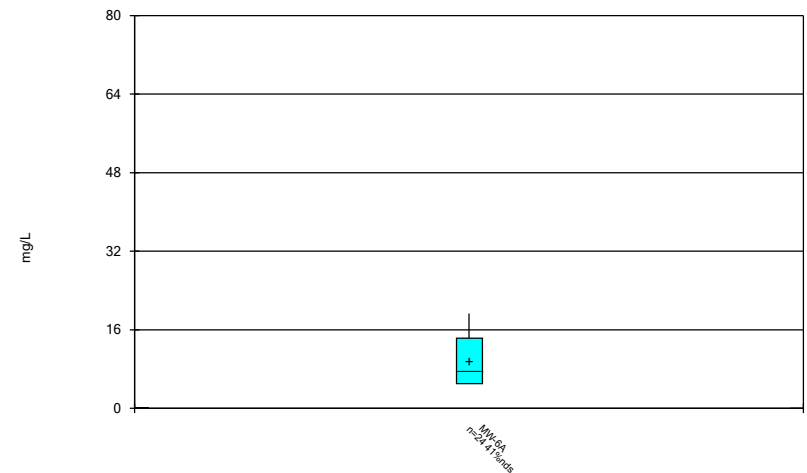
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Box & Whiskers Plot



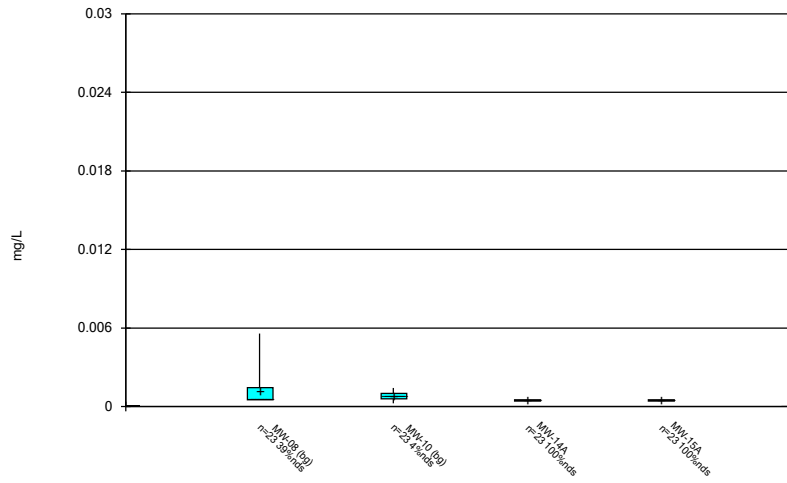
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Box & Whiskers Plot



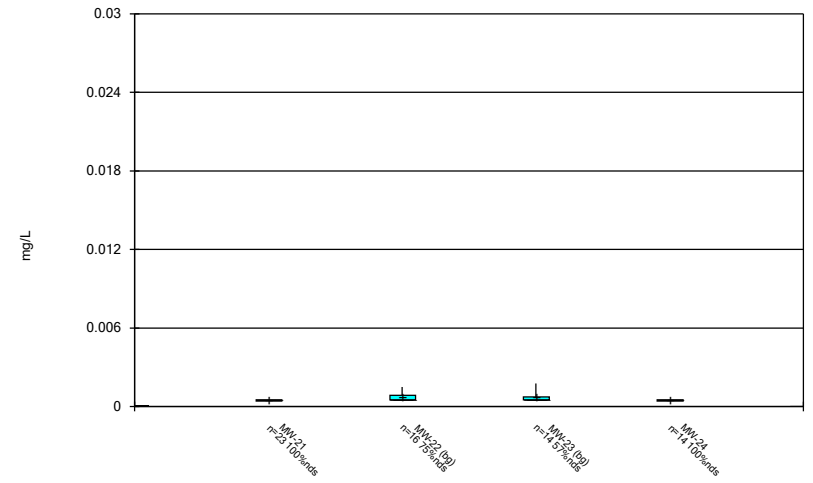
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Box & Whiskers Plot



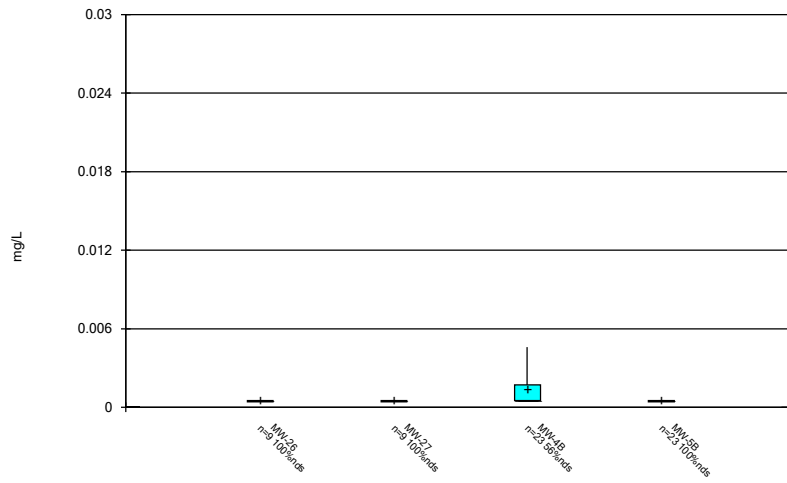
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Box & Whiskers Plot



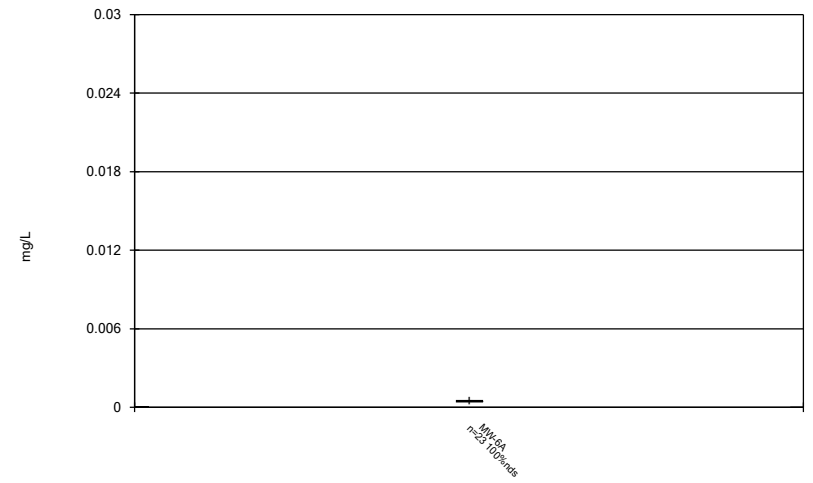
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Box & Whiskers Plot



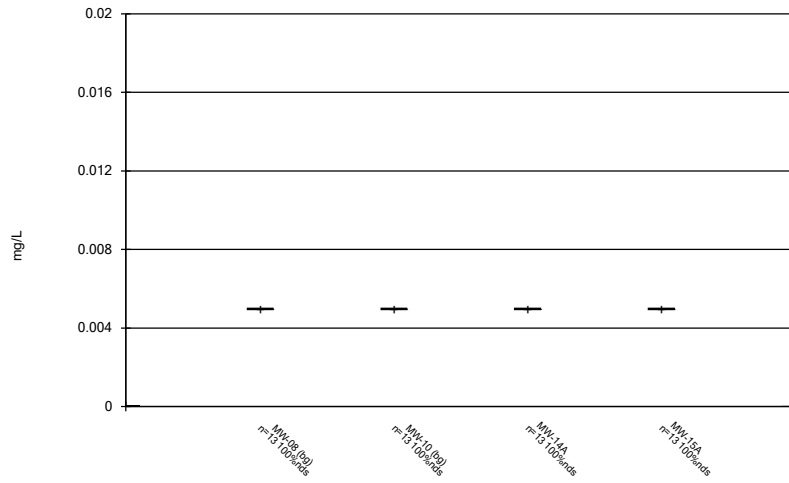
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Box & Whiskers Plot



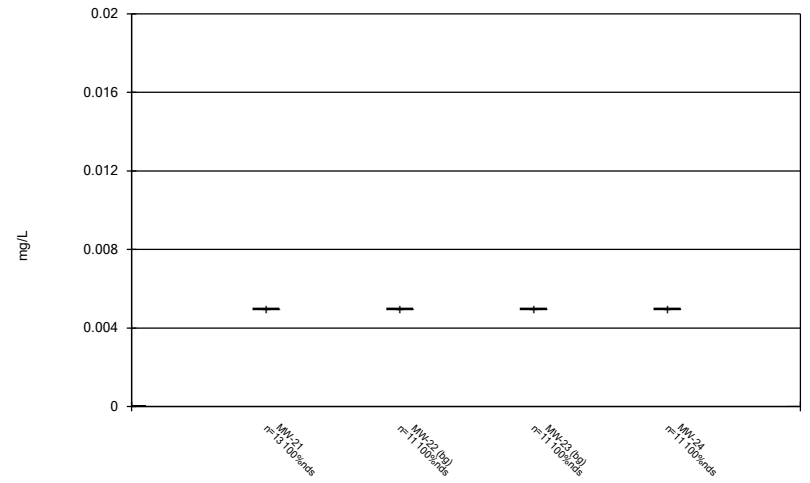
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Box & Whiskers Plot



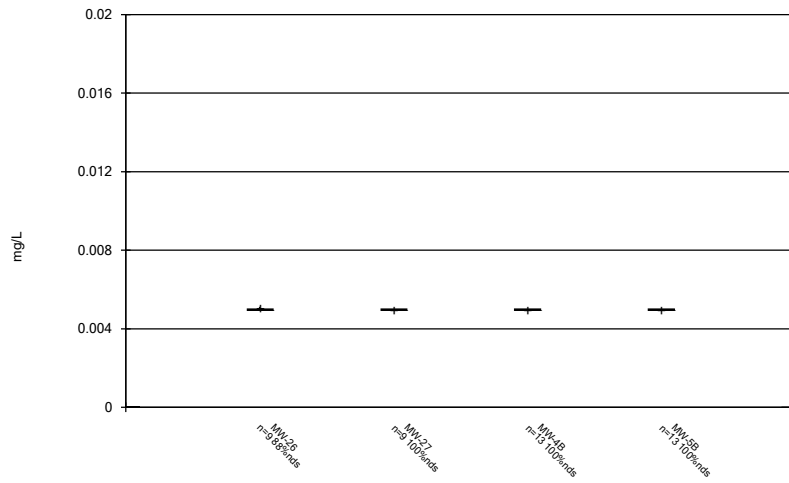
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Box & Whiskers Plot



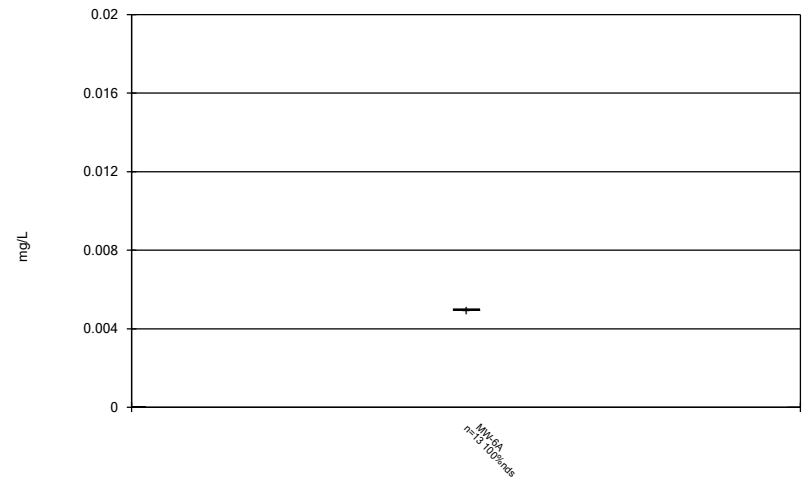
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Box & Whiskers Plot



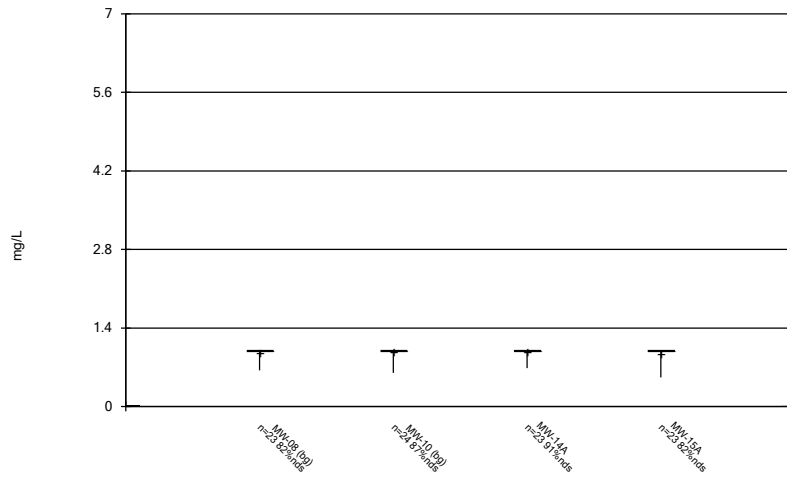
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Box & Whiskers Plot



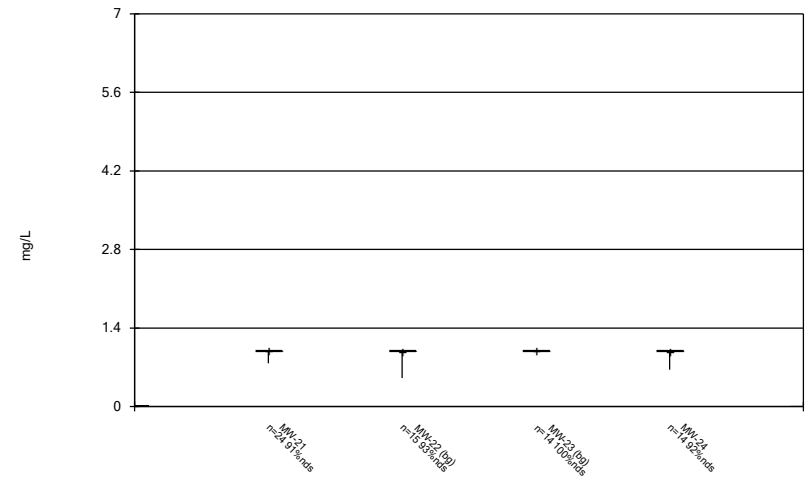
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Box & Whiskers Plot



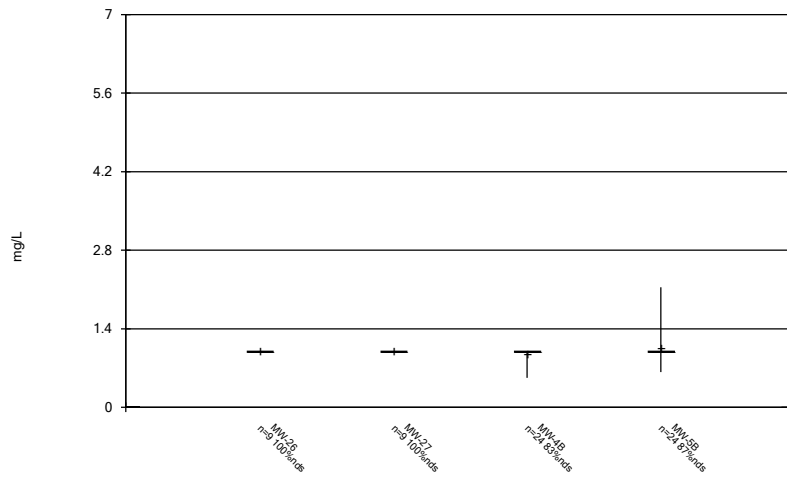
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Box & Whiskers Plot



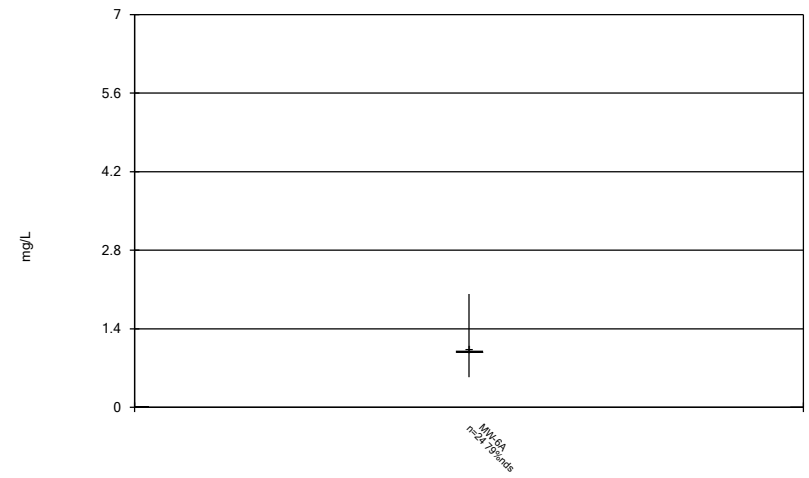
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Box & Whiskers Plot



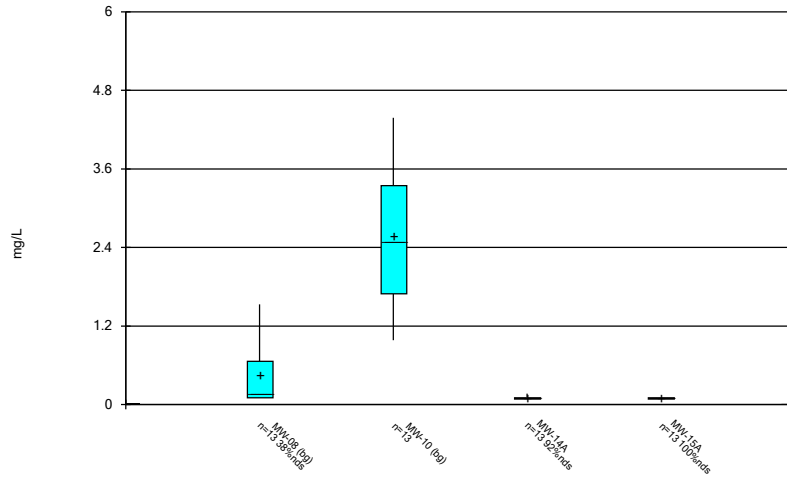
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Box & Whiskers Plot



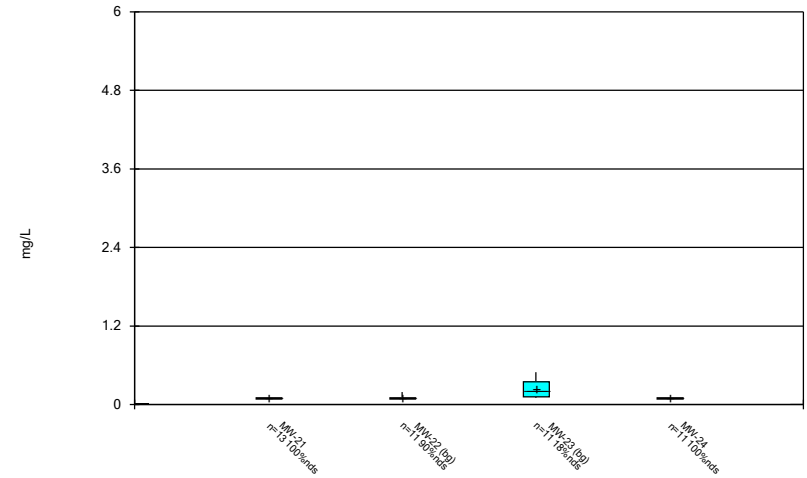
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Box & Whiskers Plot



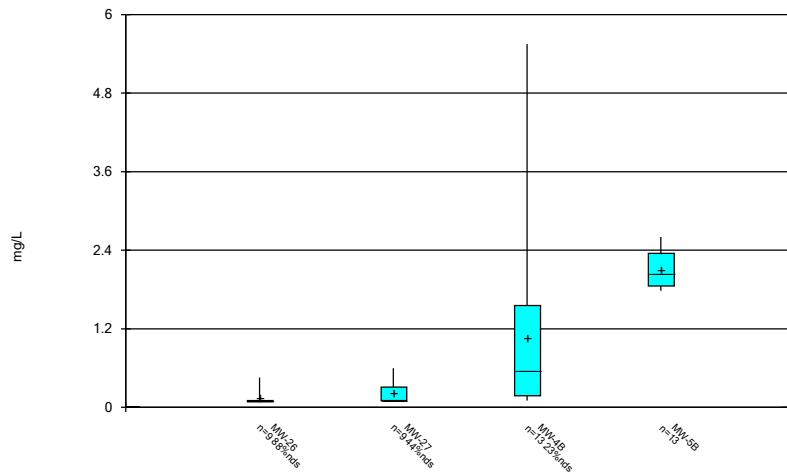
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Iron Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



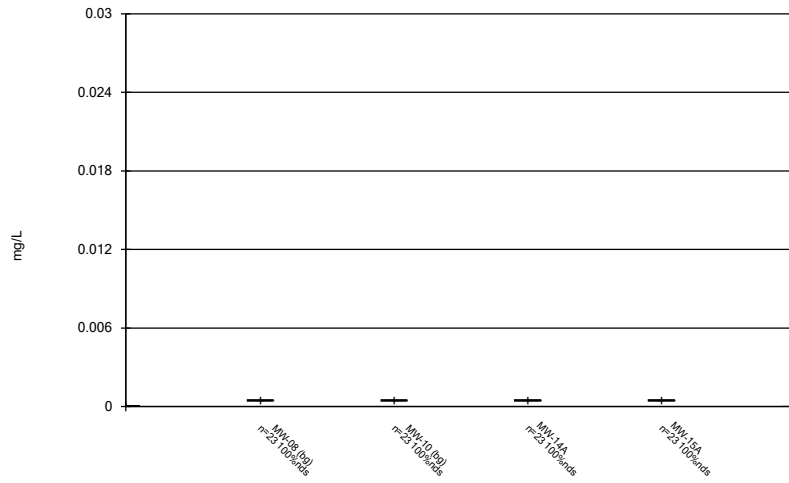
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Box & Whiskers Plot



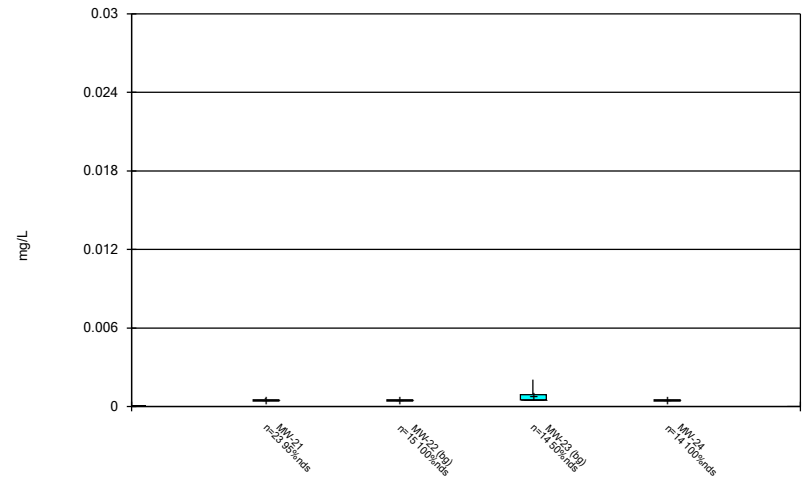
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Box & Whiskers Plot



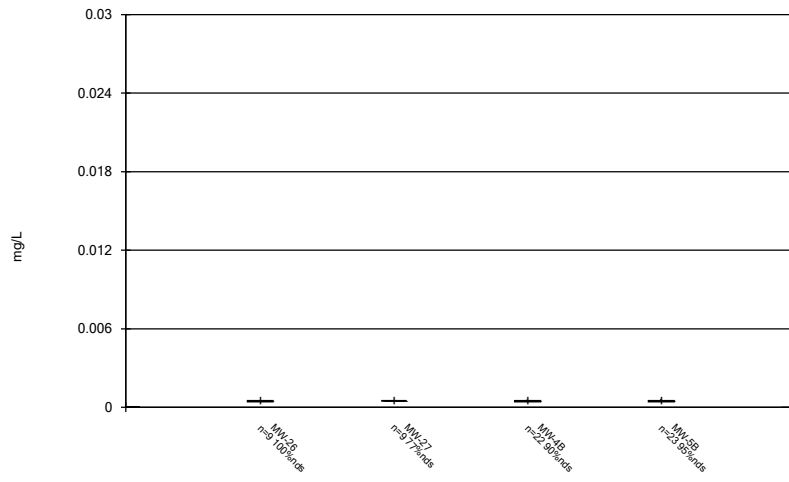
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Box & Whiskers Plot



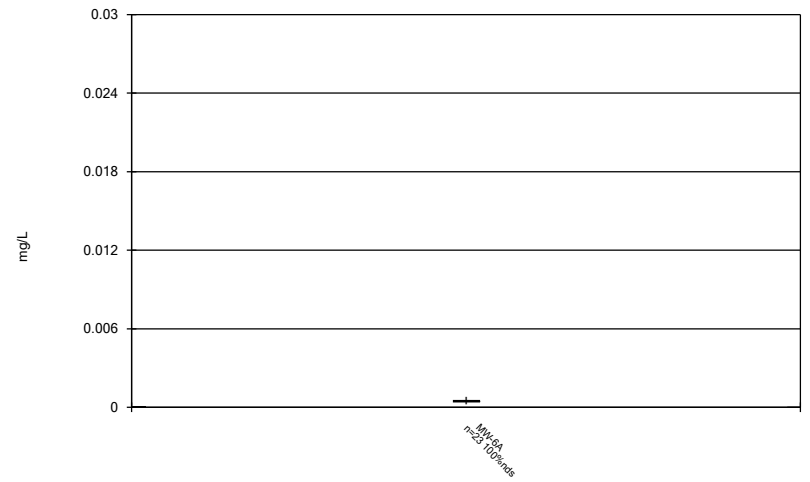
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Box & Whiskers Plot



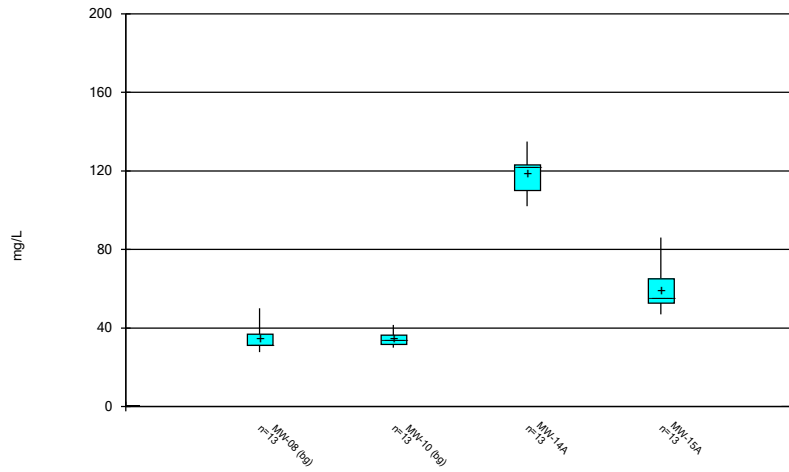
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Box & Whiskers Plot



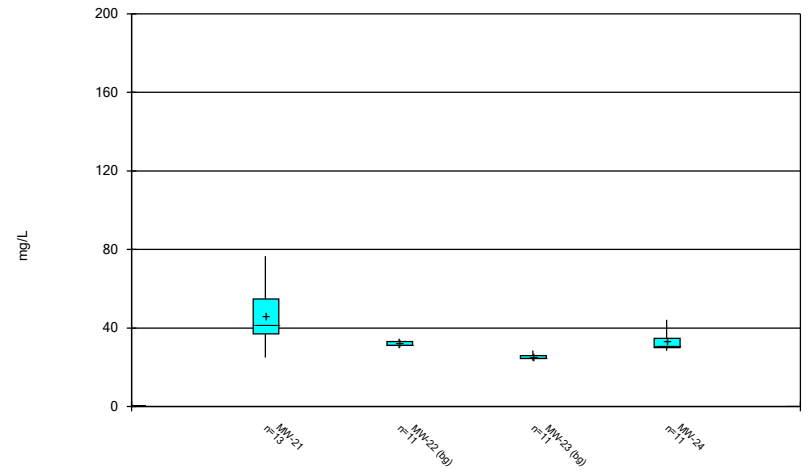
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Box & Whiskers Plot



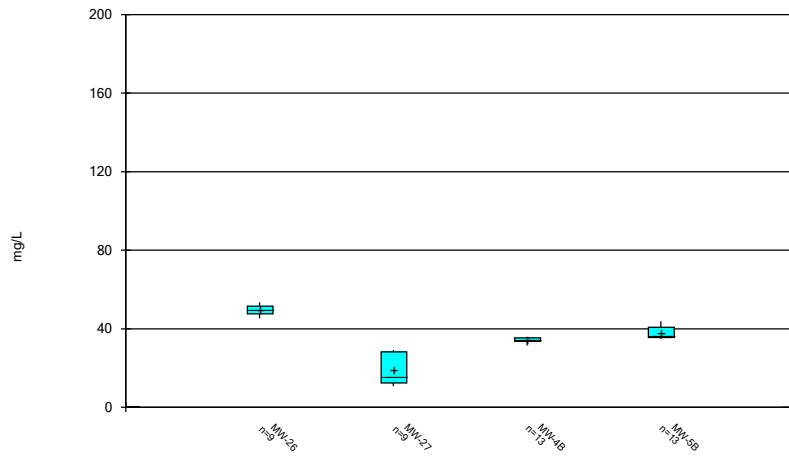
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Magnesium Analysis Run 11/5/2024 2:29 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



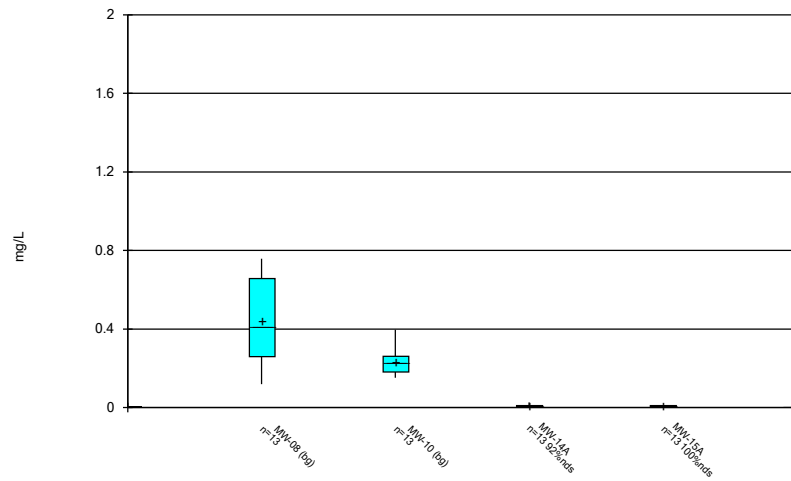
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Box & Whiskers Plot



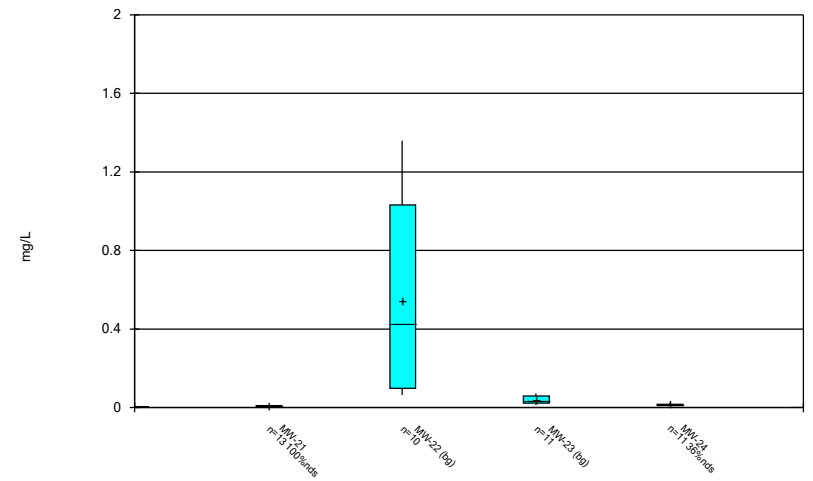
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Box & Whiskers Plot



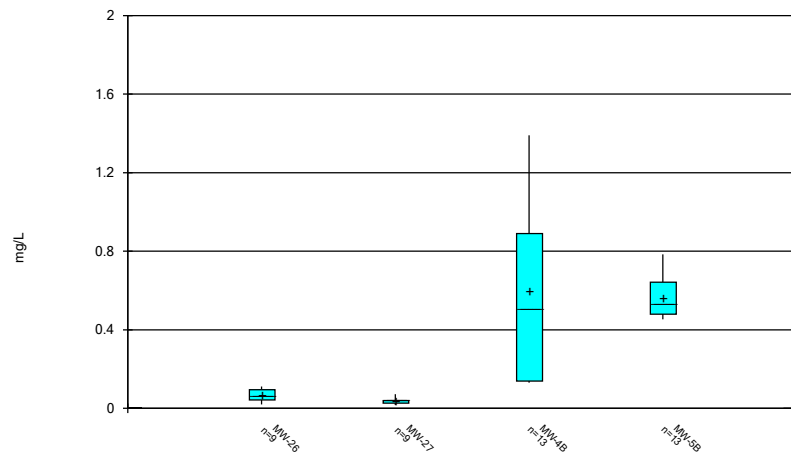
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



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Box & Whiskers Plot



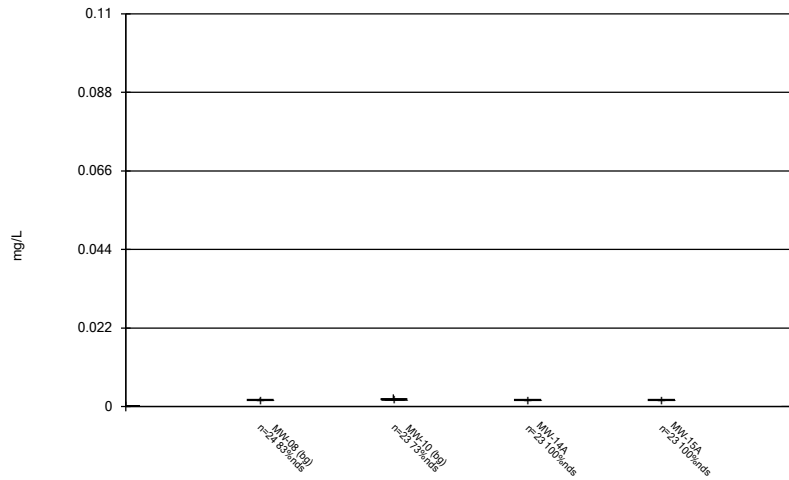
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Box & Whiskers Plot



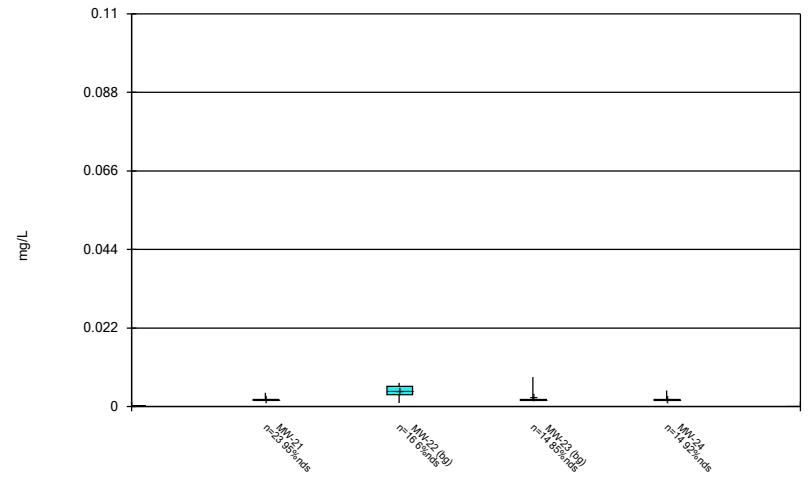
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Box & Whiskers Plot



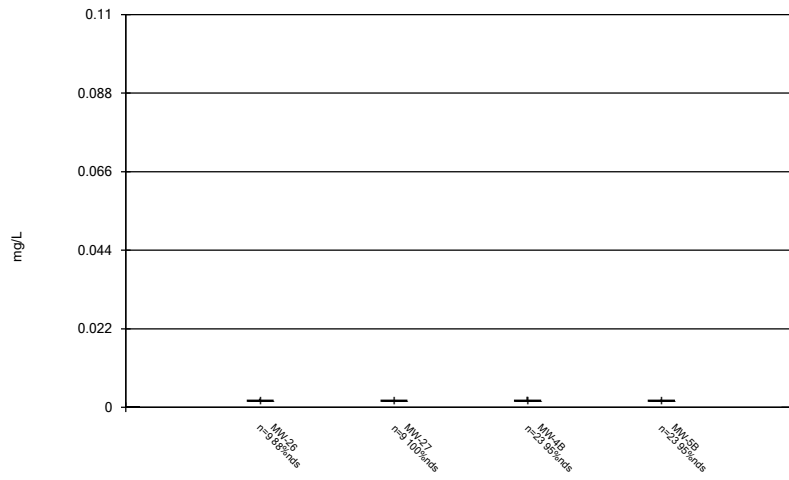
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



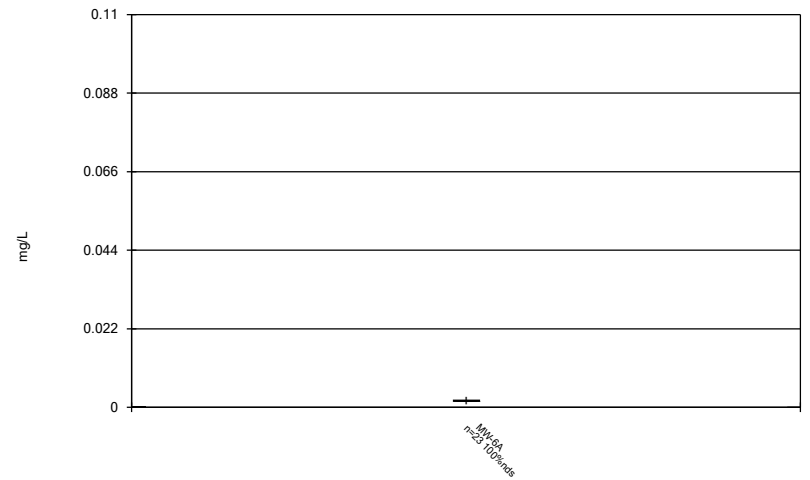
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Box & Whiskers Plot



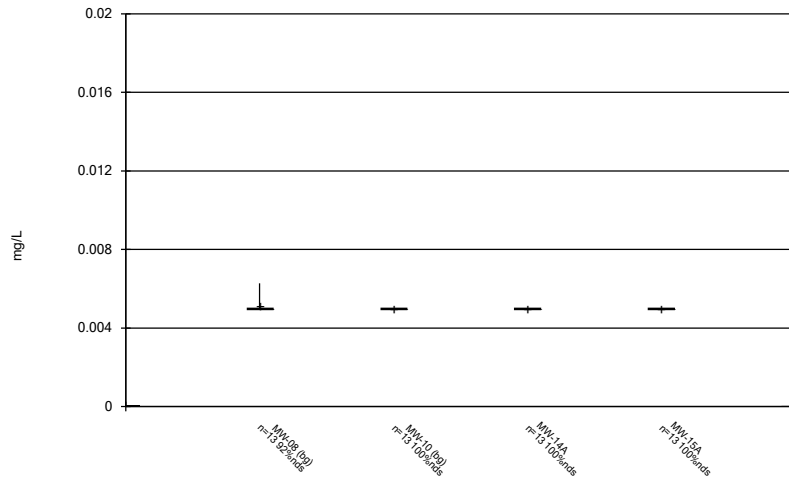
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Box & Whiskers Plot



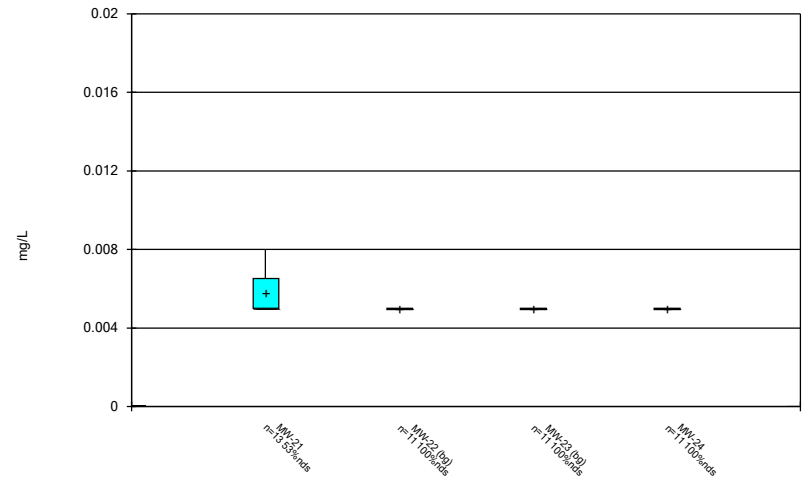
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Box & Whiskers Plot



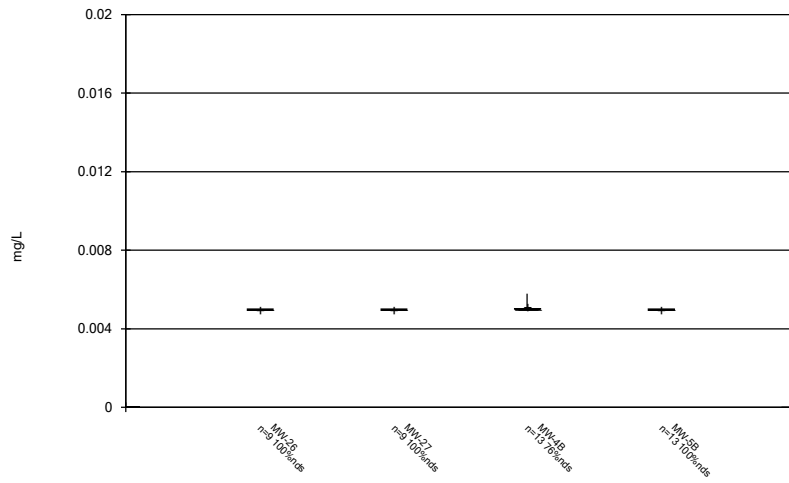
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



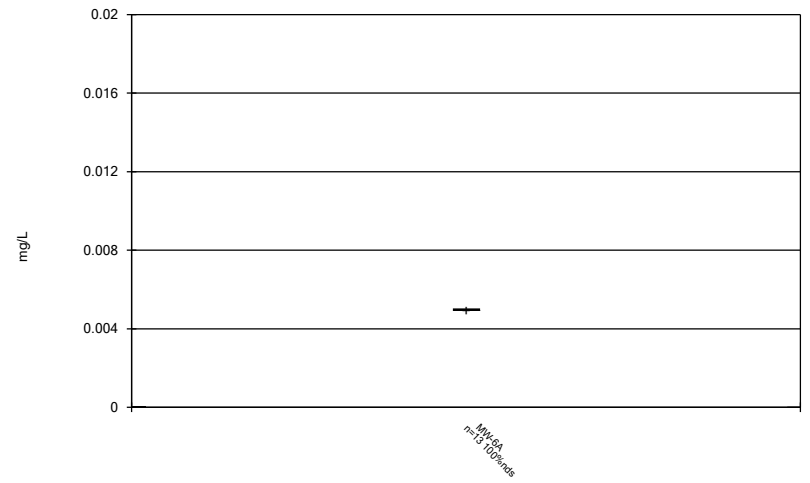
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



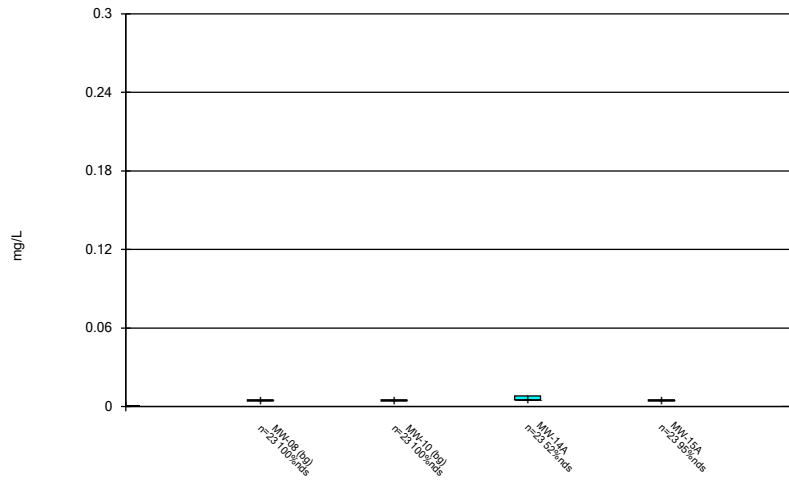
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Box & Whiskers Plot



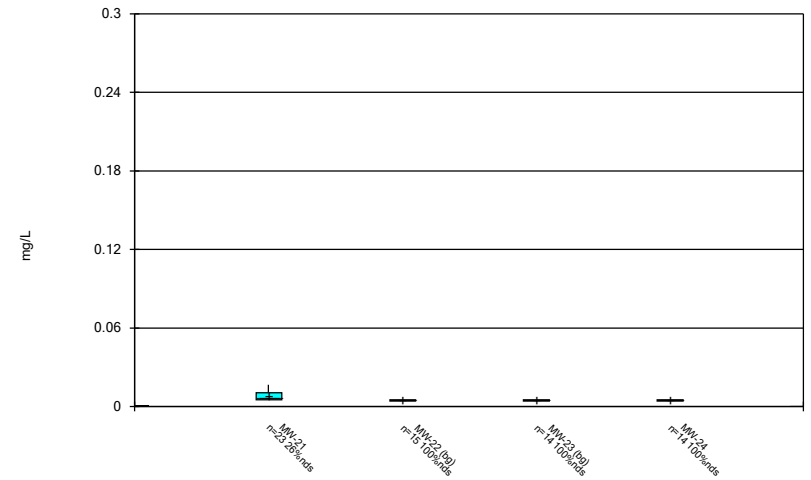
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



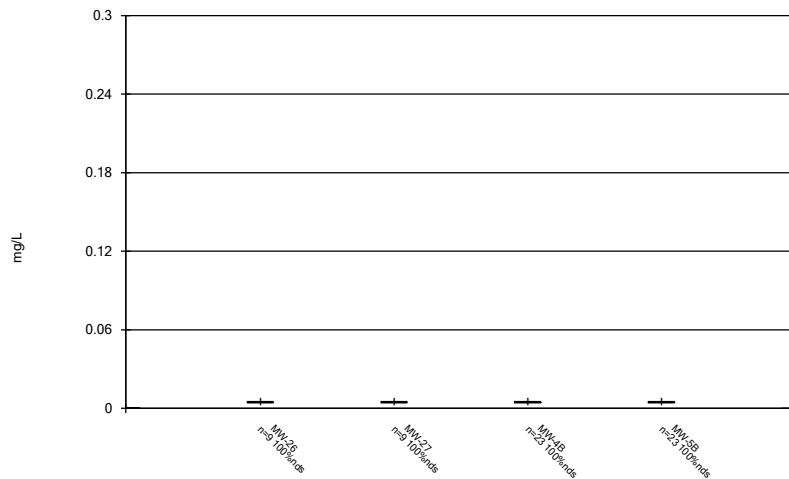
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



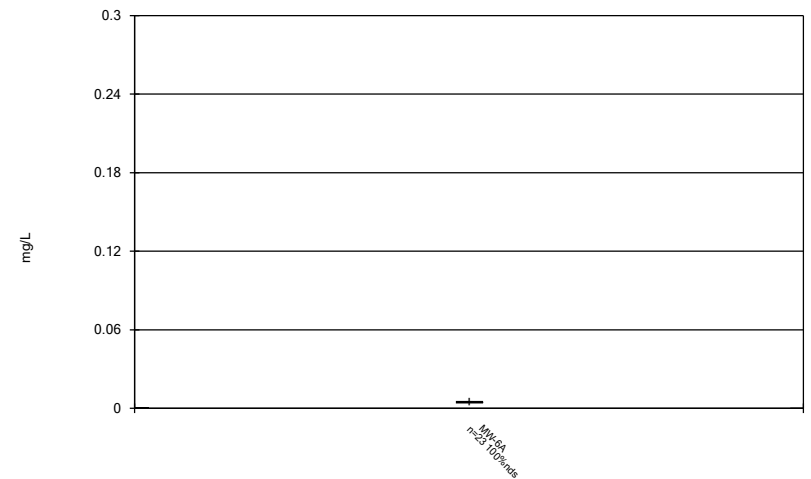
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



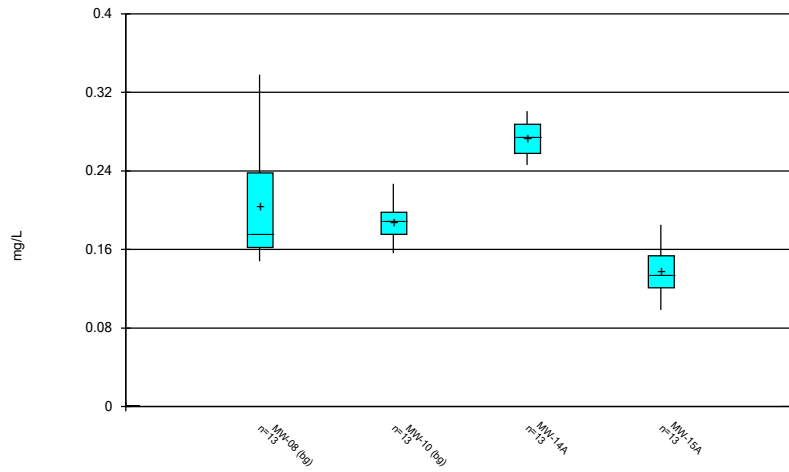
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



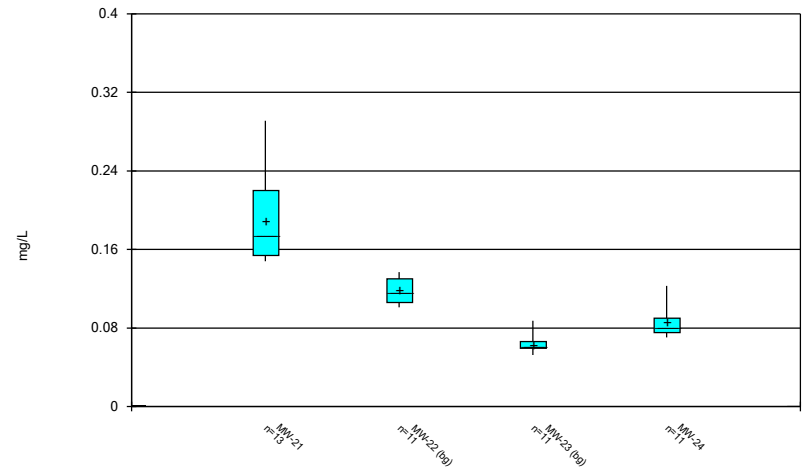
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



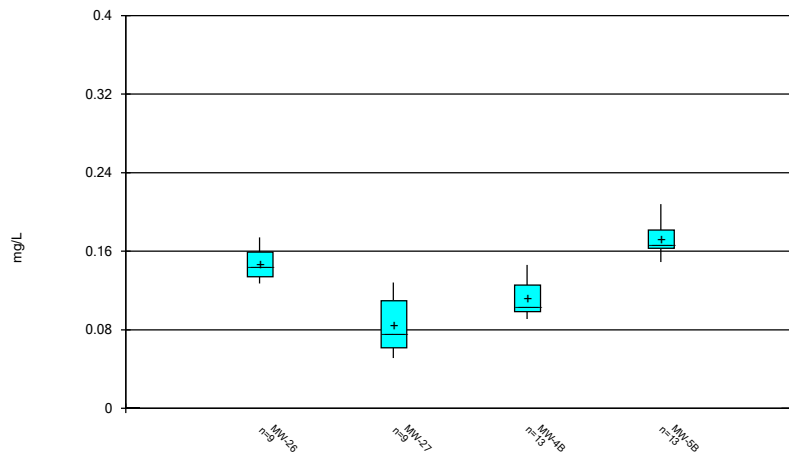
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Box & Whiskers Plot



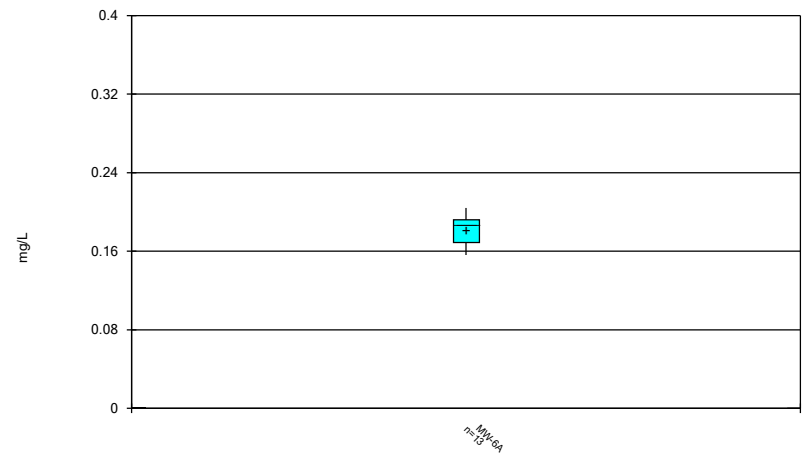
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Box & Whiskers Plot



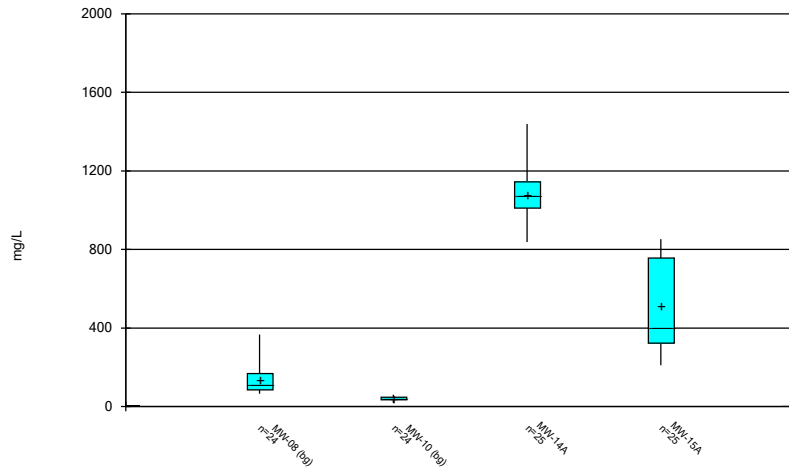
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



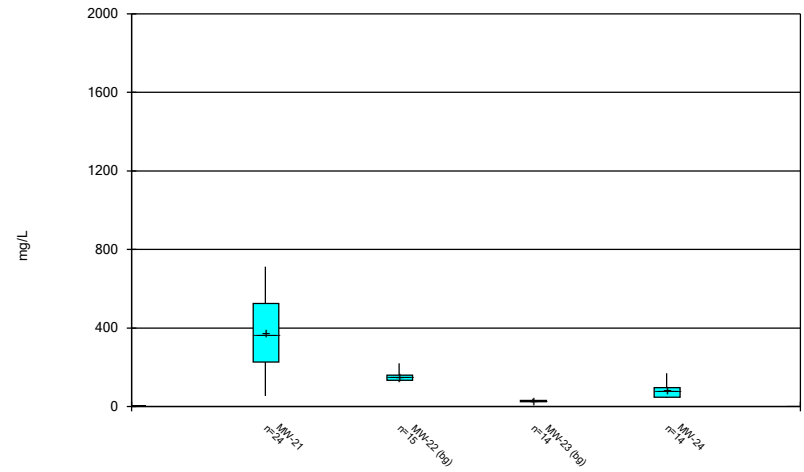
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



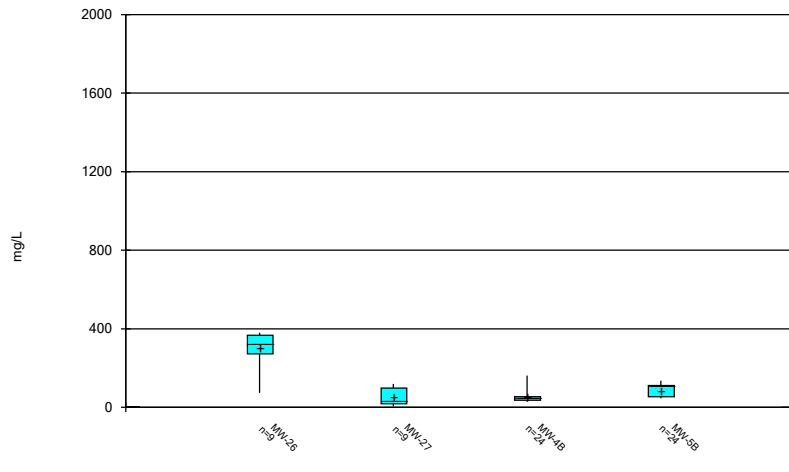
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Box & Whiskers Plot



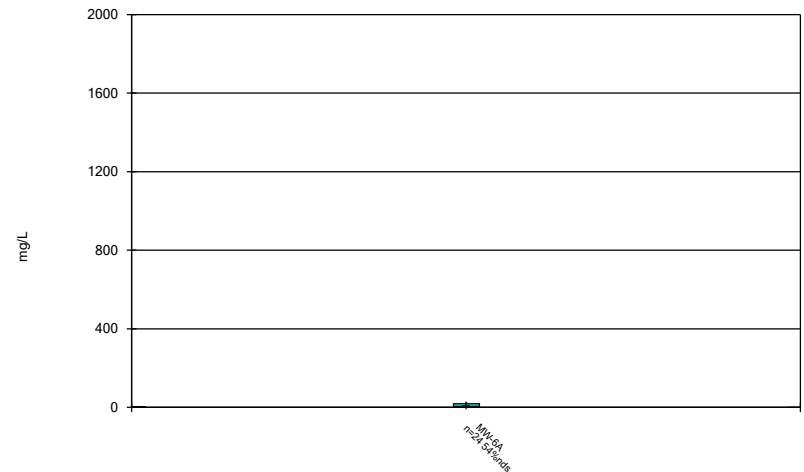
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



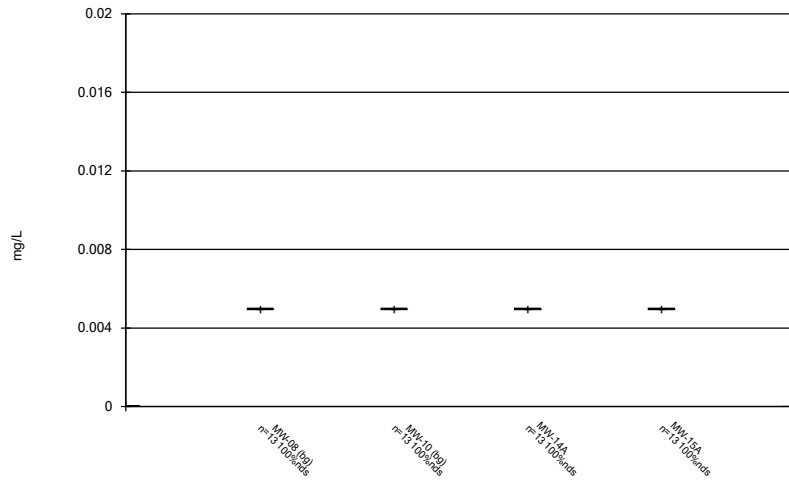
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



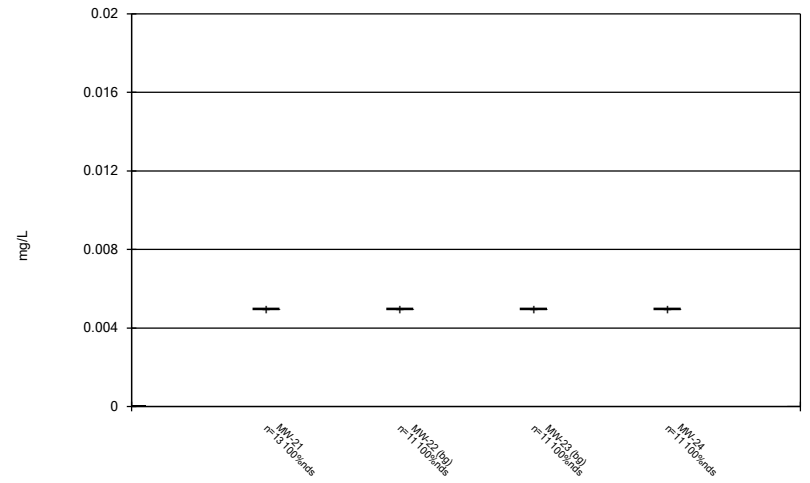
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



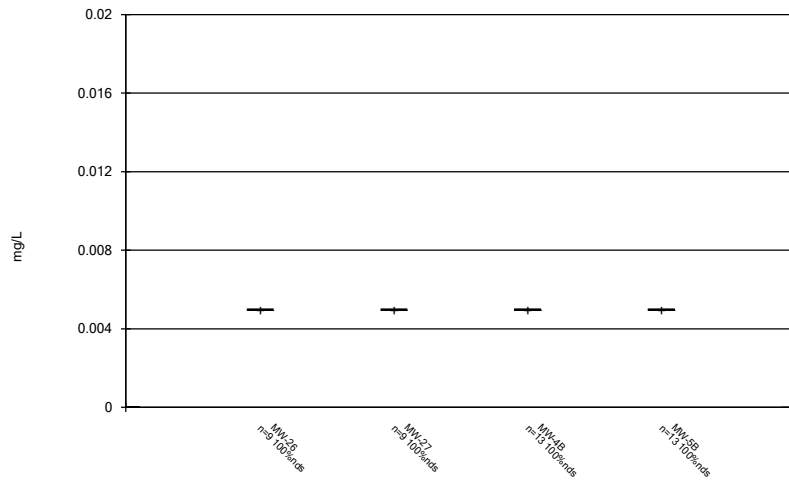
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



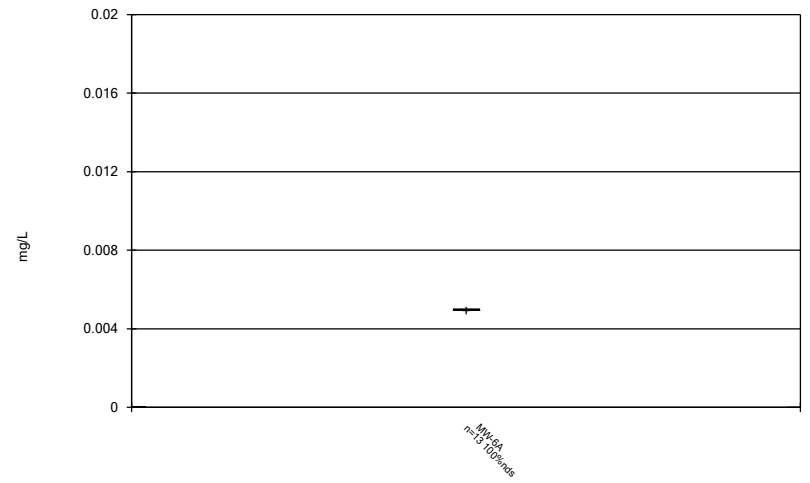
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



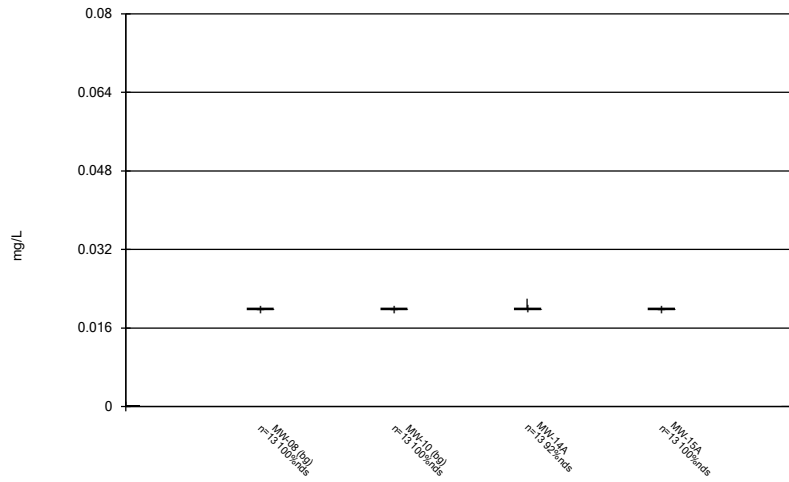
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



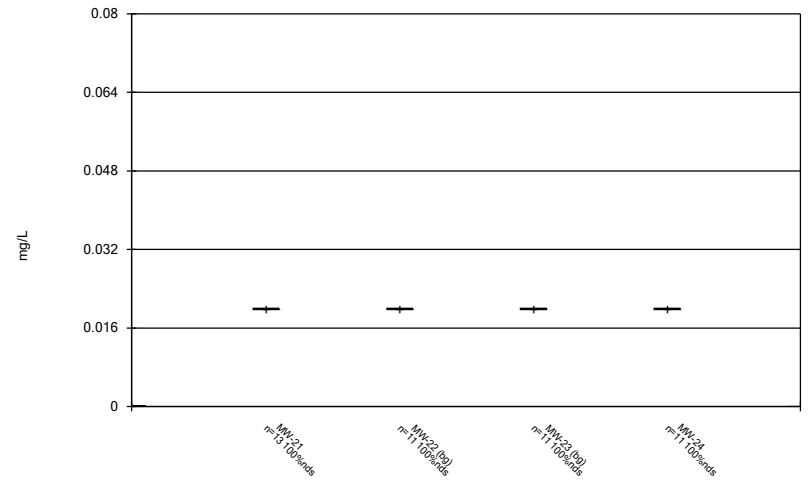
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Box & Whiskers Plot



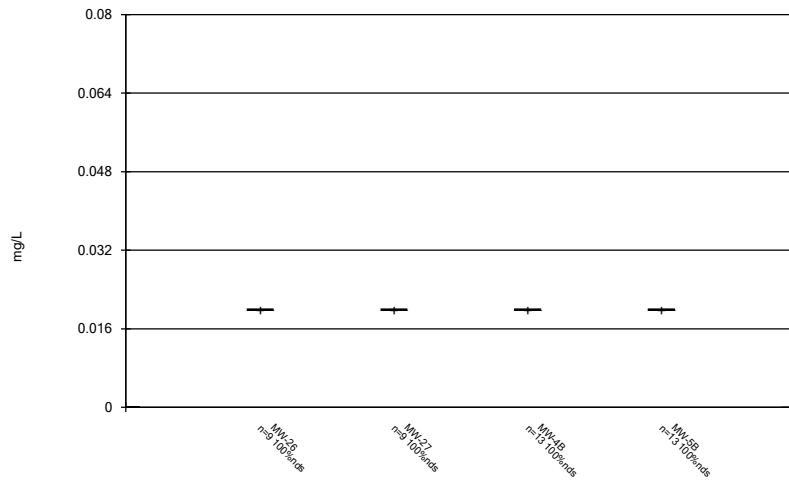
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Zinc Analysis Run 11/5/2024 2:30 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Zinc Analysis Run 11/5/2024 2:30 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

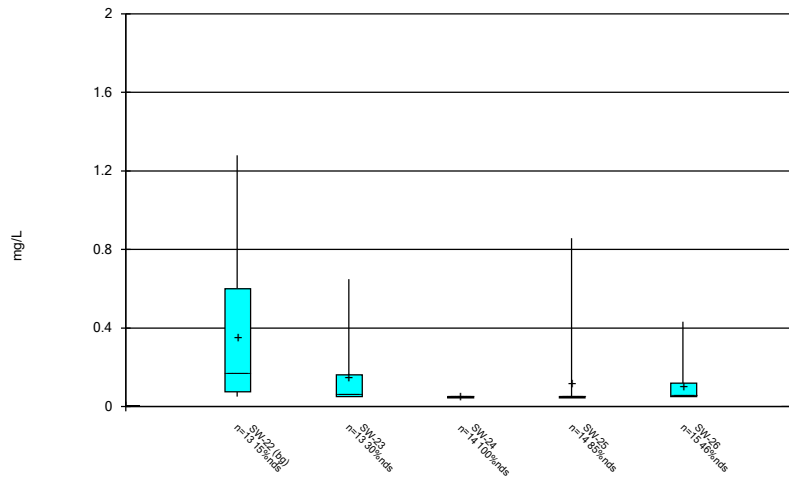
Box & Whiskers Plot



Constituent: Zinc Analysis Run 11/5/2024 2:30 PM View: State Wells Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

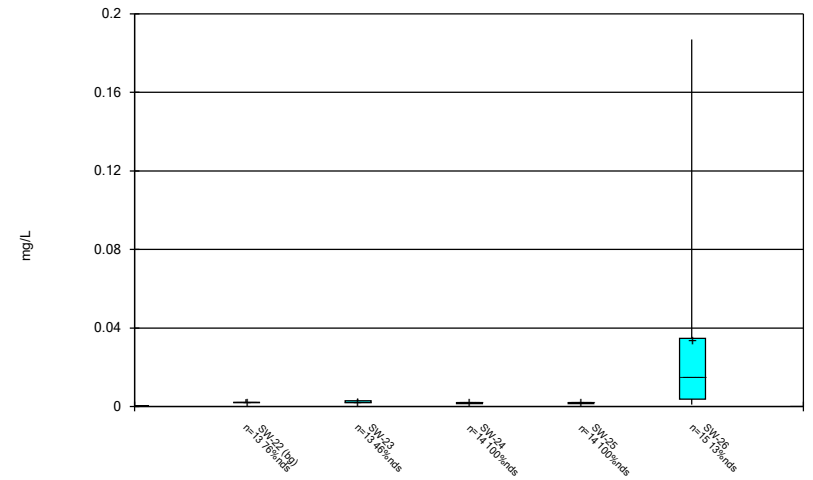
Surface Water Box Plots

Box & Whiskers Plot



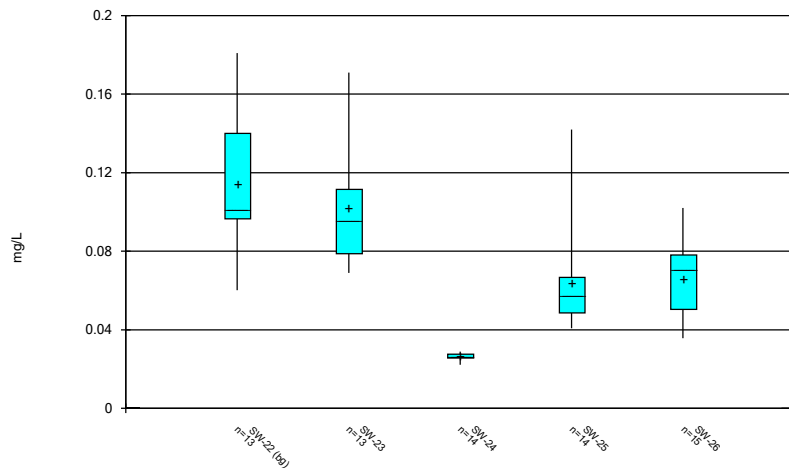
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



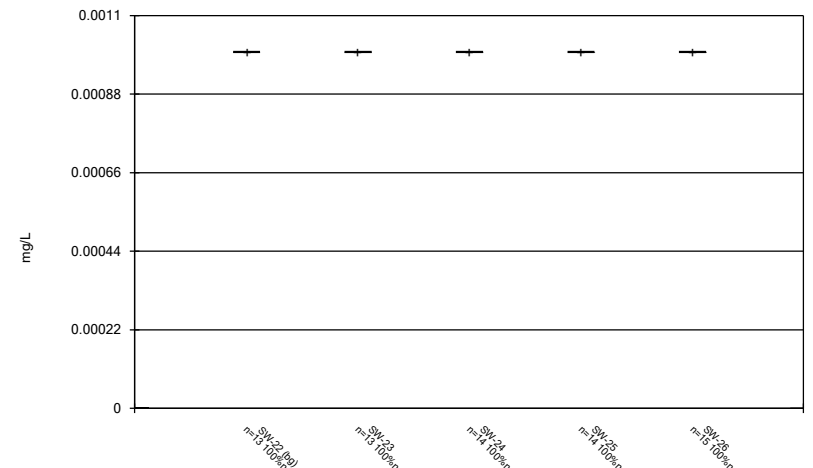
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



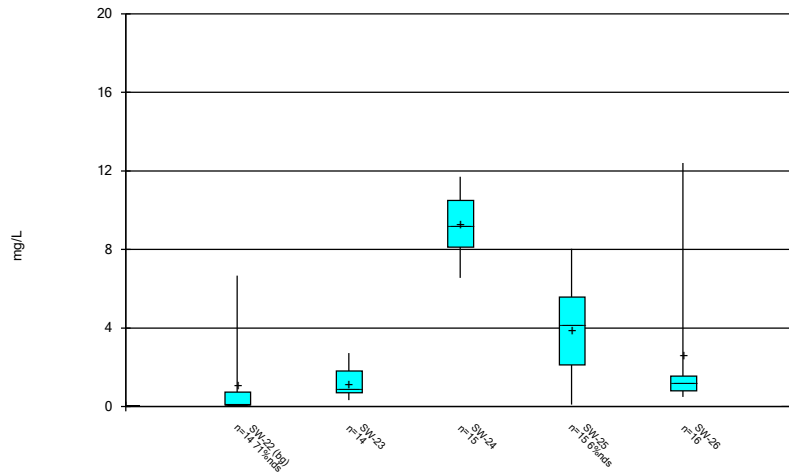
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



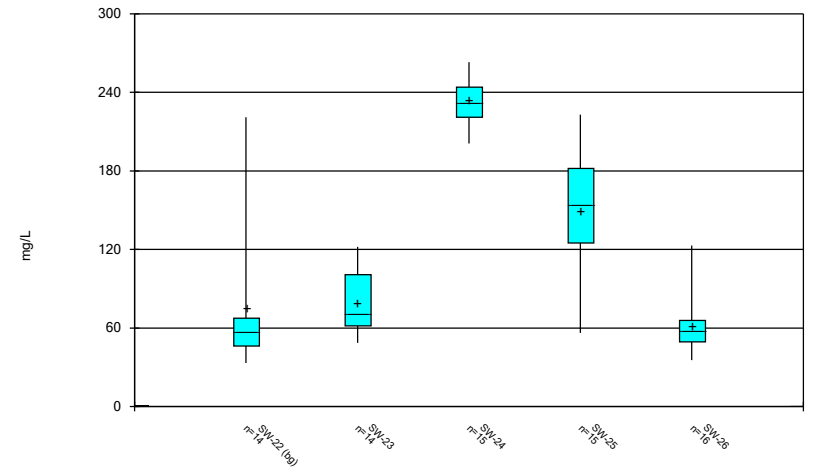
Constituent: Beryllium Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



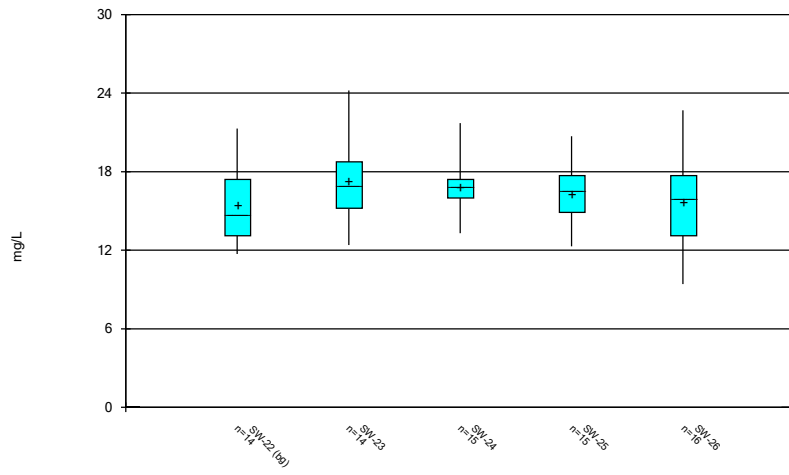
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Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



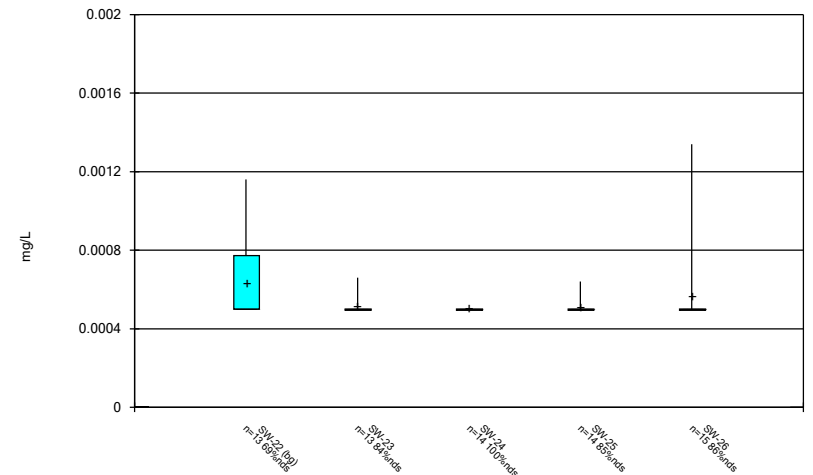
Constituent: Calcium Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



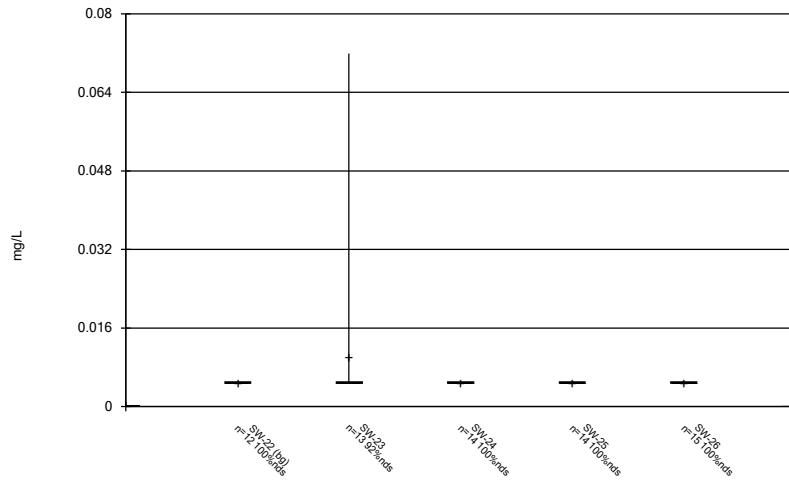
Constituent: Chloride Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



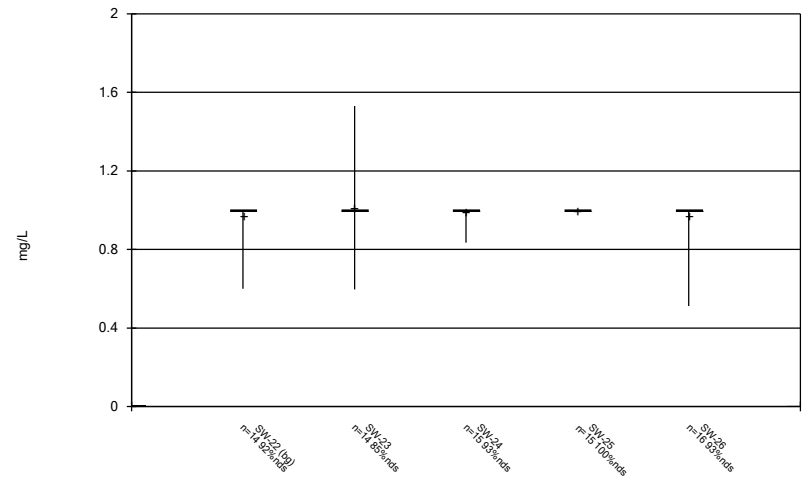
Constituent: Cobalt Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



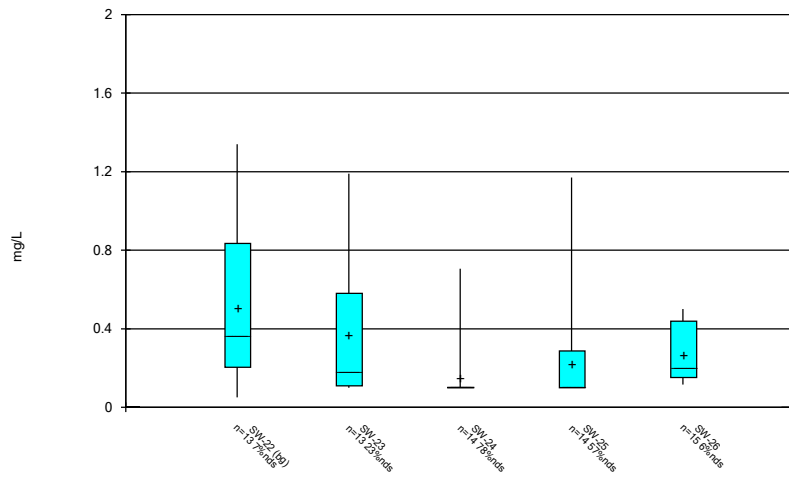
Constituent: Copper Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



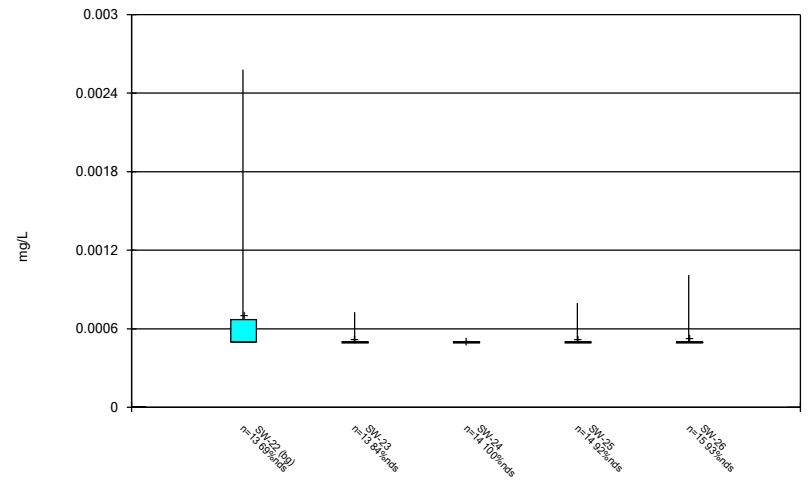
Constituent: Fluoride Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



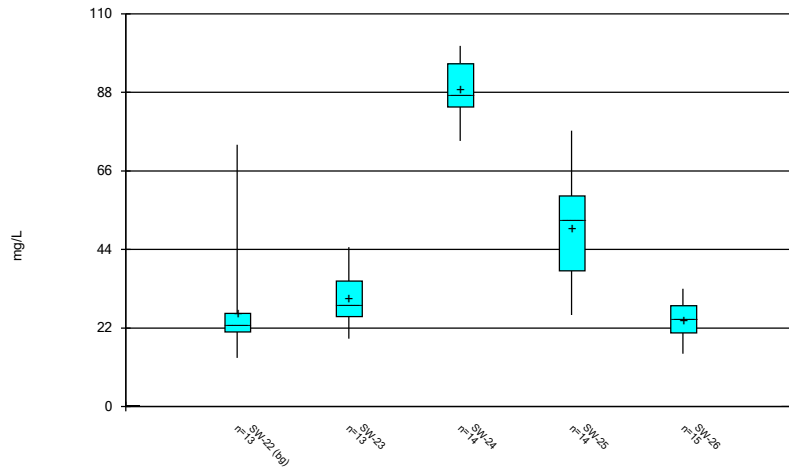
Constituent: Iron Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



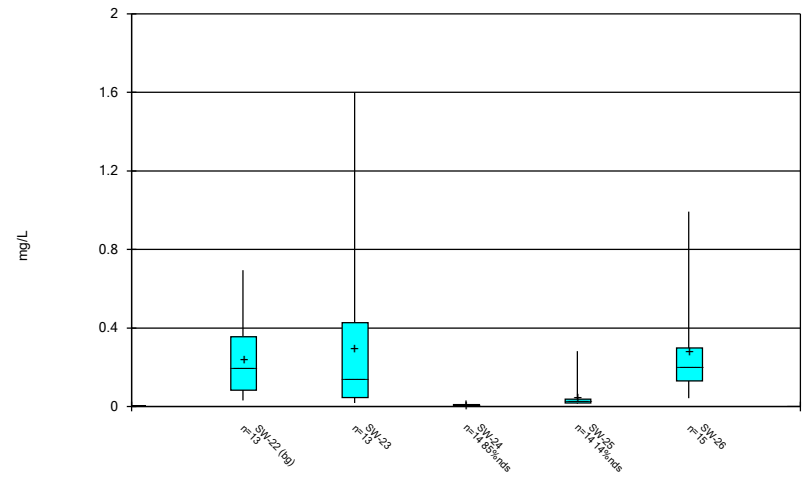
Constituent: Lead Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



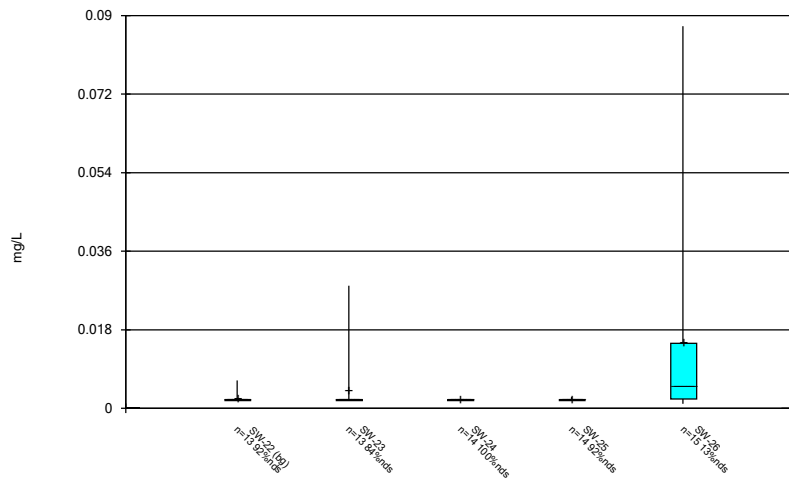
Constituent: Magnesium Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



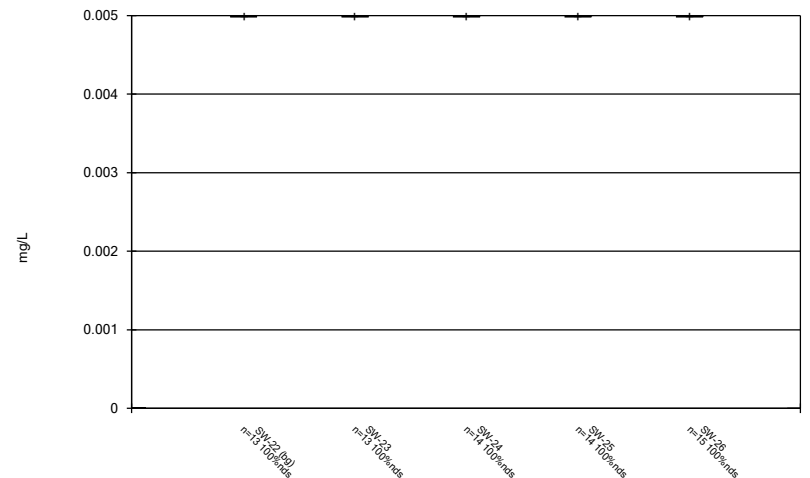
Constituent: Manganese Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



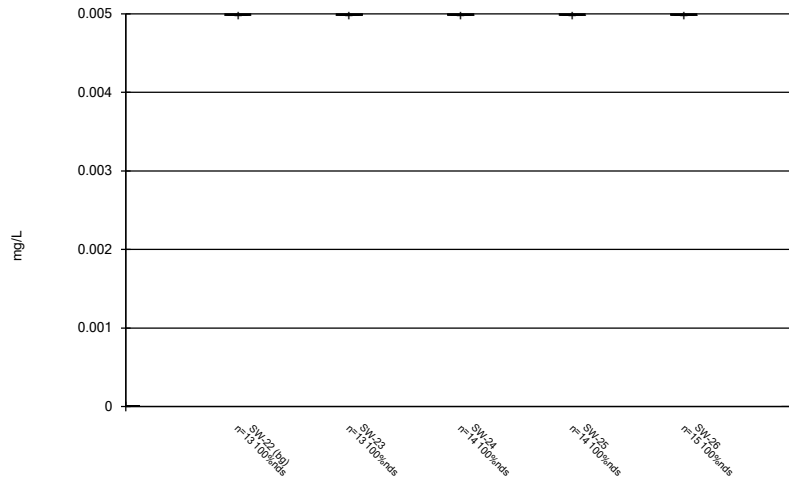
Constituent: Molybdenum Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



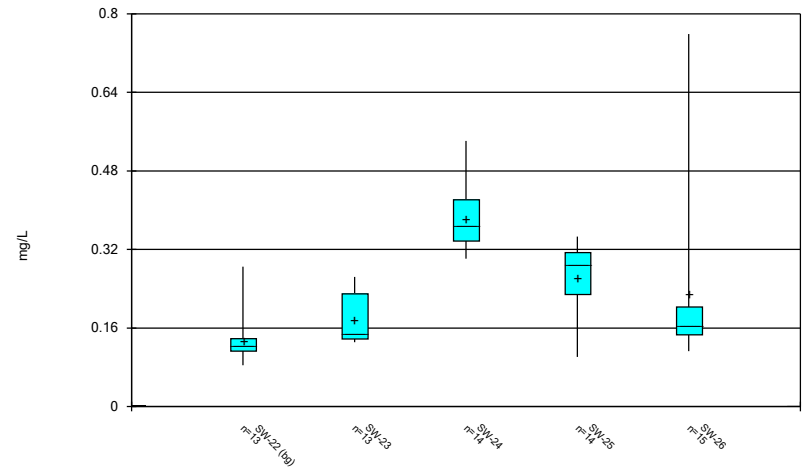
Constituent: Nickel Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



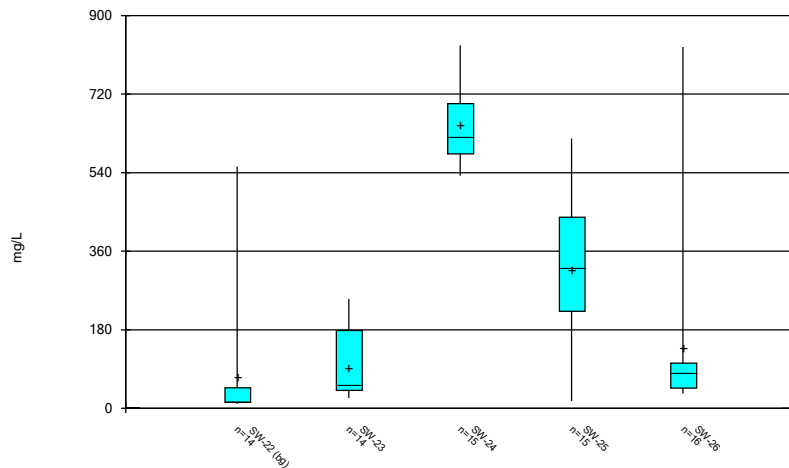
Constituent: Selenium Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



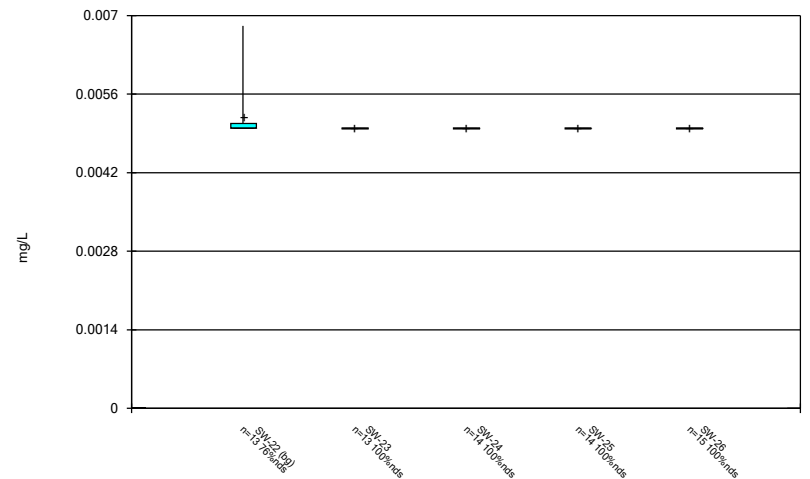
Constituent: Strontium Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



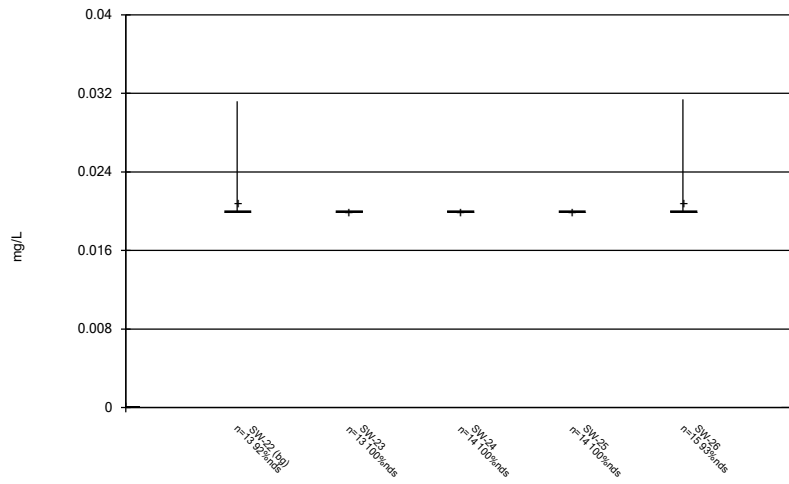
Constituent: Sulfate Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Vanadium Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Zinc Analysis Run 11/5/2024 2:32 PM View: State Surface Water Descriptive
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

FIGURE C.

Monitoring Wells Outlier Summary

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/5/2024, 2:16 PM

	MW-15A Barium (mg/L)	MW-15A Chloride (mg/L)	MW-08 Fluoride (mg/L)	MW-14A Fluoride (mg/L)	MW-15A Fluoride (mg/L)	MW-4B Lead (mg/L)	MW-22 Manganese (mg/L)
6/6/2016	2.13 (o)						
6/7/2016						0.00147 (o)	
4/17/2017	47.4 (o)	1.69 (o)	1.93 (o)	6.7 (o)			
8/6/2019							1.74 (o)

Surface Water Outlier Summary

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/5/2024, 2:16 PM

SW-22 Copper (mg/L)

9/1/2021 0.0358 (o)

Monitoring Wells

FIGURE D.

Interwell Prediction Limits - Monitoring Wells (April 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:03 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-14A	0.322	4/15/2024	15.2	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	4/15/2024	5.8	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	4/12/2024	2.31	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	4/12/2024	3.07	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	4/12/2024	1.01	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	4/15/2024	344	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	4/15/2024	39.3	Yes	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Magnesium (mg/L)	MW-14A	44.44	4/15/2024	135	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.44	4/15/2024	51.6	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.44	4/12/2024	50.5	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Sulfate (mg/L)	MW-14A	366	4/15/2024	1160	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2

Interwell Prediction Limits - Monitoring Wells (April 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:03 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bq N	Bq Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	MW-14A	0.552	4/15/2024	0.05ND	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-26	0.552	4/12/2024	0.05ND	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-27	0.552	4/12/2024	0.191	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-4B	0.552	4/15/2024	0.05ND	No	44	n/a	n/a	77.27	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	n/a	0.00784	n/a	9 future	n/a	71	n/a	n/a	57.75	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-14A	0.271	4/15/2024	0.0323	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-15A	0.271	4/15/2024	0.0353	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-21	0.271	4/12/2024	0.031	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-24	0.271	4/12/2024	0.0899	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-26	0.271	4/12/2024	0.0716	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-27	0.271	4/12/2024	0.0511	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-4B	0.271	4/15/2024	0.168	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-5B	0.271	4/15/2024	0.243	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-6A	0.271	4/15/2024	0.235	No	71	n/a	n/a	0	n/a	n/a	0.0003764	NP Inter (normality) 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	9 future	n/a	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-14A	0.322	4/15/2024	15.2	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	4/15/2024	5.8	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	4/12/2024	2.31	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-24	0.322	4/12/2024	0.1ND	No	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	4/12/2024	3.07	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	4/12/2024	1.01	Yes	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-4B	0.322	4/15/2024	0.1ND	No	73	n/a	n/a	86.3	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	4/15/2024	344	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-15A	152	4/15/2024	118	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-21	152	4/12/2024	59.9	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-24	152	4/12/2024	71.6	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-26	152	4/12/2024	134	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-27	152	4/12/2024	35.4	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-4B	152	4/15/2024	97.7	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5B	152	4/15/2024	112	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6A	152	4/15/2024	92.4	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-14A	30	4/15/2024	16.4	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-15A	30	4/15/2024	7.01	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-21	30	4/12/2024	5ND	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-24	30	4/12/2024	19.5	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-26	30	4/12/2024	17.4	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-27	30	4/12/2024	19.5	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-4B	30	4/15/2024	18.1	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	4/15/2024	39.3	Yes	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6A	30	4/15/2024	15.5	No	73	n/a	n/a	28.77	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Cobalt (mg/L)	MW-4B	0.00558	4/15/2024	0.00172	No	72	n/a	n/a	38.89	n/a	n/a	0.0003676	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-26	0.005	4/12/2024	0.005ND	No	44	n/a	n/a	100	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-14A	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-15A	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-21	1	4/12/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-24	1	4/12/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-4B	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-5B	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-6A	1	4/15/2024	1ND	No	72	n/a	n/a	88.89	n/a	n/a	0.0003676	NP Inter (NDs) 1 of 2
Iron (mg/L)	MW-14A	4.38	4/15/2024	0.1ND	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-26	4.38	4/12/2024	0.1ND	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-27	4.38	4/12/2024	0.181	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-4B	4.38	4/15/2024	0.309	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-5B	4.38	4/15/2024	1.78	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-6A	4.38	4/15/2024	3.42	No	44	n/a	n/a	38.64	n/a	n/a	0.0009603	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-21	0.00204	4/12/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-27	0.00204	4/12/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-4B	0.00204	4/15/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-5B	0.00204	4/15/2024	0.0005ND	No	71	n/a	n/a	90.14	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	MW-14A	44.44	4/15/2024	135	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.44	4/15/2024	51.6	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-21	44.44	4/12/2024	24.9	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-24	44.44	4/12/2024	30.7	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.44	4/12/2024	50.5	Yes	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-27	44.44	4/12/2024	15.4	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-4B	44.44	4/15/2024	35.6	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-5B	44.44	4/15/2024	36.5	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-6A	44.44	4/15/2024	31	No	44	5.61	0.4557	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2

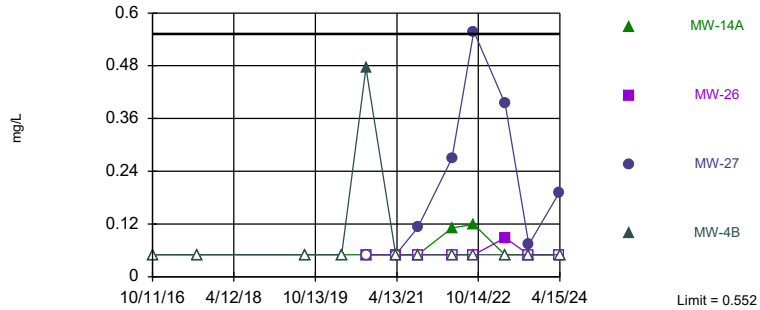
Interwell Prediction Limits - Monitoring Wells (April 2024) - All Results Page 2

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:03 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Manganese (mg/L)	MW-14A	1.204	4/15/2024	0.005ND	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-24	1.204	4/12/2024	0.0156	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-26	1.204	4/12/2024	0.0697	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-27	1.204	4/12/2024	0.0376	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-4B	1.204	4/15/2024	0.395	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-5B	1.204	4/15/2024	0.506	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-6A	1.204	4/15/2024	0.114	No	43	0.4896	0.2614	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Molybdenum (mg/L)	MW-21	0.00822	4/12/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-24	0.00822	4/12/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-26	0.00822	4/12/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-4B	0.00822	4/15/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-5B	0.00822	4/15/2024	0.002ND	No	73	n/a	n/a	67.12	n/a	n/a	0.0003589	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-21	0.00628	4/12/2024	0.005ND	No	44	n/a	n/a	97.73	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-4B	0.00628	4/15/2024	0.005ND	No	44	n/a	n/a	97.73	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-14A	0.005	4/15/2024	0.005ND	No	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-15A	0.005	4/15/2024	0.005ND	No	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-21	0.005	4/12/2024	0.005ND	No	71	n/a	n/a	100	n/a	n/a	0.0003764	NP Inter (NDs) 1 of 2
Strontium (mg/L)	MW-14A	0.3032	4/15/2024	0.301	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-15A	0.3032	4/15/2024	0.125	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-21	0.3032	4/12/2024	0.153	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-24	0.3032	4/12/2024	0.0703	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-26	0.3032	4/12/2024	0.147	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-27	0.3032	4/12/2024	0.069	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-4B	0.3032	4/15/2024	0.0951	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-5B	0.3032	4/15/2024	0.166	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-6A	0.3032	4/15/2024	0.19	No	44	0.1486	0.06664	0	None	No	0.0002787	Param Inter 1 of 2
Sulfate (mg/L)	MW-14A	366	4/15/2024	1160	Yes	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-15A	366	4/15/2024	256	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-21	366	4/12/2024	138	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-24	366	4/12/2024	43.8	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-26	366	4/12/2024	309	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-27	366	4/12/2024	36.7	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-4B	366	4/15/2024	56.1	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5B	366	4/15/2024	46.3	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6A	366	4/15/2024	18.1	No	73	n/a	n/a	0	n/a	n/a	0.0003589	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.005	n/a	9 future	n/a	44	n/a	n/a	100	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2
Zinc (mg/L)	n/a	0.02	n/a	9 future	n/a	44	n/a	n/a	100	n/a	n/a	0.0009603	NP Inter (NDs) 1 of 2

Within Limit

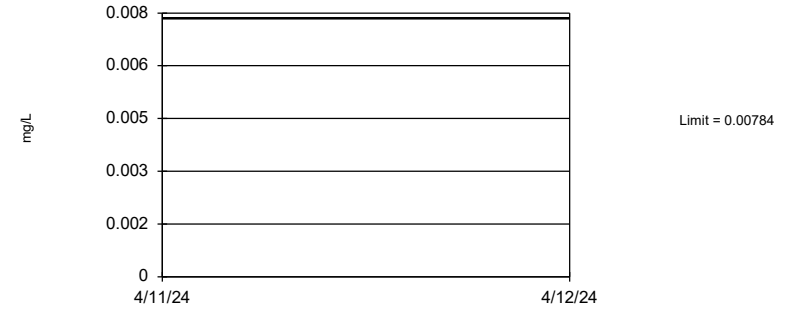
Prediction Limit
 Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 44 background values. 77.27% NDs. Annual per-constituent alpha = 0.01714. Individual comparison alpha = 0.0009603 (1 of 2). Comparing 4 points to limit. Assumes 5 future values.

Constituent: Aluminum Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
 Interwell Non-parametric

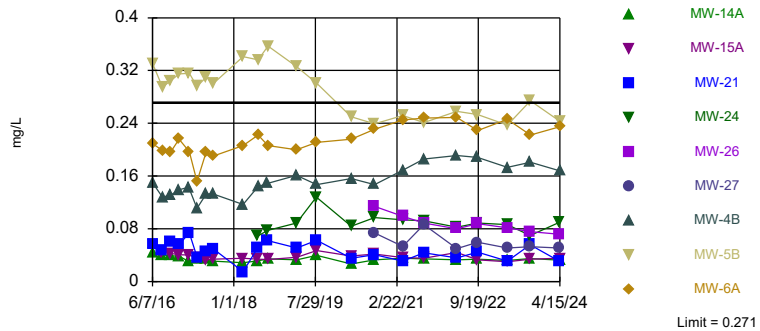


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 71 background values. 57.75% NDs. Annual per-constituent alpha = 0.006754. Individual comparison alpha = 0.0003764 (1 of 2). Assumes 9 future values.

Constituent: Arsenic Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

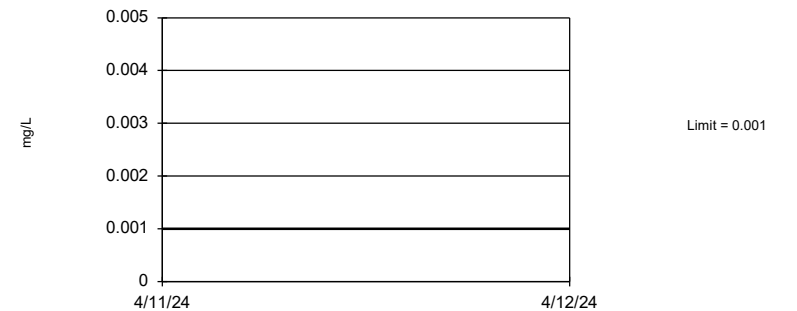
Prediction Limit
 Interwell Non-parametric



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 71 background values. Annual per-constituent alpha = 0.006754. Individual comparison alpha = 0.0003764 (1 of 2). Comparing 9 points to limit.

Constituent: Barium Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
 Interwell Non-parametric

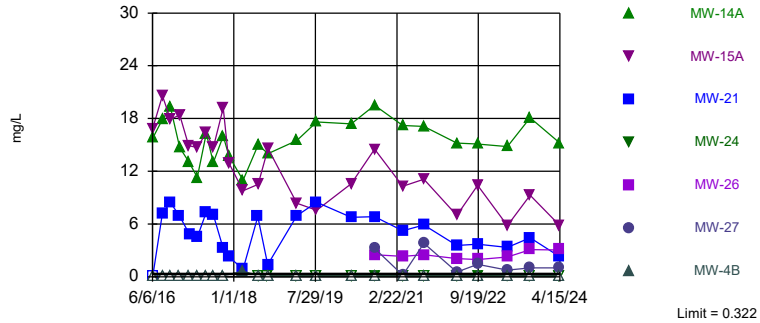


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 71) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.006754. Individual comparison alpha = 0.0003764 (1 of 2). Assumes 9 future values.

Constituent: Beryllium Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A, MW-15A, MW-21,
MW-26, MW-27

Prediction Limit
Interwell Non-parametric

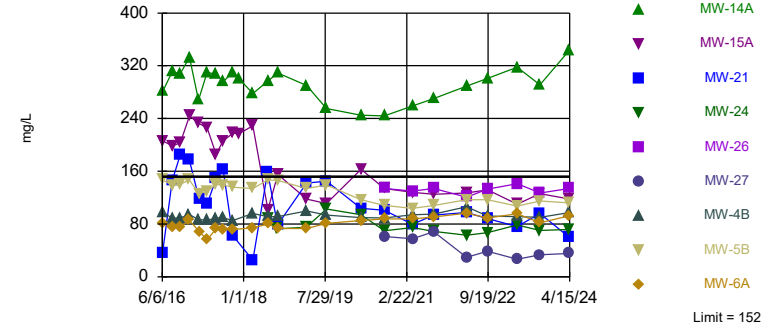


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 73 background values. 86.3% NDs. Annual per-constituent alpha = 0.00644. Individual comparison alpha = 0.0003589 (1 of 2). Comparing 7 points to limit. Assumes 2 future values.

Constituent: Boron Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A

Prediction Limit
Interwell Non-parametric

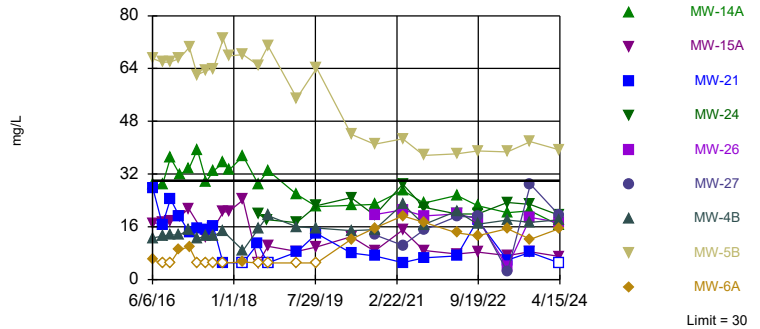


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 73 background values. Annual per-constituent alpha = 0.00644. Individual comparison alpha = 0.0003589 (1 of 2). Comparing 9 points to limit.

Constituent: Calcium Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-5B

Prediction Limit
Interwell Non-parametric

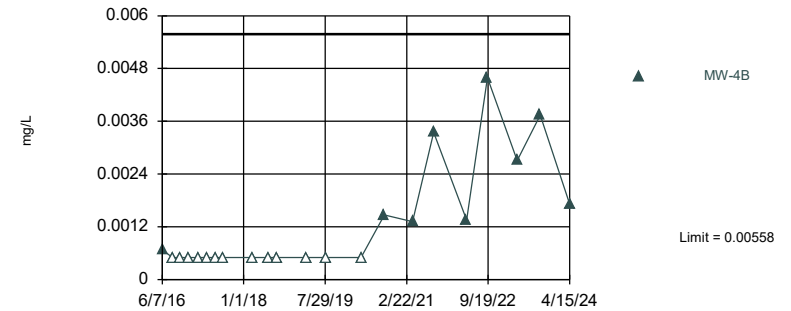


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 73 background values. 28.77% NDs. Annual per-constituent alpha = 0.00644. Individual comparison alpha = 0.0003589 (1 of 2). Comparing 9 points to limit.

Constituent: Chloride Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

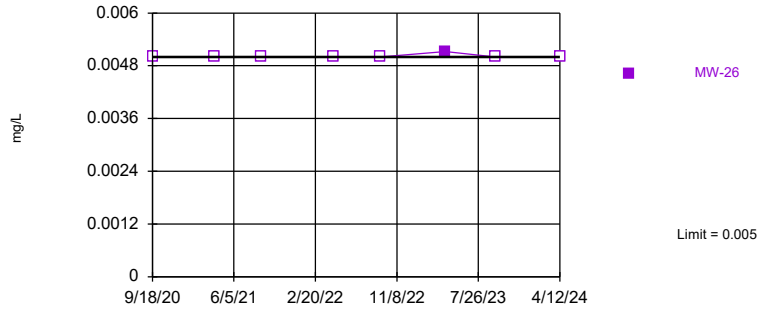


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 72 background values. 38.89% NDs. Annual per-constituent alpha = 0.006597. Individual comparison alpha = 0.0003676 (1 of 2). Assumes 8 future values.

Constituent: Cobalt Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

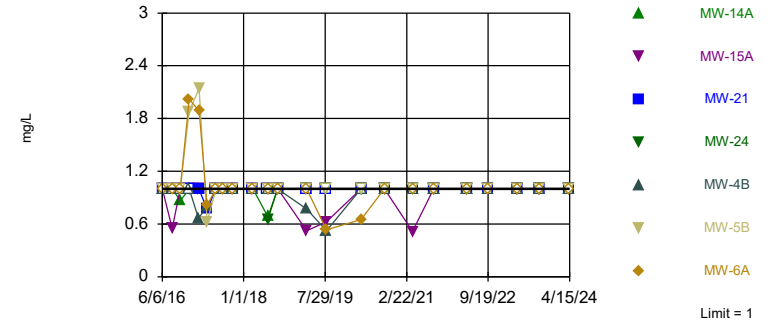


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 44) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.01714. Individual comparison alpha = 0.0009603 (1 of 2). Assumes 8 future values.

Constituent: Copper Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

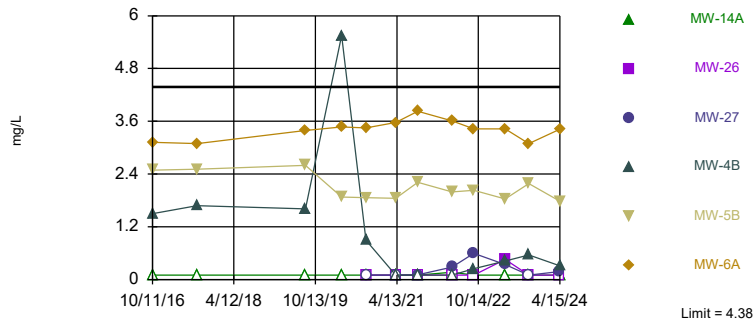


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 72 background values. 88.89% NDs. Annual per-constituent alpha = 0.006597. Individual comparison alpha = 0.0003676 (1 of 2). Comparing 7 points to limit. Assumes 2 future values.

Constituent: Fluoride Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

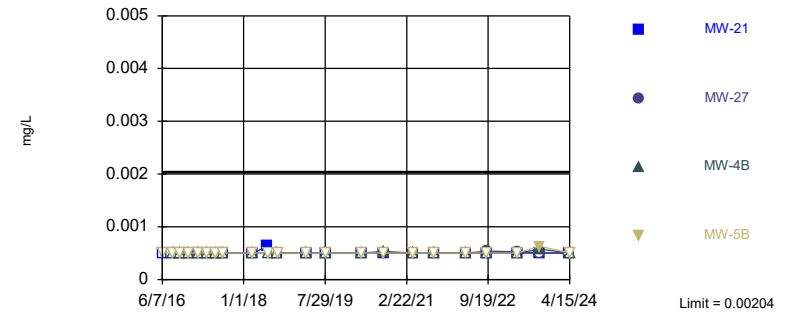


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 44 background values. 38.64% NDs. Annual per-constituent alpha = 0.01714. Individual comparison alpha = 0.0009603 (1 of 2). Comparing 6 points to limit. Assumes 3 future values.

Constituent: Iron Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

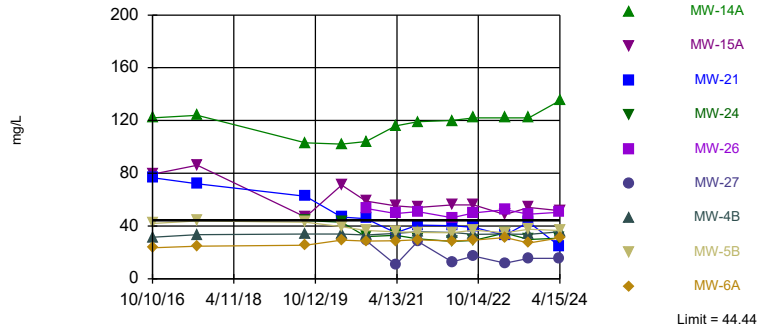


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 71 background values. 90.14% NDs. Annual per-constituent alpha = 0.006754. Individual comparison alpha = 0.0003764 (1 of 2). Comparing 4 points to limit. Assumes 5 future values.

Constituent: Lead Analysis Run 11/7/2024 12:58 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A, MW-15A, MW-26

Prediction Limit
Interwell Parametric

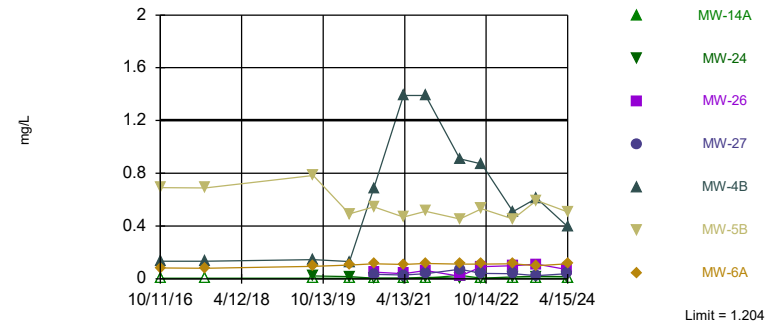


Background Data Summary (based on square root transformation): Mean=5.61, Std. Dev.=0.4557, n=44. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.927, critical = 0.924. Kappa = 2.319 (c=21, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0002787. Comparing 9 points to limit.

Constituent: Magnesium Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

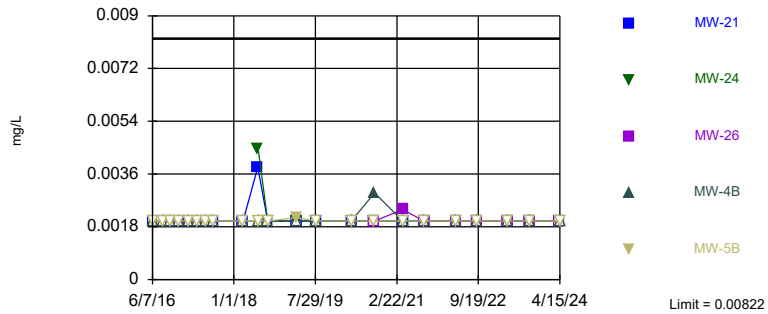


Background Data Summary (based on square root transformation): Mean=0.4896, Std. Dev.=0.2614, n=43. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9307, critical = 0.923. Kappa = 2.325 (c=21, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0002787. Comparing 7 points to limit. Assumes 2 future values.

Constituent: Manganese Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

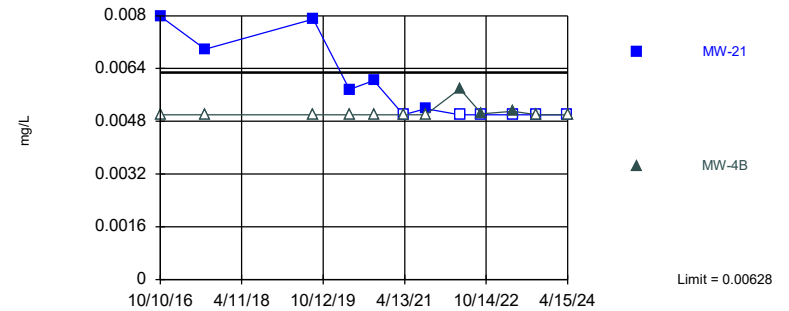


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 73 background values. 67.12% NDs. Annual per-constituent alpha = 0.00644. Individual comparison alpha = 0.0003589 (1 of 2). Comparing 5 points to limit. Assumes 4 future values.

Constituent: Molybdenum Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

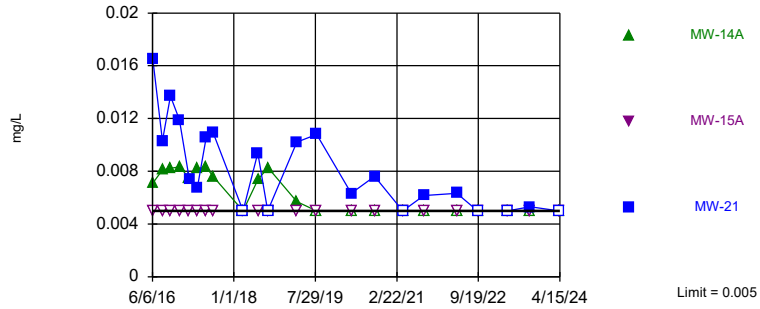


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 44 background values. 97.73% NDs. Annual per-constituent alpha = 0.01714. Individual comparison alpha = 0.0009603 (1 of 2). Comparing 2 points to limit. Assumes 7 future values.

Constituent: Nickel Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

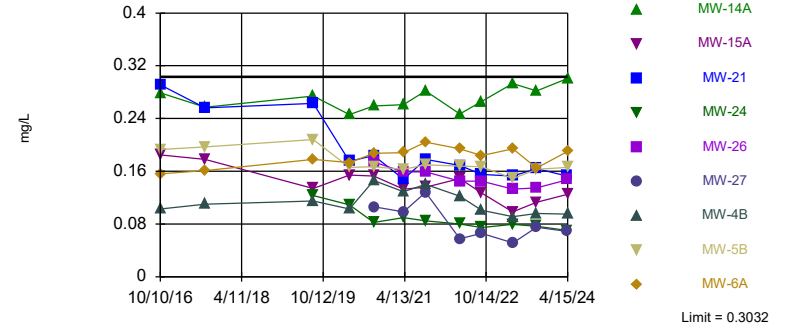


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 71) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.006754. Individual comparison alpha = 0.0003764 (1 of 2). Comparing 3 points to limit. Assumes 6 future values.

Constituent: Selenium Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

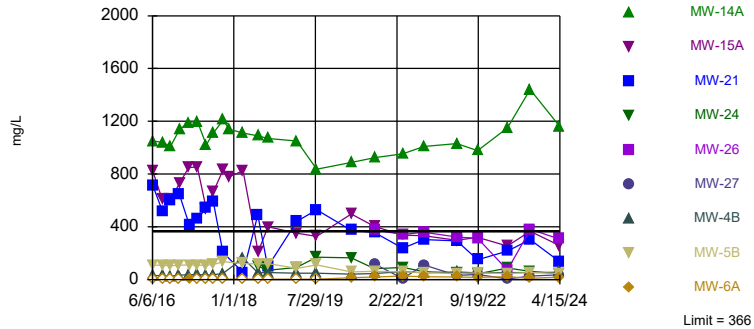


Background Data Summary: Mean=0.1486, Std. Dev.=0.06664, n=44. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.931, critical = 0.924. Kappa = 2.319 (c=21, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0002787. Comparing 9 points to limit.

Constituent: Strontium Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A

Prediction Limit
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 73 background values. Annual per-constituent alpha = 0.00644. Individual comparison alpha = 0.0003589 (1 of 2). Comparing 9 points to limit.

Constituent: Sulfate Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 44) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.01714. Individual comparison alpha = 0.0009603 (1 of 2). Assumes 9 future values.

Constituent: Vanadium Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 44) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.01714. Individual comparison alpha = 0.0009603 (1 of 2). Assumes 9 future values.

Constituent: Zinc Analysis Run 11/7/2024 12:59 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-4B	MW-22 (bg)	MW-23 (bg)	MW-27	MW-26
10/10/2016	<0.05	0.0826						
10/11/2016			<0.05	<0.05				
8/7/2017	<0.05	<0.05		<0.05				
8/8/2017			<0.05					
8/6/2019	<0.05				<0.05	0.253		
8/7/2019		<0.05	<0.05	<0.05				
4/7/2020	<0.05	<0.05	<0.05	<0.05	<0.05	0.552		
9/18/2020	<0.05	<0.05	<0.05	0.475	<0.05	<0.05	<0.05	<0.05
4/5/2021	<0.05	<0.05	<0.05	<0.05	<0.05	0.39	<0.05	<0.05
9/1/2021	<0.05	<0.05	<0.05	<0.05	<0.05	0.135	0.112	<0.05
4/20/2022	<0.05	<0.05	0.111	<0.05	<0.05	0.478	0.27	<0.05
9/14/2022	<0.05	<0.05	0.119	<0.05	<0.05	0.142	0.558	<0.05
4/10/2023					<0.05			
4/11/2023	<0.05		<0.05					
4/12/2023		<0.05		<0.05		0.233	0.394	0.0884
9/18/2023		<0.05			<0.05	0.105		
9/19/2023	<0.05		<0.05					
9/20/2023				<0.05			0.0737	<0.05
4/11/2024		<0.05			<0.05	0.243		
4/12/2024	<0.05						0.191	<0.05
4/15/2024			<0.05	<0.05				

Prediction Limit

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-22 (bg)	MW-23 (bg)
6/6/2016	0.00298			
6/7/2016		<0.002		
8/15/2016	0.00369			
8/16/2016		<0.002		
10/10/2016	0.00328	<0.002		
12/14/2016	0.00312	<0.002		
2/17/2017	0.00298			
2/21/2017		<0.002		
4/17/2017	<0.002	<0.002		
6/19/2017	0.00262	<0.002		
8/7/2017	0.00317	<0.002		
3/5/2018	<0.002			
3/6/2018		<0.002	<0.002	
6/19/2018	0.00211	<0.002	0.00245	
6/20/2018				<0.002
8/27/2018	0.0036	<0.002	0.00261	<0.002
3/18/2019		<0.002		
3/19/2019	0.0056		<0.002	<0.002
8/6/2019		<0.002	<0.002	<0.002
8/7/2019	0.00784			
4/7/2020	0.00697	<0.002	<0.002	<0.002
9/18/2020	0.00748	<0.002	<0.002	<0.002
4/5/2021	0.00393	<0.002	0.00289	<0.002
9/1/2021	0.00781	<0.002	0.00267	<0.002
4/20/2022	0.00371	<0.002	0.0034	<0.002
9/14/2022	0.00497	<0.002	0.00285	<0.002
4/10/2023			0.00421	
4/11/2023		0.00247		
4/12/2023	0.00224			<0.002
9/18/2023	0.00501		0.00421	<0.002
9/19/2023		<0.002		
4/11/2024	<0.002		0.00634	<0.002
4/12/2024		0.0039		

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-4B	MW-5B	MW-6A	MW-21	MW-14A	MW-15A	MW-22 (bg)
6/6/2016	0.168							2.13 (o)	
6/7/2016		0.0861	0.15	0.331	0.209				
6/8/2016						0.0573	0.0443		
8/15/2016	0.161					0.0482	0.0402	0.044	
8/16/2016		0.0671	0.128	0.295	0.199				
10/10/2016	0.163	0.0706				0.0606			
10/11/2016			0.131	0.304	0.196		0.0391	0.0426	
12/12/2016			0.139	0.315	0.216	0.056			
12/14/2016	0.15	0.0645					0.0383	0.0406	
2/17/2017	0.151		0.143				0.0306	0.0402	
2/21/2017		0.0594 (F1)		0.316	0.197	0.0735			
4/17/2017	0.138	0.0636	0.111	0.296	0.152		0.0341	0.0364	
4/18/2017						0.0356			
6/19/2017	0.154	0.076							
6/20/2017			0.133	0.31		0.0461			
6/21/2017					0.197		0.0338	0.0327	
8/7/2017	0.157	0.0596	0.133						
8/8/2017				0.3	0.19	0.0499	0.031	0.0338	
3/5/2018	0.129								
3/6/2018		0.0617	0.117	0.341	0.206	0.0148			0.15
3/7/2018							0.0285	0.0352	
6/19/2018	0.162	0.0761				0.0515			0.184
6/20/2018							0.0314	0.0338	
6/21/2018			0.144	0.336	0.222				
8/27/2018	0.216	0.0649							0.181
8/28/2018			0.149			0.0622			
8/29/2018				0.357	0.206		0.0344	0.0335	
3/18/2019		0.0751							
3/19/2019	0.185		0.161	0.326	0.2				0.209
3/20/2019						0.0511	0.0328	0.037	
8/6/2019		0.0733							0.215
8/7/2019	0.215		0.147	0.301	0.211	0.0624	0.0398	0.047	
4/7/2020	0.199	0.0613	0.156	0.25	0.216	0.0352	0.0266	0.0389	0.222
9/18/2020	0.227	0.0549	0.147	0.239	0.231	0.0407	0.0328	0.0416	0.222
4/5/2021	0.196	0.0596	0.169	0.252	0.245	0.0309	0.0355	0.0365	0.242
9/1/2021	0.233	0.0623	0.186	0.241	0.248	0.0434	0.0345	0.0355	0.247
4/20/2022	0.208	0.0631	0.191	0.258	0.249	0.036	0.0327	0.0443	0.239
9/14/2022	0.223	0.0703	0.188	0.253	0.229	0.0447	0.034	0.0327	0.243
4/10/2023									0.227
4/11/2023		0.07				0.031	0.032	0.0299	
4/12/2023	0.19		0.173	0.237	0.246				
9/18/2023	0.233								0.256
9/19/2023		0.0782				0.0559	0.0348	0.0338	
9/20/2023			0.181	0.274	0.222				
4/11/2024	0.193								0.271
4/12/2024		0.0857				0.031			
4/15/2024			0.168	0.243	0.235		0.0323	0.0353	

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-23 (bg)	MW-24	MW-27	MW-26
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	0.106	0.0695		
6/21/2018				
8/27/2018	0.0779	0.0776		
8/28/2018				
8/29/2018				
3/18/2019		0.0889		
3/19/2019	0.0922			
3/20/2019				
8/6/2019	0.0635	0.128		
8/7/2019				
4/7/2020	0.0654	0.084		
9/18/2020	0.0491	0.0969	0.0738	0.114
4/5/2021	0.0608	0.0936	0.0534	0.0989
9/1/2021	0.0497	0.0922	0.0862	0.0889
4/20/2022	0.0572	0.0826	0.0498	0.0802
9/14/2022	0.0507	0.0887	0.0594	0.0876
4/10/2023				
4/11/2023		0.0863		
4/12/2023	0.0518		0.0508	0.0815
9/18/2023	0.0533			
9/19/2023		0.0698		
9/20/2023			0.053	0.0755
4/11/2024	0.0547			
4/12/2024		0.0899	0.0511	0.0716
4/15/2024				

Prediction Limit

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-22 (bg)	MW-23 (bg)
6/6/2016	<0.001			
6/7/2016		<0.001		
8/15/2016	<0.001			
8/16/2016		<0.001		
10/10/2016	<0.001	<0.001		
12/14/2016	<0.001	<0.001		
2/17/2017	<0.001			
2/21/2017		<0.001		
4/17/2017	<0.001	<0.001		
6/19/2017	<0.001	<0.001		
8/7/2017	<0.001	<0.001		
3/5/2018	<0.001			
3/6/2018		<0.001	<0.001	
6/19/2018	<0.001	<0.001	<0.001	
6/20/2018				<0.001
8/27/2018	<0.001	<0.001	<0.001	<0.001
3/18/2019		<0.001		
3/19/2019	<0.001		<0.001	<0.001
8/6/2019		<0.001	<0.001	<0.001
8/7/2019	<0.001			
4/7/2020	<0.001	<0.001	<0.001	<0.001
9/18/2020	<0.001	<0.001	<0.001	<0.001
4/5/2021	<0.001	<0.001	<0.001	<0.001
9/1/2021	<0.001	<0.001	<0.001	<0.001
4/20/2022	<0.001	<0.001	<0.001	<0.001
9/14/2022	<0.001	<0.001	<0.001	<0.001
4/10/2023			<0.001	
4/11/2023		<0.001		
4/12/2023	<0.001			<0.001
9/18/2023	<0.001		<0.001	<0.001
9/19/2023		<0.001		
4/11/2024	<0.001		<0.001	<0.001
4/12/2024		<0.001		

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-4B	MW-08 (bg)	MW-21	MW-14A	MW-22 (bg)	MW-24	MW-23 (bg)
6/6/2016	<0.1	16.8							
6/7/2016			<0.1	<0.1					
6/8/2016					<0.1	15.8			
8/15/2016	<0.1	20.6			7.23	17.9			
8/16/2016			<0.1	<0.1					
10/10/2016	<0.1			<0.1	8.45				
10/11/2016		17.9	<0.1			19.3			
12/12/2016			<0.1		6.93				
12/14/2016	<0.1	18.4		<0.1		14.7			
2/17/2017	<0.1	14.9	<0.1			13.1			
2/21/2017				<0.1	4.87				
4/17/2017	<0.1	14.7	<0.1	<0.1		11.3			
4/18/2017					4.49				
6/19/2017	<0.1			<0.1					
6/20/2017			<0.1		7.36				
6/21/2017		16.4				16.3			
8/7/2017	<0.1		<0.1	<0.1					
8/8/2017		14.7			7.05	13			
10/16/2017	<0.1		<0.1	<0.1	3.33				
10/17/2017		19.2				16			
11/28/2017		12.9 (R)			2.24 (R)	13.7 (R)			
3/5/2018	<0.1								
3/6/2018			0.66	<0.1	0.885		<0.1		
3/7/2018		9.8				11			
6/19/2018	<0.1			<0.1	6.84		<0.1		
6/20/2018		10.5				15		<0.1	<0.1
6/21/2018			<0.1						
8/27/2018	<0.1			<0.1			<0.1	<0.1	<0.1
8/28/2018			<0.1		1.36				
8/29/2018		14.6				14			
3/18/2019				<0.1				<0.1	
3/19/2019	<0.1		<0.1				0.299		<0.1
3/20/2019		8.35			6.95	15.5			
8/6/2019				0.205			<0.1	<0.1	<0.1
8/7/2019	<0.1	7.56	<0.1		8.46	17.6			
4/7/2020	<0.1	10.6	<0.1	<0.1	6.76	17.4	<0.1	<0.1	<0.1
9/18/2020	<0.1	14.5	<0.1	<0.1	6.82	19.5	0.263	0.109	0.15
4/5/2021	<0.1	10.3	<0.1	<0.1	5.24	17.2	<0.1	<0.1	<0.1
9/1/2021	<0.1	11.1	<0.1	<0.1	5.88	17.1	<0.1	<0.1	<0.1
4/20/2022	<0.1	6.98	<0.1	<0.1	3.57	15.2	<0.1	<0.1	<0.1
9/14/2022	<0.1	10.4	<0.1	<0.1	3.69	15.1	0.322	0.134	0.204
4/10/2023							0.247		
4/11/2023		5.8		<0.1	3.35	14.8		0.114	
4/12/2023	<0.1		<0.1						0.145
9/18/2023	<0.1						0.207		0.128
9/19/2023		9.28		<0.1	4.42	18.1		<0.1	
9/20/2023			<0.1						
4/11/2024	<0.1						<0.1		<0.1
4/12/2024				<0.1	2.31			<0.1	
4/15/2024		5.8	<0.1			15.2			

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-26	MW-27
6/6/2016		
6/7/2016		
6/8/2016		
8/15/2016		
8/16/2016		
10/10/2016		
10/11/2016		
12/12/2016		
12/14/2016		
2/17/2017		
2/21/2017		
4/17/2017		
4/18/2017		
6/19/2017		
6/20/2017		
6/21/2017		
8/7/2017		
8/8/2017		
10/16/2017		
10/17/2017		
11/28/2017		
3/5/2018		
3/6/2018		
3/7/2018		
6/19/2018		
6/20/2018		
6/21/2018		
8/27/2018		
8/28/2018		
8/29/2018		
3/18/2019		
3/19/2019		
3/20/2019		
8/6/2019		
8/7/2019		
4/7/2020		
9/18/2020	2.5	3.25
4/5/2021	2.33	0.17
9/1/2021	2.49	3.82
4/20/2022	2.07	0.549
9/14/2022	1.97	1.41
4/10/2023		
4/11/2023		
4/12/2023	2.26	0.741
9/18/2023		
9/19/2023		
9/20/2023	3.08	1
4/11/2024		
4/12/2024	3.07	1.01
4/15/2024		

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediciton Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-15A	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-6A	MW-4B	MW-14A	MW-21	MW-22 (bg)
6/6/2016	206	89.3							
6/7/2016			152	147	81.4	98.2			
6/8/2016							281	37.2	
8/15/2016	199	80.7					311	146	
8/16/2016			117	139	75.4	88.8			
10/10/2016		83.3	118						185
10/11/2016	203			140	75.7	89.3	308		
12/12/2016				147	85.6	94.5			178
12/14/2016	244	86.5	109				333		
2/17/2017	233	81.2				86.8	268		
2/21/2017			89.9	126	68.8				118
4/17/2017	226	79.2	96.5	130	56.3	85.9	310		
4/18/2017									110
6/19/2017		83.6	113						
6/20/2017				140		88.7			149
6/21/2017	186				72.9		307		
8/7/2017		85.5	91.3			89.7			
8/8/2017	206			139	71.2		296	163	
10/16/2017		83.3	77			85.3			62.3
10/17/2017	218			136	71.9		310		
11/28/2017	217 (R)						301 (R)		
3/5/2018		77.3							
3/6/2018			74.7	134	74.1	95.8		25.1	69.8
3/7/2018	229						278		
6/19/2018		88.5	115					159	91.5
6/20/2018	102						297		
6/21/2018				147	80.1	91.4			
8/27/2018		85.4	83.6						80.7
8/28/2018						91.3		78.7	
8/29/2018	155			146	73.3		309		
3/18/2019			97.6						
3/19/2019		76.3		134	73.2	99.7			91.6
3/20/2019	118						290	142	
8/6/2019			132						83.8
8/7/2019	111	78.9		139	80.9	93.8	255	145	
4/7/2020	163	75.4	92.4	117	85.1	89.6	245	104	80.9
9/18/2020	134	74.2	77.7	108	87.9	89	244	101	75.5
4/5/2021	128	78.8	81.2	104	87.6	94.1	259	79.5	78.4
9/1/2021	125	80	78.3	108	90.6	95.1	270	93.5	79.4
4/20/2022	127	90.4	69.6	117	96.5	106	289	97.5	80.2
9/14/2022	132	82	76.8	117	89	92.3	301	88.2	79.6
4/10/2023									80.4
4/11/2023	110		78.2				318	76	
4/12/2023		83.7		107	95.4	91.3			
9/18/2023		84.7							79
9/19/2023	126		79.4				291	96	
9/20/2023				115	82.1	90.4			
4/11/2024		96.2							83.1
4/12/2024			84.2					59.9	
4/15/2024	118			112	92.4	97.7	344		

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-23 (bg)	MW-24	MW-26	MW-27
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
10/16/2017				
10/17/2017				
11/28/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	70.5	88		
6/21/2018				
8/27/2018	63.9	72.8		
8/28/2018				
8/29/2018				
3/18/2019		75		
3/19/2019	59.7			
3/20/2019				
8/6/2019	59.5	103		
8/7/2019				
4/7/2020	61	94.3		
9/18/2020	52.1	69.9	134	61
4/5/2021	56.3	74.6	130	57.6
9/1/2021	56.1	69	134	68.4
4/20/2022	54	62.8	121	29.6
9/14/2022	54.5	66.8	133	38.7
4/10/2023				
4/11/2023		78.6		
4/12/2023	55.3		141	26.8
9/18/2023	56			
9/19/2023		70.5		
9/20/2023			127	33.4
4/11/2024	59.7			
4/12/2024		71.6	134	35.4
4/15/2024				

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-15A	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-6A	MW-4B	MW-14A	MW-21	MW-22 (bg)
6/6/2016	17.1	6.22							
6/7/2016			19.8	67	5.97	12.6			
6/8/2016							28.7	27.7	
8/15/2016	17.2	<5					28.7	16.6	
8/16/2016			17.8	65.9	<5	13.2			
10/10/2016		<5	16.2					24.4	
10/11/2016	17.6			66	<5	13.6	37		
12/12/2016				67	9.08	13.5		19.2	
12/14/2016	19	<5	17.2				31.9		
2/17/2017	21.5	<5				15.1	33.5		
2/21/2017			15.4	70.4	9.93			14.2	
4/17/2017	47.4 (o)	<5	17.1	62.1	<5	12.5	39.4		
4/18/2017								15.6	
6/19/2017		<5	14.1						
6/20/2017				63.4		13.2		15.1	
6/21/2017	12.8				<5		29.7		
8/7/2017		<5	14			13.2			
8/8/2017	15.4			64	<5		32.9	16.1	
10/16/2017		<5	14.4			14.7		5.09	
10/17/2017	20.5			73	<5		35.4		
11/28/2017	20.7 (R)			67.8 (R)			33.2 (R)		
3/5/2018		<5							
3/6/2018			14.5	68.2	5.33	8.81		<5	30
3/7/2018	24.2						37.4		
6/19/2018		<5	14.9					10.9	27.2
6/20/2018	<5						29		
6/21/2018				65	<5	15.3			
8/27/2018		<5	15.6						29.8
8/28/2018						19.4		<5	
8/29/2018	10.1			70.8	<5		33.1		
3/18/2019			16.1						
3/19/2019		<5		55	<5	16			27.6
3/20/2019	8.54						25.8	8.3	
8/6/2019			17.1						26.9
8/7/2019	9.91	<5		64.1	<5	15.6	22.1	14	
4/7/2020	13	<5	17.2	44	12.2	14.8	22.5	8.05	24.8
9/18/2020	8.63	<5	14.7	41	15.6	15.1	22.8	7.21	23.2
4/5/2021	15	<5	22.3	42.7	19.3	22.9	27.1	5.14	28.1
9/1/2021	8.86	<5	16.3	37.6	17.4	16.7	23.2	6.58	20
4/20/2022	7.71	<5	15.8	38.1	14.2	20.8	25.5	7.19	20.2
9/14/2022	8.29	<5	16.7	39	13.3	16.8	22.4	18	7.04
4/10/2023									18.2
4/11/2023	7.3		17.9				20.3	5.93	
4/12/2023		5.86		38.7	15.4	18			
9/18/2023		<5							18.4
9/19/2023	8.41		19.9				20.9	8.23	
9/20/2023				41.8	12.2	17.4			
4/11/2024		<5							15.8
4/12/2024			17.2					<5	
4/15/2024	7.01			39.3	15.5	18.1	16.4		

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-23 (bg)	MW-24	MW-27	MW-26
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
10/16/2017				
10/17/2017				
11/28/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	15.9	19.9		
6/21/2018				
8/27/2018	14.2	18.1		
8/28/2018				
8/29/2018				
3/18/2019		17.3		
3/19/2019	10.5			
3/20/2019				
8/6/2019	13.8	22.4		
8/7/2019				
4/7/2020	15.7	24.8		
9/18/2020	14.4	19.5	13.6	19.7
4/5/2021	21.4	28.9	10.4	21.1
9/1/2021	15.2	21.9	15	19.3
4/20/2022	16.9	19.9	19.1	19.9
9/14/2022	16.2	19.9	19	18.4
4/10/2023				
4/11/2023		23.4		
4/12/2023	17.7		2.45	3.83
9/18/2023	19.2			
9/19/2023		22.8		
9/20/2023			28.9	18.8
4/11/2024	19.2			
4/12/2024		19.5	19.5	17.4
4/15/2024				

Prediction Limit

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-4B	MW-22 (bg)	MW-23 (bg)
6/6/2016	0.000555				
6/7/2016		<0.0005	0.000681		
8/15/2016	<0.0005				
8/16/2016		<0.0005	<0.0005		
10/10/2016	0.000523	<0.0005			
10/11/2016			<0.0005		
12/12/2016			<0.0005		
12/14/2016	0.000638	<0.0005			
2/17/2017	0.000663		<0.0005		
2/21/2017		<0.0005			
4/17/2017	0.000779	<0.0005	<0.0005		
6/19/2017	0.000621	0.000601			
6/20/2017			<0.0005		
8/7/2017	0.000695	0.00051	<0.0005		
3/5/2018	0.000627				
3/6/2018		<0.0005	<0.0005	0.00142	
5/14/2018				0.0012	
6/19/2018	0.00107	<0.0005		0.00129	
6/20/2018					0.00161
6/21/2018			<0.0005		
8/27/2018	0.00088	<0.0005		0.00149	0.00066
8/28/2018			<0.0005		
3/18/2019		0.00177			
3/19/2019	0.000783		<0.0005	<0.0005	0.00176
8/6/2019		0.00558		<0.0005	<0.0005
8/7/2019	0.000572		<0.0005		
4/7/2020	0.000581	0.000517	<0.0005	<0.0005	0.000817
9/18/2020	0.000751	0.000738	0.00147	<0.0005	<0.0005
4/5/2021	0.000752	0.000839	0.00132	<0.0005	0.000517
9/1/2021	0.000576	0.00127	0.00335	<0.0005	<0.0005
4/20/2022	0.00104	0.00143	0.00135	<0.0005	0.000561
9/14/2022	0.00109	0.00164	0.00459	<0.0005	<0.0005
4/10/2023				<0.0005	
4/11/2023		0.0014			
4/12/2023	0.00142		0.00271		<0.0005
9/18/2023	0.000995			<0.0005	<0.0005
9/19/2023		0.00126			
9/20/2023			0.00374		
4/11/2024	0.00122			<0.0005	<0.0005
4/12/2024		0.0018			
4/15/2024			0.00172		

Prediction Limit

Constituent: Copper (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-23 (bg)	MW-22 (bg)	MW-26
10/10/2016	<0.005	<0.005			
8/7/2017	<0.005	<0.005			
8/6/2019	<0.005		<0.005	<0.005	
8/7/2019		<0.005			
4/7/2020	<0.005	<0.005	<0.005	<0.005	
9/18/2020	<0.005	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005	<0.005
4/10/2023				<0.005	
4/11/2023	<0.005				
4/12/2023		<0.005	<0.005		0.00512
9/18/2023		<0.005	<0.005	<0.005	
9/19/2023	<0.005				
9/20/2023					<0.005
4/11/2024		<0.005	<0.005	<0.005	
4/12/2024	<0.005				<0.005

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-6A	MW-4B	MW-5B	MW-21	MW-14A	MW-22 (bg)
6/6/2016	0.731	<1							
6/7/2016			<1	<1	<1	<1			
6/8/2016							<1	<1	
8/15/2016	<1	0.549					<1	<1	
8/16/2016			<1	<1	<1	<1			
10/10/2016	<1		<1				<1		
10/11/2016		<1		<1	<1	<1		0.867	
12/12/2016				2.02	<1	1.88	<1		
12/14/2016	<1	<1	0.72					<1	
2/17/2017	<1	<1			0.664			<1	
2/21/2017			<1	1.89		2.14	0.993		
4/17/2017	0.774	6.7 (o)	1.69 (o)	0.814	0.801	0.627		1.93 (o)	
4/18/2017							0.768		
6/19/2017	<1		<1						
6/20/2017					<1	<1	<1		
6/21/2017		<1		<1				<1	
8/7/2017	<1		<1		<1				
8/8/2017		<1		<1		<1	<1	<1	
10/16/2017	<1		<1		<1		<1		
10/17/2017		<1		<1		<1		<1	
3/5/2018	<1								
3/6/2018			<1	<1	<1	<1	<1		<1
3/7/2018		<1						<1	
6/19/2018	<1		0.826				<1		<1
6/20/2018		<1						0.684	
6/21/2018				<1	<1	<1			
8/27/2018	<1		<1						<1
8/28/2018					<1		<1		
8/29/2018		<1		<1		<1		<1	
3/18/2019			<1						
3/19/2019	<1			<1	0.771	<1			<1
3/20/2019		0.523					<1	<1	
8/6/2019			0.643						0.507
8/7/2019	0.596	0.625		0.535	0.525	<1	<1	<1	
4/7/2020	<1	<1	0.864	0.652	<1	<1	<1	<1	<1
9/18/2020	<1	<1	<1	<1	<1	<1	<1	<1	<1
4/5/2021	<1	0.516	<1	<1	<1	<1	<1	<1	<1
9/1/2021	<1	<1	<1	<1	<1	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1	<1	<1	<1	<1	<1
9/14/2022	<1	<1	<1	<1	<1	<1	<1	<1	<1
4/10/2023									<1
4/11/2023		<1	<1				<1	<1	
4/12/2023	<1			<1	<1	<1			
9/18/2023	<1								<1
9/19/2023		<1	<1				<1	<1	
9/20/2023				<1	<1	<1			
4/11/2024	<1								<1
4/12/2024			<1				<1		
4/15/2024		<1		<1	<1	<1		<1	

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-23 (bg)	MW-24
6/6/2016		
6/7/2016		
6/8/2016		
8/15/2016		
8/16/2016		
10/10/2016		
10/11/2016		
12/12/2016		
12/14/2016		
2/17/2017		
2/21/2017		
4/17/2017		
4/18/2017		
6/19/2017		
6/20/2017		
6/21/2017		
8/7/2017		
8/8/2017		
10/16/2017		
10/17/2017		
3/5/2018		
3/6/2018		
3/7/2018		
6/19/2018		
6/20/2018	<1	0.653
6/21/2018		
8/27/2018	<1	<1
8/28/2018		
8/29/2018		
3/18/2019		<1
3/19/2019	<1	
3/20/2019		
8/6/2019	<1	<1
8/7/2019		
4/7/2020	<1	<1
9/18/2020	<1	<1
4/5/2021	<1	<1
9/1/2021	<1	<1
4/20/2022	<1	<1
9/14/2022	<1	<1
4/10/2023		
4/11/2023		<1
4/12/2023	<1	
9/18/2023	<1	
9/19/2023		<1
9/20/2023		
4/11/2024	<1	
4/12/2024		<1
4/15/2024		

Prediction Limit

Constituent: Iron (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-4B	MW-6A	MW-14A	MW-5B	MW-23 (bg)	MW-22 (bg)	MW-26
10/10/2016	<0.1	1.8							
10/11/2016			1.5	3.12	<0.1	2.49			
8/7/2017	<0.1	1.58	1.68						
8/8/2017				3.09	<0.1	2.51			
8/6/2019	<0.1						0.231	<0.1	
8/7/2019		3.33	1.61	3.39	<0.1	2.6			
4/7/2020	<0.1	3.36	5.55	3.47	<0.1	1.88	0.485	<0.1	
9/18/2020	<0.1	4.38	0.895	3.45	<0.1	1.86	<0.1	<0.1	<0.1
4/5/2021	0.167	2.08	<0.1	3.57	<0.1	1.85	0.348	<0.1	<0.1
9/1/2021	0.141	4.37	<0.1	3.83	<0.1	2.21	0.136	<0.1	<0.1
4/20/2022	0.565	2.49	<0.1	3.61	0.165	1.99	0.492	<0.1	<0.1
9/14/2022	0.609	2.7	0.25	3.43	<0.1	2.03	0.117	<0.1	<0.1
4/10/2023								<0.1	
4/11/2023	0.708				<0.1				
4/12/2023		1.09	0.423	3.43		1.83	0.21		0.456
9/18/2023		2.45					<0.1	<0.1	
9/19/2023	0.451				<0.1				
9/20/2023			0.559	3.09		2.18			<0.1
4/11/2024		0.982					0.239	<0.1	
4/12/2024	1.29								<0.1
4/15/2024			0.309	3.42	<0.1	1.78			

Prediction Limit

Constituent: Iron (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

MW-27

10/10/2016	
10/11/2016	
8/7/2017	
8/8/2017	
8/6/2019	
8/7/2019	
4/7/2020	
9/18/2020	<0.1
4/5/2021	<0.1
9/1/2021	0.11
4/20/2022	0.281
9/14/2022	0.594
4/10/2023	
4/11/2023	
4/12/2023	0.338
9/18/2023	
9/19/2023	
9/20/2023	<0.1
4/11/2024	
4/12/2024	0.181
4/15/2024	

Prediction Limit

Constituent: Lead (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-21	MW-4B	MW-22 (bg)	MW-23 (bg)	MW-27
6/6/2016	<0.0005							
6/7/2016		<0.0005	<0.0005		0.00147 (o)			
6/8/2016				<0.0005				
8/15/2016	<0.0005			<0.0005				
8/16/2016		<0.0005	<0.0005		<0.0005			
10/10/2016	<0.0005	<0.0005		<0.0005				
10/11/2016			<0.0005		<0.0005			
12/12/2016			<0.0005	<0.0005	<0.0005			
12/14/2016	<0.0005	<0.0005						
2/17/2017	<0.0005				<0.0005			
2/21/2017		<0.0005	<0.0005	<0.0005				
4/17/2017	<0.0005	<0.0005	<0.0005		<0.0005			
4/18/2017				<0.0005				
6/19/2017	<0.0005	<0.0005						
6/20/2017			<0.0005	<0.0005	<0.0005			
8/7/2017	<0.0005	<0.0005			<0.0005			
8/8/2017			<0.0005	<0.0005				
3/5/2018	<0.0005							
3/6/2018		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
6/19/2018	<0.0005	<0.0005		0.000633		<0.0005		
6/20/2018							0.00151	
6/21/2018			<0.0005		<0.0005			
8/27/2018	<0.0005	<0.0005				<0.0005	0.000626	
8/28/2018				<0.0005	<0.0005			
8/29/2018			<0.0005					
3/18/2019		<0.0005						
3/19/2019	<0.0005		<0.0005		<0.0005	<0.0005	0.00204	
3/20/2019				<0.0005				
8/6/2019		<0.0005				<0.0005	0.000663	
8/7/2019	<0.0005		<0.0005	<0.0005	<0.0005			
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00116	
9/18/2020	<0.0005	<0.0005	<0.0005	<0.0005	0.000532	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000624	<0.0005
9/1/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000596	<0.0005
9/14/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000536
4/10/2023						<0.0005		
4/11/2023		<0.0005		<0.0005				
4/12/2023	<0.0005		<0.0005		<0.0005		<0.0005	0.000528
9/18/2023	<0.0005					<0.0005	<0.0005	
9/19/2023		<0.0005		<0.0005				
9/20/2023			0.000627		0.000576			<0.0005
4/11/2024	<0.0005					<0.0005	<0.0005	
4/12/2024		<0.0005		<0.0005				<0.0005
4/15/2024			<0.0005		<0.0005			

Prediction Limit

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-21	MW-15A	MW-4B	MW-14A	MW-6A	MW-5B	MW-22 (bg)
10/10/2016	44.1	33.8	76.6						
10/11/2016				79.3	31.4	122	23.5	42	
8/7/2017	36.4	37.8			33.4				
8/8/2017			72.1	86		124	24.7	43.8	
8/6/2019	50.1								33
8/7/2019		30	62.5	46.9	34	103	25.4	42.8	
4/7/2020	37.1	31.4	46.9	71	34	102	29.4	39.6	34.5
9/18/2020	31.8	31.9	45.6	59	33.2	104	28.5	36.6	31.1
4/5/2021	31.8	32.2	34.9	55.4	34.3	116	28.8	35.7	31
9/1/2021	31	31.3	40.8	54	35.6	119	29.6	35.2	31.4
4/20/2022	27.7	35	40.2	56	35.1	120	28.6	35	29.6
9/14/2022	30.1	33.3	39.1	56.1	33.6	122	29.4	36.8	31.8
4/10/2023									31.5
4/11/2023	31.1		33	48.7		122			
4/12/2023		34.5			33.9		31.2	34.8	
9/18/2023		34.7							32
9/19/2023	31.5		42.8	54		122			
9/20/2023					33.6		27.2	37.6	
4/11/2024		41.5							33
4/12/2024	32.7		24.9						
4/15/2024				51.6	35.6	135	31	36.5	

Prediction Limit

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-26	MW-27
10/10/2016				
10/11/2016				
8/7/2017				
8/8/2017				
8/6/2019	44.2	24.7		
8/7/2019				
4/7/2020	43	28.5		
9/18/2020	32	24.3	53.4	29.2
4/5/2021	33	25.3	49.5	10.7
9/1/2021	30.3	24.8	50.8	28.4
4/20/2022	28.3	23.3	46.4	12.9
9/14/2022	29.1	24.6	49.9	17.3
4/10/2023				
4/11/2023	34.7			
4/12/2023		24.4	52.3	11.9
9/18/2023		25.4		
9/19/2023	29.9			
9/20/2023			48.9	15.5
4/11/2024		26.6		
4/12/2024	30.7		50.5	15.4
4/15/2024				

Prediction Limit

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-4B	MW-14A	MW-5B	MW-6A	MW-24	MW-23 (bg)	MW-22 (bg)
10/10/2016	0.28	0.151							
10/11/2016			0.133	<0.01	0.69	0.0818			
8/7/2017	0.237	0.166	0.132						
8/8/2017				<0.01	0.689	0.0802			
8/6/2019	0.758						0.0223	0.0443	1.74 (o)
8/7/2019		0.177	0.145	<0.01	0.784	0.0941			
4/7/2020	0.119	0.184	0.13	<0.01	0.492	0.103	0.0156	0.0718	0.0896
9/18/2020	0.652	0.251	0.686	<0.01	0.546	0.113	<0.01	0.0127	1.36
4/5/2021	0.185	0.199	1.39	<0.01	0.467	0.109	<0.01	0.0634	0.175
9/1/2021	0.663	0.221	1.39	<0.01	0.512	0.117	0.0126	0.0444	1.27
4/20/2022	0.411	0.231	0.91	0.0264	0.454	0.112	<0.01	0.0588	0.106
9/14/2022	0.749	0.31	0.871	<0.01	0.532	0.112	<0.01	0.0222	0.795
4/10/2023									0.0633
4/11/2023	0.309			<0.01			0.0144		
4/12/2023		0.396	0.51		0.453	0.113		0.0372	
9/18/2023		0.266						0.0169	0.767
9/19/2023	0.37			<0.01			0.0183		
9/20/2023			0.612		0.594	0.0995			
4/11/2024		0.233						0.037	0.118
4/12/2024	0.509						0.0156		
4/15/2024			0.395	<0.01	0.506	0.114			

Prediction Limit

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-27	MW-26
10/10/2016		
10/11/2016		
8/7/2017		
8/8/2017		
8/6/2019		
8/7/2019		
4/7/2020		
9/18/2020	0.0345	0.0501
4/5/2021	0.0278	0.0395
9/1/2021	0.0375	0.0629
4/20/2022	0.0722	0.019
9/14/2022	0.0406	0.0917
4/10/2023		
4/11/2023		
4/12/2023	0.0378	0.0983
9/18/2023		
9/19/2023		
9/20/2023	0.0231	0.111
4/11/2024		
4/12/2024	0.0376	0.0697
4/15/2024		

Prediction Limit

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-4B	MW-21	MW-22 (bg)	MW-24	MW-23 (bg)	MW-26
6/6/2016	<0.002								
6/7/2016		<0.002	<0.002	<0.002					
6/8/2016					<0.002				
8/15/2016	<0.002				<0.002				
8/16/2016		<0.002	<0.002	<0.002					
10/10/2016	<0.002	<0.002			<0.002				
10/11/2016			<0.002	<0.002					
12/12/2016			<0.002	<0.002	<0.002				
12/14/2016	<0.002	<0.002							
2/17/2017	<0.002			<0.002					
2/21/2017		<0.002	<0.002		<0.002				
4/17/2017	<0.002	<0.002	<0.002	<0.002					
4/18/2017					<0.002				
6/19/2017	<0.002	<0.002							
6/20/2017			<0.002	<0.002	<0.002				
8/7/2017	<0.002	<0.002		<0.002	<0.002				
8/8/2017			<0.002		<0.002				
3/5/2018	<0.002								
3/6/2018		0.0022	<0.002	<0.002	<0.002	0.00568			
5/14/2018		<0.002				0.00385			
6/19/2018	<0.002	<0.002			0.00383	0.00423			
6/20/2018							0.00447	0.00822	
6/21/2018			<0.002	<0.002					
8/27/2018	0.0022	0.00224				0.00424	<0.002	0.00617	
8/28/2018				<0.002	<0.002				
8/29/2018			<0.002						
3/18/2019		<0.002					<0.002		
3/19/2019	0.00341		0.00212	<0.002		0.00263		<0.002	
3/20/2019					<0.002				
8/6/2019		<0.002				0.00574	<0.002	<0.002	
8/7/2019	0.00219		<0.002	<0.002	<0.002				
4/7/2020	0.00215	<0.002	<0.002	<0.002	<0.002	0.00297	<0.002	<0.002	
9/18/2020	<0.002	<0.002	<0.002	0.00296	<0.002	0.00529	<0.002	<0.002	<0.002
4/5/2021	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00239
9/1/2021	0.00217	0.00218	<0.002	<0.002	<0.002	0.00558	<0.002	<0.002	<0.002
4/20/2022	<0.002	<0.002	<0.002	<0.002	<0.002	0.0042	<0.002	<0.002	<0.002
9/14/2022	<0.002	<0.002	<0.002	<0.002	<0.002	0.00446	<0.002	<0.002	<0.002
4/10/2023						0.00364			
4/11/2023		<0.002			<0.002		<0.002		
4/12/2023	<0.002		<0.002	<0.002				<0.002	<0.002
9/18/2023	<0.002					0.00661		<0.002	
9/19/2023		<0.002			<0.002		<0.002		
9/20/2023			<0.002	<0.002					<0.002
4/11/2024	<0.002					0.00217		<0.002	
4/12/2024		<0.002			<0.002		<0.002		<0.002
4/15/2024			<0.002	<0.002					

Prediction Limit

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-21	MW-10 (bg)	MW-4B	MW-22 (bg)	MW-23 (bg)
10/10/2016	<0.005	0.00799	<0.005			
10/11/2016				<0.005		
8/7/2017	<0.005		<0.005	<0.005		
8/8/2017		0.00699				
8/6/2019	<0.005				<0.005	<0.005
8/7/2019		0.0079	<0.005	<0.005		
4/7/2020	<0.005	0.00576	<0.005	<0.005	<0.005	<0.005
9/18/2020	0.00628	0.00604	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	0.00518	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	0.00578	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	0.00503	<0.005	<0.005
4/10/2023					<0.005	
4/11/2023	<0.005	<0.005				
4/12/2023			<0.005	0.0051		<0.005
9/18/2023			<0.005		<0.005	<0.005
9/19/2023	<0.005	<0.005				
9/20/2023				<0.005		
4/11/2024			<0.005		<0.005	<0.005
4/12/2024	<0.005	<0.005				
4/15/2024				<0.005		

Prediction Limit

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-15A	MW-10 (bg)	MW-08 (bg)	MW-21	MW-14A	MW-22 (bg)	MW-23 (bg)
6/6/2016	<0.005	<0.005					
6/7/2016			<0.005				
6/8/2016				0.0165	0.0071		
8/15/2016	<0.005	<0.005		0.0103	0.00811		
8/16/2016			<0.005				
10/10/2016		<0.005	<0.005	0.0137			
10/11/2016	<0.005				0.00821		
12/12/2016				0.0119			
12/14/2016	<0.005	<0.005	<0.005		0.00834		
2/17/2017	<0.005	<0.005			0.00752		
2/21/2017			<0.005	0.0074			
4/17/2017	<0.005	<0.005	<0.005		0.00823		
4/18/2017				0.00674			
6/19/2017		<0.005	<0.005				
6/20/2017				0.0106			
6/21/2017	<0.005				0.00829		
8/7/2017		<0.005	<0.005				
8/8/2017	<0.005			0.0109	0.00759		
3/5/2018		<0.005					
3/6/2018			<0.005	<0.005		<0.005	
3/7/2018	0.00502				<0.005		
6/19/2018		<0.005	<0.005	0.00939		<0.005	
6/20/2018	<0.005				0.00739		<0.005
8/27/2018		<0.005	<0.005			<0.005	<0.005
8/28/2018				<0.005			
8/29/2018	<0.005				0.00827		
3/18/2019			<0.005				
3/19/2019		<0.005				<0.005	<0.005
3/20/2019	<0.005			0.0102	0.00569		
8/6/2019			<0.005			<0.005	<0.005
8/7/2019	<0.005	<0.005		0.0108	<0.005		
4/7/2020	<0.005	<0.005	<0.005	0.00632	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	0.00762	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	0.00617	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	0.00634	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
4/10/2023						<0.005	
4/11/2023	<0.005		<0.005	<0.005	<0.005		
4/12/2023		<0.005					<0.005
9/18/2023		<0.005				<0.005	<0.005
9/19/2023	<0.005		<0.005	0.0053	<0.005		
4/11/2024		<0.005				<0.005	<0.005
4/12/2024			<0.005	<0.005			
4/15/2024	<0.005				<0.005		

Prediction Limit

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-21	MW-15A	MW-4B	MW-14A	MW-6A	MW-5B	MW-22 (bg)
10/10/2016	0.338	0.156	0.291						
10/11/2016				0.185	0.103	0.279	0.156	0.193	
8/7/2017	0.243	0.165			0.11				
8/8/2017			0.256	0.178		0.257	0.161	0.197	
8/6/2019	0.323								0.133
8/7/2019		0.199	0.263	0.134	0.115	0.274	0.178	0.208	
4/7/2020	0.233	0.19	0.175	0.154	0.103	0.246	0.173	0.166	0.129
9/18/2020	0.176	0.19	0.184	0.153	0.146	0.259	0.187	0.167	0.108
4/5/2021	0.188	0.179	0.148	0.133	0.129	0.261	0.188	0.163	0.13
9/1/2021	0.172	0.227	0.178	0.136	0.14	0.282	0.204	0.17	0.115
4/20/2022	0.164	0.173	0.169	0.149	0.122	0.247	0.194	0.168	0.127
9/14/2022	0.16	0.191	0.155	0.127	0.101	0.266	0.184	0.167	0.111
4/10/2023									0.137
4/11/2023	0.148		0.153	0.0985		0.293			
4/12/2023		0.178			0.091		0.194	0.149	
9/18/2023		0.207							0.101
9/19/2023	0.151		0.164	0.113		0.282			
9/20/2023					0.0958		0.165	0.163	
4/11/2024		0.188							0.103
4/12/2024	0.172		0.153						
4/15/2024				0.125	0.0951	0.301	0.19	0.166	

Prediction Limit

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-26	MW-27
10/10/2016				
10/11/2016				
8/7/2017				
8/8/2017				
8/6/2019	0.123	0.0872		
8/7/2019				
4/7/2020	0.109	0.0661		
9/18/2020	0.0824	0.0602	0.174	0.106
4/5/2021	0.0899	0.0639	0.159	0.0986
9/1/2021	0.085	0.068	0.159	0.128
4/20/2022	0.0802	0.0595	0.145	0.0575
9/14/2022	0.0746	0.0592	0.145	0.0659
4/10/2023				
4/11/2023	0.0795			
4/12/2023		0.0526	0.133	0.0512
9/18/2023		0.0601		
9/19/2023	0.0768			
9/20/2023			0.135	0.0752
4/11/2024		0.0585		
4/12/2024	0.0703		0.147	0.069
4/15/2024				

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April

Muscataine Power & Water Client: GHD Data: Muscataine Power & Water

	MW-15A	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-6A	MW-4B	MW-14A	MW-21	MW-22 (bg)
6/6/2016	827	42.1							
6/7/2016			366	109	<5	32.2			
6/8/2016							1050	713	
8/15/2016	605	33.8					1040	520	
8/16/2016			187	109	<5	28.4			
10/10/2016		36.4	187					603	
10/11/2016	607			105	<5	27.2	1010		
12/12/2016				109	<5	32.7		645	
12/14/2016	732	38.4	149				1140		
2/17/2017	849	47.3				36	1190		
2/21/2017			145	111	5.94			415	
4/17/2017	853	38.3	145	108	<5	39.5	1200		
4/18/2017								461	
6/19/2017		35.4	190						
6/20/2017				108		33		541	
6/21/2017	537				<5		1020		
8/7/2017		39	119			35.3			
8/8/2017	664			114	<5		1110	590	
10/16/2017		46.9	106			45.4		206	
10/17/2017	835			135	<5		1210		
11/28/2017	779 (R)						1140 (R)		
3/5/2018		51.4							
3/6/2018			87.3	122	<5	162		53.7	123
3/7/2018	824						1110		
6/19/2018		37.3	136					489	134
6/20/2018	210						1090		
6/21/2018				119	<5	51.3			
8/27/2018		34.3	94.7						125
8/28/2018						52.2		96.6	
8/29/2018	400			120	<5		1070		
3/18/2019			223						
3/19/2019		42.8		85	<5	48			134
3/20/2019	351						1050	442	
8/6/2019			276						139
8/7/2019	327	28.8		112	<5	47	837	529	
4/7/2020	496	18.6	123	58.9	13.6	41.5	888	373	143
9/18/2020	403	36.5	100	61.9	19.1	46.9	924	356	151
4/5/2021	338	27.6	99.7	57.4	27.3	60.1	952	237	154
9/1/2021	333	32.3	82.7	53.7	22.7	50.2	1010	303	154
4/20/2022	297	48.3	72.8	44.7	18.9	58.4	1030	293	158
9/14/2022	319	31.2	67.1	49.9	16.4	49.5	978	151	220
4/10/2023									147
4/11/2023	254		72.2				1150	215	
4/12/2023		39.8		45.8	20.5	54			
9/18/2023		57.4							208
9/19/2023	365		94.2				1440	303	
9/20/2023				53.4	10.1	53.1			
4/11/2024		49.6							160
4/12/2024			65.7					138	
4/15/2024	256			46.3	18.1	56.1	1160		

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-23 (bg)	MW-24	MW-26	MW-27
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
10/16/2017				
10/17/2017				
11/28/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	38.4	101		
6/21/2018				
8/27/2018	31.7	70		
8/28/2018				
8/29/2018				
3/18/2019		90.8		
3/19/2019	26.2			
3/20/2019				
8/6/2019	29.7	169		
8/7/2019				
4/7/2020	25.5	164		
9/18/2020	25.8	81	376	119
4/5/2021	35.5	91.2	341	7.63
9/1/2021	25.8	59.3	358	111
4/20/2022	25.4	48.5	322	30.7
9/14/2022	23	44.5	313	38.2
4/10/2023				
4/11/2023		87.8		
4/12/2023	25		72.5	5.13
9/18/2023	28.6			
9/19/2023		62.9		
9/20/2023			380	27
4/11/2024	21.8			
4/12/2024		43.8	309	36.7
4/15/2024				

Prediction Limit

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-22 (bg)	MW-23 (bg)
10/10/2016	<0.005	<0.005		
8/7/2017	<0.005	<0.005		
8/6/2019	<0.005		<0.005	<0.005
8/7/2019		<0.005		
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/10/2023			<0.005	
4/11/2023	<0.005			
4/12/2023		<0.005		<0.005
9/18/2023		<0.005	<0.005	<0.005
9/19/2023	<0.005			
4/11/2024		<0.005	<0.005	<0.005
4/12/2024	<0.005			

Prediction Limit

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 1:03 PM View: State Wells Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-22 (bg)	MW-23 (bg)
10/10/2016	<0.02	<0.02		
8/7/2017	<0.02	<0.02		
8/6/2019	<0.02		<0.02	<0.02
8/7/2019		<0.02		
4/7/2020	<0.02	<0.02	<0.02	<0.02
9/18/2020	<0.02	<0.02	<0.02	<0.02
4/5/2021	<0.02	<0.02	<0.02	<0.02
9/1/2021	<0.02	<0.02	<0.02	<0.02
4/20/2022	<0.02	<0.02	<0.02	<0.02
9/14/2022	<0.02	<0.02	<0.02	<0.02
4/10/2023			<0.02	
4/11/2023	<0.02			
4/12/2023		<0.02		<0.02
9/18/2023		<0.02	<0.02	<0.02
9/19/2023	<0.02			
4/11/2024		<0.02	<0.02	<0.02
4/12/2024	<0.02			

FIGURE E.

Interwell Prediction Limits - Monitoring Wells (September 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:27 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-14A	0.322	9/11/2024	17.7	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	9/11/2024	8.5	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	9/10/2024	3.68	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	9/11/2024	4.19	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	9/11/2024	3.02	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	9/11/2024	327	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	9/12/2024	40.5	Yes	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Magnesium (mg/L)	MW-14A	44.62	9/11/2024	134	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.62	9/11/2024	53.8	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.62	9/11/2024	45.3	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Selenium (mg/L)	MW-21	0.005	9/10/2024	0.00666	Yes	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	MW-14A	366	9/11/2024	1110	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Zinc (mg/L)	MW-14A	0.02	9/11/2024	0.022	Yes	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2

Interwell Prediction Limits - Monitoring Wells (September 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:27 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bq N	Bq Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	MW-14A	0.552	9/11/2024	0.05ND	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-26	0.552	9/11/2024	0.05ND	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-27	0.552	9/11/2024	0.0529	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Aluminum (mg/L)	MW-4B	0.552	9/12/2024	0.05ND	No	48	n/a	n/a	77.08	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	n/a	0.00784	n/a	9 future	n/a	75	n/a	n/a	56	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-14A	0.271	9/11/2024	0.0338	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-15A	0.271	9/11/2024	0.0335	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-21	0.271	9/10/2024	0.0555	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-24	0.271	9/11/2024	0.0885	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-26	0.271	9/11/2024	0.0643	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-27	0.271	9/11/2024	0.0795	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-4B	0.271	9/12/2024	0.184	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-5B	0.271	9/12/2024	0.258	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-6A	0.271	9/12/2024	0.249	No	75	n/a	n/a	0	n/a	n/a	0.0003413	NP Inter (normality) 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	9 future	n/a	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-14A	0.322	9/11/2024	17.7	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-15A	0.322	9/11/2024	8.5	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-21	0.322	9/10/2024	3.68	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-24	0.322	9/11/2024	0.1ND	No	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-26	0.322	9/11/2024	4.19	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-27	0.322	9/11/2024	3.02	Yes	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Boron (mg/L)	MW-4B	0.322	9/12/2024	0.1ND	No	77	n/a	n/a	84.42	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Calcium (mg/L)	MW-14A	152	9/11/2024	327	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-15A	152	9/11/2024	129	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-21	152	9/10/2024	96.6	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-24	152	9/11/2024	73.6	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-26	152	9/11/2024	126	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-27	152	9/11/2024	63.1	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-4B	152	9/12/2024	102	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-5B	152	9/12/2024	123	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Calcium (mg/L)	MW-6A	152	9/12/2024	99.4	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-14A	30	9/11/2024	16.3	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-15A	30	9/11/2024	7.41	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-21	30	9/10/2024	13.5	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-24	30	9/11/2024	22.8	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-26	30	9/11/2024	17.3	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-27	30	9/11/2024	27.2	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-4B	30	9/12/2024	14.6	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-5B	30	9/12/2024	40.5	Yes	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Chloride (mg/L)	MW-6A	30	9/12/2024	14.4	No	77	n/a	n/a	27.27	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Cobalt (mg/L)	MW-4B	0.00558	9/12/2024	0.0028	No	76	n/a	n/a	39.47	n/a	n/a	0.0003325	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-26	0.005	9/11/2024	0.005ND	No	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-14A	1	9/11/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-15A	1	9/11/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-21	1	9/10/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-24	1	9/11/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-4B	1	9/12/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-5B	1	9/12/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	MW-6A	1	9/12/2024	1ND	No	76	n/a	n/a	89.47	n/a	n/a	0.0003325	NP Inter (NDs) 1 of 2
Iron (mg/L)	MW-14A	4.38	9/11/2024	0.1ND	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-26	4.38	9/11/2024	0.1ND	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-27	4.38	9/11/2024	0.1ND	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-4B	4.38	9/12/2024	0.797	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-5B	4.38	9/12/2024	2.06	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Iron (mg/L)	MW-6A	4.38	9/12/2024	3.6	No	48	n/a	n/a	35.42	n/a	n/a	0.0008083	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-21	0.00204	9/10/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-27	0.00204	9/11/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-4B	0.00204	9/12/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-5B	0.00204	9/12/2024	0.0005ND	No	75	n/a	n/a	90.67	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	MW-14A	44.62	9/11/2024	134	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-15A	44.62	9/11/2024	53.8	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-21	44.62	9/10/2024	41.3	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-24	44.62	9/11/2024	31	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-26	44.62	9/11/2024	45.3	Yes	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-27	44.62	9/11/2024	27.9	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-4B	44.62	9/12/2024	35.9	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-5B	44.62	9/12/2024	36.4	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Magnesium (mg/L)	MW-6A	44.62	9/12/2024	30.8	No	48	5.624	0.4593	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2

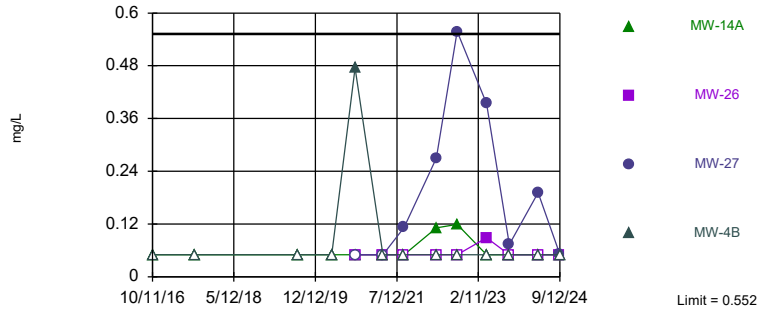
Interwell Prediction Limits - Monitoring Wells (September 2024) - All Results Page 2

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:27 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Manganese (mg/L)	MW-14A	1.2	9/11/2024	0.005ND	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-24	1.2	9/11/2024	0.0111	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-26	1.2	9/11/2024	0.0458	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-27	1.2	9/11/2024	0.0168	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-4B	1.2	9/12/2024	0.491	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-5B	1.2	9/12/2024	0.554	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Manganese (mg/L)	MW-6A	1.2	9/12/2024	0.118	No	47	0.4948	0.2606	0	None	sqrt(x)	0.0002787	Param Inter 1 of 2
Molybdenum (mg/L)	MW-21	0.00822	9/10/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-24	0.00822	9/11/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-26	0.00822	9/11/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-4B	0.00822	9/12/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	MW-5B	0.00822	9/12/2024	0.002ND	No	77	n/a	n/a	64.94	n/a	n/a	0.0003238	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-21	0.00628	9/10/2024	0.005ND	No	48	n/a	n/a	97.92	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-4B	0.00628	9/12/2024	0.005ND	No	48	n/a	n/a	97.92	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-14A	0.005	9/11/2024	0.005ND	No	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-15A	0.005	9/11/2024	0.005ND	No	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-21	0.005	9/10/2024	0.00666	Yes	75	n/a	n/a	100	n/a	n/a	0.0003413	NP Inter (NDs) 1 of 2
Strontium (mg/L)	MW-14A	0.2991	9/11/2024	0.298	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-15A	0.2991	9/11/2024	0.117	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-21	0.2991	9/10/2024	0.181	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-24	0.2991	9/11/2024	0.0754	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-26	0.2991	9/11/2024	0.127	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-27	0.2991	9/11/2024	0.113	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-4B	0.2991	9/12/2024	0.103	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-5B	0.2991	9/12/2024	0.162	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Strontium (mg/L)	MW-6A	0.2991	9/12/2024	0.188	No	48	0.1476	0.06588	0	None	No	0.0002787	Param Inter 1 of 2
Sulfate (mg/L)	MW-14A	366	9/11/2024	1110	Yes	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-15A	366	9/11/2024	273	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-21	366	9/10/2024	248	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-24	366	9/11/2024	43.8	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-26	366	9/11/2024	234	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-27	366	9/11/2024	85	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-4B	366	9/12/2024	65.8	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-5B	366	9/12/2024	50.4	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MW-6A	366	9/12/2024	16.3	No	77	n/a	n/a	0	n/a	n/a	0.0003238	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.005	n/a	9 future	n/a	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2
Zinc (mg/L)	MW-14A	0.02	9/11/2024	0.022	Yes	48	n/a	n/a	100	n/a	n/a	0.0008083	NP Inter (NDs) 1 of 2

Within Limit

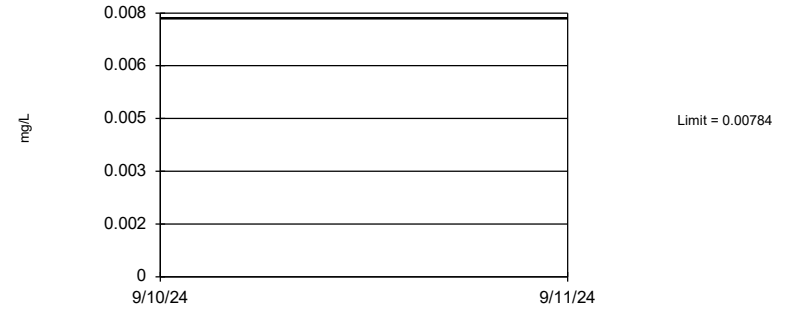
Prediction Limit
 Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 48 background values. 77.08% NDs. Annual per-constituent alpha = 0.01445. Individual comparison alpha = 0.0008083 (1 of 2). Comparing 4 points to limit. Assumes 5 future values.

Constituent: Aluminum Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
 Interwell Non-parametric

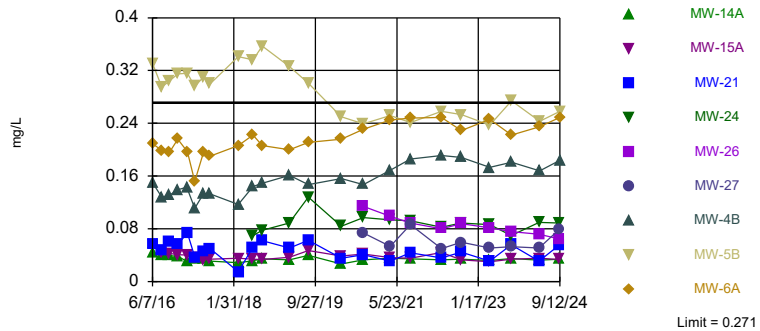


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 75 background values. 56% NDs. Annual per-constituent alpha = 0.006126. Individual comparison alpha = 0.0003413 (1 of 2). Assumes 9 future values.

Constituent: Arsenic Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
 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 75 background values. Annual per-constituent alpha = 0.006126. Individual comparison alpha = 0.0003413 (1 of 2). Comparing 9 points to limit.

Constituent: Barium Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
 Interwell Non-parametric

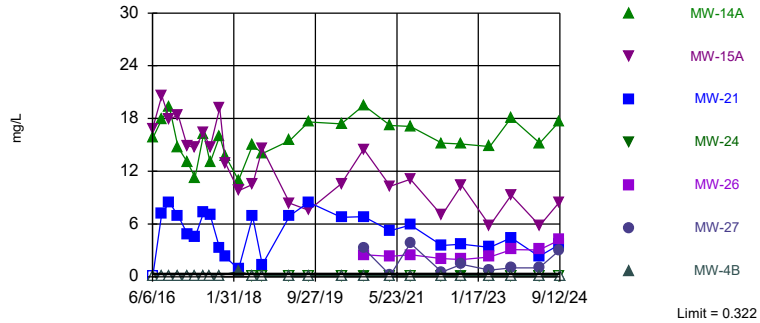


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 75) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.006126. Individual comparison alpha = 0.0003413 (1 of 2). Assumes 9 future values.

Constituent: Beryllium Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A, MW-15A, MW-21,
MW-26, MW-27

Prediction Limit
Interwell Non-parametric

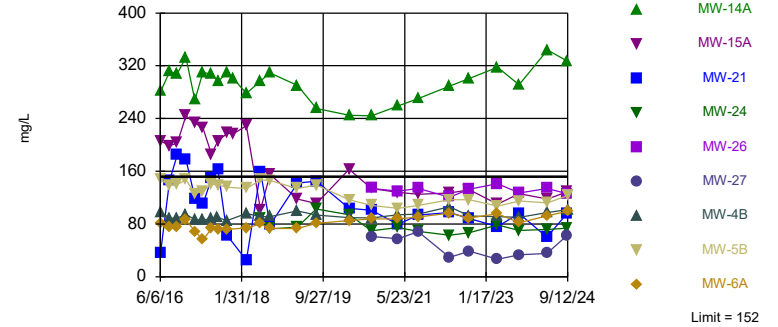


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 77 background values. 84.42% NDs. Annual per-constituent alpha = 0.005812. Individual comparison alpha = 0.0003238 (1 of 2). Comparing 7 points to limit. Assumes 2 future values.

Constituent: Boron Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A

Prediction Limit
Interwell Non-parametric

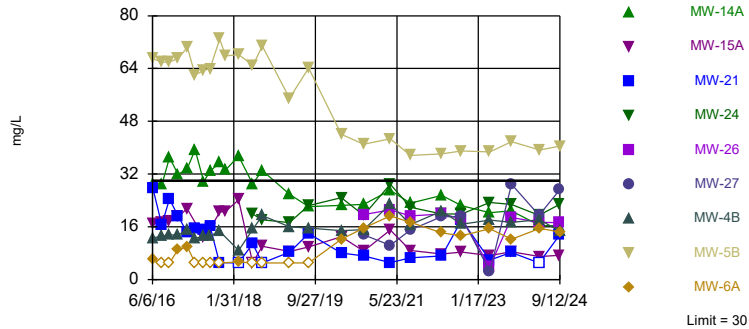


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 77 background values. Annual per-constituent alpha = 0.005812. Individual comparison alpha = 0.0003238 (1 of 2). Comparing 9 points to limit.

Constituent: Calcium Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-5B

Prediction Limit
Interwell Non-parametric

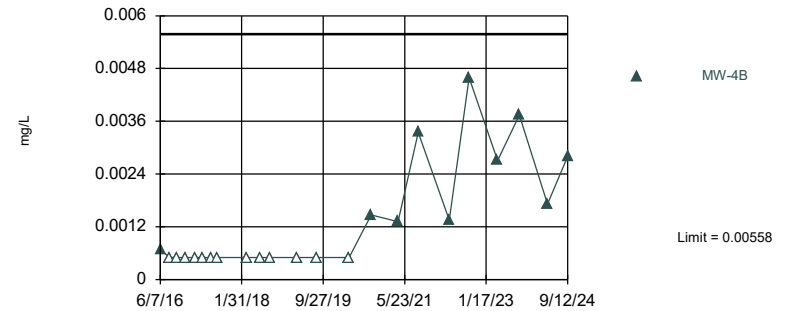


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 77 background values. 27.27% NDs. Annual per-constituent alpha = 0.005812. Individual comparison alpha = 0.0003238 (1 of 2). Comparing 9 points to limit.

Constituent: Chloride Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

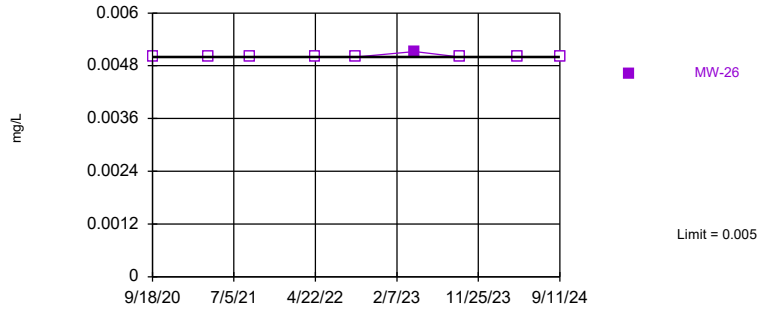


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 76 background values. 39.47% NDs. Annual per-constituent alpha = 0.005969. Individual comparison alpha = 0.0003235 (1 of 2). Assumes 8 future values.

Constituent: Cobalt Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

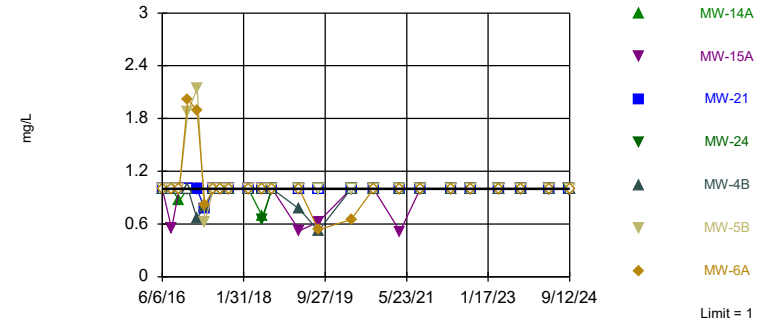


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 48) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.01445. Individual comparison alpha = 0.0008083 (1 of 2). Assumes 8 future values.

Constituent: Copper Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

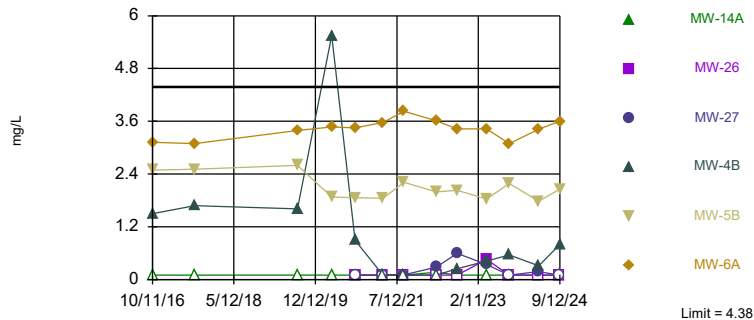


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 76 background values. 89.47% NDs. Annual per-constituent alpha = 0.005969. Individual comparison alpha = 0.0003325 (1 of 2). Comparing 7 points to limit. Assumes 2 future values.

Constituent: Fluoride Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

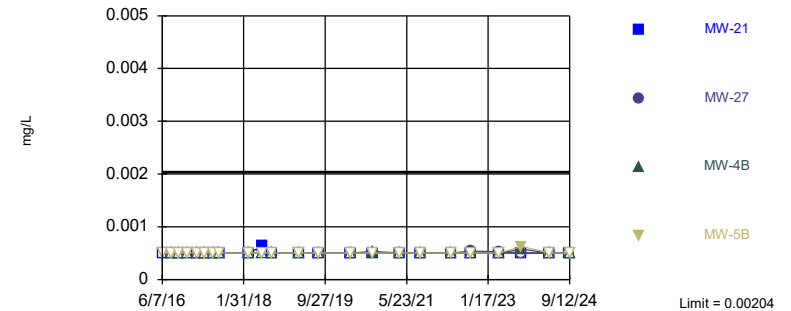


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 48 background values. 35.42% NDs. Annual per-constituent alpha = 0.01445. Individual comparison alpha = 0.0008083 (1 of 2). Comparing 6 points to limit. Assumes 3 future values.

Constituent: Iron Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

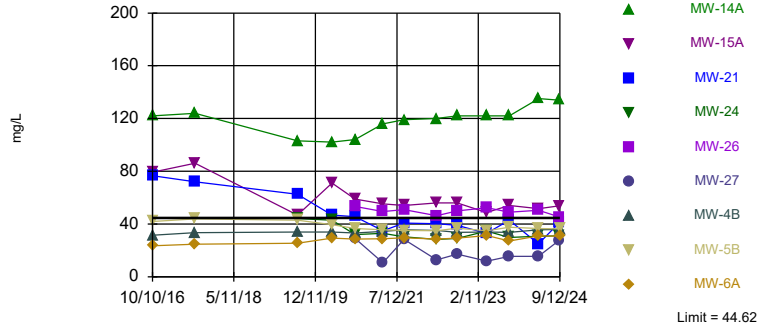


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 75 background values. 90.67% NDs. Annual per-constituent alpha = 0.006126. Individual comparison alpha = 0.0003413 (1 of 2). Comparing 4 points to limit. Assumes 5 future values.

Constituent: Lead Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A, MW-15A, MW-26

Prediction Limit
Interwell Parametric

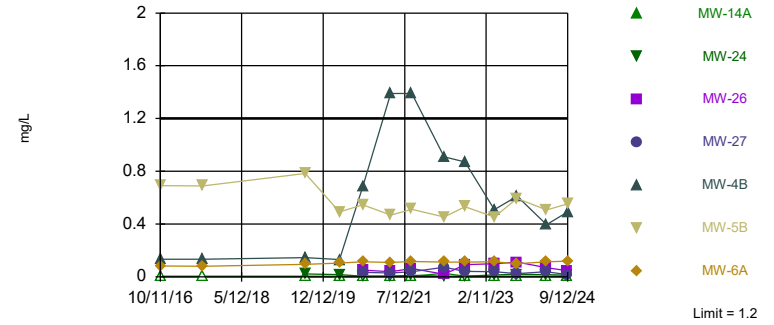


Background Data Summary (based on square root transformation): Mean=5.624, Std. Dev.=0.4593, n=48. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9369, critical = 0.929. Kappa = 2.3 (c=21, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0002787. Comparing 9 points to limit.

Constituent: Magnesium Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

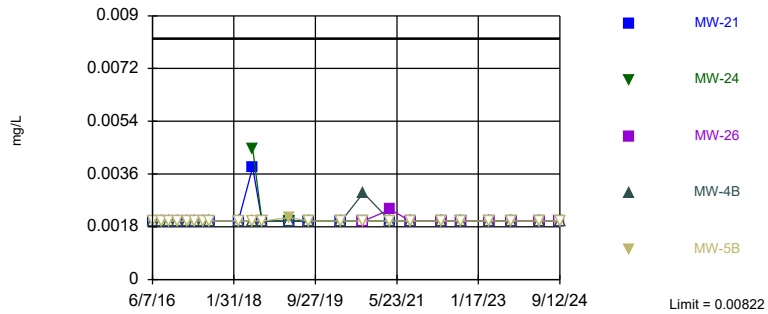


Background Data Summary (based on square root transformation): Mean=0.4948, Std. Dev.=0.2606, n=47. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9387, critical = 0.928. Kappa = 2.304 (c=21, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0002787. Comparing 7 points to limit. Assumes 2 future values.

Constituent: Manganese Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

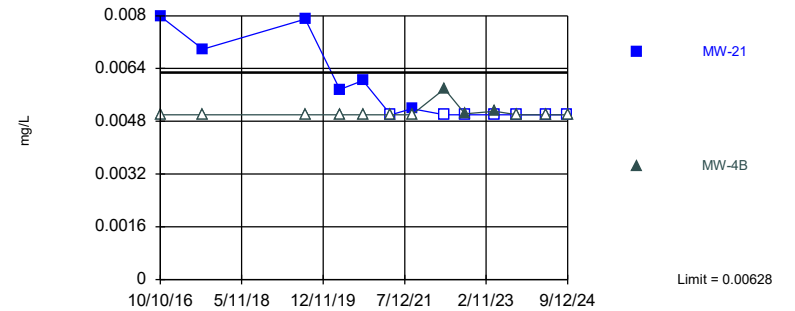


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 77 background values. 64.94% NDs. Annual per-constituent alpha = 0.005812. Individual comparison alpha = 0.0003238 (1 of 2). Comparing 5 points to limit. Assumes 4 future values.

Constituent: Molybdenum Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

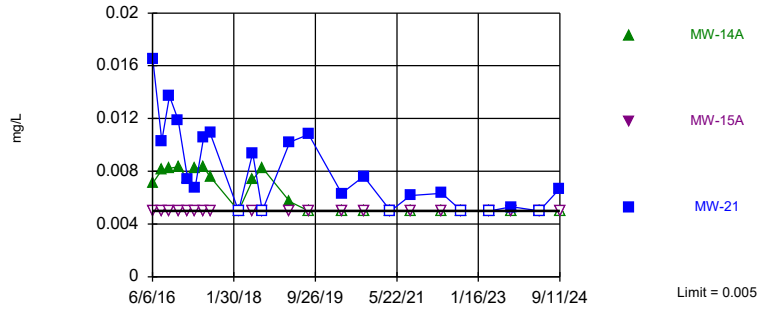


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 48 background values. 97.92% NDs. Annual per-constituent alpha = 0.01445. Individual comparison alpha = 0.0008083 (1 of 2). Comparing 2 points to limit. Assumes 7 future values.

Constituent: Nickel Analysis Run 11/7/2024 1:24 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-21

Prediction Limit
Interwell Non-parametric

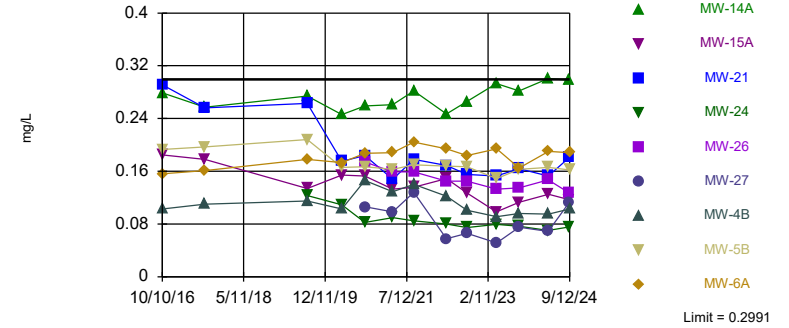


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 75) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.006126. Individual comparison alpha = 0.0003413 (1 of 2). Comparing 3 points to limit. Assumes 6 future values.

Constituent: Selenium Analysis Run 11/7/2024 1:25 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

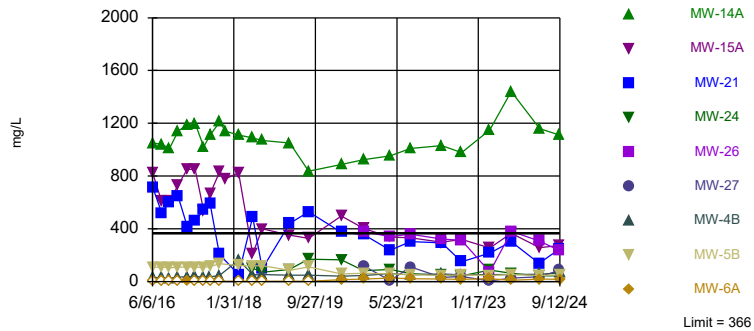


Background Data Summary: Mean=0.1476, Std. Dev.=0.06588, n=48. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9291, critical = 0.929. Kappa = 2.3 (c=21, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0002787. Comparing 9 points to limit.

Constituent: Strontium Analysis Run 11/7/2024 1:25 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A

Prediction Limit
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 77 background values. Annual per-constituent alpha = 0.005812. Individual comparison alpha = 0.0003238 (1 of 2). Comparing 9 points to limit.

Constituent: Sulfate Analysis Run 11/7/2024 1:25 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
Interwell Non-parametric

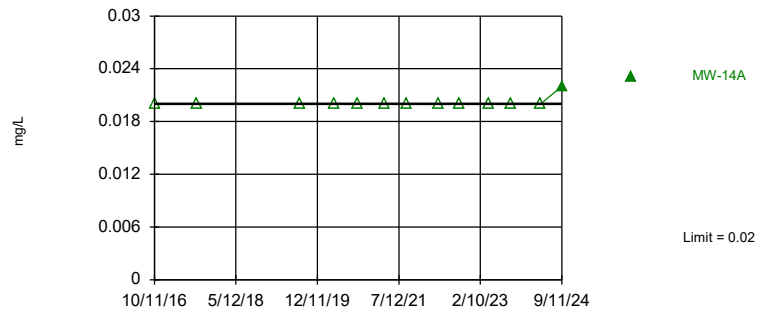


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 48) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.01445. Individual comparison alpha = 0.0008083 (1 of 2). Assumes 9 future values.

Constituent: Vanadium Analysis Run 11/7/2024 1:25 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: MW-14A

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 48) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.01445. Individual comparison alpha = 0.0008083 (1 of 2). Assumes 8 future values.

Prediction Limit

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-4B	MW-23 (bg)	MW-22 (bg)	MW-26	MW-27
10/10/2016	<0.05	0.0826						
10/11/2016			<0.05	<0.05				
8/7/2017	<0.05	<0.05		<0.05				
8/8/2017			<0.05					
8/6/2019	<0.05				0.253	<0.05		
8/7/2019		<0.05	<0.05	<0.05				
4/7/2020	<0.05	<0.05	<0.05	<0.05	0.552	<0.05		
9/18/2020	<0.05	<0.05	<0.05	0.475	<0.05	<0.05	<0.05	<0.05
4/5/2021	<0.05	<0.05	<0.05	<0.05	0.39	<0.05	<0.05	<0.05
9/1/2021	<0.05	<0.05	<0.05	<0.05	0.135	<0.05	<0.05	0.112
4/20/2022	<0.05	<0.05	0.111	<0.05	0.478	<0.05	<0.05	0.27
9/14/2022	<0.05	<0.05	0.119	<0.05	0.142	<0.05	<0.05	0.558
4/10/2023						<0.05		
4/11/2023	<0.05		<0.05					
4/12/2023		<0.05		<0.05	0.233		0.0884	0.394
9/18/2023		<0.05			0.105	<0.05		
9/19/2023	<0.05		<0.05					
9/20/2023				<0.05			<0.05	0.0737
4/11/2024		<0.05			0.243	<0.05		
4/12/2024	<0.05						<0.05	0.191
4/15/2024			<0.05	<0.05				
9/10/2024		<0.05			0.168	<0.05		
9/11/2024	<0.05		<0.05				<0.05	0.0529
9/12/2024				<0.05				

Prediction Limit

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-22 (bg)	MW-23 (bg)
6/6/2016	0.00298			
6/7/2016		<0.002		
8/15/2016	0.00369			
8/16/2016		<0.002		
10/10/2016	0.00328	<0.002		
12/14/2016	0.00312	<0.002		
2/17/2017	0.00298			
2/21/2017		<0.002		
4/17/2017	<0.002	<0.002		
6/19/2017	0.00262	<0.002		
8/7/2017	0.00317	<0.002		
3/5/2018	<0.002			
3/6/2018		<0.002	<0.002	
6/19/2018	0.00211	<0.002	0.00245	
6/20/2018				<0.002
8/27/2018	0.0036	<0.002	0.00261	<0.002
3/18/2019		<0.002		
3/19/2019	0.0056		<0.002	<0.002
8/6/2019		<0.002	<0.002	<0.002
8/7/2019	0.00784			
4/7/2020	0.00697	<0.002	<0.002	<0.002
9/18/2020	0.00748	<0.002	<0.002	<0.002
4/5/2021	0.00393	<0.002	0.00289	<0.002
9/1/2021	0.00781	<0.002	0.00267	<0.002
4/20/2022	0.00371	<0.002	0.0034	<0.002
9/14/2022	0.00497	<0.002	0.00285	<0.002
4/10/2023			0.00421	
4/11/2023		0.00247		
4/12/2023	0.00224			<0.002
9/18/2023	0.00501		0.00421	<0.002
9/19/2023		<0.002		
4/11/2024	<0.002		0.00634	<0.002
4/12/2024		0.0039		
9/10/2024	0.00525		0.00749	<0.002
9/11/2024		0.00466		

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-4B	MW-6A	MW-21	MW-14A	MW-15A	MW-22 (bg)
6/6/2016	0.168							2.13 (o)	
6/7/2016		0.0861	0.331	0.15	0.209				
6/8/2016						0.0573	0.0443		
8/15/2016	0.161					0.0482	0.0402	0.044	
8/16/2016		0.0671	0.295	0.128	0.199				
10/10/2016	0.163	0.0706				0.0606			
10/11/2016			0.304	0.131	0.196		0.0391	0.0426	
12/12/2016			0.315	0.139	0.216	0.056			
12/14/2016	0.15	0.0645					0.0383	0.0406	
2/17/2017	0.151			0.143			0.0306	0.0402	
2/21/2017		0.0594 (F1)	0.316		0.197	0.0735			
4/17/2017	0.138	0.0636	0.296	0.111	0.152		0.0341	0.0364	
4/18/2017						0.0356			
6/19/2017	0.154	0.076							
6/20/2017			0.31	0.133		0.0461			
6/21/2017					0.197		0.0338	0.0327	
8/7/2017	0.157	0.0596		0.133					
8/8/2017			0.3		0.19	0.0499	0.031	0.0338	
3/5/2018	0.129								
3/6/2018		0.0617	0.341	0.117	0.206	0.0148			0.15
3/7/2018							0.0285	0.0352	
6/19/2018	0.162	0.0761				0.0515			0.184
6/20/2018							0.0314	0.0338	
6/21/2018			0.336	0.144	0.222				
8/27/2018	0.216	0.0649							0.181
8/28/2018				0.149		0.0622			
8/29/2018			0.357		0.206		0.0344	0.0335	
3/18/2019		0.0751							
3/19/2019	0.185		0.326	0.161	0.2				0.209
3/20/2019						0.0511	0.0328	0.037	
8/6/2019		0.0733							0.215
8/7/2019	0.215		0.301	0.147	0.211	0.0624	0.0398	0.047	
4/7/2020	0.199	0.0613	0.25	0.156	0.216	0.0352	0.0266	0.0389	0.222
9/18/2020	0.227	0.0549	0.239	0.147	0.231	0.0407	0.0328	0.0416	0.222
4/5/2021	0.196	0.0596	0.252	0.169	0.245	0.0309	0.0355	0.0365	0.242
9/1/2021	0.233	0.0623	0.241	0.186	0.248	0.0434	0.0345	0.0355	0.247
4/20/2022	0.208	0.0631	0.258	0.191	0.249	0.036	0.0327	0.0443	0.239
9/14/2022	0.223	0.0703	0.253	0.188	0.229	0.0447	0.034	0.0327	0.243
4/10/2023									0.227
4/11/2023		0.07				0.031	0.032	0.0299	
4/12/2023	0.19		0.237	0.173	0.246				
9/18/2023	0.233								0.256
9/19/2023		0.0782				0.0559	0.0348	0.0338	
9/20/2023			0.274	0.181	0.222				
4/11/2024	0.193								0.271
4/12/2024		0.0857				0.031			
4/15/2024			0.243	0.168	0.235		0.0323	0.0353	
9/10/2024	0.219					0.0555			0.268
9/11/2024		0.0944					0.0338	0.0335	
9/12/2024			0.258	0.184	0.249				

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-26	MW-27
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	0.0695	0.106		
6/21/2018				
8/27/2018	0.0776	0.0779		
8/28/2018				
8/29/2018				
3/18/2019	0.0889			
3/19/2019		0.0922		
3/20/2019				
8/6/2019	0.128	0.0635		
8/7/2019				
4/7/2020	0.084	0.0654		
9/18/2020	0.0969	0.0491	0.114	0.0738
4/5/2021	0.0936	0.0608	0.0989	0.0534
9/1/2021	0.0922	0.0497	0.0889	0.0862
4/20/2022	0.0826	0.0572	0.0802	0.0498
9/14/2022	0.0887	0.0507	0.0876	0.0594
4/10/2023				
4/11/2023	0.0863			
4/12/2023		0.0518	0.0815	0.0508
9/18/2023		0.0533		
9/19/2023	0.0698			
9/20/2023			0.0755	0.053
4/11/2024		0.0547		
4/12/2024	0.0899		0.0716	0.0511
4/15/2024				
9/10/2024		0.0521		
9/11/2024	0.0885		0.0643	0.0795
9/12/2024				

Prediction Limit

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-22 (bg)	MW-23 (bg)
6/6/2016	<0.001			
6/7/2016		<0.001		
8/15/2016	<0.001			
8/16/2016		<0.001		
10/10/2016	<0.001	<0.001		
12/14/2016	<0.001	<0.001		
2/17/2017	<0.001			
2/21/2017		<0.001		
4/17/2017	<0.001	<0.001		
6/19/2017	<0.001	<0.001		
8/7/2017	<0.001	<0.001		
3/5/2018	<0.001			
3/6/2018		<0.001	<0.001	
6/19/2018	<0.001	<0.001	<0.001	
6/20/2018				<0.001
8/27/2018	<0.001	<0.001	<0.001	<0.001
3/18/2019		<0.001		
3/19/2019	<0.001		<0.001	<0.001
8/6/2019		<0.001	<0.001	<0.001
8/7/2019	<0.001			
4/7/2020	<0.001	<0.001	<0.001	<0.001
9/18/2020	<0.001	<0.001	<0.001	<0.001
4/5/2021	<0.001	<0.001	<0.001	<0.001
9/1/2021	<0.001	<0.001	<0.001	<0.001
4/20/2022	<0.001	<0.001	<0.001	<0.001
9/14/2022	<0.001	<0.001	<0.001	<0.001
4/10/2023			<0.001	
4/11/2023		<0.001		
4/12/2023	<0.001			<0.001
9/18/2023	<0.001		<0.001	<0.001
9/19/2023		<0.001		
4/11/2024	<0.001		<0.001	<0.001
4/12/2024		<0.001		
9/10/2024	<0.001		<0.001	<0.001
9/11/2024		<0.001		

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-4B	MW-21	MW-14A	MW-22 (bg)	MW-24	MW-23 (bg)
6/6/2016	<0.1	16.8							
6/7/2016			<0.1	<0.1					
6/8/2016					<0.1	15.8			
8/15/2016	<0.1	20.6			7.23	17.9			
8/16/2016			<0.1	<0.1					
10/10/2016	<0.1		<0.1		8.45				
10/11/2016		17.9		<0.1		19.3			
12/12/2016				<0.1	6.93				
12/14/2016	<0.1	18.4	<0.1			14.7			
2/17/2017	<0.1	14.9		<0.1		13.1			
2/21/2017			<0.1		4.87				
4/17/2017	<0.1	14.7	<0.1	<0.1		11.3			
4/18/2017					4.49				
6/19/2017	<0.1		<0.1						
6/20/2017				<0.1	7.36				
6/21/2017		16.4				16.3			
8/7/2017	<0.1		<0.1	<0.1					
8/8/2017		14.7			7.05	13			
10/16/2017	<0.1		<0.1	<0.1	3.33				
10/17/2017		19.2				16			
11/28/2017		12.9 (R)			2.24 (R)	13.7 (R)			
3/5/2018	<0.1								
3/6/2018			<0.1	0.66	0.885		<0.1		
3/7/2018		9.8				11			
6/19/2018	<0.1		<0.1		6.84		<0.1		
6/20/2018		10.5				15		<0.1	<0.1
6/21/2018				<0.1					
8/27/2018	<0.1		<0.1				<0.1	<0.1	<0.1
8/28/2018				<0.1	1.36				
8/29/2018		14.6				14			
3/18/2019			<0.1					<0.1	
3/19/2019	<0.1			<0.1			0.299		<0.1
3/20/2019		8.35			6.95	15.5			
8/6/2019			0.205				<0.1	<0.1	<0.1
8/7/2019	<0.1	7.56		<0.1	8.46	17.6			
4/7/2020	<0.1	10.6	<0.1	<0.1	6.76	17.4	<0.1	<0.1	<0.1
9/18/2020	<0.1	14.5	<0.1	<0.1	6.82	19.5	0.263	0.109	0.15
4/5/2021	<0.1	10.3	<0.1	<0.1	5.24	17.2	<0.1	<0.1	<0.1
9/1/2021	<0.1	11.1	<0.1	<0.1	5.88	17.1	<0.1	<0.1	<0.1
4/20/2022	<0.1	6.98	<0.1	<0.1	3.57	15.2	<0.1	<0.1	<0.1
9/14/2022	<0.1	10.4	<0.1	<0.1	3.69	15.1	0.322	0.134	0.204
4/10/2023							0.247		
4/11/2023		5.8	<0.1		3.35	14.8		0.114	
4/12/2023	<0.1			<0.1					0.145
9/18/2023	<0.1						0.207		0.128
9/19/2023		9.28	<0.1		4.42	18.1		<0.1	
9/20/2023				<0.1					
4/11/2024	<0.1						<0.1		<0.1
4/12/2024			<0.1		2.31			<0.1	
4/15/2024		5.8		<0.1		15.2			
9/10/2024	<0.1				3.68		0.243		0.126
9/11/2024		8.5	<0.1			17.7		<0.1	

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-4B	MW-21	MW-14A	MW-22 (bg)	MW-24	MW-23 (bg)
9/12/2024				<0.1					

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-27	MW-26
6/6/2016		
6/7/2016		
6/8/2016		
8/15/2016		
8/16/2016		
10/10/2016		
10/11/2016		
12/12/2016		
12/14/2016		
2/17/2017		
2/21/2017		
4/17/2017		
4/18/2017		
6/19/2017		
6/20/2017		
6/21/2017		
8/7/2017		
8/8/2017		
10/16/2017		
10/17/2017		
11/28/2017		
3/5/2018		
3/6/2018		
3/7/2018		
6/19/2018		
6/20/2018		
6/21/2018		
8/27/2018		
8/28/2018		
8/29/2018		
3/18/2019		
3/19/2019		
3/20/2019		
8/6/2019		
8/7/2019		
4/7/2020		
9/18/2020	3.25	2.5
4/5/2021	0.17	2.33
9/1/2021	3.82	2.49
4/20/2022	0.549	2.07
9/14/2022	1.41	1.97
4/10/2023		
4/11/2023		
4/12/2023	0.741	2.26
9/18/2023		
9/19/2023		
9/20/2023	1	3.08
4/11/2024		
4/12/2024	1.01	3.07
4/15/2024		
9/10/2024		
9/11/2024	3.02	4.19

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

MW-27

MW-26

9/12/2024

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-6A	MW-4B	MW-5B	MW-14A	MW-21	MW-22 (bg)
6/6/2016	89.3	206							
6/7/2016			152	81.4	98.2	147			
6/8/2016							281	37.2	
8/15/2016	80.7	199					311	146	
8/16/2016			117	75.4	88.8	139			
10/10/2016	83.3		118					185	
10/11/2016		203		75.7	89.3	140	308		
12/12/2016				85.6	94.5	147		178	
12/14/2016	86.5	244	109				333		
2/17/2017	81.2	233			86.8		268		
2/21/2017			89.9	68.8		126		118	
4/17/2017	79.2	226	96.5	56.3	85.9	130	310		
4/18/2017								110	
6/19/2017	83.6		113						
6/20/2017					88.7	140		149	
6/21/2017		186		72.9			307		
8/7/2017	85.5		91.3		89.7				
8/8/2017		206		71.2		139	296	163	
10/16/2017	83.3		77		85.3			62.3	
10/17/2017		218		71.9		136	310		
11/28/2017		217 (R)					301 (R)		
3/5/2018	77.3								
3/6/2018			74.7	74.1	95.8	134		25.1	69.8
3/7/2018		229					278		
6/19/2018	88.5		115					159	91.5
6/20/2018		102					297		
6/21/2018				80.1	91.4	147			
8/27/2018	85.4		83.6						80.7
8/28/2018					91.3			78.7	
8/29/2018		155		73.3		146	309		
3/18/2019			97.6						
3/19/2019	76.3			73.2	99.7	134			91.6
3/20/2019		118					290	142	
8/6/2019			132						83.8
8/7/2019	78.9	111		80.9	93.8	139	255	145	
4/7/2020	75.4	163	92.4	85.1	89.6	117	245	104	80.9
9/18/2020	74.2	134	77.7	87.9	89	108	244	101	75.5
4/5/2021	78.8	128	81.2	87.6	94.1	104	259	79.5	78.4
9/1/2021	80	125	78.3	90.6	95.1	108	270	93.5	79.4
4/20/2022	90.4	127	69.6	96.5	106	117	289	97.5	80.2
9/14/2022	82	132	76.8	89	92.3	117	301	88.2	79.6
4/10/2023									80.4
4/11/2023		110	78.2				318	76	
4/12/2023	83.7			95.4	91.3	107			
9/18/2023	84.7								79
9/19/2023		126	79.4				291	96	
9/20/2023				82.1	90.4	115			
4/11/2024	96.2								83.1
4/12/2024			84.2					59.9	
4/15/2024		118		92.4	97.7	112	344		
9/10/2024	97.8							96.6	84.3
9/11/2024		129	88.6				327		

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-6A	MW-4B	MW-5B	MW-14A	MW-21	MW-22 (bg)
9/12/2024				99.4	102	123			

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-26	MW-27
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
10/16/2017				
10/17/2017				
11/28/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	88	70.5		
6/21/2018				
8/27/2018	72.8	63.9		
8/28/2018				
8/29/2018				
3/18/2019	75			
3/19/2019		59.7		
3/20/2019				
8/6/2019	103	59.5		
8/7/2019				
4/7/2020	94.3	61		
9/18/2020	69.9	52.1	134	61
4/5/2021	74.6	56.3	130	57.6
9/1/2021	69	56.1	134	68.4
4/20/2022	62.8	54	121	29.6
9/14/2022	66.8	54.5	133	38.7
4/10/2023				
4/11/2023	78.6			
4/12/2023		55.3	141	26.8
9/18/2023		56		
9/19/2023	70.5			
9/20/2023			127	33.4
4/11/2024		59.7		
4/12/2024	71.6		134	35.4
4/15/2024				
9/10/2024		58		
9/11/2024	73.6		126	63.1

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

9/12/2024 MW-24 MW-23 (bg) MW-26 MW-27

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-6A	MW-5B	MW-4B	MW-08 (bg)	MW-14A	MW-21	MW-22 (bg)
6/6/2016	6.22	17.1							
6/7/2016			5.97	67	12.6	19.8			
6/8/2016							28.7	27.7	
8/15/2016	<5	17.2					28.7	16.6	
8/16/2016			<5	65.9	13.2	17.8			
10/10/2016	<5					16.2		24.4	
10/11/2016		17.6	<5	66	13.6		37		
12/12/2016			9.08	67	13.5			19.2	
12/14/2016	<5	19				17.2	31.9		
2/17/2017	<5	21.5			15.1		33.5		
2/21/2017			9.93	70.4		15.4		14.2	
4/17/2017	<5	47.4 (o)	<5	62.1	12.5	17.1	39.4		
4/18/2017								15.6	
6/19/2017	<5					14.1			
6/20/2017				63.4	13.2			15.1	
6/21/2017		12.8	<5				29.7		
8/7/2017	<5				13.2	14			
8/8/2017		15.4	<5	64			32.9	16.1	
10/16/2017	<5				14.7	14.4		5.09	
10/17/2017		20.5	<5	73			35.4		
11/28/2017		20.7 (R)		67.8 (R)			33.2 (R)		
3/5/2018	<5								
3/6/2018			5.33	68.2	8.81	14.5		<5	30
3/7/2018		24.2					37.4		
6/19/2018	<5					14.9		10.9	27.2
6/20/2018		<5					29		
6/21/2018			<5	65	15.3				
8/27/2018	<5					15.6			29.8
8/28/2018					19.4			<5	
8/29/2018		10.1	<5	70.8			33.1		
3/18/2019						16.1			
3/19/2019	<5		<5	55	16				27.6
3/20/2019		8.54					25.8	8.3	
8/6/2019						17.1			26.9
8/7/2019	<5	9.91	<5	64.1	15.6		22.1	14	
4/7/2020	<5	13	12.2	44	14.8	17.2	22.5	8.05	24.8
9/18/2020	<5	8.63	15.6	41	15.1	14.7	22.8	7.21	23.2
4/5/2021	<5	15	19.3	42.7	22.9	22.3	27.1	5.14	28.1
9/1/2021	<5	8.86	17.4	37.6	16.7	16.3	23.2	6.58	20
4/20/2022	<5	7.71	14.2	38.1	20.8	15.8	25.5	7.19	20.2
9/14/2022	<5	8.29	13.3	39	16.8	16.7	22.4	18	7.04
4/10/2023									18.2
4/11/2023		7.3				17.9	20.3	5.93	
4/12/2023	5.86		15.4	38.7	18				
9/18/2023	<5								18.4
9/19/2023		8.41				19.9	20.9	8.23	
9/20/2023			12.2	41.8	17.4				
4/11/2024	<5								15.8
4/12/2024						17.2		<5	
4/15/2024		7.01	15.5	39.3	18.1		16.4		
9/10/2024	9.65							13.5	16.6
9/11/2024		7.41				20.1	16.3		

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-6A	MW-5B	MW-4B	MW-08 (bg)	MW-14A	MW-21	MW-22 (bg)
9/12/2024			14.4	40.5	14.6				

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-27	MW-26
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
10/16/2017				
10/17/2017				
11/28/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	19.9	15.9		
6/21/2018				
8/27/2018	18.1	14.2		
8/28/2018				
8/29/2018				
3/18/2019	17.3			
3/19/2019		10.5		
3/20/2019				
8/6/2019	22.4	13.8		
8/7/2019				
4/7/2020	24.8	15.7		
9/18/2020	19.5	14.4	13.6	19.7
4/5/2021	28.9	21.4	10.4	21.1
9/1/2021	21.9	15.2	15	19.3
4/20/2022	19.9	16.9	19.1	19.9
9/14/2022	19.9	16.2	19	18.4
4/10/2023				
4/11/2023	23.4			
4/12/2023		17.7	2.45	3.83
9/18/2023		19.2		
9/19/2023	22.8			
9/20/2023			28.9	18.8
4/11/2024		19.2		
4/12/2024	19.5		19.5	17.4
4/15/2024				
9/10/2024		21.7		
9/11/2024	22.8		27.2	17.3

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

9/12/2024 MW-24 MW-23 (bg) MW-27 MW-26

Prediction Limit

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-4B	MW-22 (bg)	MW-23 (bg)
6/6/2016	0.000555				
6/7/2016		<0.0005	0.000681		
8/15/2016	<0.0005				
8/16/2016		<0.0005	<0.0005		
10/10/2016	0.000523	<0.0005			
10/11/2016			<0.0005		
12/12/2016			<0.0005		
12/14/2016	0.000638	<0.0005			
2/17/2017	0.000663		<0.0005		
2/21/2017		<0.0005			
4/17/2017	0.000779	<0.0005	<0.0005		
6/19/2017	0.000621	0.000601			
6/20/2017			<0.0005		
8/7/2017	0.000695	0.00051	<0.0005		
3/5/2018	0.000627				
3/6/2018		<0.0005	<0.0005	0.00142	
5/14/2018				0.0012	
6/19/2018	0.00107	<0.0005		0.00129	
6/20/2018					0.00161
6/21/2018			<0.0005		
8/27/2018	0.00088	<0.0005		0.00149	0.00066
8/28/2018			<0.0005		
3/18/2019		0.00177			
3/19/2019	0.000783		<0.0005	<0.0005	0.00176
8/6/2019		0.00558		<0.0005	<0.0005
8/7/2019	0.000572		<0.0005		
4/7/2020	0.000581	0.000517	<0.0005	<0.0005	0.000817
9/18/2020	0.000751	0.000738	0.00147	<0.0005	<0.0005
4/5/2021	0.000752	0.000839	0.00132	<0.0005	0.000517
9/1/2021	0.000576	0.00127	0.00335	<0.0005	<0.0005
4/20/2022	0.00104	0.00143	0.00135	<0.0005	0.000561
9/14/2022	0.00109	0.00164	0.00459	<0.0005	<0.0005
4/10/2023				<0.0005	
4/11/2023		0.0014			
4/12/2023	0.00142		0.00271		<0.0005
9/18/2023	0.000995			<0.0005	<0.0005
9/19/2023		0.00126			
9/20/2023			0.00374		
4/11/2024	0.00122			<0.0005	<0.0005
4/12/2024		0.0018			
4/15/2024			0.00172		
9/10/2024	0.000977			<0.0005	<0.0005
9/11/2024		0.00216			
9/12/2024			0.0028		

Prediction Limit

Constituent: Copper (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-23 (bg)	MW-22 (bg)	MW-26
10/10/2016	<0.005	<0.005			
8/7/2017	<0.005	<0.005			
8/6/2019	<0.005		<0.005	<0.005	
8/7/2019		<0.005			
4/7/2020	<0.005	<0.005	<0.005	<0.005	
9/18/2020	<0.005	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005	<0.005
4/10/2023				<0.005	
4/11/2023	<0.005				
4/12/2023		<0.005	<0.005		0.00512
9/18/2023		<0.005	<0.005	<0.005	
9/19/2023	<0.005				
9/20/2023					<0.005
4/11/2024		<0.005	<0.005	<0.005	
4/12/2024	<0.005				<0.005
9/10/2024		<0.005	<0.005	<0.005	
9/11/2024	<0.005				<0.005

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-15A	MW-10 (bg)	MW-08 (bg)	MW-4B	MW-5B	MW-6A	MW-21	MW-14A	MW-22 (bg)
6/6/2016	<1	0.731							
6/7/2016			<1	<1	<1	<1			
6/8/2016							<1	<1	
8/15/2016	0.549	<1					<1	<1	
8/16/2016			<1	<1	<1	<1			
10/10/2016		<1	<1				<1		
10/11/2016	<1			<1	<1	<1		0.867	
12/12/2016				<1	1.88	2.02	<1		
12/14/2016	<1	<1	0.72					<1	
2/17/2017	<1	<1		0.664				<1	
2/21/2017			<1		2.14	1.89	0.993		
4/17/2017	6.7 (o)	0.774	1.69 (o)	0.801	0.627	0.814		1.93 (o)	
4/18/2017							0.768		
6/19/2017		<1	<1						
6/20/2017				<1	<1		<1		
6/21/2017	<1					<1		<1	
8/7/2017		<1	<1	<1					
8/8/2017	<1				<1	<1	<1	<1	
10/16/2017		<1	<1	<1			<1		
10/17/2017	<1				<1	<1		<1	
3/5/2018		<1							
3/6/2018			<1	<1	<1	<1	<1		<1
3/7/2018	<1							<1	
6/19/2018		<1	0.826				<1		<1
6/20/2018	<1							0.684	
6/21/2018				<1	<1	<1			
8/27/2018		<1	<1						<1
8/28/2018				<1			<1		
8/29/2018	<1				<1	<1		<1	
3/18/2019			<1						
3/19/2019		<1		0.771	<1	<1			<1
3/20/2019	0.523						<1	<1	
8/6/2019			0.643						0.507
8/7/2019	0.625	0.596		0.525	<1	0.535	<1	<1	
4/7/2020	<1	<1	0.864	<1	<1	0.652	<1	<1	<1
9/18/2020	<1	<1	<1	<1	<1	<1	<1	<1	<1
4/5/2021	0.516	<1	<1	<1	<1	<1	<1	<1	<1
9/1/2021	<1	<1	<1	<1	<1	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1	<1	<1	<1	<1	<1
9/14/2022	<1	<1	<1	<1	<1	<1	<1	<1	<1
4/10/2023									<1
4/11/2023	<1		<1				<1	<1	
4/12/2023		<1		<1	<1	<1			
9/18/2023		<1							<1
9/19/2023	<1		<1				<1	<1	
9/20/2023				<1	<1	<1			
4/11/2024		<1							<1
4/12/2024			<1				<1		
4/15/2024	<1			<1	<1	<1		<1	
9/10/2024		<1					<1		<1
9/11/2024	<1		<1					<1	
9/12/2024				<1	<1	<1			

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-23 (bg)	MW-24
6/6/2016		
6/7/2016		
6/8/2016		
8/15/2016		
8/16/2016		
10/10/2016		
10/11/2016		
12/12/2016		
12/14/2016		
2/17/2017		
2/21/2017		
4/17/2017		
4/18/2017		
6/19/2017		
6/20/2017		
6/21/2017		
8/7/2017		
8/8/2017		
10/16/2017		
10/17/2017		
3/5/2018		
3/6/2018		
3/7/2018		
6/19/2018		
6/20/2018	<1	0.653
6/21/2018		
8/27/2018	<1	<1
8/28/2018		
8/29/2018		
3/18/2019		<1
3/19/2019	<1	
3/20/2019		
8/6/2019	<1	<1
8/7/2019		
4/7/2020	<1	<1
9/18/2020	<1	<1
4/5/2021	<1	<1
9/1/2021	<1	<1
4/20/2022	<1	<1
9/14/2022	<1	<1
4/10/2023		
4/11/2023		<1
4/12/2023	<1	
9/18/2023	<1	
9/19/2023		<1
9/20/2023		
4/11/2024	<1	
4/12/2024		<1
4/15/2024		
9/10/2024	<1	
9/11/2024		<1
9/12/2024		

Prediction Limit

Constituent: Iron (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-6A	MW-5B	MW-4B	MW-14A	MW-23 (bg)	MW-22 (bg)	MW-26
10/10/2016	<0.1	1.8							
10/11/2016			3.12	2.49	1.5	<0.1			
8/7/2017	<0.1	1.58			1.68				
8/8/2017			3.09	2.51		<0.1			
8/6/2019	<0.1						0.231	<0.1	
8/7/2019		3.33	3.39	2.6	1.61	<0.1			
4/7/2020	<0.1	3.36	3.47	1.88	5.55	<0.1	0.485	<0.1	
9/18/2020	<0.1	4.38	3.45	1.86	0.895	<0.1	<0.1	<0.1	<0.1
4/5/2021	0.167	2.08	3.57	1.85	<0.1	<0.1	0.348	<0.1	<0.1
9/1/2021	0.141	4.37	3.83	2.21	<0.1	<0.1	0.136	<0.1	<0.1
4/20/2022	0.565	2.49	3.61	1.99	<0.1	0.165	0.492	<0.1	<0.1
9/14/2022	0.609	2.7	3.43	2.03	0.25	<0.1	0.117	<0.1	<0.1
4/10/2023								<0.1	
4/11/2023	0.708					<0.1			
4/12/2023		1.09	3.43	1.83	0.423		0.21		0.456
9/18/2023		2.45					<0.1	<0.1	
9/19/2023	0.451					<0.1			
9/20/2023			3.09	2.18	0.559				<0.1
4/11/2024		0.982					0.239	<0.1	
4/12/2024	1.29								<0.1
4/15/2024			3.42	1.78	0.309	<0.1			
9/10/2024		2.86					0.16	0.189	
9/11/2024	1.53					<0.1			<0.1
9/12/2024			3.6	2.06	0.797				

Prediction Limit

Constituent: Iron (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

MW-27

10/10/2016	
10/11/2016	
8/7/2017	
8/8/2017	
8/6/2019	
8/7/2019	
4/7/2020	
9/18/2020	<0.1
4/5/2021	<0.1
9/1/2021	0.11
4/20/2022	0.281
9/14/2022	0.594
4/10/2023	
4/11/2023	
4/12/2023	0.338
9/18/2023	
9/19/2023	
9/20/2023	<0.1
4/11/2024	
4/12/2024	0.181
4/15/2024	
9/10/2024	
9/11/2024	<0.1
9/12/2024	

Prediction Limit

Constituent: Lead (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-08 (bg)	MW-5B	MW-21	MW-4B	MW-22 (bg)	MW-23 (bg)	MW-27
6/6/2016	<0.0005							
6/7/2016		<0.0005	<0.0005		0.00147 (o)			
6/8/2016				<0.0005				
8/15/2016	<0.0005			<0.0005				
8/16/2016		<0.0005	<0.0005		<0.0005			
10/10/2016	<0.0005	<0.0005		<0.0005				
10/11/2016			<0.0005		<0.0005			
12/12/2016			<0.0005	<0.0005	<0.0005			
12/14/2016	<0.0005	<0.0005						
2/17/2017	<0.0005				<0.0005			
2/21/2017		<0.0005	<0.0005	<0.0005				
4/17/2017	<0.0005	<0.0005	<0.0005		<0.0005			
4/18/2017				<0.0005				
6/19/2017	<0.0005	<0.0005						
6/20/2017			<0.0005	<0.0005	<0.0005			
8/7/2017	<0.0005	<0.0005			<0.0005			
8/8/2017			<0.0005	<0.0005				
3/5/2018	<0.0005							
3/6/2018		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
6/19/2018	<0.0005	<0.0005		0.000633		<0.0005		
6/20/2018							0.00151	
6/21/2018			<0.0005		<0.0005			
8/27/2018	<0.0005	<0.0005				<0.0005	0.000626	
8/28/2018				<0.0005	<0.0005			
8/29/2018			<0.0005					
3/18/2019		<0.0005						
3/19/2019	<0.0005		<0.0005		<0.0005	<0.0005	0.00204	
3/20/2019				<0.0005				
8/6/2019		<0.0005				<0.0005	0.000663	
8/7/2019	<0.0005		<0.0005	<0.0005	<0.0005			
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00116	
9/18/2020	<0.0005	<0.0005	<0.0005	<0.0005	0.000532	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000624	<0.0005
9/1/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4/20/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000596	<0.0005
9/14/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000536
4/10/2023						<0.0005		
4/11/2023		<0.0005		<0.0005				
4/12/2023	<0.0005		<0.0005		<0.0005		<0.0005	0.000528
9/18/2023	<0.0005					<0.0005	<0.0005	
9/19/2023		<0.0005		<0.0005				
9/20/2023			0.000627		0.000576			<0.0005
4/11/2024	<0.0005					<0.0005	<0.0005	
4/12/2024		<0.0005		<0.0005				<0.0005
4/15/2024			<0.0005		<0.0005			
9/10/2024	<0.0005			<0.0005		<0.0005	<0.0005	
9/11/2024		<0.0005						<0.0005
9/12/2024			<0.0005		<0.0005			

Prediction Limit

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-21	MW-10 (bg)	MW-14A	MW-4B	MW-5B	MW-15A	MW-6A	MW-22 (bg)
10/10/2016	44.1	76.6	33.8						
10/11/2016				122	31.4	42	79.3	23.5	
8/7/2017	36.4		37.8		33.4				
8/8/2017		72.1		124		43.8	86	24.7	
8/6/2019	50.1								33
8/7/2019		62.5	30	103	34	42.8	46.9	25.4	
4/7/2020	37.1	46.9	31.4	102	34	39.6	71	29.4	34.5
9/18/2020	31.8	45.6	31.9	104	33.2	36.6	59	28.5	31.1
4/5/2021	31.8	34.9	32.2	116	34.3	35.7	55.4	28.8	31
9/1/2021	31	40.8	31.3	119	35.6	35.2	54	29.6	31.4
4/20/2022	27.7	40.2	35	120	35.1	35	56	28.6	29.6
9/14/2022	30.1	39.1	33.3	122	33.6	36.8	56.1	29.4	31.8
4/10/2023									31.5
4/11/2023	31.1	33		122			48.7		
4/12/2023			34.5		33.9	34.8		31.2	
9/18/2023			34.7						32
9/19/2023	31.5	42.8		122			54		
9/20/2023					33.6	37.6		27.2	
4/11/2024			41.5						33
4/12/2024	32.7	24.9							
4/15/2024				135	35.6	36.5	51.6	31	
9/10/2024		41.3	41.1						33.1
9/11/2024	34.3			134			53.8		
9/12/2024					35.9	36.4		30.8	

Prediction Limit

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-27	MW-26
10/10/2016				
10/11/2016				
8/7/2017				
8/8/2017				
8/6/2019	44.2	24.7		
8/7/2019				
4/7/2020	43	28.5		
9/18/2020	32	24.3	29.2	53.4
4/5/2021	33	25.3	10.7	49.5
9/1/2021	30.3	24.8	28.4	50.8
4/20/2022	28.3	23.3	12.9	46.4
9/14/2022	29.1	24.6	17.3	49.9
4/10/2023				
4/11/2023	34.7			
4/12/2023		24.4	11.9	52.3
9/18/2023		25.4		
9/19/2023	29.9			
9/20/2023			15.5	48.9
4/11/2024		26.6		
4/12/2024	30.7		15.4	50.5
4/15/2024				
9/10/2024		25.9		
9/11/2024	31		27.9	45.3
9/12/2024				

Prediction Limit

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-4B	MW-14A	MW-5B	MW-6A	MW-24	MW-23 (bg)	MW-22 (bg)
10/10/2016	0.28	0.151							
10/11/2016			0.133	<0.01	0.69	0.0818			
8/7/2017	0.237	0.166	0.132						
8/8/2017				<0.01	0.689	0.0802			
8/6/2019	0.758						0.0223	0.0443	1.74 (o)
8/7/2019		0.177	0.145	<0.01	0.784	0.0941			
4/7/2020	0.119	0.184	0.13	<0.01	0.492	0.103	0.0156	0.0718	0.0896
9/18/2020	0.652	0.251	0.686	<0.01	0.546	0.113	<0.01	0.0127	1.36
4/5/2021	0.185	0.199	1.39	<0.01	0.467	0.109	<0.01	0.0634	0.175
9/1/2021	0.663	0.221	1.39	<0.01	0.512	0.117	0.0126	0.0444	1.27
4/20/2022	0.411	0.231	0.91	0.0264	0.454	0.112	<0.01	0.0588	0.106
9/14/2022	0.749	0.31	0.871	<0.01	0.532	0.112	<0.01	0.0222	0.795
4/10/2023									0.0633
4/11/2023	0.309			<0.01			0.0144		
4/12/2023		0.396	0.51		0.453	0.113		0.0372	
9/18/2023		0.266						0.0169	0.767
9/19/2023	0.37			<0.01			0.0183		
9/20/2023			0.612		0.594	0.0995			
4/11/2024		0.233						0.037	0.118
4/12/2024	0.509						0.0156		
4/15/2024			0.395	<0.01	0.506	0.114			
9/10/2024		0.255						0.0301	0.677
9/11/2024	0.491			<0.01			0.0111		
9/12/2024			0.491		0.554	0.118			

Prediction Limit

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-27	MW-26
10/10/2016		
10/11/2016		
8/7/2017		
8/8/2017		
8/6/2019		
8/7/2019		
4/7/2020		
9/18/2020	0.0345	0.0501
4/5/2021	0.0278	0.0395
9/1/2021	0.0375	0.0629
4/20/2022	0.0722	0.019
9/14/2022	0.0406	0.0917
4/10/2023		
4/11/2023		
4/12/2023	0.0378	0.0983
9/18/2023		
9/19/2023		
9/20/2023	0.0231	0.111
4/11/2024		
4/12/2024	0.0376	0.0697
4/15/2024		
9/10/2024		
9/11/2024	0.0168	0.0458
9/12/2024		

Prediction Limit

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-5B	MW-4B	MW-08 (bg)	MW-21	MW-22 (bg)	MW-24	MW-23 (bg)	MW-26
6/6/2016	<0.002								
6/7/2016		<0.002	<0.002	<0.002					
6/8/2016					<0.002				
8/15/2016	<0.002				<0.002				
8/16/2016		<0.002	<0.002	<0.002					
10/10/2016	<0.002			<0.002	<0.002				
10/11/2016		<0.002	<0.002						
12/12/2016		<0.002	<0.002		<0.002				
12/14/2016	<0.002			<0.002					
2/17/2017	<0.002		<0.002						
2/21/2017		<0.002		<0.002	<0.002				
4/17/2017	<0.002	<0.002	<0.002	<0.002					
4/18/2017					<0.002				
6/19/2017	<0.002			<0.002					
6/20/2017		<0.002	<0.002		<0.002				
8/7/2017	<0.002		<0.002	<0.002					
8/8/2017		<0.002			<0.002				
3/5/2018	<0.002								
3/6/2018		<0.002	<0.002	0.0022	<0.002	0.00568			
5/14/2018				<0.002		0.00385			
6/19/2018	<0.002			<0.002	0.00383	0.00423			
6/20/2018							0.00447	0.00822	
6/21/2018		<0.002	<0.002						
8/27/2018	0.0022			0.00224		0.00424	<0.002	0.00617	
8/28/2018			<0.002		<0.002				
8/29/2018		<0.002							
3/18/2019				<0.002			<0.002		
3/19/2019	0.00341	0.00212	<0.002			0.00263		<0.002	
3/20/2019					<0.002				
8/6/2019				<0.002		0.00574	<0.002	<0.002	
8/7/2019	0.00219	<0.002	<0.002		<0.002				
4/7/2020	0.00215	<0.002	<0.002	<0.002	<0.002	0.00297	<0.002	<0.002	
9/18/2020	<0.002	<0.002	0.00296	<0.002	<0.002	0.00529	<0.002	<0.002	<0.002
4/5/2021	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00239
9/1/2021	0.00217	<0.002	<0.002	0.00218	<0.002	0.00558	<0.002	<0.002	<0.002
4/20/2022	<0.002	<0.002	<0.002	<0.002	<0.002	0.0042	<0.002	<0.002	<0.002
9/14/2022	<0.002	<0.002	<0.002	<0.002	<0.002	0.00446	<0.002	<0.002	<0.002
4/10/2023						0.00364			
4/11/2023				<0.002	<0.002		<0.002		
4/12/2023	<0.002	<0.002	<0.002					<0.002	<0.002
9/18/2023	<0.002					0.00661		<0.002	
9/19/2023				<0.002	<0.002		<0.002		
9/20/2023		<0.002	<0.002						<0.002
4/11/2024	<0.002					0.00217		<0.002	
4/12/2024				<0.002	<0.002		<0.002		<0.002
4/15/2024		<0.002	<0.002						
9/10/2024	0.00287				<0.002	0.00578		<0.002	
9/11/2024				0.00205			<0.002		<0.002
9/12/2024		<0.002	<0.002						

Prediction Limit

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-21	MW-4B	MW-23 (bg)	MW-22 (bg)
10/10/2016	<0.005	<0.005	0.00799			
10/11/2016				<0.005		
8/7/2017	<0.005	<0.005		<0.005		
8/8/2017			0.00699			
8/6/2019	<0.005				<0.005	<0.005
8/7/2019		<0.005	0.0079	<0.005		
4/7/2020	<0.005	<0.005	0.00576	<0.005	<0.005	<0.005
9/18/2020	0.00628	<0.005	0.00604	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	0.00518	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	0.00578	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	0.00503	<0.005	<0.005
4/10/2023						<0.005
4/11/2023	<0.005		<0.005			
4/12/2023		<0.005		0.0051	<0.005	
9/18/2023		<0.005			<0.005	<0.005
9/19/2023	<0.005		<0.005			
9/20/2023				<0.005		
4/11/2024		<0.005			<0.005	<0.005
4/12/2024	<0.005		<0.005			
4/15/2024				<0.005		
9/10/2024		<0.005	<0.005		<0.005	<0.005
9/11/2024	<0.005					
9/12/2024				<0.005		

Prediction Limit

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-15A	MW-10 (bg)	MW-08 (bg)	MW-21	MW-14A	MW-22 (bg)	MW-23 (bg)
6/6/2016	<0.005	<0.005					
6/7/2016			<0.005				
6/8/2016				0.0165	0.0071		
8/15/2016	<0.005	<0.005		0.0103	0.00811		
8/16/2016			<0.005				
10/10/2016		<0.005	<0.005	0.0137			
10/11/2016	<0.005				0.00821		
12/12/2016				0.0119			
12/14/2016	<0.005	<0.005	<0.005		0.00834		
2/17/2017	<0.005	<0.005			0.00752		
2/21/2017			<0.005	0.0074			
4/17/2017	<0.005	<0.005	<0.005		0.00823		
4/18/2017				0.00674			
6/19/2017		<0.005	<0.005				
6/20/2017				0.0106			
6/21/2017	<0.005				0.00829		
8/7/2017		<0.005	<0.005				
8/8/2017	<0.005			0.0109	0.00759		
3/5/2018		<0.005					
3/6/2018			<0.005	<0.005		<0.005	
3/7/2018	0.00502				<0.005		
6/19/2018		<0.005	<0.005	0.00939		<0.005	
6/20/2018	<0.005				0.00739		<0.005
8/27/2018		<0.005	<0.005			<0.005	<0.005
8/28/2018				<0.005			
8/29/2018	<0.005				0.00827		
3/18/2019			<0.005				
3/19/2019		<0.005				<0.005	<0.005
3/20/2019	<0.005			0.0102	0.00569		
8/6/2019			<0.005			<0.005	<0.005
8/7/2019	<0.005	<0.005		0.0108	<0.005		
4/7/2020	<0.005	<0.005	<0.005	0.00632	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	0.00762	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	0.00617	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	0.00634	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
4/10/2023						<0.005	
4/11/2023	<0.005		<0.005	<0.005	<0.005		
4/12/2023		<0.005					<0.005
9/18/2023		<0.005				<0.005	<0.005
9/19/2023	<0.005		<0.005	0.0053	<0.005		
4/11/2024		<0.005				<0.005	<0.005
4/12/2024			<0.005	<0.005			
4/15/2024	<0.005				<0.005		
9/10/2024		<0.005		0.00666		<0.005	<0.005
9/11/2024	<0.005		<0.005		<0.005		

Prediction Limit

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-21	MW-10 (bg)	MW-14A	MW-4B	MW-5B	MW-15A	MW-6A	MW-22 (bg)
10/10/2016	0.338	0.291	0.156						
10/11/2016				0.279	0.103	0.193	0.185	0.156	
8/7/2017	0.243		0.165		0.11				
8/8/2017		0.256		0.257		0.197	0.178	0.161	
8/6/2019	0.323								0.133
8/7/2019		0.263	0.199	0.274	0.115	0.208	0.134	0.178	
4/7/2020	0.233	0.175	0.19	0.246	0.103	0.166	0.154	0.173	0.129
9/18/2020	0.176	0.184	0.19	0.259	0.146	0.167	0.153	0.187	0.108
4/5/2021	0.188	0.148	0.179	0.261	0.129	0.163	0.133	0.188	0.13
9/1/2021	0.172	0.178	0.227	0.282	0.14	0.17	0.136	0.204	0.115
4/20/2022	0.164	0.169	0.173	0.247	0.122	0.168	0.149	0.194	0.127
9/14/2022	0.16	0.155	0.191	0.266	0.101	0.167	0.127	0.184	0.111
4/10/2023									0.137
4/11/2023	0.148	0.153		0.293			0.0985		
4/12/2023			0.178		0.091	0.149		0.194	
9/18/2023			0.207						0.101
9/19/2023	0.151	0.164		0.282			0.113		
9/20/2023					0.0958	0.163		0.165	
4/11/2024			0.188						0.103
4/12/2024	0.172	0.153							
4/15/2024				0.301	0.0951	0.166	0.125	0.19	
9/10/2024		0.181	0.197						0.106
9/11/2024	0.181			0.298			0.117		
9/12/2024					0.103	0.162		0.188	

Prediction Limit

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-27	MW-26
10/10/2016				
10/11/2016				
8/7/2017				
8/8/2017				
8/6/2019	0.123	0.0872		
8/7/2019				
4/7/2020	0.109	0.0661		
9/18/2020	0.0824	0.0602	0.106	0.174
4/5/2021	0.0899	0.0639	0.0986	0.159
9/1/2021	0.085	0.068	0.128	0.159
4/20/2022	0.0802	0.0595	0.0575	0.145
9/14/2022	0.0746	0.0592	0.0659	0.145
4/10/2023				
4/11/2023	0.0795			
4/12/2023		0.0526	0.0512	0.133
9/18/2023		0.0601		
9/19/2023	0.0768			
9/20/2023			0.0752	0.135
4/11/2024		0.0585		
4/12/2024	0.0703		0.069	0.147
4/15/2024				
9/10/2024		0.0598		
9/11/2024	0.0754		0.113	0.127
9/12/2024				

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-6A	MW-4B	MW-5B	MW-14A	MW-21	MW-22 (bg)
6/6/2016	42.1	827							
6/7/2016			366	<5	32.2	109			
6/8/2016							1050	713	
8/15/2016	33.8	605					1040	520	
8/16/2016			187	<5	28.4	109			
10/10/2016	36.4		187						603
10/11/2016		607		<5	27.2	105	1010		
12/12/2016				<5	32.7	109			645
12/14/2016	38.4	732	149				1140		
2/17/2017	47.3	849			36		1190		
2/21/2017			145	5.94		111			415
4/17/2017	38.3	853	145	<5	39.5	108	1200		
4/18/2017									461
6/19/2017	35.4		190						
6/20/2017					33	108			541
6/21/2017		537		<5			1020		
8/7/2017	39		119		35.3				
8/8/2017		664		<5		114	1110		590
10/16/2017	46.9		106		45.4				206
10/17/2017		835		<5		135	1210		
11/28/2017		779 (R)					1140 (R)		
3/5/2018	51.4								
3/6/2018			87.3	<5	162	122		53.7	123
3/7/2018		824					1110		
6/19/2018	37.3		136					489	134
6/20/2018		210					1090		
6/21/2018				<5	51.3	119			
8/27/2018	34.3		94.7						125
8/28/2018					52.2			96.6	
8/29/2018		400		<5		120	1070		
3/18/2019			223						
3/19/2019	42.8			<5	48	85			134
3/20/2019		351					1050	442	
8/6/2019			276						139
8/7/2019	28.8	327		<5	47	112	837	529	
4/7/2020	18.6	496	123	13.6	41.5	58.9	888	373	143
9/18/2020	36.5	403	100	19.1	46.9	61.9	924	356	151
4/5/2021	27.6	338	99.7	27.3	60.1	57.4	952	237	154
9/1/2021	32.3	333	82.7	22.7	50.2	53.7	1010	303	154
4/20/2022	48.3	297	72.8	18.9	58.4	44.7	1030	293	158
9/14/2022	31.2	319	67.1	16.4	49.5	49.9	978	151	220
4/10/2023									147
4/11/2023		254	72.2				1150	215	
4/12/2023	39.8			20.5	54	45.8			
9/18/2023	57.4								208
9/19/2023		365	94.2				1440	303	
9/20/2023				10.1	53.1	53.4			
4/11/2024	49.6								160
4/12/2024			65.7					138	
4/15/2024		256		18.1	56.1	46.3	1160		
9/10/2024	59.9							248	161
9/11/2024		273	68.9				1110		

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-10 (bg)	MW-15A	MW-08 (bg)	MW-6A	MW-4B	MW-5B	MW-14A	MW-21	MW-22 (bg)
9/12/2024				16.3	65.8	50.4			

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-24	MW-23 (bg)	MW-26	MW-27
6/6/2016				
6/7/2016				
6/8/2016				
8/15/2016				
8/16/2016				
10/10/2016				
10/11/2016				
12/12/2016				
12/14/2016				
2/17/2017				
2/21/2017				
4/17/2017				
4/18/2017				
6/19/2017				
6/20/2017				
6/21/2017				
8/7/2017				
8/8/2017				
10/16/2017				
10/17/2017				
11/28/2017				
3/5/2018				
3/6/2018				
3/7/2018				
6/19/2018				
6/20/2018	101	38.4		
6/21/2018				
8/27/2018	70	31.7		
8/28/2018				
8/29/2018				
3/18/2019	90.8			
3/19/2019		26.2		
3/20/2019				
8/6/2019	169	29.7		
8/7/2019				
4/7/2020	164	25.5		
9/18/2020	81	25.8	376	119
4/5/2021	91.2	35.5	341	7.63
9/1/2021	59.3	25.8	358	111
4/20/2022	48.5	25.4	322	30.7
9/14/2022	44.5	23	313	38.2
4/10/2023				
4/11/2023	87.8			
4/12/2023		25	72.5	5.13
9/18/2023		28.6		
9/19/2023	62.9			
9/20/2023			380	27
4/11/2024		21.8		
4/12/2024	43.8		309	36.7
4/15/2024				
9/10/2024		23.8		
9/11/2024	43.8		234	85

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

9/12/2024 MW-24 MW-23 (bg) MW-26 MW-27

Prediction Limit

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-22 (bg)	MW-23 (bg)
10/10/2016	<0.005	<0.005		
8/7/2017	<0.005	<0.005		
8/6/2019	<0.005		<0.005	<0.005
8/7/2019		<0.005		
4/7/2020	<0.005	<0.005	<0.005	<0.005
9/18/2020	<0.005	<0.005	<0.005	<0.005
4/5/2021	<0.005	<0.005	<0.005	<0.005
9/1/2021	<0.005	<0.005	<0.005	<0.005
4/20/2022	<0.005	<0.005	<0.005	<0.005
9/14/2022	<0.005	<0.005	<0.005	<0.005
4/10/2023			<0.005	
4/11/2023	<0.005			
4/12/2023		<0.005		<0.005
9/18/2023		<0.005	<0.005	<0.005
9/19/2023	<0.005			
4/11/2024		<0.005	<0.005	<0.005
4/12/2024	<0.005			
9/10/2024		<0.005	<0.005	<0.005
9/11/2024	<0.005			

Prediction Limit

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 1:27 PM View: State Wells Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	MW-08 (bg)	MW-10 (bg)	MW-14A	MW-23 (bg)	MW-22 (bg)
10/10/2016	<0.02	<0.02			
10/11/2016			<0.02		
8/7/2017	<0.02	<0.02			
8/8/2017			<0.02		
8/6/2019	<0.02			<0.02	<0.02
8/7/2019		<0.02	<0.02		
4/7/2020	<0.02	<0.02	<0.02	<0.02	<0.02
9/18/2020	<0.02	<0.02	<0.02	<0.02	<0.02
4/5/2021	<0.02	<0.02	<0.02	<0.02	<0.02
9/1/2021	<0.02	<0.02	<0.02	<0.02	<0.02
4/20/2022	<0.02	<0.02	<0.02	<0.02	<0.02
9/14/2022	<0.02	<0.02	<0.02	<0.02	<0.02
4/10/2023					<0.02
4/11/2023	<0.02		<0.02		
4/12/2023		<0.02		<0.02	
9/18/2023		<0.02		<0.02	<0.02
9/19/2023	<0.02		<0.02		
4/11/2024		<0.02		<0.02	<0.02
4/12/2024	<0.02				
4/15/2024			<0.02		
9/10/2024		<0.02		<0.02	<0.02
9/11/2024	<0.02		0.022		

FIGURE F.

Trend Tests - Monitoring Wells Prediction Limit Exceedances - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:30 PM

<u>Constituent</u>	<u>Well</u>	<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>	<u>Method</u>
Boron (mg/L)	MW-15A	-1.395	-198	-111	Yes	25	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-08 (bg)	-4.322	-114	-105	Yes	24	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-22 (bg)	-2.242	-77	-53	Yes	15	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-23 (bg)	1.058	56	48	Yes	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-5B	-4.247	-157	-111	Yes	25	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-21	-0.0008179	-128	-98	Yes	23	26.09	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-08 (bg)	-14.03	-178	-105	Yes	24	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-22 (bg)	7.15	81	53	Yes	15	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-23 (bg)	-1.122	-54	-48	Yes	14	0	n/a	n/a	0.01	NP

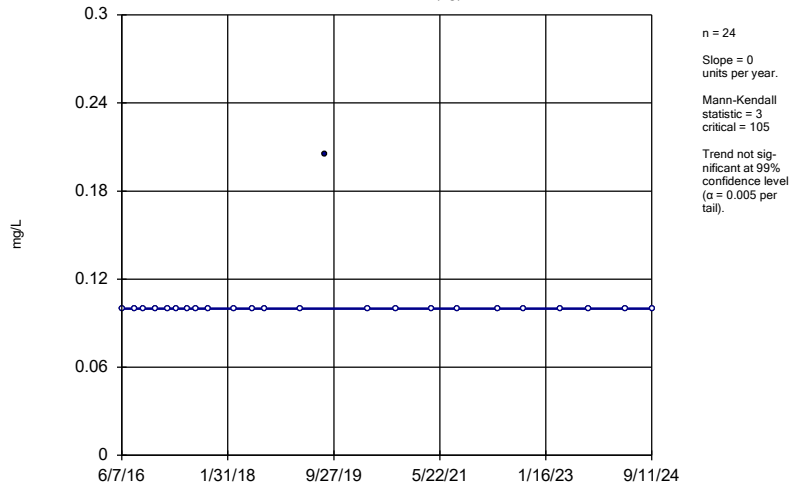
Trend Tests - Monitoring Wells Prediction Limit Exceedances - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:30 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-08 (bg)	0	3	105	No	24	95.83	n/a	n/a	0.01	NP
Boron (mg/L)	MW-10 (bg)	0	0	105	No	24	100	n/a	n/a	0.01	NP
Boron (mg/L)	MW-14A	0.2089	45	111	No	25	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-15A	-1.395	-198	-111	Yes	25	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-21	-0.2935	-72	-111	No	25	4	n/a	n/a	0.01	NP
Boron (mg/L)	MW-22 (bg)	0	19	53	No	15	60	n/a	n/a	0.01	NP
Boron (mg/L)	MW-23 (bg)	0	23	48	No	14	64.29	n/a	n/a	0.01	NP
Boron (mg/L)	MW-26	0.2662	10	25	No	9	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-27	0.2145	4	25	No	9	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-08 (bg)	-4.322	-114	-105	Yes	24	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-10 (bg)	0.2249	19	105	No	24	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-14A	-1.168	-20	-111	No	25	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-22 (bg)	0.1239	3	53	No	15	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-23 (bg)	-1.14	-32	-48	No	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-08 (bg)	0.2664	68	105	No	24	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-10 (bg)	0	18	105	No	24	87.5	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-22 (bg)	-2.242	-77	-53	Yes	15	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-23 (bg)	1.058	56	48	Yes	14	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-5B	-4.247	-157	-111	Yes	25	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-08 (bg)	-1.014	-25	-43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-10 (bg)	1.022	34	43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-14A	4.303	38	43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-15A	-3.028	-37	-43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-22 (bg)	0.2483	12	34	No	11	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-23 (bg)	0.1699	9	34	No	11	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	MW-26	-0.8975	-12	-25	No	9	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-08 (bg)	0	0	98	No	23	100	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-10 (bg)	0	0	98	No	23	100	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-21	-0.0008179	-128	-98	Yes	23	26.09	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-22 (bg)	0	0	53	No	15	100	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-23 (bg)	0	0	48	No	14	100	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-08 (bg)	-14.03	-178	-105	Yes	24	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-10 (bg)	0.5948	28	105	No	24	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-14A	-4.303	-16	-111	No	25	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-22 (bg)	7.15	81	53	Yes	15	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-23 (bg)	-1.122	-54	-48	Yes	14	0	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-08 (bg)	0	0	43	No	13	100	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-10 (bg)	0	0	43	No	13	100	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-14A	0	12	43	No	13	92.31	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-22 (bg)	0	0	34	No	11	100	n/a	n/a	0.01	NP
Zinc (mg/L)	MW-23 (bg)	0	0	34	No	11	100	n/a	n/a	0.01	NP

Sen's Slope Estimator

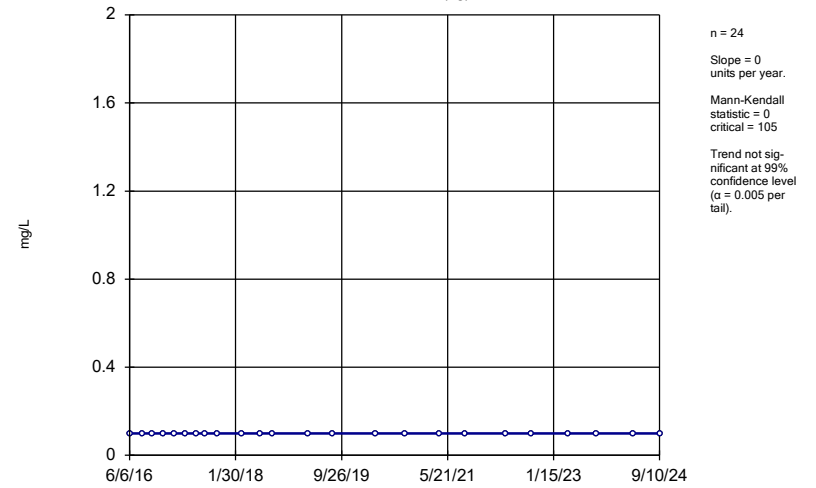
MW-08 (bg)



Constituent: Boron Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

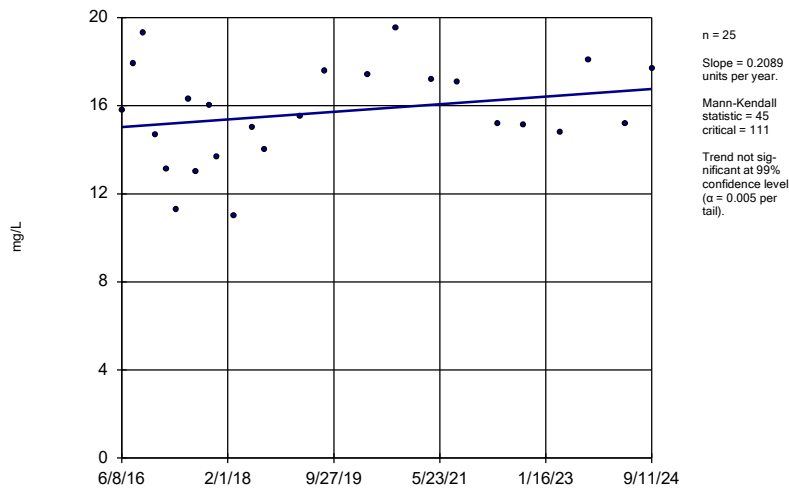
MW-10 (bg)



Constituent: Boron Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

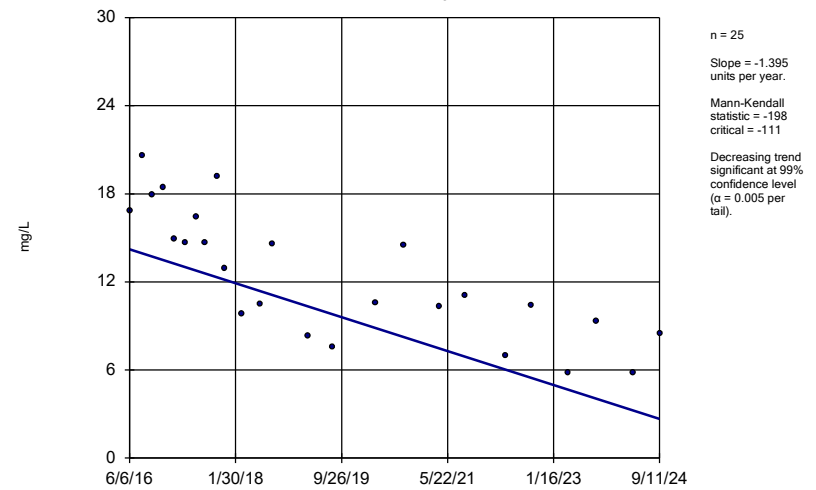
MW-14A



Constituent: Boron Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

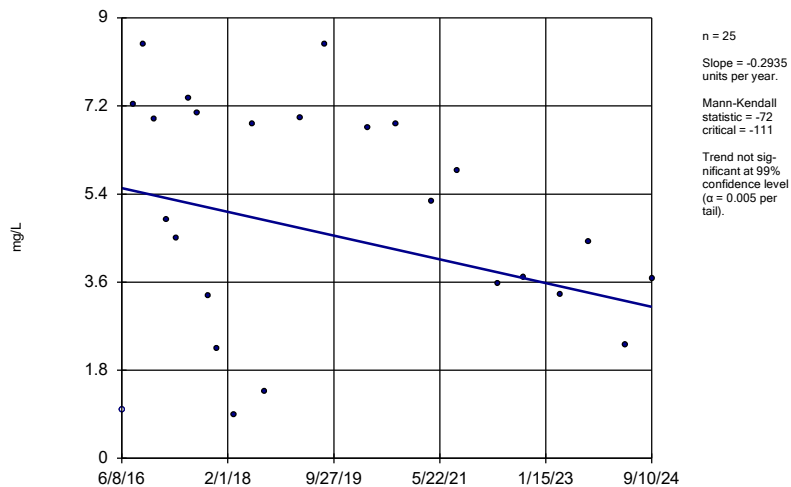
MW-15A



Constituent: Boron Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

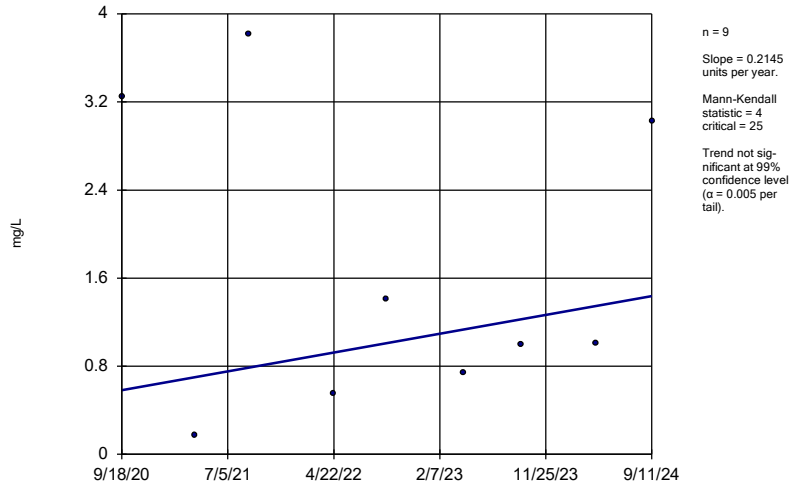
Sen's Slope Estimator

MW-21



Sen's Slope Estimator

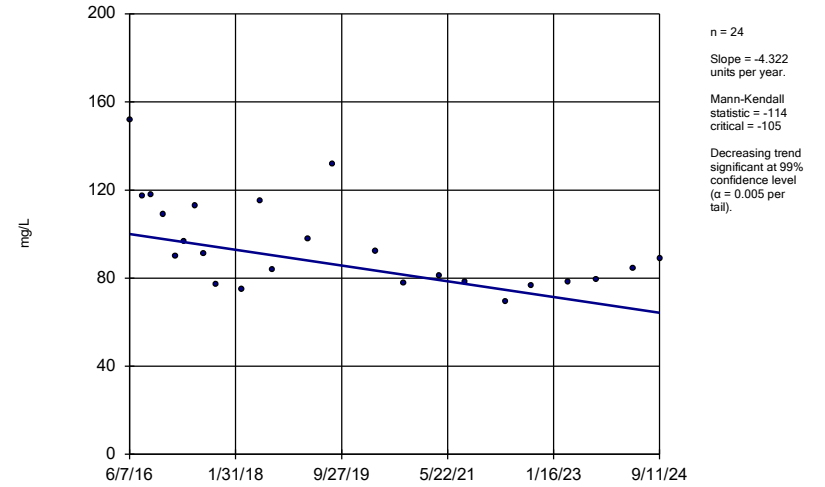
MW-27



Constituent: Boron Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

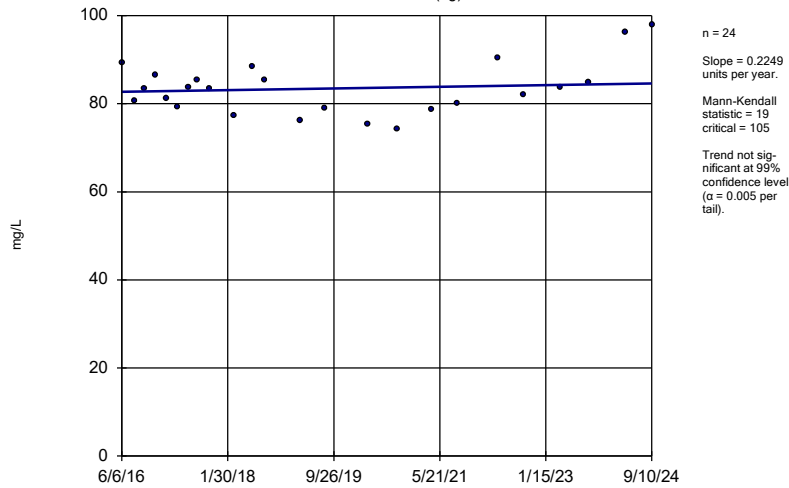
MW-08 (bg)



Constituent: Calcium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

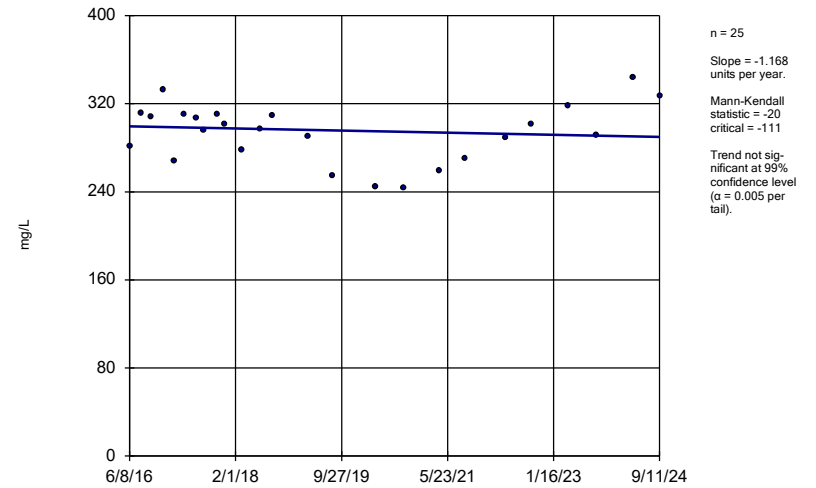
MW-10 (bg)



Constituent: Calcium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

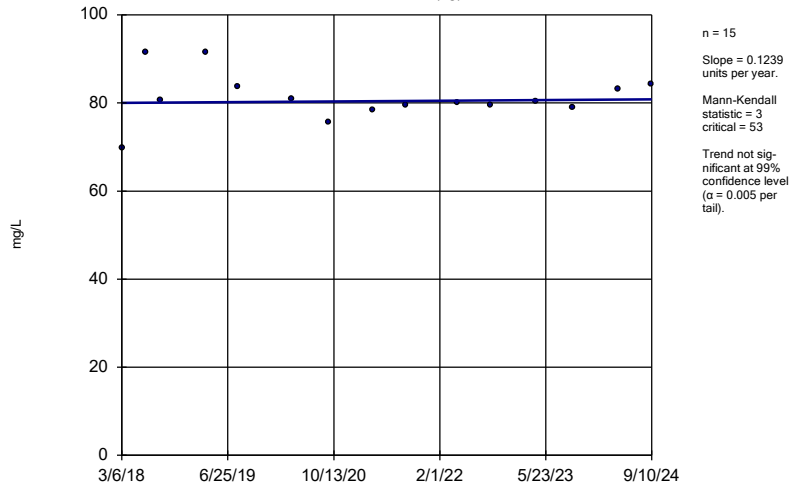
MW-14A



Constituent: Calcium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

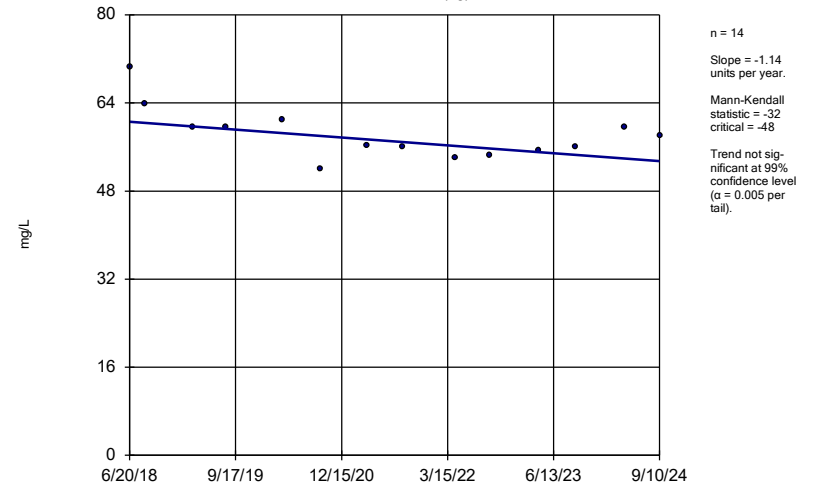
MW-22 (bg)



Constituent: Calcium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

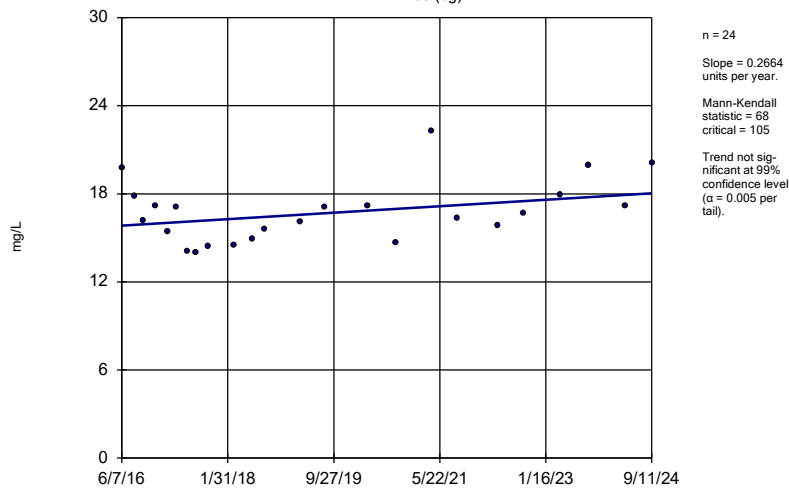
MW-23 (bg)



Constituent: Calcium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

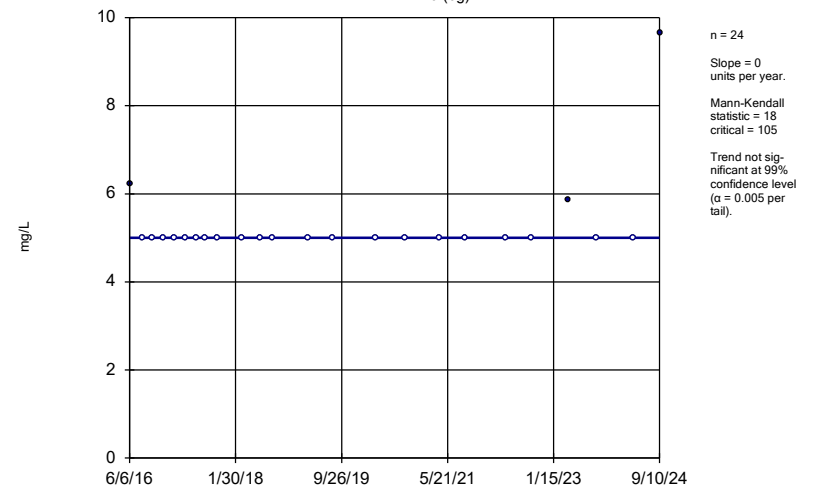
MW-08 (bg)



Constituent: Chloride Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

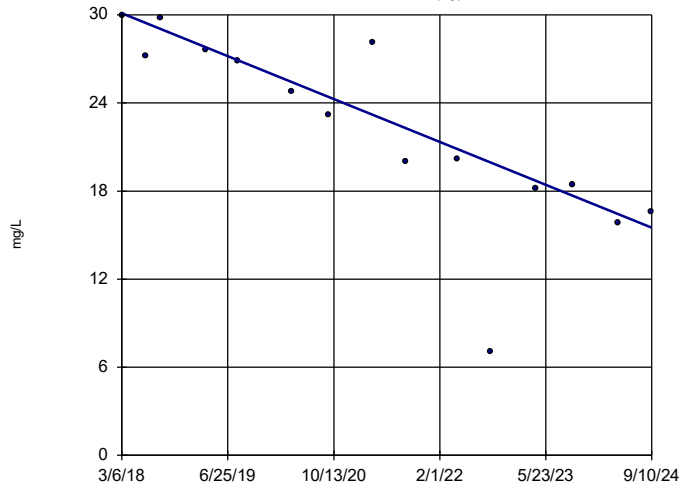
MW-10 (bg)



Constituent: Chloride Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-22 (bg)

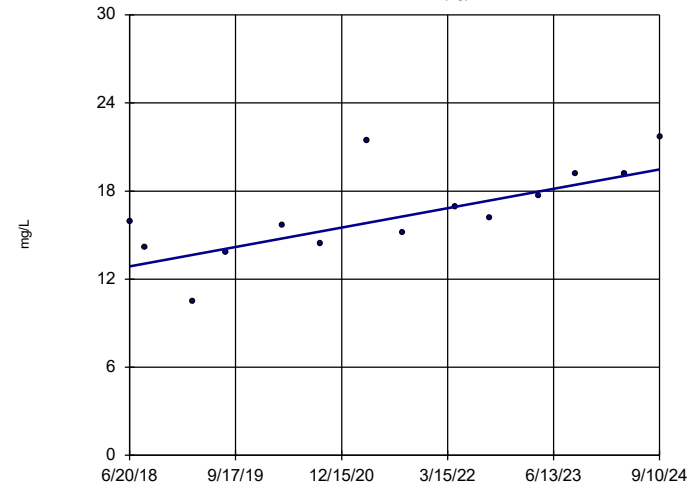


n = 15
 Slope = -2.242
 units per year.
 Mann-Kendall
 statistic = -77
 critical = -53
 Decreasing trend
 significant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Chloride Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-23 (bg)

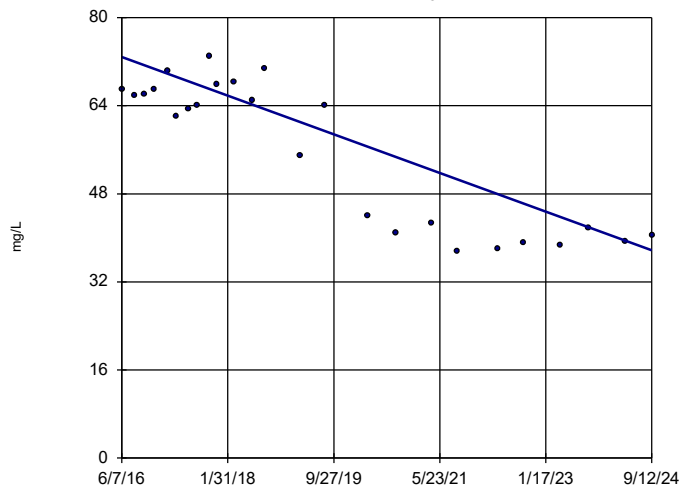


n = 14
 Slope = 1.058
 units per year.
 Mann-Kendall
 statistic = 56
 critical = 48
 Increasing trend
 significant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Chloride Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-5B

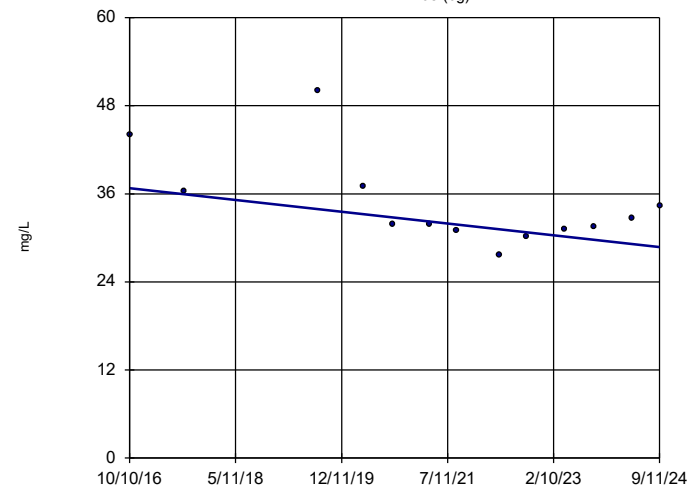


n = 25
 Slope = -4.247
 units per year.
 Mann-Kendall
 statistic = -157
 critical = -111
 Decreasing trend
 significant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Chloride Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-08 (bg)

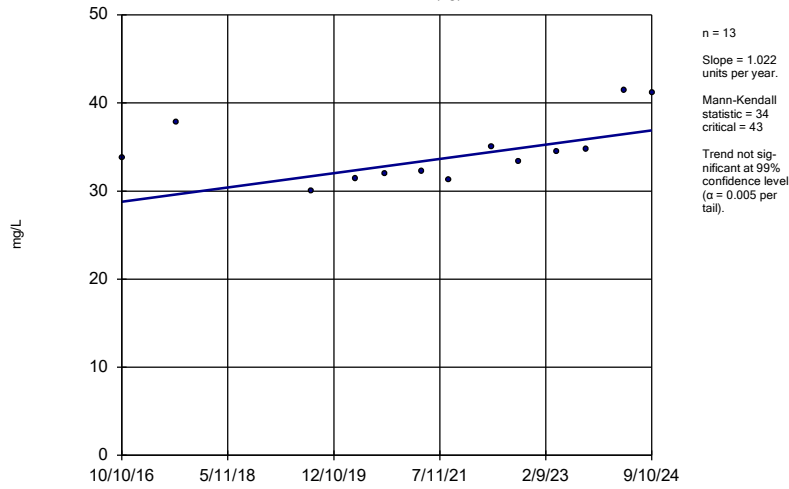


n = 13
 Slope = -1.014
 units per year.
 Mann-Kendall
 statistic = -25
 critical = -43
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

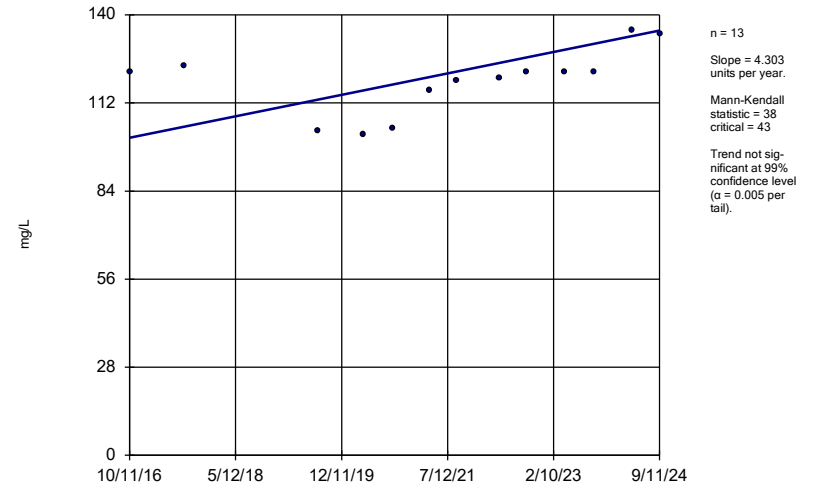
MW-10 (bg)



Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

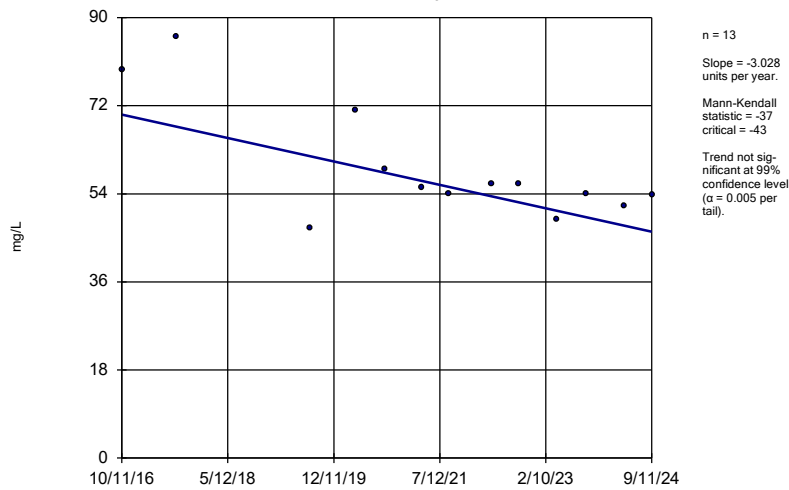
MW-14A



Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

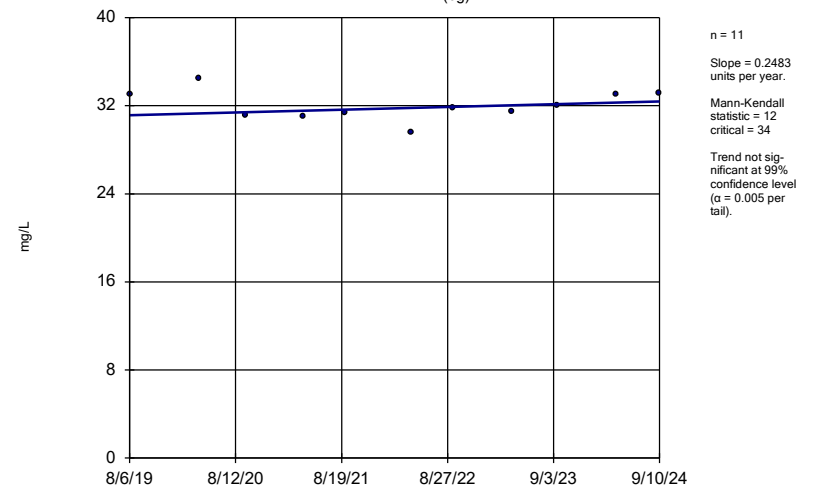
MW-15A



Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

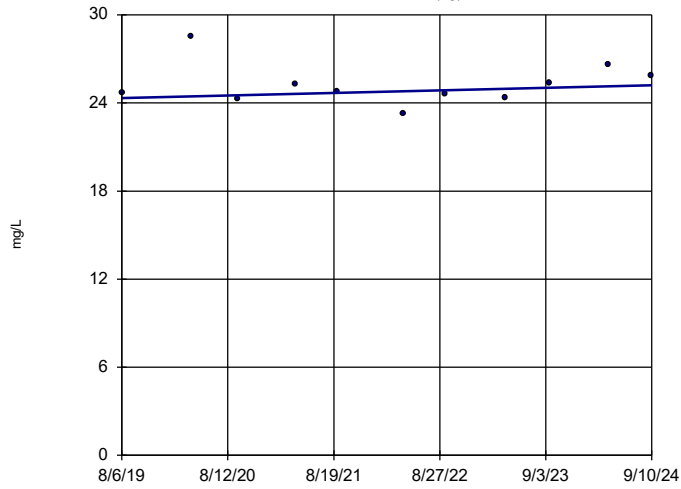
MW-22 (bg)



Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-23 (bg)

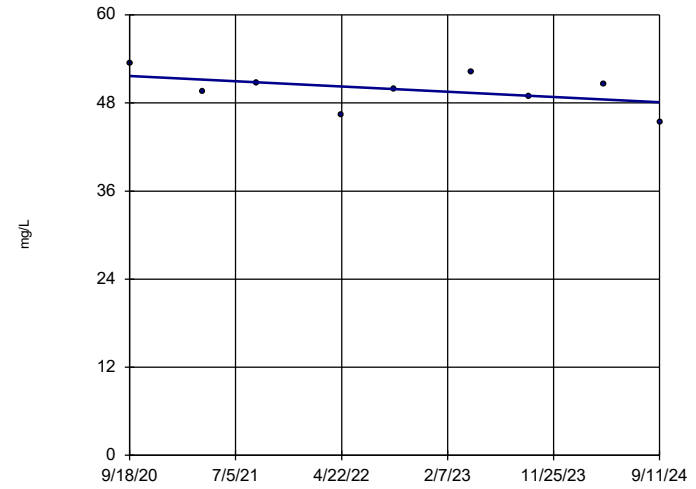


n = 11
 Slope = 0.1699 units per year.
 Mann-Kendall statistic = 9
 critical = 34
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-26

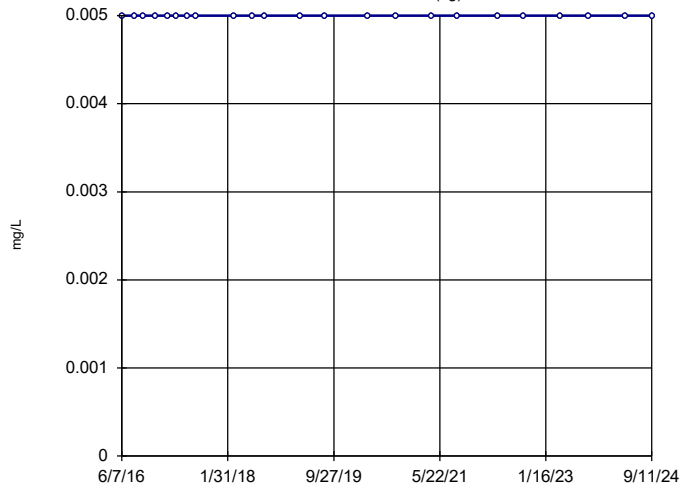


n = 9
 Slope = -0.8975 units per year.
 Mann-Kendall statistic = -12
 critical = -25
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Magnesium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-08 (bg)

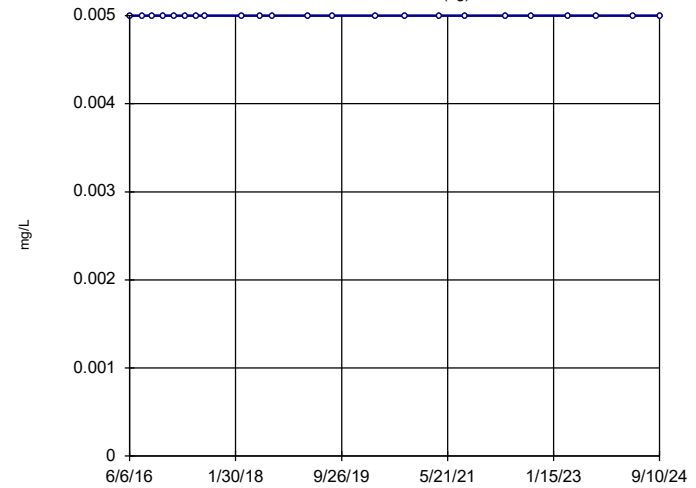


n = 23
 Slope = 0 units per year.
 Mann-Kendall statistic = 0
 critical = 98
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Selenium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-10 (bg)

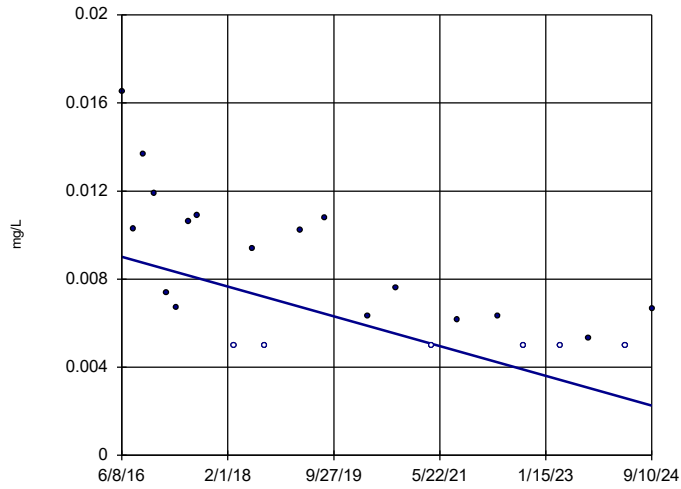


n = 23
 Slope = 0 units per year.
 Mann-Kendall statistic = 0
 critical = 98
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Selenium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-21

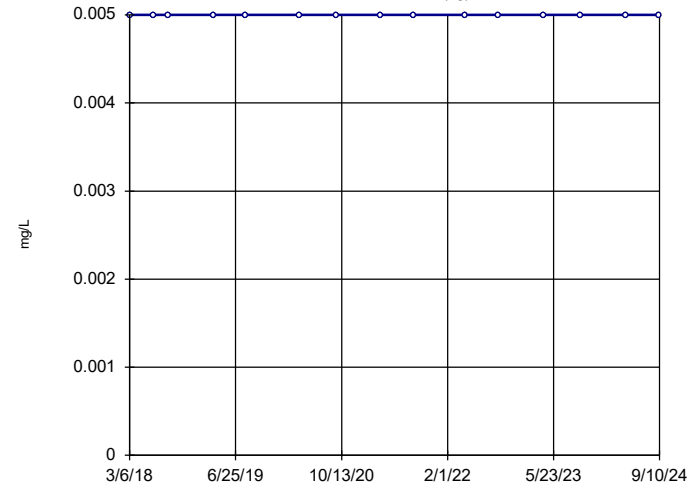


n = 23
Slope = -0.0008179
units per year.
Mann-Kendall
statistic = -128
critical = -98
Decreasing trend
significant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Selenium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-22 (bg)

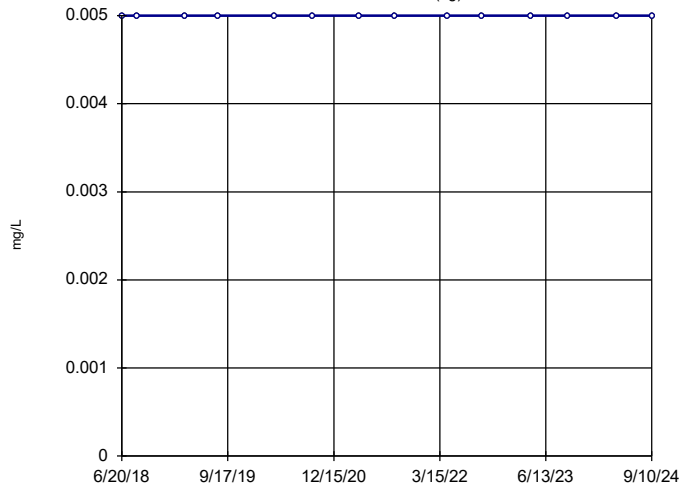


n = 15
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 53
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Selenium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-23 (bg)

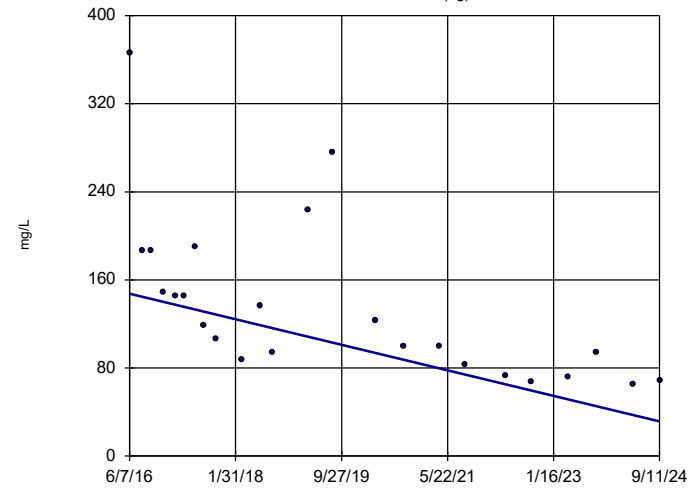


n = 14
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 48
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Selenium Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-08 (bg)

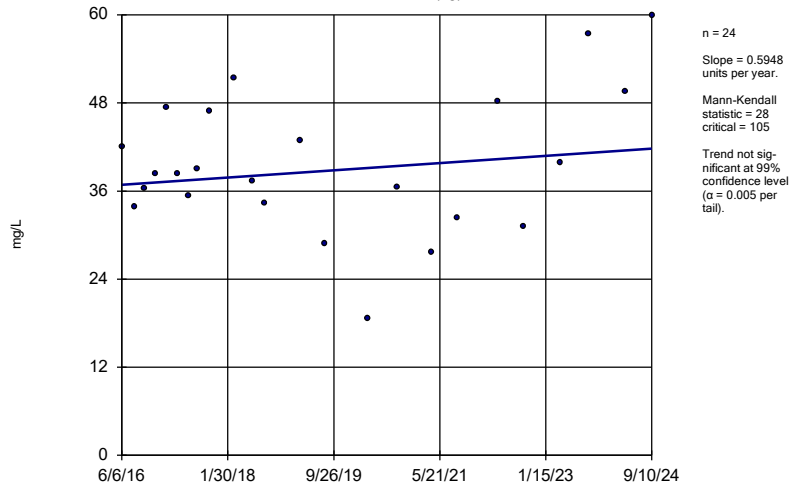


n = 24
Slope = -14.03
units per year.
Mann-Kendall
statistic = -178
critical = -105
Decreasing trend
significant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Sulfate Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

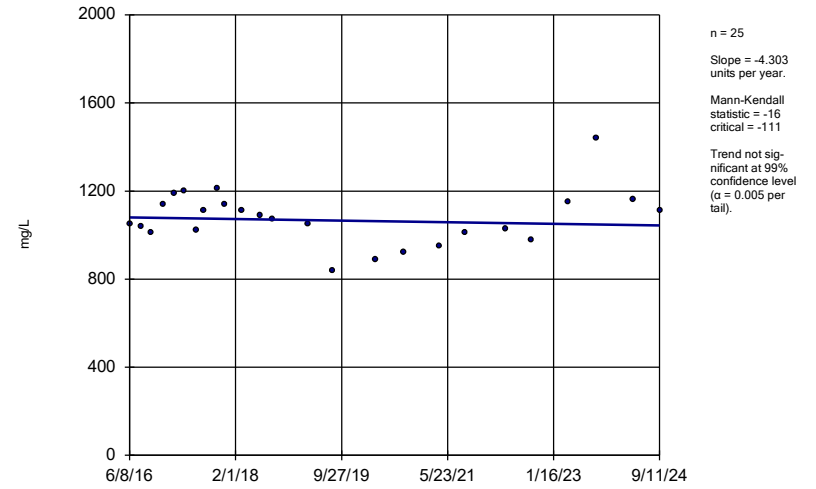
MW-10 (bg)



Constituent: Sulfate Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

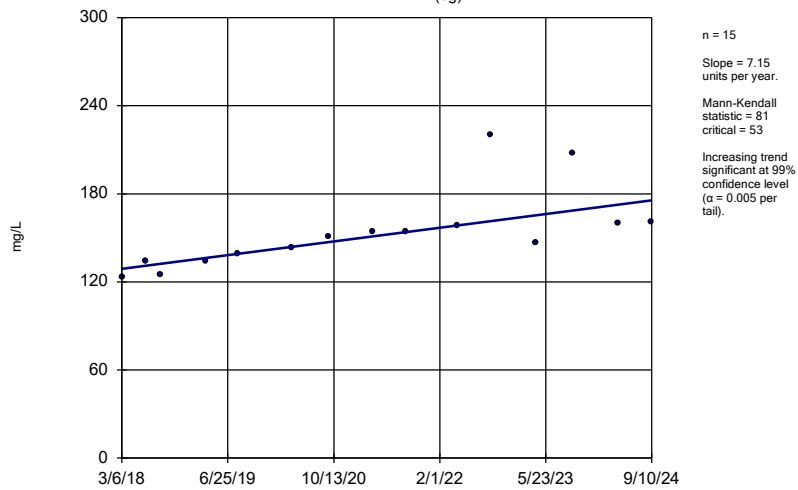
MW-14A



Constituent: Sulfate Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

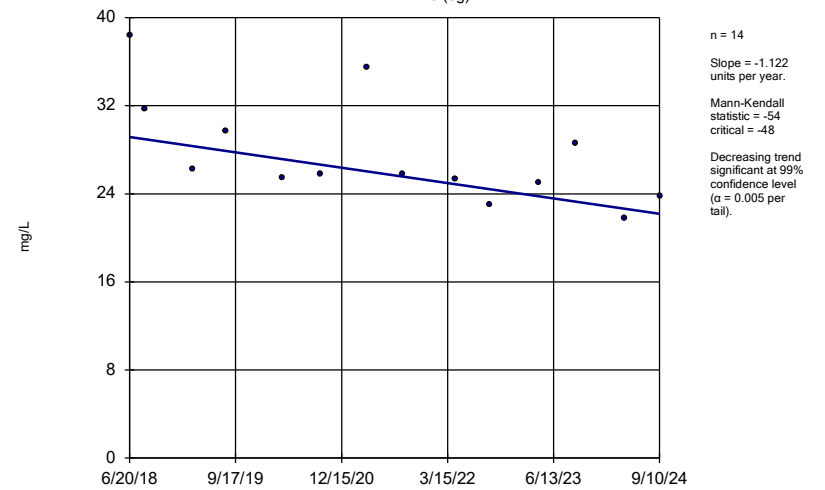
MW-22 (bg)



Constituent: Sulfate Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

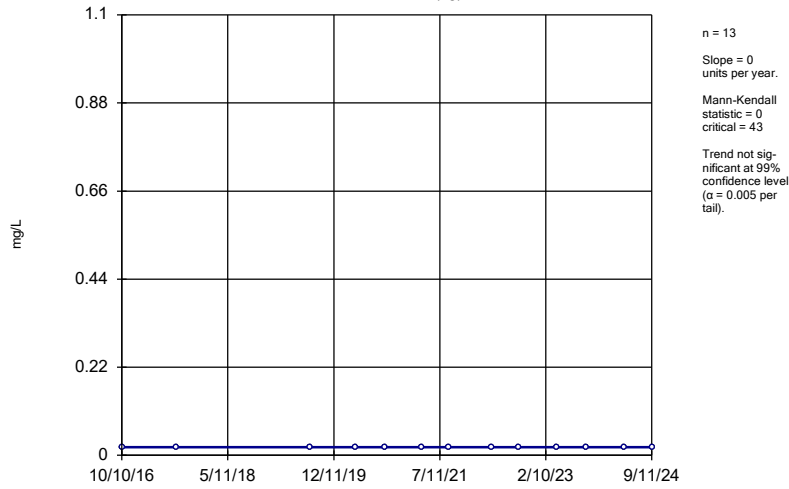
MW-23 (bg)



Constituent: Sulfate Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

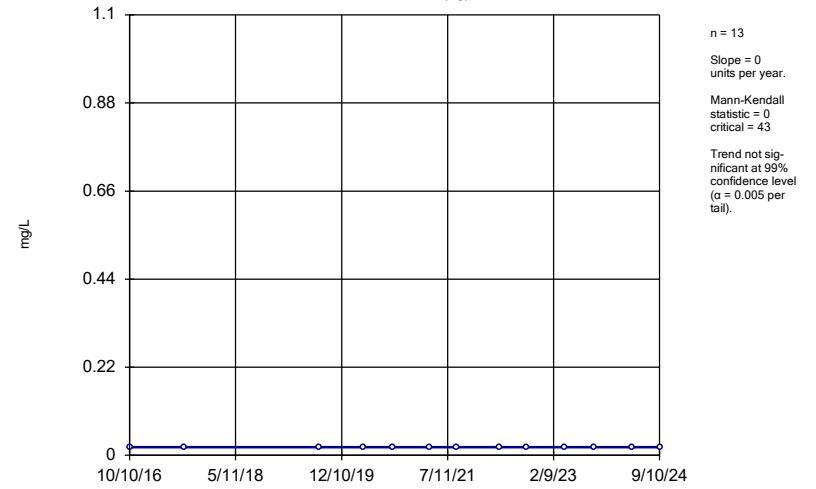
MW-08 (bg)



Constituent: Zinc Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

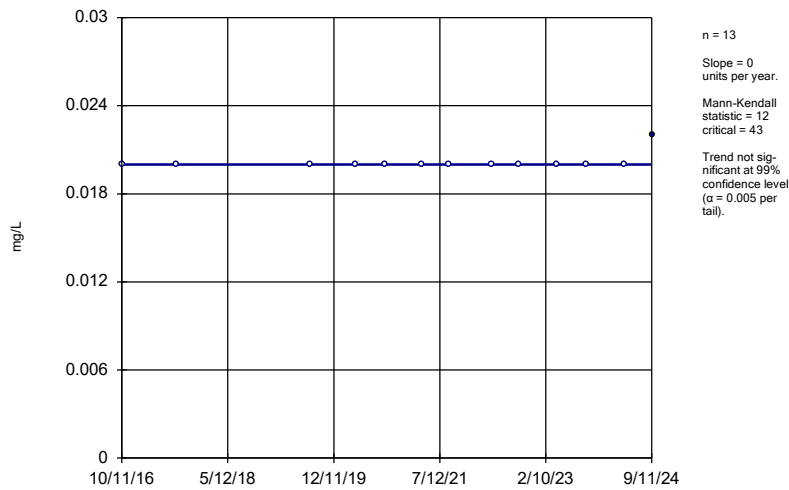
MW-10 (bg)



Constituent: Zinc Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

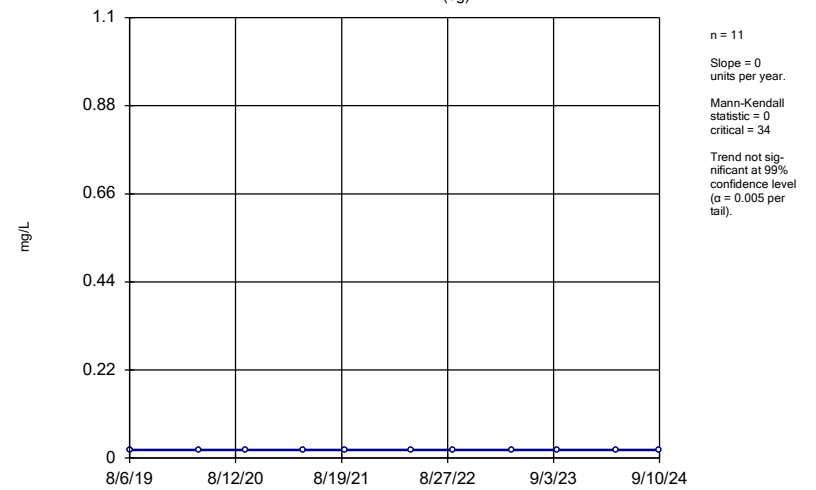
MW-14A



Constituent: Zinc Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

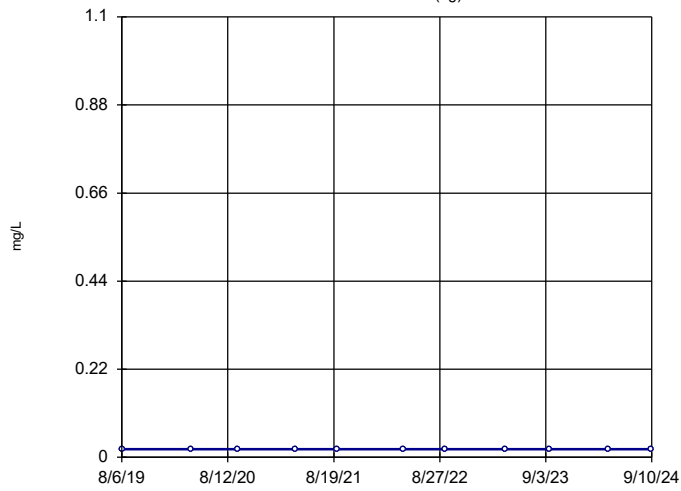
MW-22 (bg)



Constituent: Zinc Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

MW-23 (bg)



n = 11

Slope = 0
units per year.

Mann-Kendall
statistic = 0
critical = 34

Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Zinc Analysis Run 11/7/2024 1:28 PM View: State Wells Trend Tests

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Surface Water

FIGURE G.

Interwell Prediction Limits - Monitoring Wells (April 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/5/2024, 1:54 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	SW-24	6.67	4/9/2024	7.91	Yes	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SW-24	221	4/9/2024	231	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-24	73.3	4/9/2024	85.8	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-24	0.285	4/9/2024	0.448	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-25	0.285	4/10/2024	0.293	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-24	554	4/9/2024	676	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2

Interwell Prediction Limits - Monitoring Wells (April 2024) - All Results

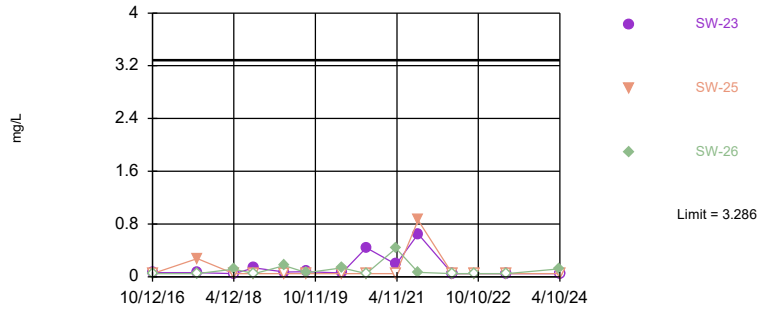
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/5/2024, 1:54 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	SW-23	3.286	4/10/2024	0.05ND	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Aluminum (mg/L)	SW-25	3.286	4/10/2024	0.05ND	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Aluminum (mg/L)	SW-26	3.286	4/9/2024	0.119	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Arsenic (mg/L)	SW-23	0.00367	4/10/2024	0.002ND	No	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	SW-26	0.00367	4/9/2024	0.00217	No	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Barium (mg/L)	SW-23	0.2213	4/10/2024	0.075	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Barium (mg/L)	SW-24	0.2213	4/9/2024	0.0262	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Barium (mg/L)	SW-25	0.2213	4/10/2024	0.0461	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Barium (mg/L)	SW-26	0.2213	4/9/2024	0.0701	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-23	6.67	4/10/2024	0.485	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-24	6.67	4/9/2024	7.91	Yes	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-25	6.67	4/10/2024	3.76	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-26	6.67	4/9/2024	0.484	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SW-23	221	4/10/2024	60	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Calcium (mg/L)	SW-24	221	4/9/2024	231	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Calcium (mg/L)	SW-25	221	4/10/2024	142	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Calcium (mg/L)	SW-26	221	4/9/2024	56.1	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Chloride (mg/L)	SW-23	22.81	4/10/2024	22.2	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Chloride (mg/L)	SW-24	22.81	4/9/2024	14.9	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Chloride (mg/L)	SW-25	22.81	4/10/2024	19.3	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Chloride (mg/L)	SW-26	22.81	4/9/2024	20.6	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Cobalt (mg/L)	SW-23	0.00116	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	SW-25	0.00116	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	SW-26	0.00116	4/9/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Copper (mg/L)	SW-23	0.005	4/10/2024	0.005ND	No	12	n/a	n/a	100	n/a	n/a	0.009707	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-23	1	4/10/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-24	1	4/9/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-26	1	4/9/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Iron (mg/L)	SW-23	2.016	4/10/2024	0.05ND	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Iron (mg/L)	SW-24	2.016	4/9/2024	0.05ND	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Iron (mg/L)	SW-25	2.016	4/10/2024	0.05ND	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Iron (mg/L)	SW-26	2.016	4/9/2024	0.178	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Lead (mg/L)	SW-23	0.00258	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Lead (mg/L)	SW-25	0.00258	4/10/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Lead (mg/L)	SW-26	0.00258	4/9/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	SW-23	73.3	4/10/2024	23	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-24	73.3	4/9/2024	85.8	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-25	73.3	4/10/2024	42.2	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Magnesium (mg/L)	SW-26	73.3	4/9/2024	20.8	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Manganese (mg/L)	SW-23	0.959	4/10/2024	0.0181	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Manganese (mg/L)	SW-24	0.959	4/9/2024	0.005ND	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Manganese (mg/L)	SW-25	0.959	4/10/2024	0.0148	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Manganese (mg/L)	SW-26	0.959	4/9/2024	0.0612	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Molybdenum (mg/L)	SW-23	0.00637	4/10/2024	0.002ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	SW-25	0.00637	4/10/2024	0.002ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Molybdenum (mg/L)	SW-26	0.00637	4/9/2024	0.002ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Nickel (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Selenium (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Strontium (mg/L)	SW-23	0.285	4/10/2024	0.137	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-24	0.285	4/9/2024	0.448	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-25	0.285	4/10/2024	0.293	Yes	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Strontium (mg/L)	SW-26	0.285	4/9/2024	0.146	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-23	554	4/10/2024	40.2	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-24	554	4/9/2024	676	Yes	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-25	554	4/10/2024	292	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-26	554	4/9/2024	43.8	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.00682	n/a	4 future	n/a	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Zinc (mg/L)	SW-26	0.0312	4/9/2024	0.02ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2

Within Limit

Prediction Limit

Interwell Parametric



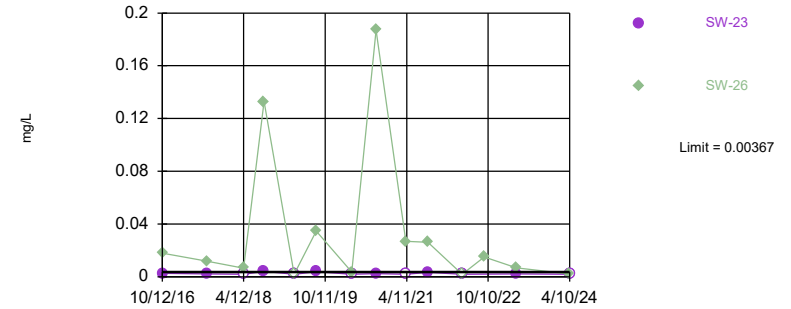
Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-1.679, Std. Dev.=1.091, n=13, 15.38% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.873, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Comparing 3 points to limit. Assumes 1 future value.

Constituent: Aluminum Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit

Interwell Non-parametric



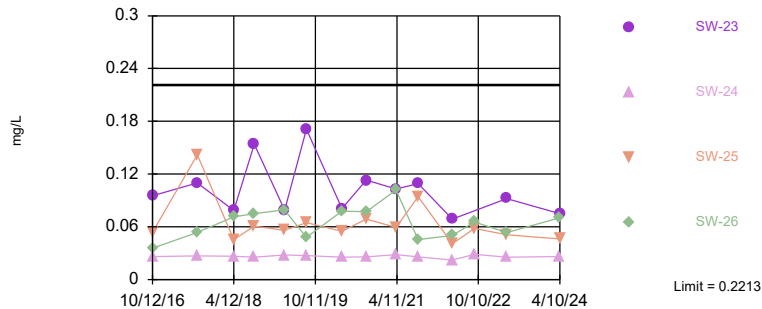
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Comparing 2 points to limit. Assumes 2 future values.

Constituent: Arsenic Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=0.334, Std. Dev.=0.05189, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8852, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Comparing 4 points to limit.

Constituent: Barium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit

Interwell Non-parametric

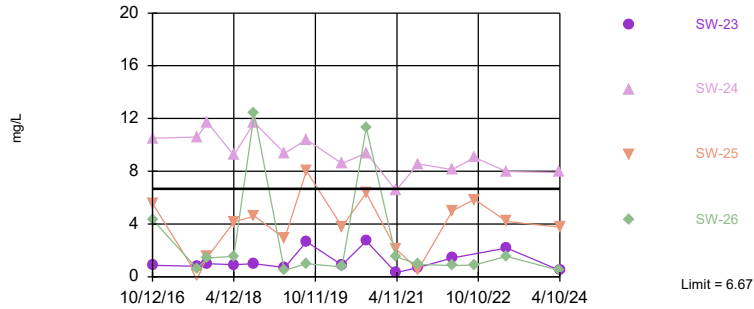


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Beryllium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-24

Prediction Limit
Interwell Non-parametric

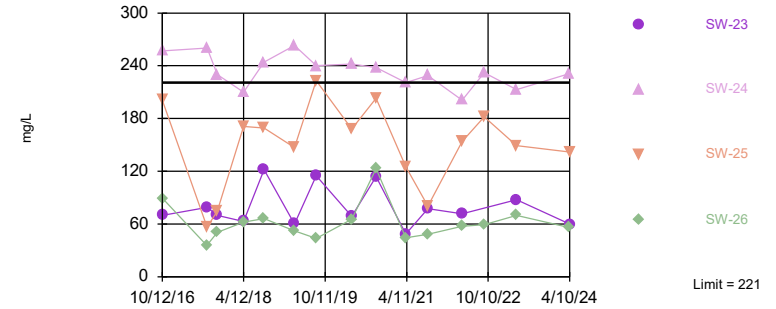


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 71.43% NDs. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Comparing 4 points to limit.

Constituent: Boron Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-24

Prediction Limit
Interwell Non-parametric

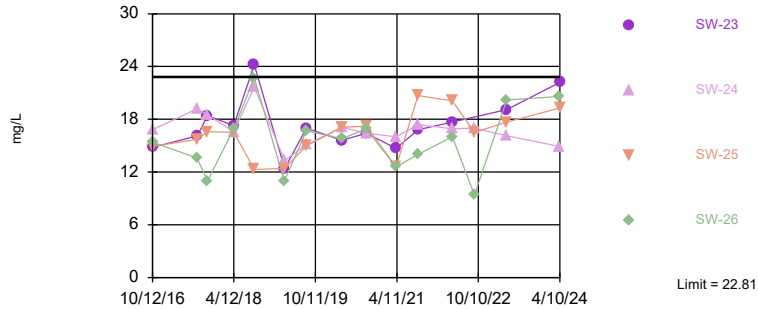


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 14 background values. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Comparing 4 points to limit.

Constituent: Calcium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

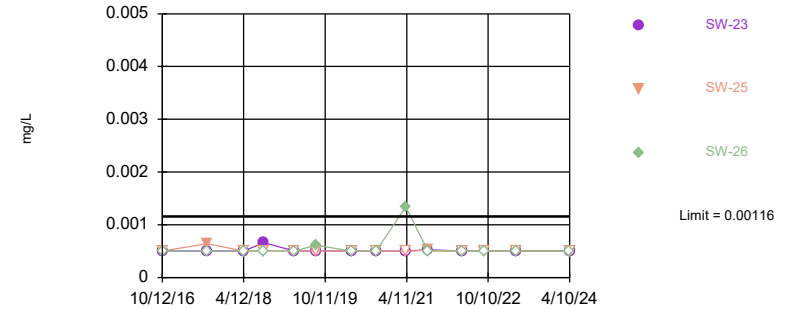


Background Data Summary: Mean=15.44, Std. Dev.=2.867, n=14. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9382, critical = 0.874. Kappa = 2.574 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Comparing 4 points to limit.

Constituent: Chloride Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

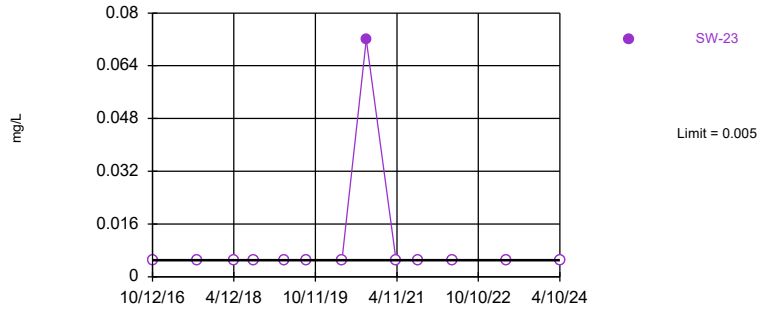


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 69.23% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Comparing 3 points to limit. Assumes 1 future value.

Constituent: Cobalt Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

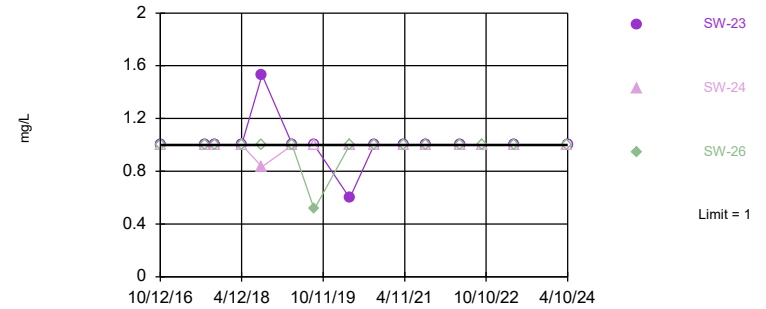


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 12) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.07507. Individual comparison alpha = 0.009707 (1 of 2). Assumes 3 future values.

Constituent: Copper Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

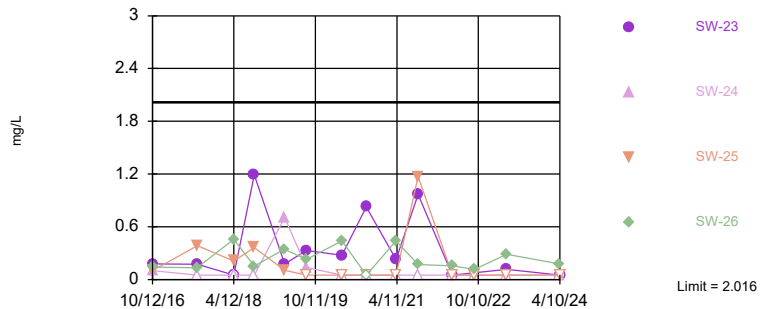


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Comparing 3 points to limit. Assumes 1 future value.

Constituent: Fluoride Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

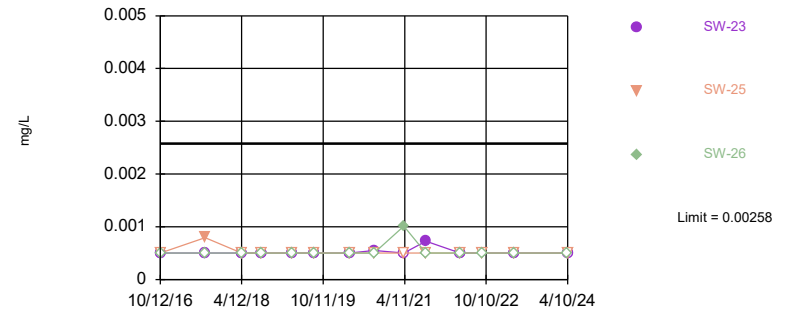


Background Data Summary (based on square root transformation): Mean=0.6502, Std. Dev.=0.2927, n=13, 7.692% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9259, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Comparing 4 points to limit.

Constituent: Iron Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

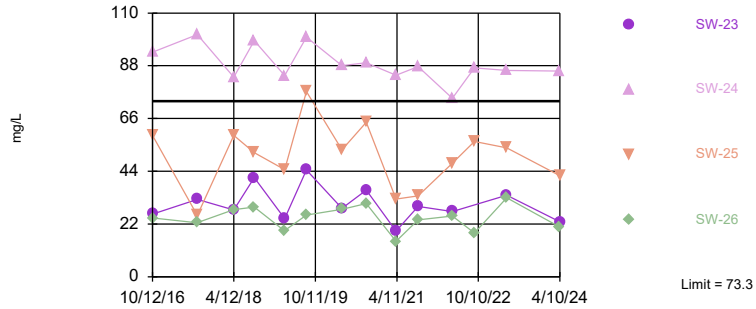


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 69.23% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Comparing 3 points to limit. Assumes 1 future value.

Constituent: Lead Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-24

Prediction Limit
Interwell Non-parametric

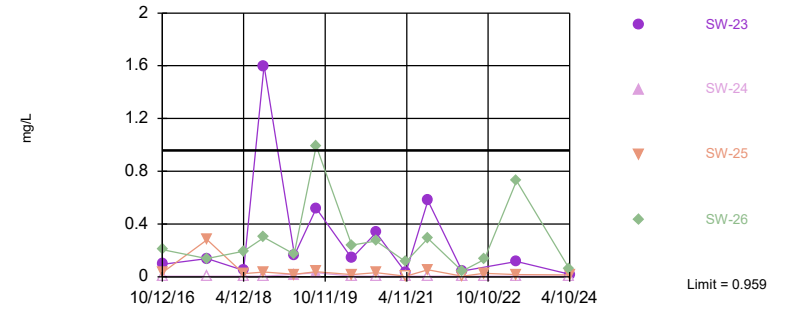


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 13 background values. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Comparing 4 points to limit.

Constituent: Magnesium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits Ap
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric



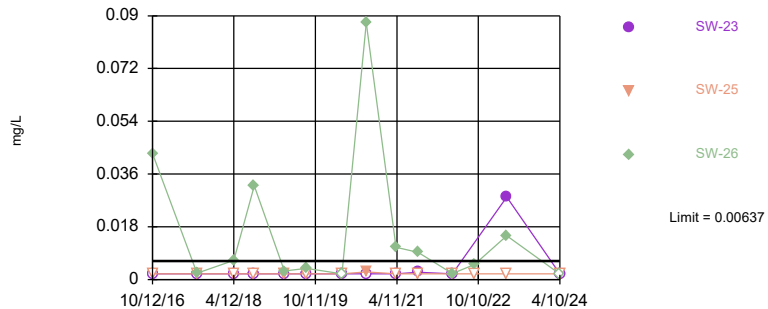
Background Data Summary (based on square root transformation): Mean=0.4468, Std. Dev.=0.2025, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9219, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Comparing 4 points to limit.

Constituent: Manganese Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits Ap
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Hollow symbols indicate censored values.

Within Limit

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Comparing 3 points to limit. Assumes 1 future value.

Constituent: Molybdenum Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits A
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Nickel Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

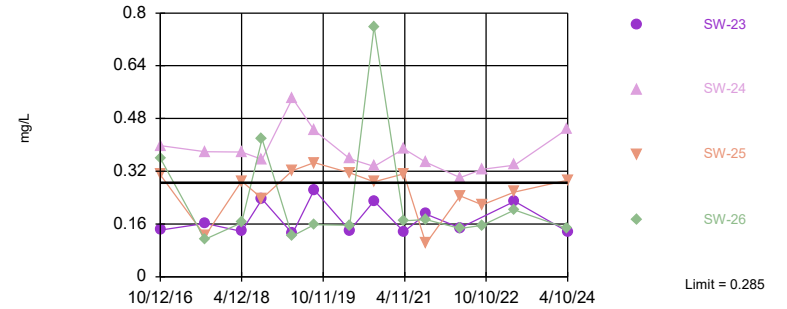
Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Selenium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-24, SW-25
Prediction Limit
Interwell Non-parametric

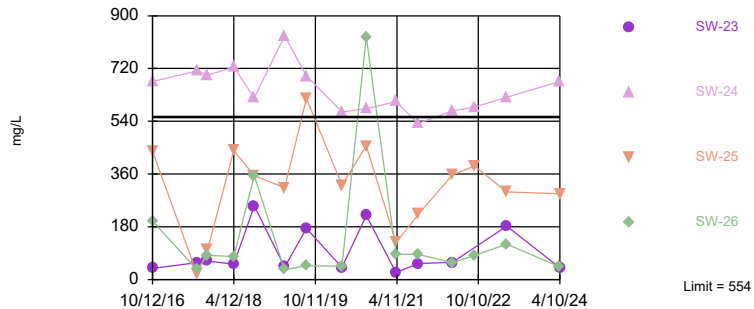


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 13 background values. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Comparing 4 points to limit.

Constituent: Strontium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-24

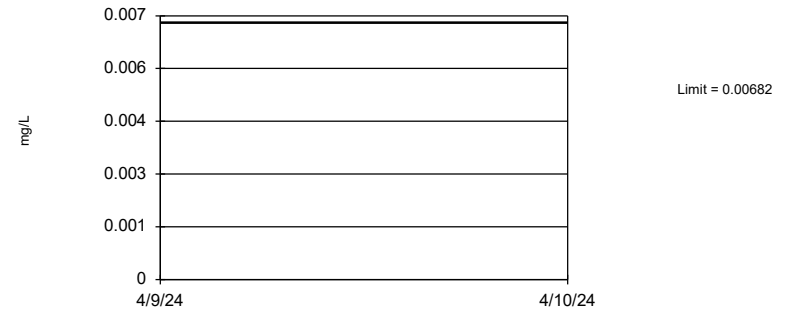
Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 14 background values. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Comparing 4 points to limit.

Constituent: Sulfate Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
Interwell Non-parametric



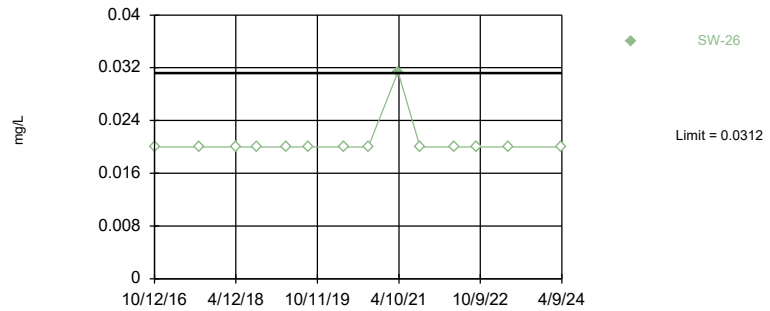
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Vanadium Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Zinc Analysis Run 11/5/2024 1:53 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit

Constituent: Aluminum (mg/L) Analysis Run 11/5/2024 1:54 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26	SW-23	SW-25
10/12/2016	0.217	<0.05	0.0624	<0.05
8/7/2017		<0.05		
8/9/2017	<0.05		0.0626	0.276
4/11/2018	0.0713	0.117	<0.05	<0.05
8/27/2018	1.09	<0.05	0.137	<0.05
3/18/2019		0.169		
3/20/2019	0.153		0.0744	<0.05
8/13/2019	0.194	0.0646	0.0761	<0.05
4/7/2020	0.0821	0.134	0.0578	<0.05
9/18/2020	1.28	<0.05	0.44	<0.05
4/5/2021	0.191	0.432	0.187	<0.05
9/1/2021	0.982	0.0654	0.648	0.858
4/20/2022	<0.05	<0.05	<0.05	<0.05
9/14/2022		<0.05		<0.05
4/19/2023	0.0782	<0.05	<0.05	<0.05
4/9/2024		0.119		
4/10/2024	0.172		<0.05	<0.05

Prediction Limit

Constituent: Arsenic (mg/L) Analysis Run 11/5/2024 1:54 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23	SW-26
10/12/2016	<0.002	0.00257	0.018
8/7/2017			0.0118
8/9/2017	<0.002	0.00211	
4/11/2018	<0.002	<0.002	0.00661
8/27/2018	<0.002	0.00401	0.133
3/18/2019			<0.002
3/20/2019	<0.002	<0.002	
8/13/2019	0.00342	0.00378	0.0347
4/7/2020	<0.002	<0.002	0.00368
9/18/2020	0.00217	0.00236	0.187
4/5/2021	<0.002	<0.002	0.0268
9/1/2021	0.00367	0.00332	0.0262
4/20/2022	<0.002	<0.002	<0.002
9/14/2022			0.0151
4/19/2023	<0.002	0.00221	0.00664
4/9/2024			0.00217
4/10/2024	<0.002	<0.002	

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 11/5/2024 1:54 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	0.111	0.0261	0.0357	0.0953	0.0538
8/7/2017			0.0535		
8/9/2017	0.0601	0.0268		0.11	0.142
4/11/2018	0.0806	0.0264	0.0712	0.0785	0.0456
8/27/2018	0.108	0.0256	0.0751	0.154	0.0608
3/18/2019			0.0793		
3/20/2019	0.0996	0.0278		0.079	0.056
8/13/2019	0.168	0.0272	0.048	0.171	0.0648
4/7/2020	0.0967	0.0254	0.078	0.0806	0.0548
9/18/2020	0.168	0.0257	0.0772	0.113	0.0686
4/5/2021	0.112	0.0285	0.102	0.103	0.0594
9/1/2021	0.181	0.0259	0.0455	0.109	0.0941
4/20/2022	0.1	0.0222	0.0503	0.0689	0.0407
9/14/2022		0.0288	0.0656		0.058
4/19/2023	0.101	0.0253	0.0536	0.0922	0.051
4/9/2024		0.0262	0.0701		
4/10/2024	0.0964			0.075	0.0461

Prediction Limit

Constituent: Beryllium (mg/L) Analysis Run 11/5/2024 1:54 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.001
8/9/2017	<0.001
4/11/2018	<0.001
8/27/2018	<0.001
3/20/2019	<0.001
8/13/2019	<0.001
4/7/2020	<0.001
9/18/2020	<0.001
4/5/2021	<0.001
9/1/2021	<0.001
4/20/2022	<0.001
4/19/2023	<0.001
4/10/2024	<0.001

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/5/2024 1:54 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	1.25	10.5	4.33	0.869	5.57
8/7/2017			0.631		
8/9/2017	5.95	10.6		0.789	<0.1
10/17/2017	6.67	11.7	1.43	0.981	1.51
4/11/2018	<0.1	9.21	1.54	0.922	4.15
8/27/2018	<0.1	11.7	12.4	0.983	4.61
3/18/2019			0.486		
3/20/2019	<0.1	9.36		0.693	2.9
8/13/2019	<0.1	10.4	1	2.66	8.03
4/7/2020	<0.1	8.58	0.745	0.898	3.8
9/18/2020	0.206	9.39	11.3	2.72	6.36
4/5/2021	<0.1	6.55	1.52	0.32	2.11
9/1/2021	<0.1	8.55	0.941	0.704	0.528
4/20/2022	<0.1	8.12	0.855	1.43	5
9/14/2022		9.05	0.892		5.86
4/19/2023	<0.1	7.97	1.54	2.17	4.2
4/9/2024		7.91	0.484		
4/10/2024	<0.1			0.485	3.76

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/5/2024 1:54 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	75.5	257	89.3	69.8	201
8/7/2017			35.5		
8/9/2017	221	260		79.1	56.3
10/17/2017	204	230	50.6	70	74.8
4/11/2018	45.2	210	62.1	62.9	171
8/27/2018	33.3	244	66.1	122	169
3/18/2019			52.4		
3/20/2019	51.8	263		60.1	147
8/13/2019	47.4	240	43.6	115	223
4/7/2020	59.6	242	65.5	68.6	168
9/18/2020	55.1	238	123	114	203
4/5/2021	42.4	221	44.5	48.7	125
9/1/2021	58.1	229	48.3	77.3	80.5
4/20/2022	58.6	201	57.4	71.7	154
9/14/2022		232	59.4		182
4/19/2023	57.6	213	70	87.6	149
4/9/2024		231	56.1		
4/10/2024	50.5			60	142

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	13.9	16.8	15.4	14.8	14.9
8/7/2017			13.6		
8/9/2017	20	19.2		16.1	15.7
10/17/2017	16.8	18.5	11	18.4	16.6
4/11/2018	16.5	16.6	16.9	17.3	16.5
8/27/2018	11.7	21.7	22.7	24.2	12.3
3/18/2019			11		
3/20/2019	12.9	13.3		12.4	12.4
8/13/2019	12.3	15.1	16.7	17	15
4/7/2020	14.5	17.1	15.8	15.6	17.1
9/18/2020	13.3	16.4	16.9	16.4	17.2
4/5/2021	14.9	16	12.6	14.7	12.6
9/1/2021	13.7	17.4	14	16.8	20.7
4/20/2022	16.3	16.9	16	17.7	20.1
9/14/2022		17	9.4		16.5
4/19/2023	18	16.1	20.2	19.1	17.7
4/9/2024		14.9	20.6		
4/10/2024	21.3			22.2	19.3

Prediction Limit

Constituent: Cobalt (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26	SW-23	SW-25
10/12/2016	<0.0005	<0.0005	<0.0005	<0.0005
8/7/2017		<0.0005		
8/9/2017	<0.0005		<0.0005	0.00064
4/11/2018	<0.0005	<0.0005	<0.0005	<0.0005
8/27/2018	<0.0005	<0.0005	0.00066	<0.0005
3/18/2019		<0.0005		
3/20/2019	<0.0005		<0.0005	<0.0005
8/13/2019	0.000833	0.000613	<0.0005	<0.0005
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005
9/18/2020	0.00116	<0.0005	<0.0005	<0.0005
4/5/2021	<0.0005	0.00134	<0.0005	<0.0005
9/1/2021	0.00105	<0.0005	0.000529	0.000512
4/20/2022	0.000713	<0.0005	<0.0005	<0.0005
9/14/2022		<0.0005		<0.0005
4/19/2023	<0.0005	<0.0005	<0.0005	<0.0005
4/9/2024		<0.0005		
4/10/2024	<0.0005		<0.0005	<0.0005

Prediction Limit

Constituent: Copper (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-23
10/12/2016	<0.005	<0.005
8/9/2017	<0.005	<0.005
4/11/2018	<0.005	<0.005
8/27/2018	<0.005	<0.005
3/20/2019	<0.005	<0.005
8/13/2019	<0.005	<0.005
4/7/2020	<0.005	<0.005
9/18/2020	<0.005	0.0719
4/5/2021	<0.005	<0.005
9/1/2021	0.0358 (o)	<0.005
4/20/2022	<0.005	<0.005
4/19/2023	<0.005	<0.005
4/10/2024	<0.005	<0.005

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26	SW-23	SW-24
10/12/2016	<1	<1	<1	<1
8/7/2017		<1		
8/9/2017	<1		<1	<1
10/17/2017	<1	<1	<1	<1
4/11/2018	<1	<1	<1	<1
8/27/2018	<1	<1	1.53	0.834
3/18/2019		<1		
3/20/2019	<1		<1	<1
8/13/2019	<1	0.512	<1	<1
4/7/2020	<1	<1	0.597	<1
9/18/2020	<1	<1	<1	<1
4/5/2021	0.6	<1	<1	<1
9/1/2021	<1	<1	<1	<1
4/20/2022	<1	<1	<1	<1
9/14/2022		<1		<1
4/19/2023	<1	<1	<1	<1
4/9/2024		<1		<1
4/10/2024	<1		<1	

Prediction Limit

Constituent: Iron (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	0.415	0.102	0.141	0.177	0.1
8/7/2017			0.135		
8/9/2017	<0.1	<0.1		0.173	0.384
4/11/2018	0.259	<0.1	0.457	<0.1	0.212
8/27/2018	1.01	<0.1	0.151	1.19	0.363
3/18/2019			0.345		
3/20/2019	0.66	0.705		0.176	0.104
8/13/2019	0.408	0.137	0.227	0.332	<0.1
4/7/2020	0.363	<0.1	0.439	0.275	<0.1
9/18/2020	1.25	<0.1	<0.1	0.827	<0.1
4/5/2021	0.21	<0.1	0.439	0.228	<0.1
9/1/2021	1.34	<0.1	0.169	0.967	1.17
4/20/2022	0.123	<0.1	0.157	<0.1	<0.1
9/14/2022		<0.1	0.116		<0.1
4/19/2023	0.24	<0.1	0.286	0.117	<0.1
4/9/2024		<0.1	0.178		
4/10/2024	0.196			<0.1	<0.1

Prediction Limit

Constituent: Lead (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26	SW-23	SW-25
10/12/2016	<0.0005	<0.0005	<0.0005	<0.0005
8/7/2017		<0.0005		
8/9/2017	<0.0005		<0.0005	0.000796
4/11/2018	<0.0005	<0.0005	<0.0005	<0.0005
8/27/2018	0.000716	<0.0005	<0.0005	<0.0005
3/18/2019		<0.0005		
3/20/2019	<0.0005		<0.0005	<0.0005
8/13/2019	0.000623	<0.0005	<0.0005	<0.0005
4/7/2020	<0.0005	<0.0005	<0.0005	<0.0005
9/18/2020	0.000829	<0.0005	0.000549	<0.0005
4/5/2021	<0.0005	0.00101	<0.0005	<0.0005
9/1/2021	0.00258	<0.0005	0.000726	<0.0005
4/20/2022	<0.0005	<0.0005	<0.0005	<0.0005
9/14/2022		<0.0005		<0.0005
4/19/2023	<0.0005	<0.0005	<0.0005	<0.0005
4/9/2024		<0.0005		
4/10/2024	<0.0005		<0.0005	<0.0005

Prediction Limit

Constituent: Magnesium (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	28.6	93.7	24.5	26.1	58.9
8/7/2017			22.6		
8/9/2017	73.3	101		32.3	25.6
4/11/2018	21.1	83.2	28	27.9	59
8/27/2018	13.6	98.4	29.1	41.4	51.8
3/18/2019			19.2		
3/20/2019	22.6	83.9		24.3	44.7
8/13/2019	20.9	99.9	25.8	44.6	77.3
4/7/2020	26.4	88.1	28.2	28.5	53
9/18/2020	22.9	89.2	30.5	36.2	64.5
4/5/2021	17.2	84	14.8	19	32.4
9/1/2021	25.8	87.6	23.8	29.4	33.8
4/20/2022	23.6	74.4	25.4	27.2	47.3
9/14/2022		87.1	18.3		56.4
4/19/2023	25.1	86.1	33	34	53.8
4/9/2024		85.8	20.8		
4/10/2024	20.9			23	42.2

Prediction Limit

Constituent: Manganese (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	0.205	<0.01	0.205	0.0951	0.0315
8/7/2017			0.139		
8/9/2017	0.0766	<0.01		0.139	0.282
4/11/2018	0.18	<0.01	0.194	0.0476	0.0244
8/27/2018	0.0399	<0.01	0.298	1.6	0.0361
3/18/2019			0.172		
3/20/2019	0.196	0.0179		0.164	0.0184
8/13/2019	0.694	0.0304	0.993	0.52	0.0387
4/7/2020	0.217	<0.01	0.241	0.14	0.0156
9/18/2020	0.492	<0.01	0.271	0.335	0.0311
4/5/2021	0.0882	<0.01	0.114	0.0311	<0.01
9/1/2021	0.539	<0.01	0.29	0.578	0.054
4/20/2022	0.125	<0.01	0.0422	0.0426	<0.01
9/14/2022		<0.01	0.131		0.026
4/19/2023	0.204	<0.01	0.728	0.115	0.0169
4/9/2024		<0.01	0.0612		
4/10/2024	0.0309			0.0181	0.0148

Prediction Limit

Constituent: Molybdenum (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26	SW-23	SW-25
10/12/2016	<0.002	0.043	<0.002	<0.002
8/7/2017		0.00214		
8/9/2017	<0.002		<0.002	<0.002
4/11/2018	<0.002	0.00659	<0.002	<0.002
8/27/2018	<0.002	0.032	<0.002	<0.002
3/18/2019		0.00291		
3/20/2019	<0.002		<0.002	<0.002
8/13/2019	<0.002	0.00379	<0.002	<0.002
4/7/2020	<0.002	<0.002	<0.002	<0.002
9/18/2020	<0.002	0.0876	<0.002	0.00256
4/5/2021	<0.002	0.011	<0.002	<0.002
9/1/2021	0.00637	0.00925	0.00252	<0.002
4/20/2022	<0.002	0.00202	<0.002	<0.002
9/14/2022		0.00514		<0.002
4/19/2023	<0.002	0.0149	0.0281	<0.002
4/9/2024		<0.002		
4/10/2024	<0.002		<0.002	<0.002

Prediction Limit

Constituent: Nickel (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	<0.005
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Selenium (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	<0.005
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Strontium (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	0.148	0.398	0.36	0.142	0.309
8/7/2017			0.113		
8/9/2017	0.285	0.379		0.162	0.124
4/11/2018	0.0998	0.378	0.164	0.138	0.29
8/27/2018	0.0842	0.356	0.418	0.236	0.238
3/18/2019			0.123		
3/20/2019	0.12	0.541		0.131	0.322
8/13/2019	0.129	0.444	0.158	0.264	0.346
4/7/2020	0.128	0.358	0.156	0.141	0.315
9/18/2020	0.125	0.335	0.759	0.23	0.288
4/5/2021	0.12	0.388	0.17	0.137	0.312
9/1/2021	0.147	0.347	0.174	0.19	0.101
4/20/2022	0.125	0.301	0.146	0.148	0.245
9/14/2022		0.326	0.156		0.218
4/19/2023	0.111	0.339	0.203	0.229	0.257
4/9/2024		0.448	0.146		
4/10/2024	0.115			0.137	0.293

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-24	SW-26	SW-23	SW-25
10/12/2016	73	676	200	37.7	438
8/7/2017			33.8		
8/9/2017	554	712		58.1	16.9
10/17/2017	213	698	82.5	63.7	101
4/11/2018	20.1	725	78.8	52	440
8/27/2018	13.2	620	355	251	355
3/18/2019			33.7		
3/20/2019	20.4	832		42.2	313
8/13/2019	10.1	694	46.3	175	618
4/7/2020	16.3	572	45.9	41.5	322
9/18/2020	21	583	828	218	456
4/5/2021	13.9	607	86.4	23.6	127
9/1/2021	14.3	533	85.9	54.3	222
4/20/2022	15.7	575	57.3	58.4	357
9/14/2022		588	81.4		387
4/19/2023	15.7	622	121	182	299
4/9/2024		676	43.8		
4/10/2024	15.1			40.2	292

Prediction Limit

Constituent: Vanadium (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	0.00549
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	0.00516
4/5/2021	<0.005
9/1/2021	0.00682
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Zinc (mg/L) Analysis Run 11/5/2024 1:55 PM View: State Surface Water Prediction Limits April
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<0.02	<0.02
8/7/2017		<0.02
8/9/2017	<0.02	
4/11/2018	<0.02	<0.02
8/27/2018	<0.02	<0.02
3/18/2019		<0.02
3/20/2019	<0.02	
8/13/2019	<0.02	<0.02
4/7/2020	<0.02	<0.02
9/18/2020	<0.02	<0.02
4/5/2021	<0.02	0.0314
9/1/2021	0.0312	<0.02
4/20/2022	<0.02	<0.02
9/14/2022		<0.02
4/19/2023	<0.02	<0.02
4/9/2024		<0.02
4/10/2024	<0.02	

FIGURE H.

Interwell Prediction Limits - Surface Water (September 2024) - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:34 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	SW-26	0.00367	9/12/2024	0.0371	Yes	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2

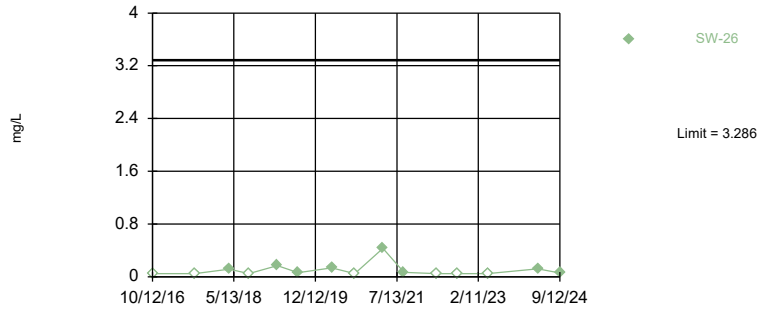
Interwell Prediction Limits - Surface Water (September 2024) - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:34 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Aluminum (mg/L)	SW-26	3.286	9/12/2024	0.0588	No	13	-1.679	1.091	15.38	Kaplan-Meier	ln(x)	0.0006269	Param Inter 1 of 2
Arsenic (mg/L)	SW-26	0.00367	9/12/2024	0.0371	Yes	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Barium (mg/L)	SW-26	0.2213	9/12/2024	0.0808	No	13	0.334	0.05189	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Beryllium (mg/L)	n/a	0.001	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Boron (mg/L)	SW-26	6.67	9/12/2024	1.38	No	14	n/a	n/a	71.43	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SW-26	221	9/12/2024	57.3	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Chloride (mg/L)	SW-26	22.81	9/12/2024	18.5	No	14	15.44	2.867	0	None	No	0.0006269	Param Inter 1 of 2
Cobalt (mg/L)	SW-26	0.00116	9/12/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Copper (mg/L)	n/a	0.005	n/a	4 future	n/a	12	n/a	n/a	100	n/a	n/a	0.009707	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SW-26	1	9/12/2024	1ND	No	14	n/a	n/a	92.86	n/a	n/a	0.007852	NP Inter (NDs) 1 of 2
Iron (mg/L)	SW-26	2.016	9/12/2024	0.2	No	13	0.6502	0.2927	7.692	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Lead (mg/L)	SW-26	0.00258	9/12/2024	0.0005ND	No	13	n/a	n/a	69.23	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Magnesium (mg/L)	SW-26	73.3	9/12/2024	20.6	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Manganese (mg/L)	SW-26	0.959	9/12/2024	0.385	No	13	0.4468	0.2025	0	None	sqrt(x)	0.0006269	Param Inter 1 of 2
Molybdenum (mg/L)	SW-26	0.00637	9/12/2024	0.00433	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Nickel (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Selenium (mg/L)	n/a	0.005	n/a	4 future	n/a	13	n/a	n/a	100	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Strontium (mg/L)	SW-26	0.285	9/12/2024	0.172	No	13	n/a	n/a	0	n/a	n/a	0.008777	NP Inter (normality) 1 of 2
Sulfate (mg/L)	SW-26	554	9/12/2024	52.2	No	14	n/a	n/a	0	n/a	n/a	0.007852	NP Inter (normality) 1 of 2
Vanadium (mg/L)	n/a	0.00682	n/a	4 future	n/a	13	n/a	n/a	76.92	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2
Zinc (mg/L)	SW-26	0.0312	9/12/2024	0.02ND	No	13	n/a	n/a	92.31	n/a	n/a	0.008777	NP Inter (NDs) 1 of 2

Within Limit

Prediction Limit
Interwell Parametric

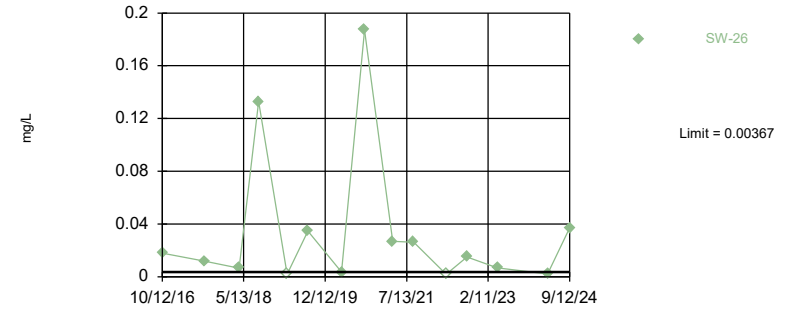


Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-1.679, Std. Dev.=1.091, n=13, 15.38% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.873, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Assumes 3 future values.

Constituent: Aluminum Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-26

Prediction Limit
Interwell Non-parametric

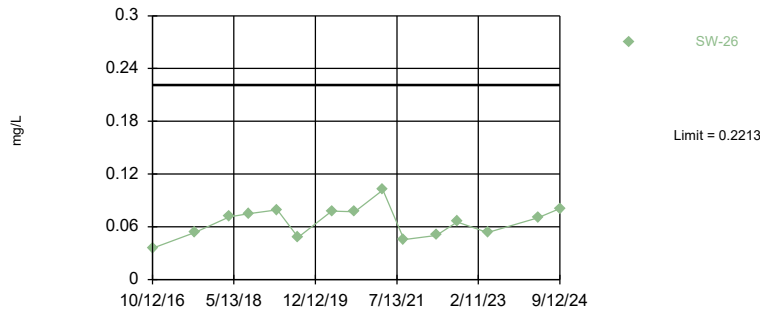


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Arsenic Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

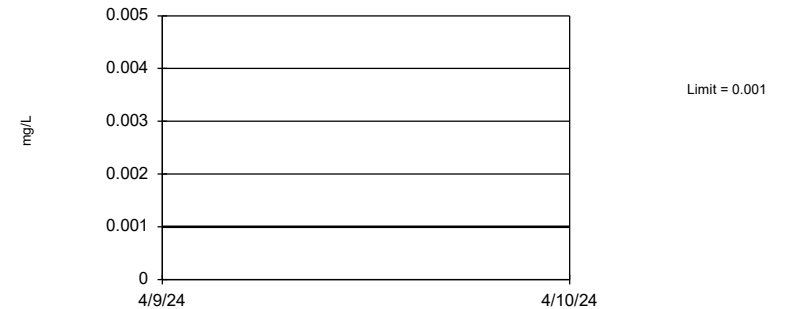


Background Data Summary (based on square root transformation): Mean=0.334, Std. Dev.=0.05189, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8852, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Assumes 3 future values.

Constituent: Barium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Exceeds Limit: SW-26

Prediction Limit
Interwell Non-parametric

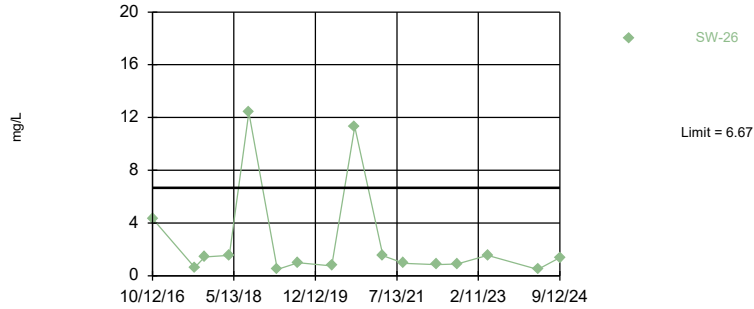


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Beryllium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

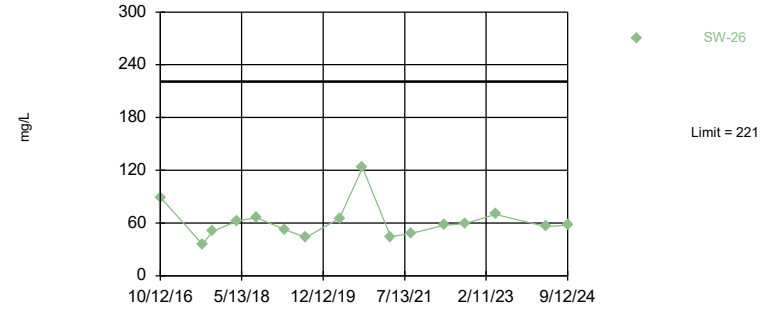


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 71.43% NDs. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Assumes 3 future values.

Constituent: Boron Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

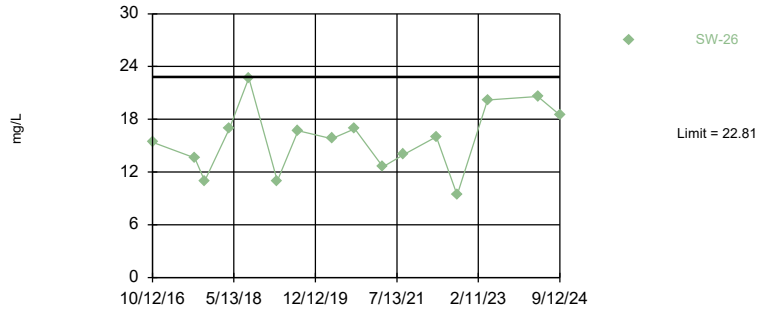


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 14 background values. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Assumes 3 future values.

Constituent: Calcium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

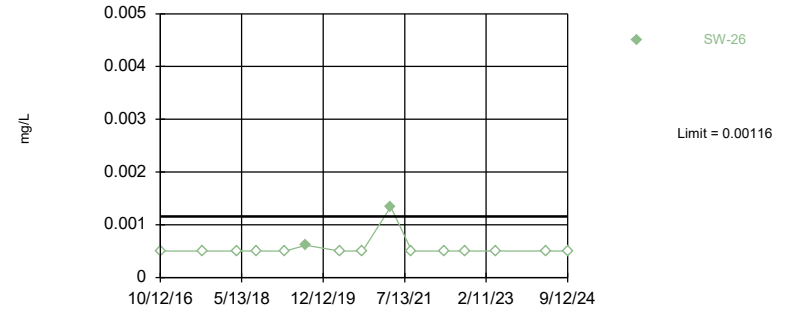


Background Data Summary: Mean=15.44, Std. Dev.=2.867, n=14. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9382, critical = 0.874. Kappa = 2.574 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Assumes 3 future values.

Constituent: Chloride Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 69.23% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Cobalt Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
Interwell Non-parametric

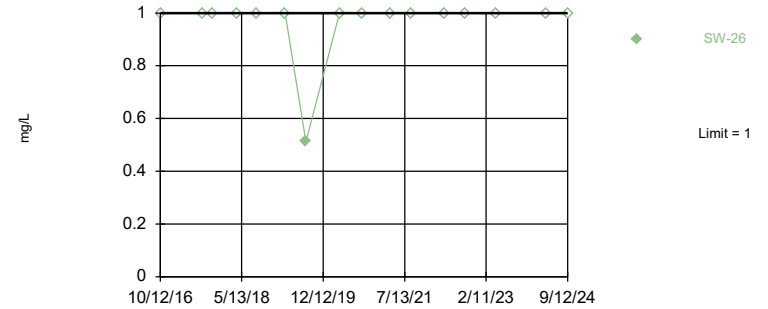


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 12) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.07507. Individual comparison alpha = 0.009707 (1 of 2). Assumes 4 future values.

Constituent: Copper Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Hollow symbols indicate censored values.

Within Limit Prediction Limit
Interwell Non-parametric

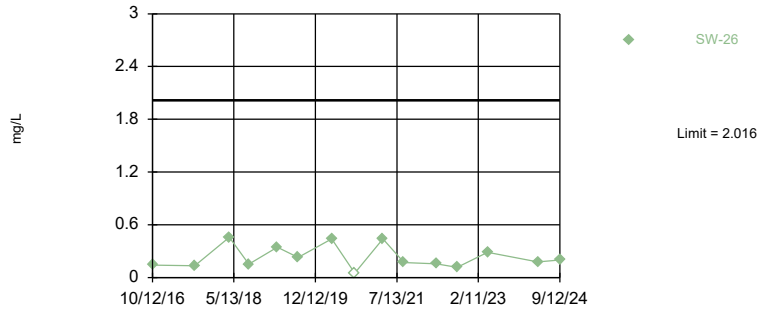


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Assumes 3 future values.

Constituent: Fluoride Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Hollow symbols indicate censored values.

Within Limit Prediction Limit
Interwell Parametric

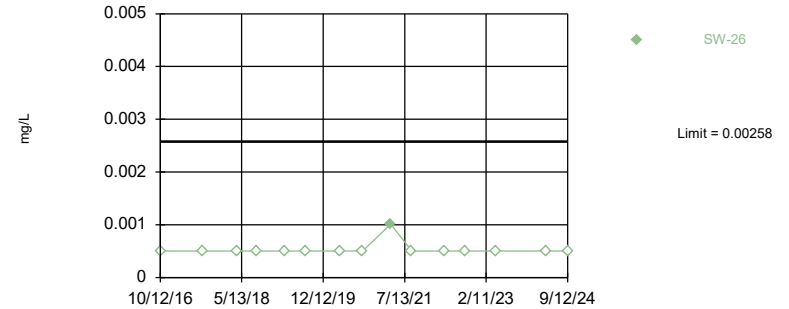


Background Data Summary (based on square root transformation): Mean=0.6502, Std. Dev.=0.2927, n=13, 7.692% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9259, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Assumes 3 future values.

Constituent: Iron Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Hollow symbols indicate censored values.

Within Limit Prediction Limit
Interwell Non-parametric

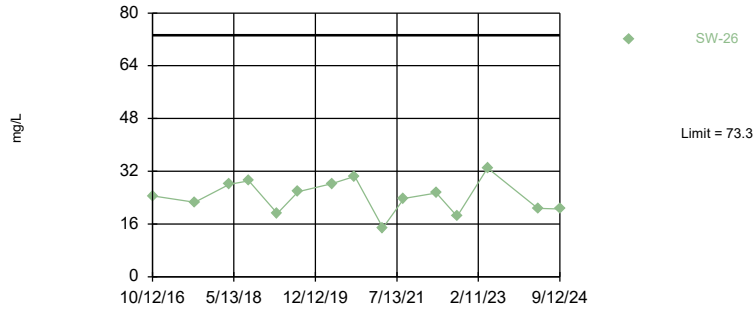


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 69.23% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Lead Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

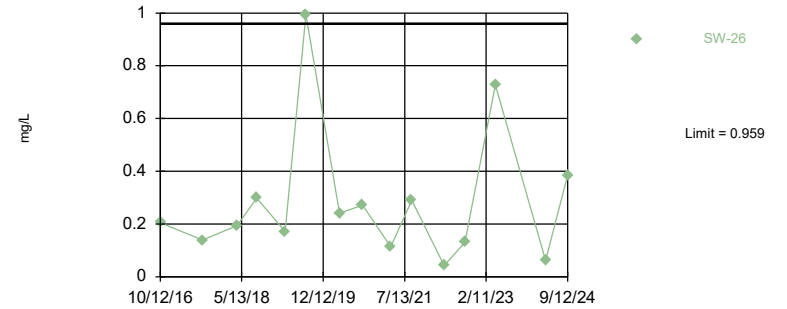


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 13 background values. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Magnesium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Parametric

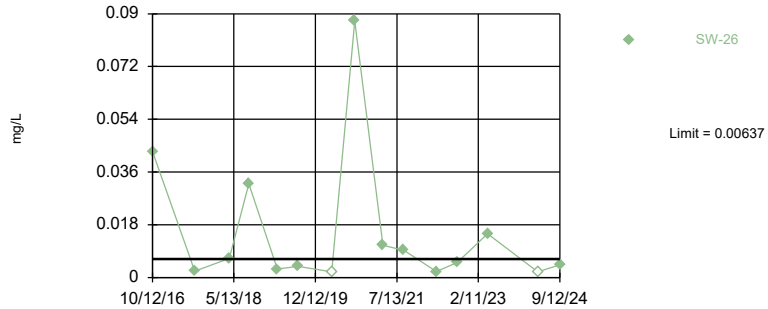


Background Data Summary (based on square root transformation): Mean=0.4468, Std. Dev.=0.2025, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9219, critical = 0.866. Kappa = 2.629 (c=21, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0006269. Assumes 3 future values.

Constituent: Manganese Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit
Interwell Non-parametric

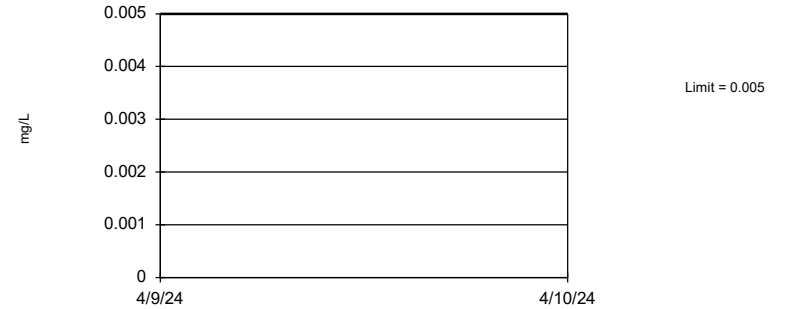


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Molybdenum Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

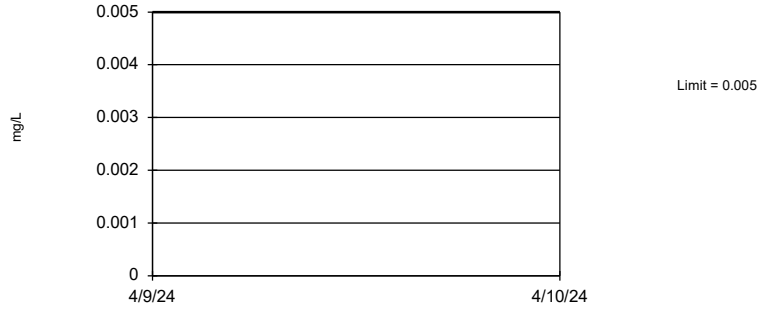
Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Nickel Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

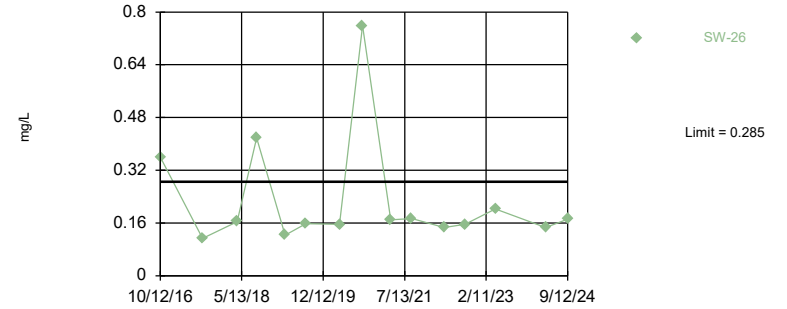
Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Selenium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

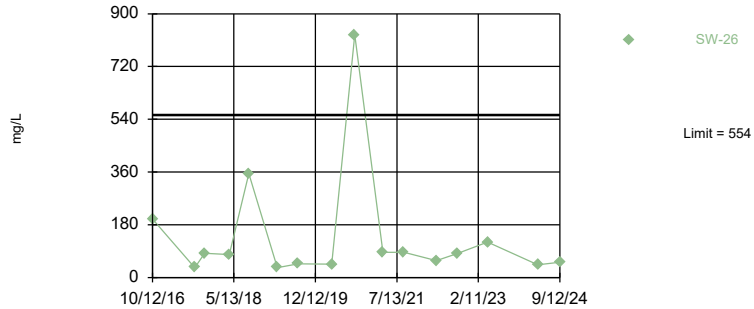
Within Limit Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 13 background values. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Constituent: Strontium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

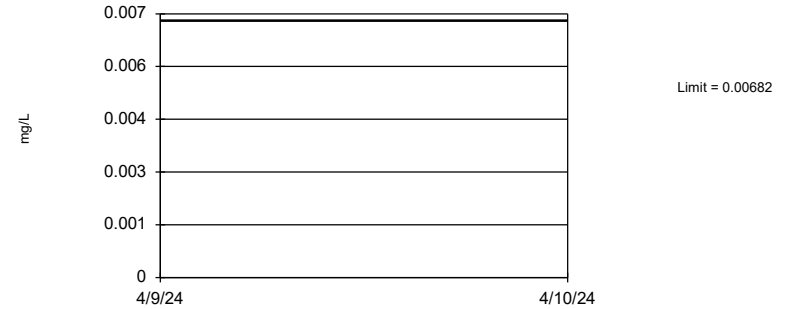
Within Limit Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 14 background values. Annual per-constituent alpha = 0.06112. Individual comparison alpha = 0.007852 (1 of 2). Assumes 3 future values.

Constituent: Sulfate Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Prediction Limit
Interwell Non-parametric

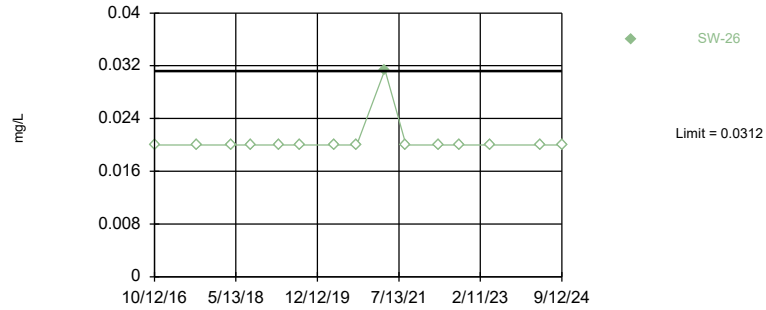


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 4 future values.

Constituent: Vanadium Analysis Run 11/7/2024 1:33 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Within Limit

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Annual per-constituent alpha = 0.0681. Individual comparison alpha = 0.008777 (1 of 2). Assumes 3 future values.

Prediction Limit

Constituent: Aluminum (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	0.217	<0.05
8/7/2017		<0.05
8/9/2017	<0.05	
4/11/2018	0.0713	0.117
8/27/2018	1.09	<0.05
3/18/2019		0.169
3/20/2019	0.153	
8/13/2019	0.194	0.0646
4/7/2020	0.0821	0.134
9/18/2020	1.28	<0.05
4/5/2021	0.191	0.432
9/1/2021	0.982	0.0654
4/20/2022	<0.05	<0.05
9/14/2022		<0.05
4/19/2023	0.0782	<0.05
4/9/2024		0.119
4/10/2024	0.172	
9/12/2024		0.0588

Prediction Limit

Constituent: Arsenic (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<0.002	0.018
8/7/2017		0.0118
8/9/2017	<0.002	
4/11/2018	<0.002	0.00661
8/27/2018	<0.002	0.133
3/18/2019		<0.002
3/20/2019	<0.002	
8/13/2019	0.00342	0.0347
4/7/2020	<0.002	0.00368
9/18/2020	0.00217	0.187
4/5/2021	<0.002	0.0268
9/1/2021	0.00367	0.0262
4/20/2022	<0.002	<0.002
9/14/2022		0.0151
4/19/2023	<0.002	0.00664
4/9/2024		0.00217
4/10/2024	<0.002	
9/12/2024		0.0371

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	0.111	0.0357
8/7/2017		0.0535
8/9/2017	0.0601	
4/11/2018	0.0806	0.0712
8/27/2018	0.108	0.0751
3/18/2019		0.0793
3/20/2019	0.0996	
8/13/2019	0.168	0.048
4/7/2020	0.0967	0.078
9/18/2020	0.168	0.0772
4/5/2021	0.112	0.102
9/1/2021	0.181	0.0455
4/20/2022	0.1	0.0503
9/14/2022		0.0656
4/19/2023	0.101	0.0536
4/9/2024		0.0701
4/10/2024	0.0964	
9/12/2024		0.0808

Prediction Limit

Constituent: Beryllium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.001
8/9/2017	<0.001
4/11/2018	<0.001
8/27/2018	<0.001
3/20/2019	<0.001
8/13/2019	<0.001
4/7/2020	<0.001
9/18/2020	<0.001
4/5/2021	<0.001
9/1/2021	<0.001
4/20/2022	<0.001
4/19/2023	<0.001
4/10/2024	<0.001

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	1.25	4.33
8/7/2017		0.631
8/9/2017	5.95	
10/17/2017	6.67	1.43
4/11/2018	<0.1	1.54
8/27/2018	<0.1	12.4
3/18/2019		0.486
3/20/2019	<0.1	
8/13/2019	<0.1	1
4/7/2020	<0.1	0.745
9/18/2020	0.206	11.3
4/5/2021	<0.1	1.52
9/1/2021	<0.1	0.941
4/20/2022	<0.1	0.855
9/14/2022		0.892
4/19/2023	<0.1	1.54
4/9/2024		0.484
4/10/2024	<0.1	
9/12/2024		1.38

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	75.5	89.3
8/7/2017		35.5
8/9/2017	221	
10/17/2017	204	50.6
4/11/2018	45.2	62.1
8/27/2018	33.3	66.1
3/18/2019		52.4
3/20/2019	51.8	
8/13/2019	47.4	43.6
4/7/2020	59.6	65.5
9/18/2020	55.1	123
4/5/2021	42.4	44.5
9/1/2021	58.1	48.3
4/20/2022	58.6	57.4
9/14/2022		59.4
4/19/2023	57.6	70
4/9/2024		56.1
4/10/2024	50.5	
9/12/2024		57.3

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	13.9	15.4
8/7/2017		13.6
8/9/2017	20	
10/17/2017	16.8	11
4/11/2018	16.5	16.9
8/27/2018	11.7	22.7
3/18/2019		11
3/20/2019	12.9	
8/13/2019	12.3	16.7
4/7/2020	14.5	15.8
9/18/2020	13.3	16.9
4/5/2021	14.9	12.6
9/1/2021	13.7	14
4/20/2022	16.3	16
9/14/2022		9.4
4/19/2023	18	20.2
4/9/2024		20.6
4/10/2024	21.3	
9/12/2024		18.5

Prediction Limit

Constituent: Cobalt (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<0.0005	<0.0005
8/7/2017		<0.0005
8/9/2017	<0.0005	
4/11/2018	<0.0005	<0.0005
8/27/2018	<0.0005	<0.0005
3/18/2019		<0.0005
3/20/2019	<0.0005	
8/13/2019	0.000833	0.000613
4/7/2020	<0.0005	<0.0005
9/18/2020	0.00116	<0.0005
4/5/2021	<0.0005	0.00134
9/1/2021	0.00105	<0.0005
4/20/2022	0.000713	<0.0005
9/14/2022		<0.0005
4/19/2023	<0.0005	<0.0005
4/9/2024		<0.0005
4/10/2024	<0.0005	
9/12/2024		<0.0005

Prediction Limit

Constituent: Copper (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	<0.005
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	0.0358 (o)
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<1	<1
8/7/2017		<1
8/9/2017	<1	
10/17/2017	<1	<1
4/11/2018	<1	<1
8/27/2018	<1	<1
3/18/2019		<1
3/20/2019	<1	
8/13/2019	<1	0.512
4/7/2020	<1	<1
9/18/2020	<1	<1
4/5/2021	0.6	<1
9/1/2021	<1	<1
4/20/2022	<1	<1
9/14/2022		<1
4/19/2023	<1	<1
4/9/2024		<1
4/10/2024	<1	
9/12/2024		<1

Prediction Limit

Constituent: Iron (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	0.415	0.141
8/7/2017		0.135
8/9/2017	<0.1	
4/11/2018	0.259	0.457
8/27/2018	1.01	0.151
3/18/2019		0.345
3/20/2019	0.66	
8/13/2019	0.408	0.227
4/7/2020	0.363	0.439
9/18/2020	1.25	<0.1
4/5/2021	0.21	0.439
9/1/2021	1.34	0.169
4/20/2022	0.123	0.157
9/14/2022		0.116
4/19/2023	0.24	0.286
4/9/2024		0.178
4/10/2024	0.196	
9/12/2024		0.2

Prediction Limit

Constituent: Lead (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<0.0005	<0.0005
8/7/2017		<0.0005
8/9/2017	<0.0005	
4/11/2018	<0.0005	<0.0005
8/27/2018	0.000716	<0.0005
3/18/2019		<0.0005
3/20/2019	<0.0005	
8/13/2019	0.000623	<0.0005
4/7/2020	<0.0005	<0.0005
9/18/2020	0.000829	<0.0005
4/5/2021	<0.0005	0.00101
9/1/2021	0.00258	<0.0005
4/20/2022	<0.0005	<0.0005
9/14/2022		<0.0005
4/19/2023	<0.0005	<0.0005
4/9/2024		<0.0005
4/10/2024	<0.0005	
9/12/2024		<0.0005

Prediction Limit

Constituent: Magnesium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	28.6	24.5
8/7/2017		22.6
8/9/2017	73.3	
4/11/2018	21.1	28
8/27/2018	13.6	29.1
3/18/2019		19.2
3/20/2019	22.6	
8/13/2019	20.9	25.8
4/7/2020	26.4	28.2
9/18/2020	22.9	30.5
4/5/2021	17.2	14.8
9/1/2021	25.8	23.8
4/20/2022	23.6	25.4
9/14/2022		18.3
4/19/2023	25.1	33
4/9/2024		20.8
4/10/2024	20.9	
9/12/2024		20.6

Prediction Limit

Constituent: Manganese (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	0.205	0.205
8/7/2017		0.139
8/9/2017	0.0766	
4/11/2018	0.18	0.194
8/27/2018	0.0399	0.298
3/18/2019		0.172
3/20/2019	0.196	
8/13/2019	0.694	0.993
4/7/2020	0.217	0.241
9/18/2020	0.492	0.271
4/5/2021	0.0882	0.114
9/1/2021	0.539	0.29
4/20/2022	0.125	0.0422
9/14/2022		0.131
4/19/2023	0.204	0.728
4/9/2024		0.0612
4/10/2024	0.0309	
9/12/2024		0.385

Prediction Limit

Constituent: Molybdenum (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<0.002	0.043
8/7/2017		0.00214
8/9/2017	<0.002	
4/11/2018	<0.002	0.00659
8/27/2018	<0.002	0.032
3/18/2019		0.00291
3/20/2019	<0.002	
8/13/2019	<0.002	0.00379
4/7/2020	<0.002	<0.002
9/18/2020	<0.002	0.0876
4/5/2021	<0.002	0.011
9/1/2021	0.00637	0.00925
4/20/2022	<0.002	0.00202
9/14/2022		0.00514
4/19/2023	<0.002	0.0149
4/9/2024		<0.002
4/10/2024	<0.002	
9/12/2024		0.00433

Prediction Limit

Constituent: Nickel (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	<0.005
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Selenium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	<0.005
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	<0.005
4/5/2021	<0.005
9/1/2021	<0.005
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Strontium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	0.148	0.36
8/7/2017		0.113
8/9/2017	0.285	
4/11/2018	0.0998	0.164
8/27/2018	0.0842	0.418
3/18/2019		0.123
3/20/2019	0.12	
8/13/2019	0.129	0.158
4/7/2020	0.128	0.156
9/18/2020	0.125	0.759
4/5/2021	0.12	0.17
9/1/2021	0.147	0.174
4/20/2022	0.125	0.146
9/14/2022		0.156
4/19/2023	0.111	0.203
4/9/2024		0.146
4/10/2024	0.115	
9/12/2024		0.172

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	73	200
8/7/2017		33.8
8/9/2017	554	
10/17/2017	213	82.5
4/11/2018	20.1	78.8
8/27/2018	13.2	355
3/18/2019		33.7
3/20/2019	20.4	
8/13/2019	10.1	46.3
4/7/2020	16.3	45.9
9/18/2020	21	828
4/5/2021	13.9	86.4
9/1/2021	14.3	85.9
4/20/2022	15.7	57.3
9/14/2022		81.4
4/19/2023	15.7	121
4/9/2024		43.8
4/10/2024	15.1	
9/12/2024		52.2

Prediction Limit

Constituent: Vanadium (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits
Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)
10/12/2016	<0.005
8/9/2017	<0.005
4/11/2018	<0.005
8/27/2018	0.00549
3/20/2019	<0.005
8/13/2019	<0.005
4/7/2020	<0.005
9/18/2020	0.00516
4/5/2021	<0.005
9/1/2021	0.00682
4/20/2022	<0.005
4/19/2023	<0.005
4/10/2024	<0.005

Prediction Limit

Constituent: Zinc (mg/L) Analysis Run 11/7/2024 1:34 PM View: State Surface Water Prediction Limits

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

	SW-22 (bg)	SW-26
10/12/2016	<0.02	<0.02
8/7/2017		<0.02
8/9/2017	<0.02	
4/11/2018	<0.02	<0.02
8/27/2018	<0.02	<0.02
3/18/2019		<0.02
3/20/2019	<0.02	
8/13/2019	<0.02	<0.02
4/7/2020	<0.02	<0.02
9/18/2020	<0.02	<0.02
4/5/2021	<0.02	0.0314
9/1/2021	0.0312	<0.02
4/20/2022	<0.02	<0.02
9/14/2022		<0.02
4/19/2023	<0.02	<0.02
4/9/2024		<0.02
4/10/2024	<0.02	
9/12/2024		<0.02

FIGURE I.

Trend Tests - Surface Water Prediction Limit Exceedances - Significant Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:37 PM

<u>Constituent</u>	<u>Well</u>	<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>	<u>Method</u>
Boron (mg/L)	SW-24	-0.4159	-64	-53	Yes	15	0	n/a	n/a	0.01	NP

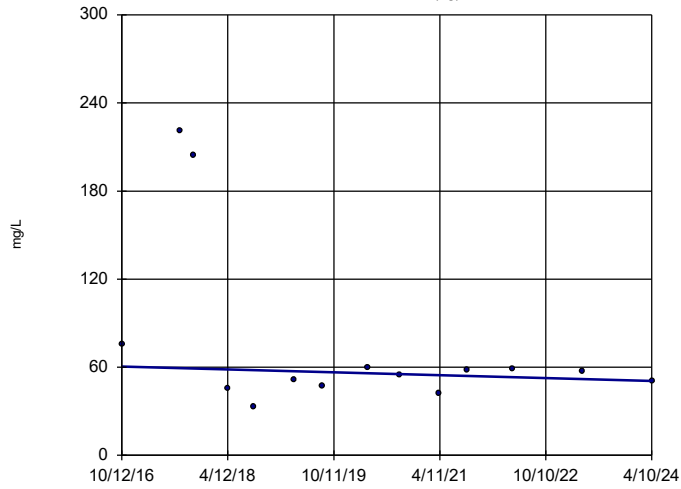
Trend Tests - Surface Water Prediction Limit Exceedances - All Results

Muscatine Power & Water Client: GHD Data: Muscatine Power & Water Printed 11/7/2024, 1:37 PM

<u>Constituent</u>	<u>Well</u>	<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>	<u>Method</u>
Arsenic (mg/L)	SW-22 (bg)	0	7	43	No	13	76.92	n/a	n/a	0.01	NP
Arsenic (mg/L)	SW-26	-0.000905	-8	-53	No	15	13.33	n/a	n/a	0.01	NP
Boron (mg/L)	SW-22 (bg)	0	-30	-48	No	14	71.43	n/a	n/a	0.01	NP
Boron (mg/L)	SW-24	-0.4159	-64	-53	Yes	15	0	n/a	n/a	0.01	NP
Calcium (mg/L)	SW-22 (bg)	-1.292	-15	-48	No	14	0	n/a	n/a	0.01	NP
Calcium (mg/L)	SW-24	-4.347	-43	-53	No	15	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	SW-22 (bg)	-0.4282	-9	-43	No	13	0	n/a	n/a	0.01	NP
Magnesium (mg/L)	SW-24	-1.166	-31	-48	No	14	0	n/a	n/a	0.01	NP
Strontium (mg/L)	SW-22 (bg)	-0.002505	-16	-43	No	13	0	n/a	n/a	0.01	NP
Strontium (mg/L)	SW-24	-0.009132	-29	-48	No	14	0	n/a	n/a	0.01	NP
Strontium (mg/L)	SW-25	-0.005334	-11	-48	No	14	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SW-22 (bg)	-2.076	-34	-48	No	14	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	SW-24	-15.8	-32	-53	No	15	0	n/a	n/a	0.01	NP

Sen's Slope Estimator

SW-22 (bg)

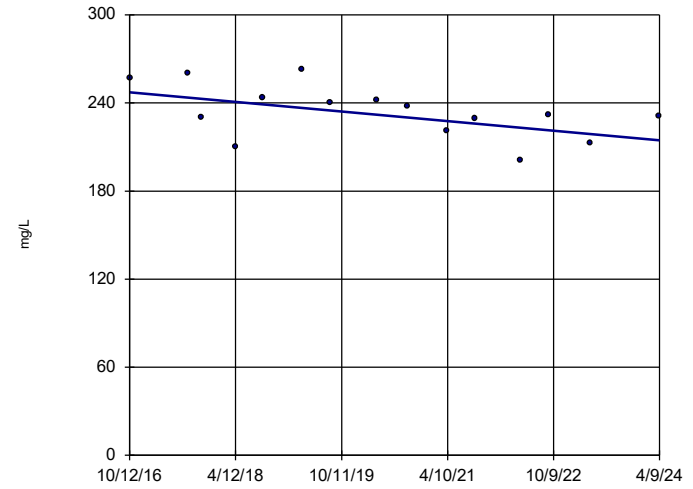


n = 14
 Slope = -1.292
 units per year.
 Mann-Kendall
 statistic = -15
 critical = -48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Calcium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-24

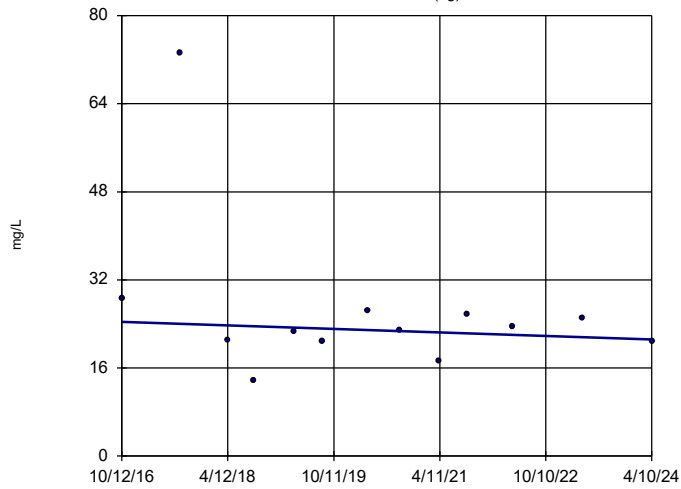


n = 15
 Slope = -4.347
 units per year.
 Mann-Kendall
 statistic = -43
 critical = -53
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Calcium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-22 (bg)

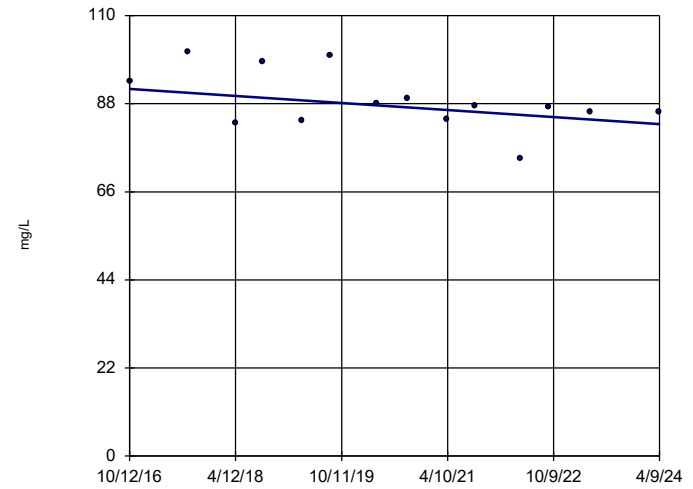


n = 13
 Slope = -0.4282
 units per year.
 Mann-Kendall
 statistic = -9
 critical = -43
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Magnesium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-24

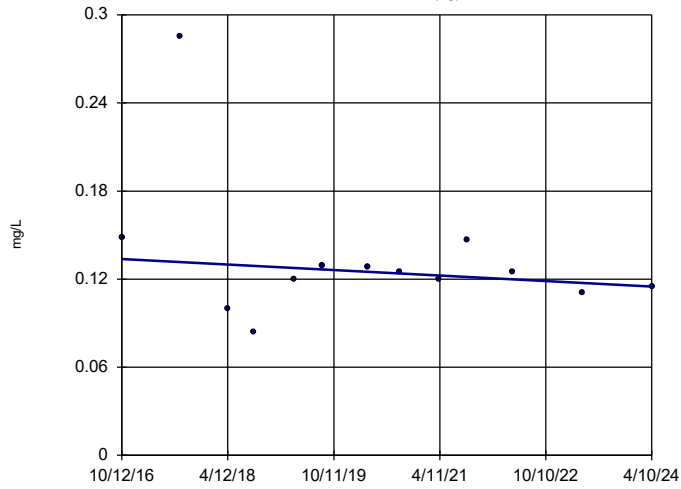


n = 14
 Slope = -1.166
 units per year.
 Mann-Kendall
 statistic = -31
 critical = -48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Magnesium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-22 (bg)

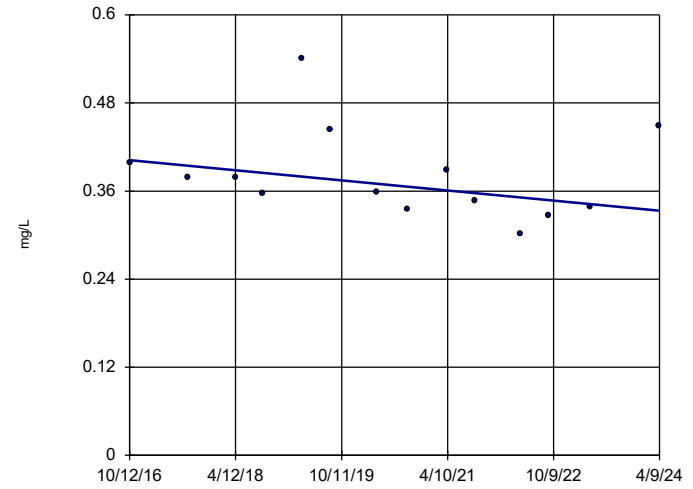


n = 13
 Slope = -0.002505 units per year.
 Mann-Kendall statistic = -16
 critical = -43
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Strontium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-24

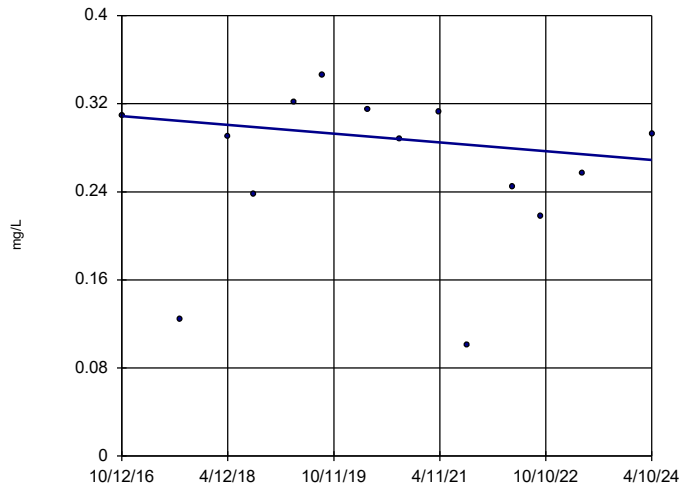


n = 14
 Slope = -0.009132 units per year.
 Mann-Kendall statistic = -29
 critical = -48
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Strontium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-25

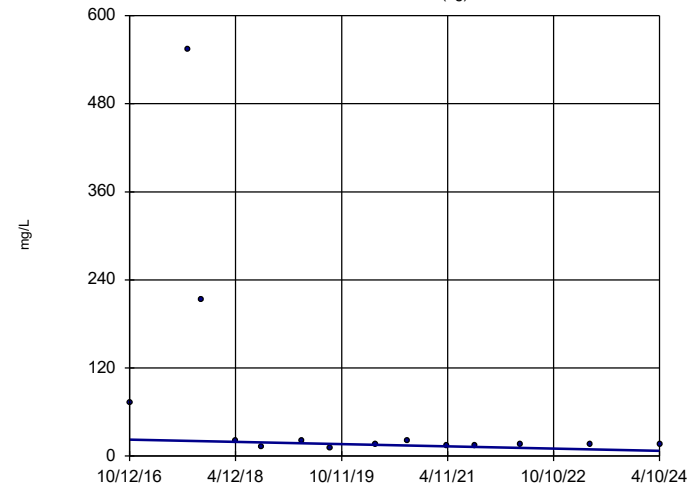


n = 14
 Slope = -0.005334 units per year.
 Mann-Kendall statistic = -11
 critical = -48
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Strontium Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

SW-22 (bg)

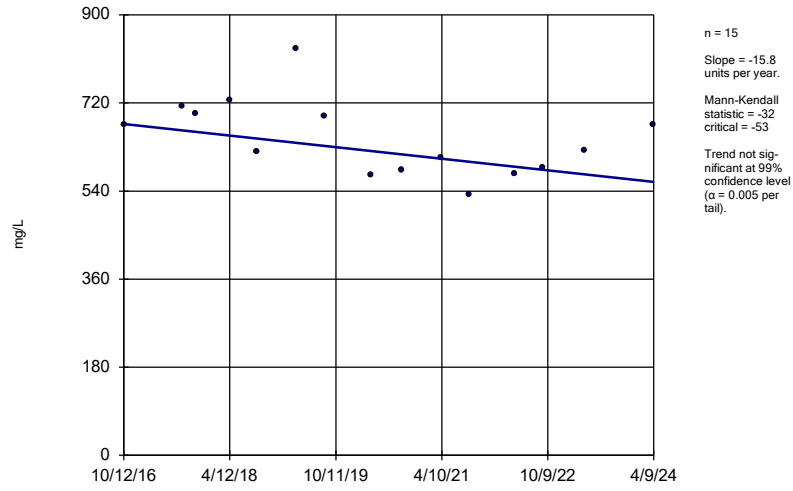


n = 14
 Slope = -2.076 units per year.
 Mann-Kendall statistic = -34
 critical = -48
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 11/7/2024 1:35 PM View: State Surface Water Trend Tests
 Muscatine Power & Water Client: GHD Data: Muscatine Power & Water

Sen's Slope Estimator

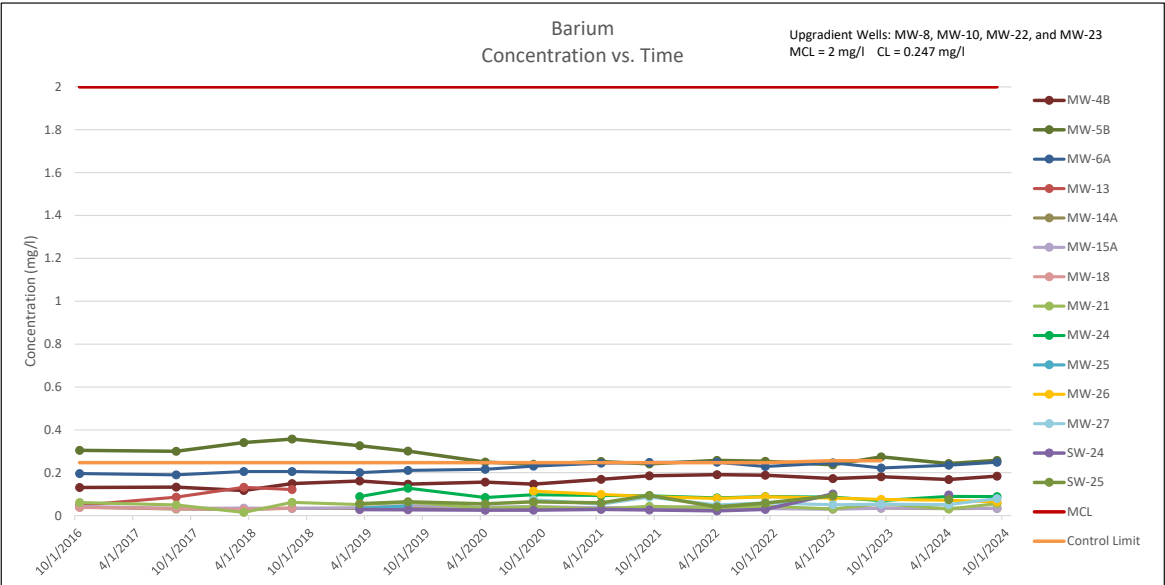
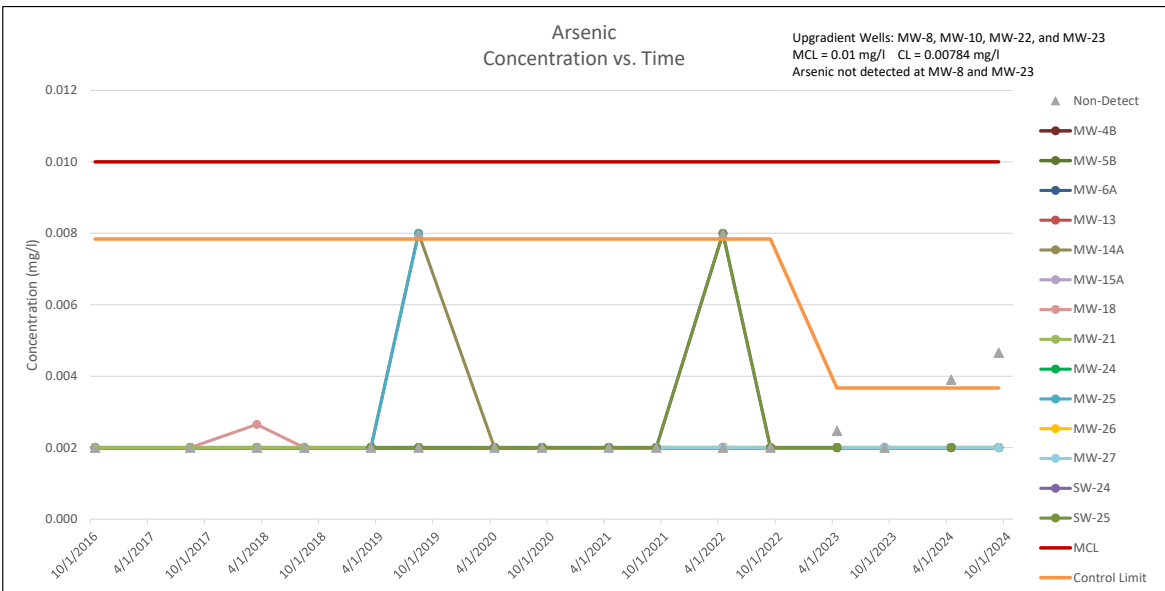
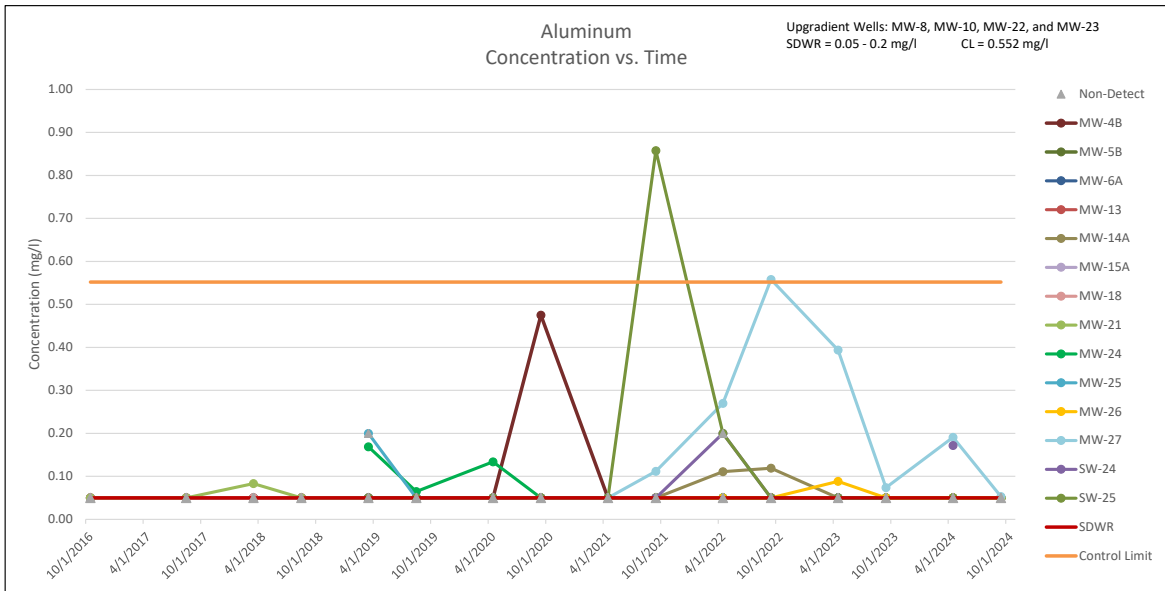
SW-24



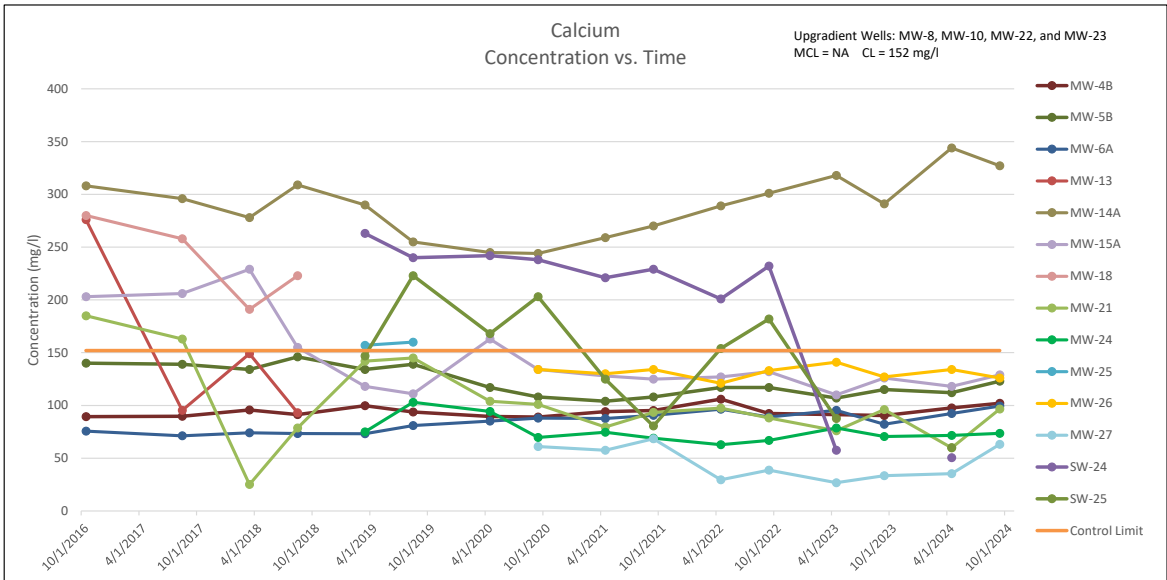
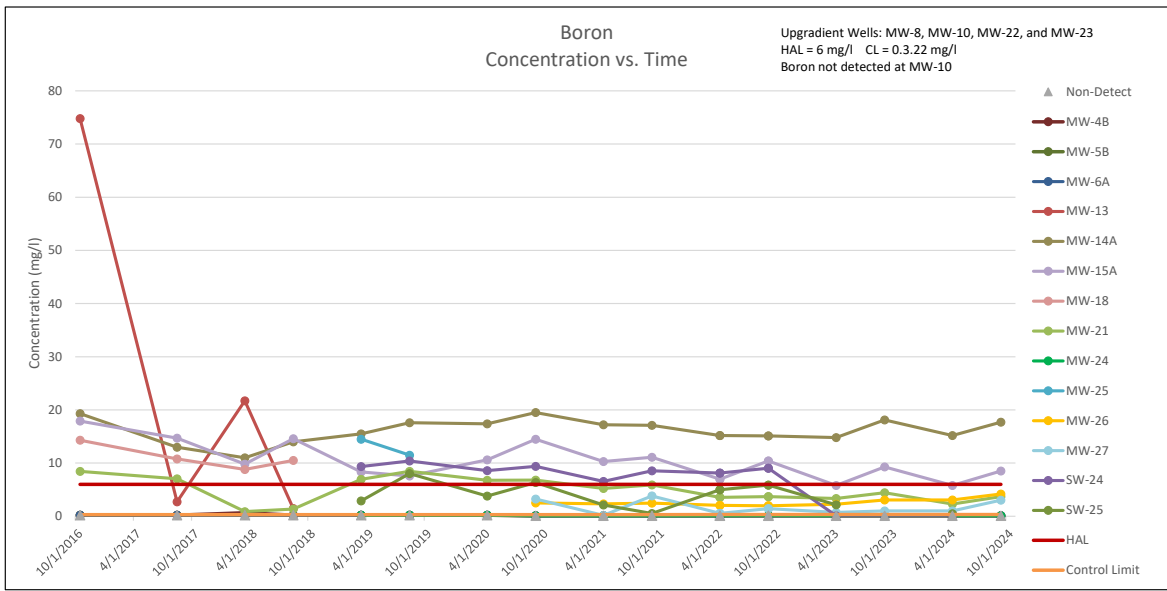
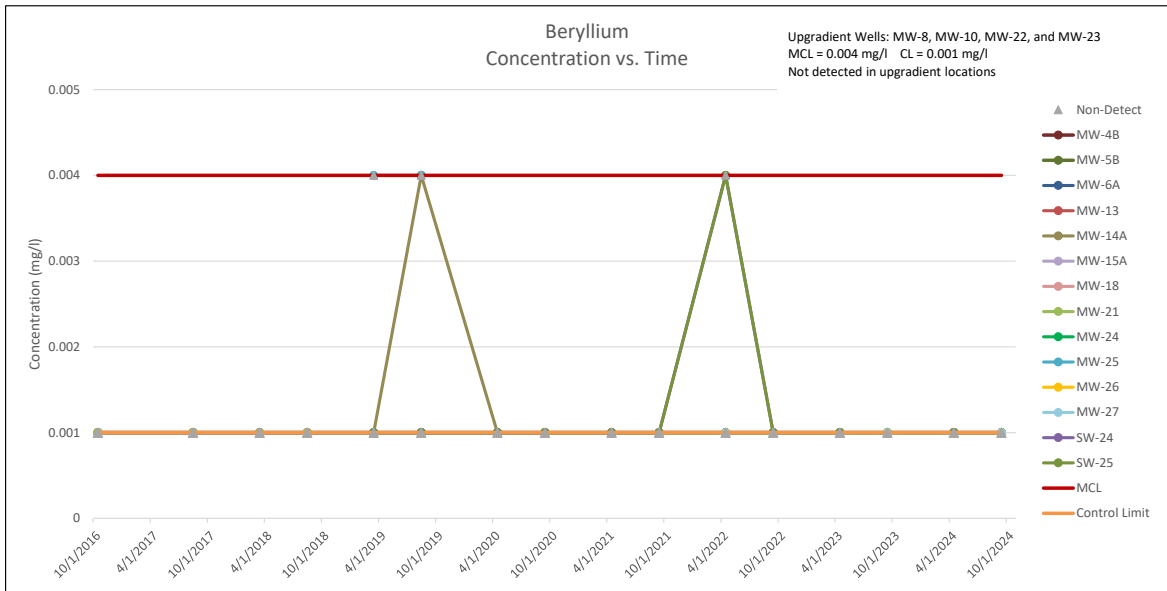
Appendix D

Time-Series Graphs

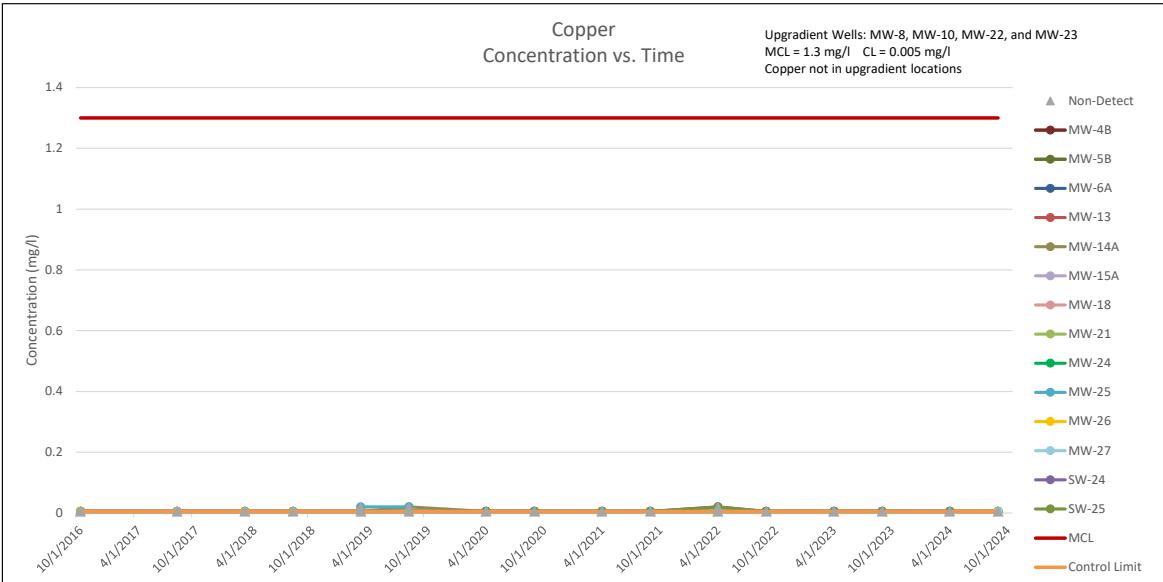
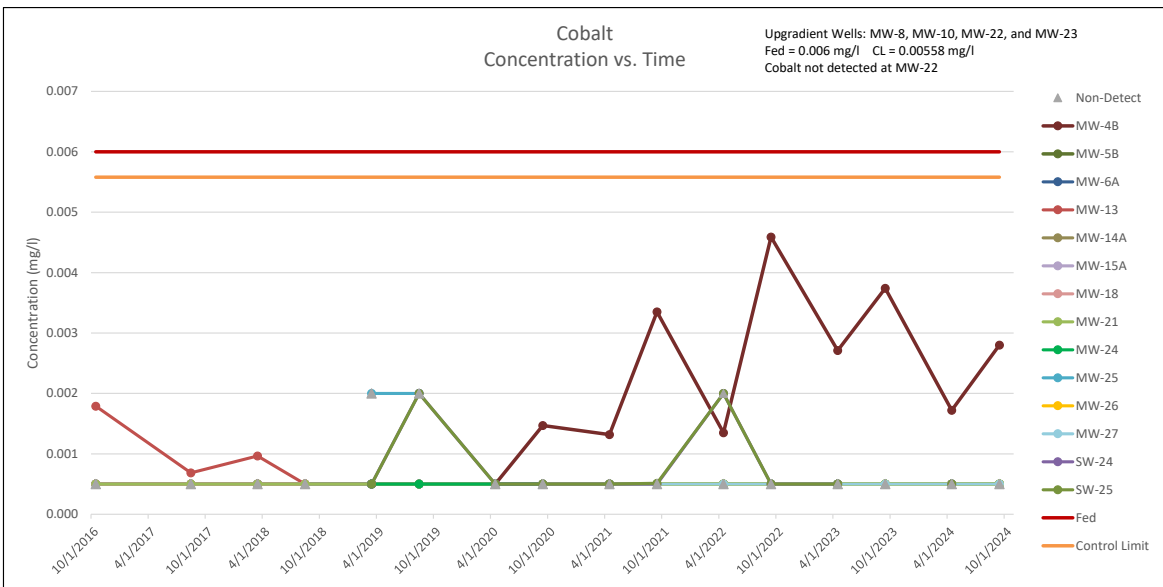
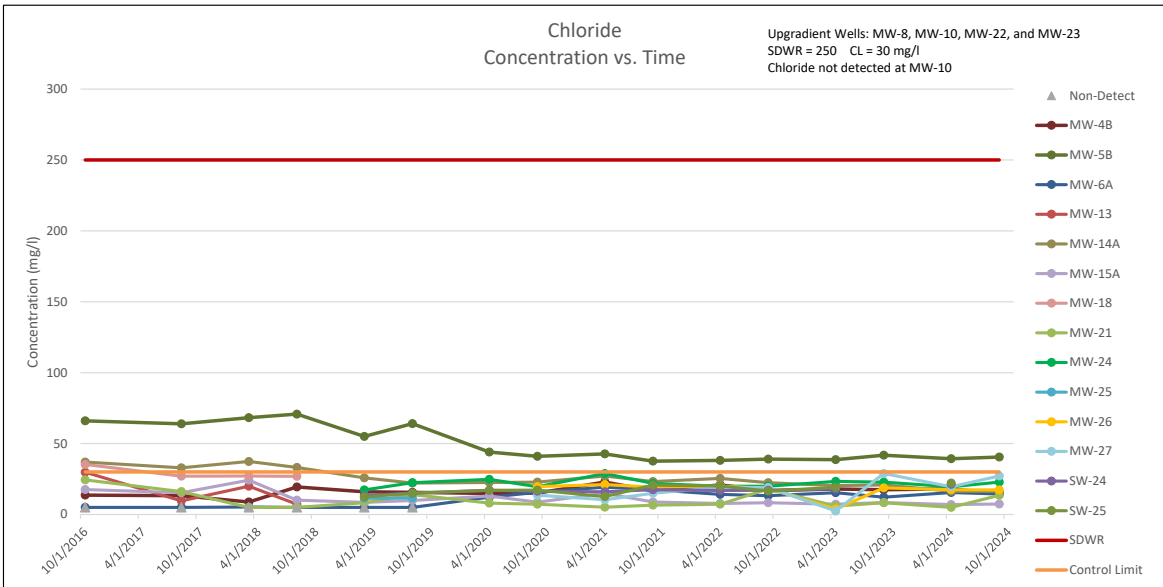
Water Quality Results
2016 - 2023



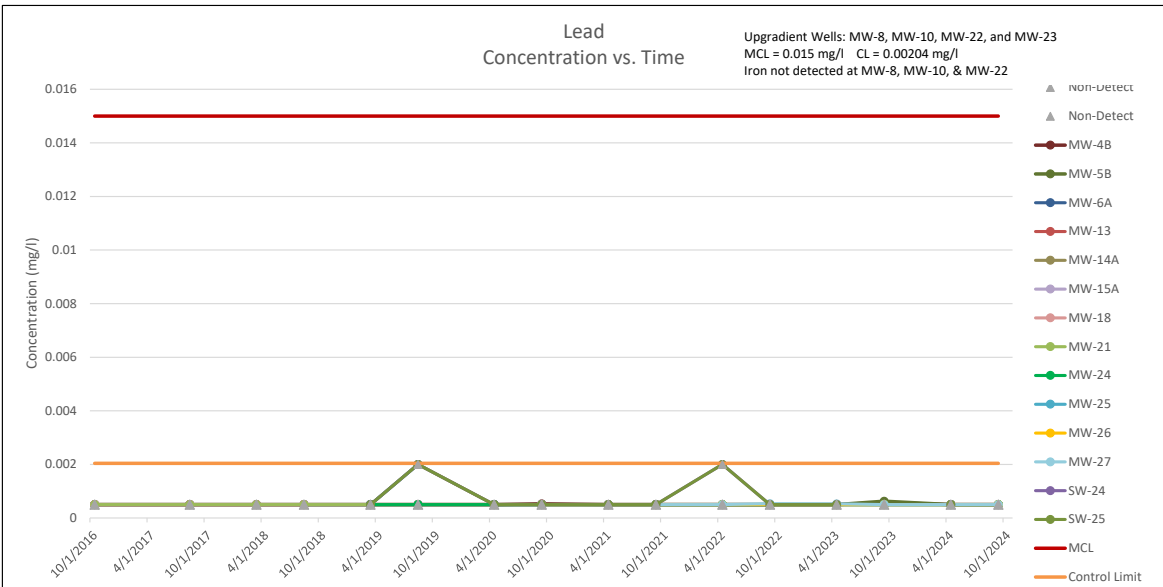
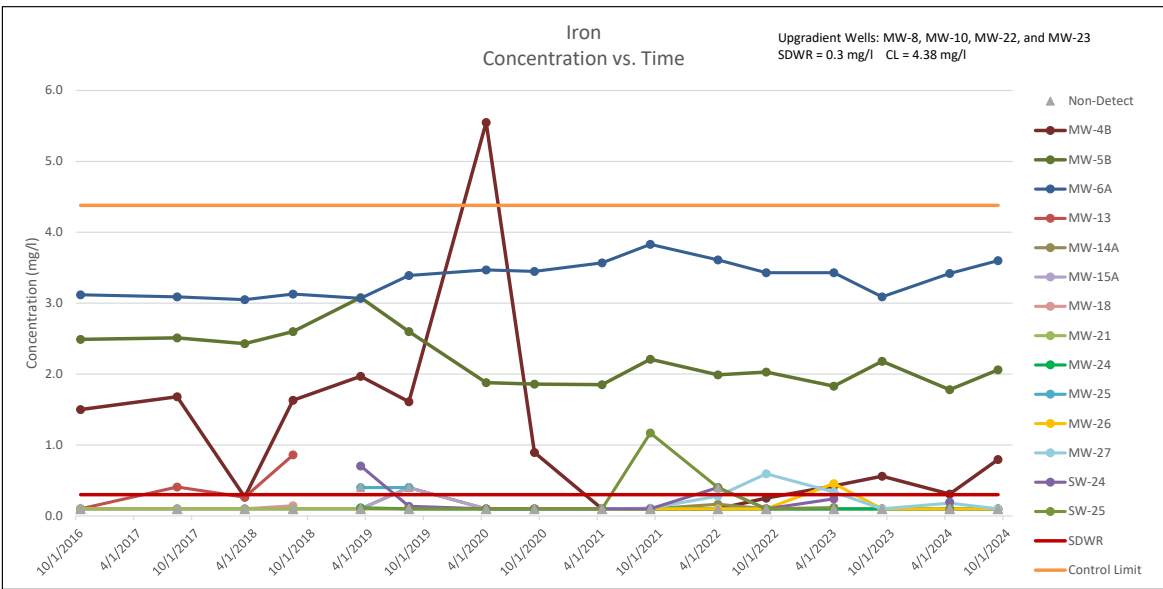
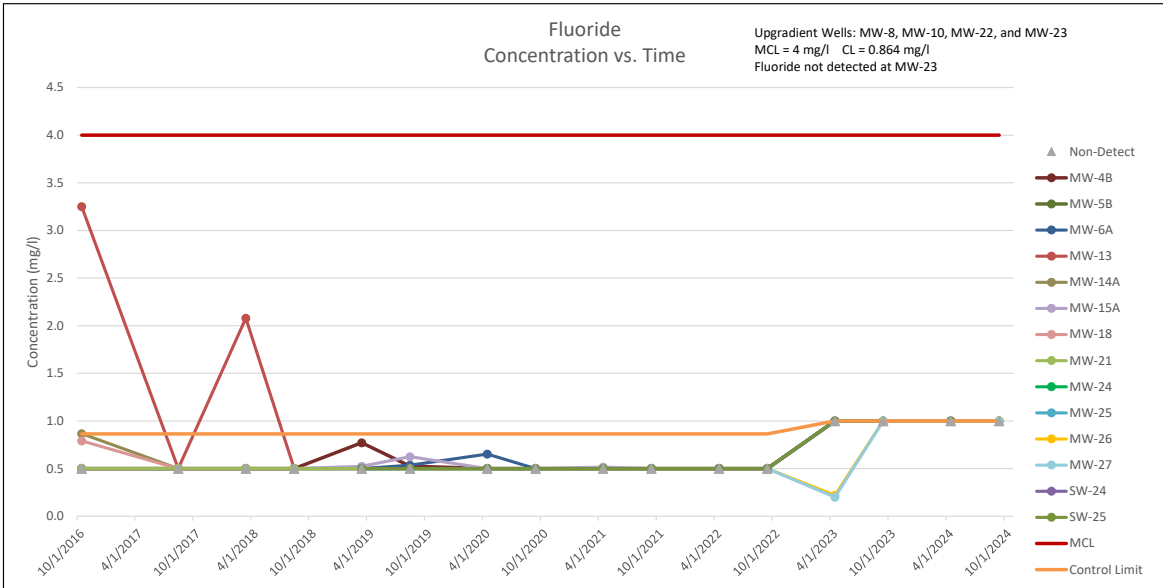
Water Quality Results
2016 - 2023



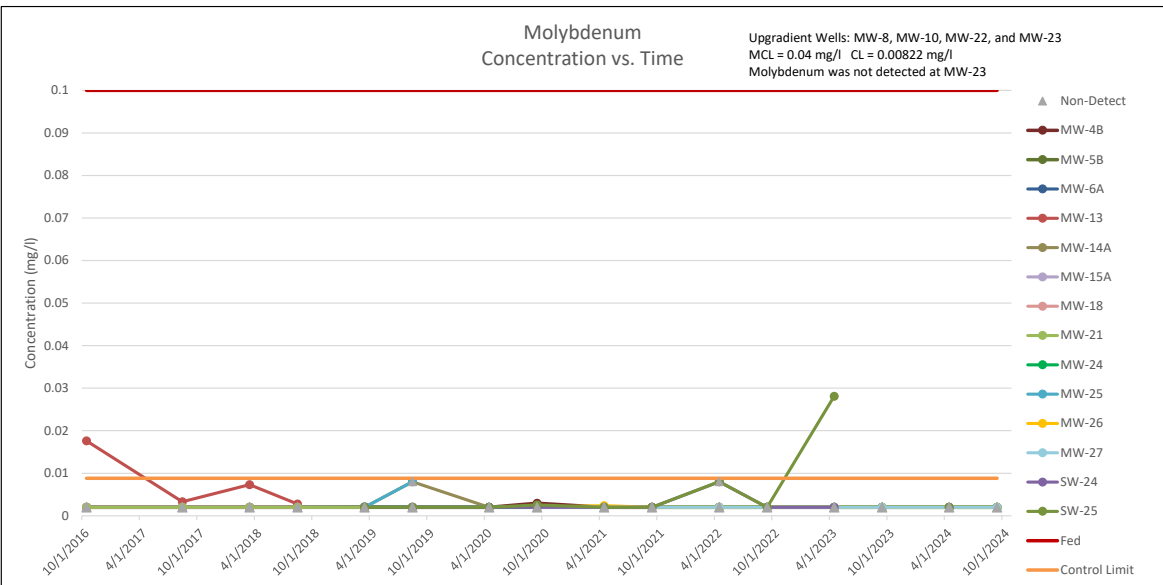
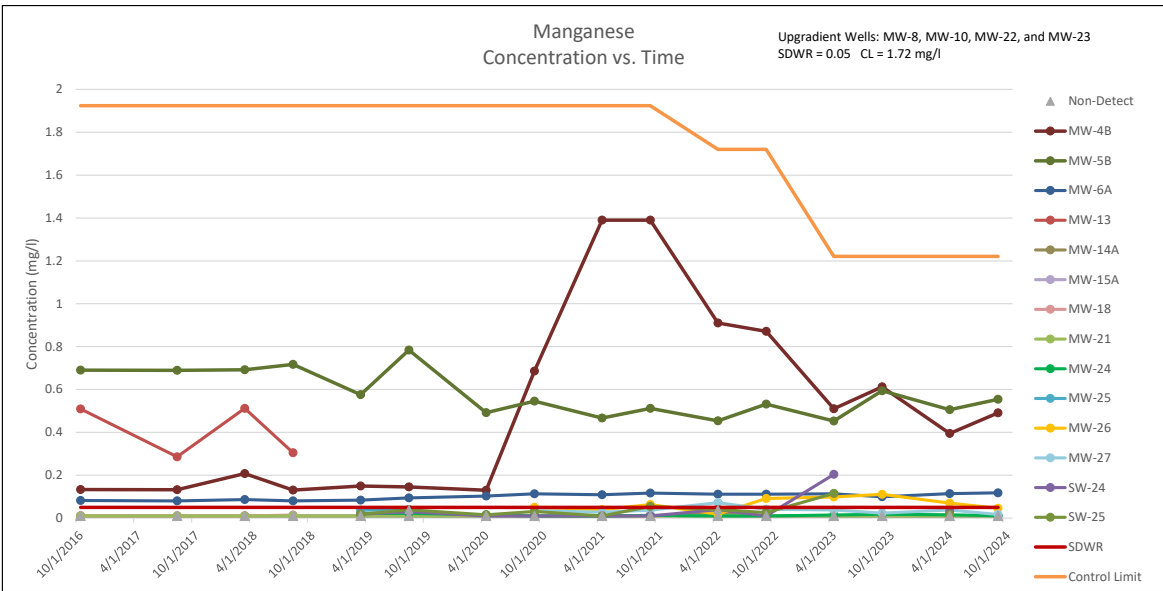
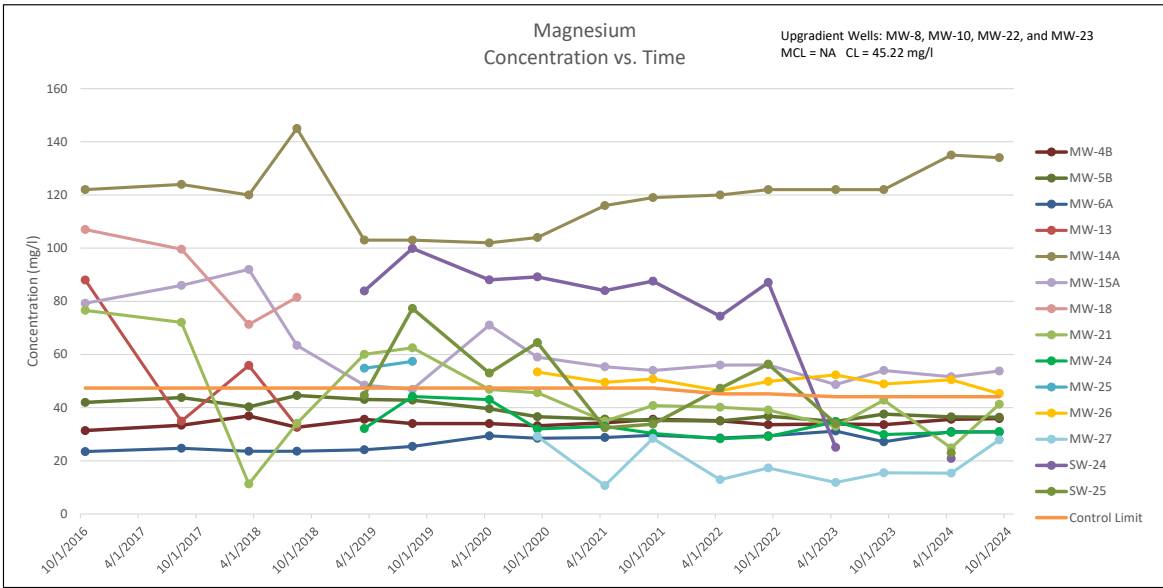
Water Quality Results
2016 - 2023



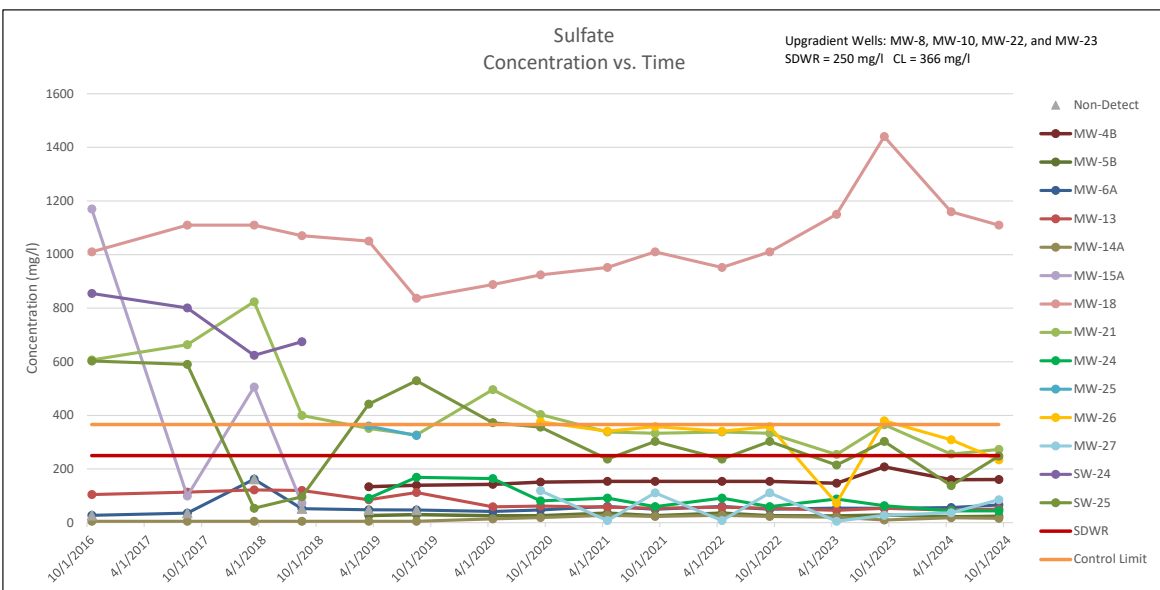
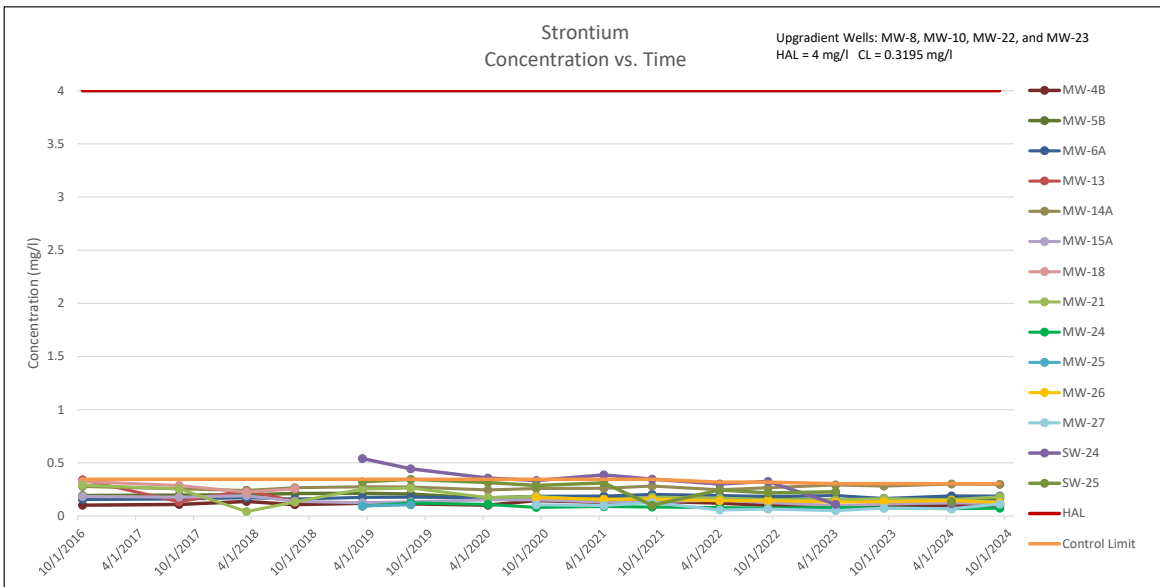
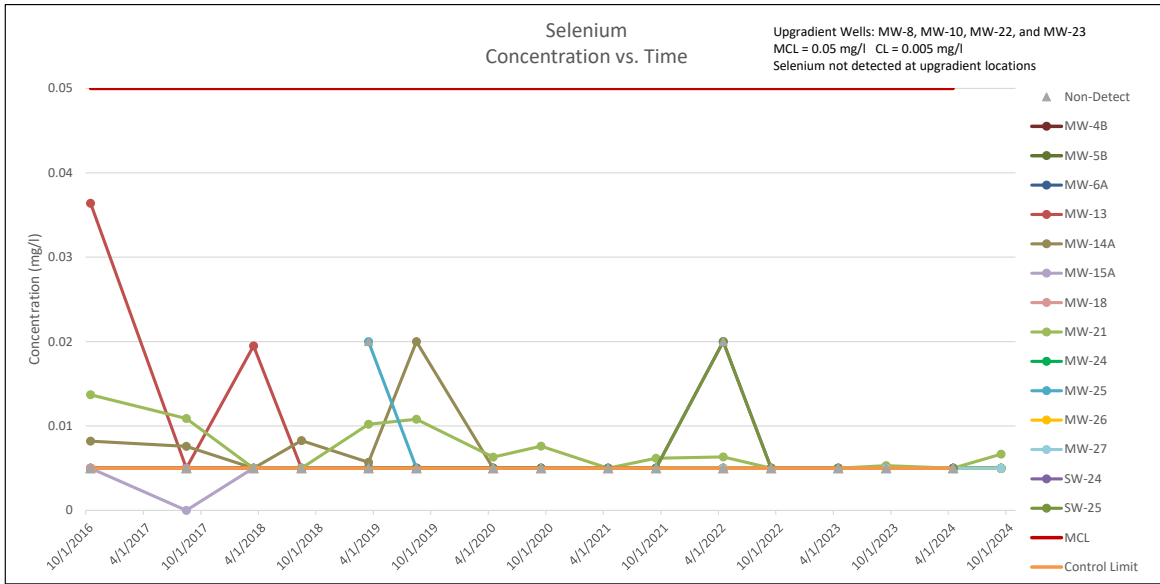
Water Quality Results
2016 - 2023



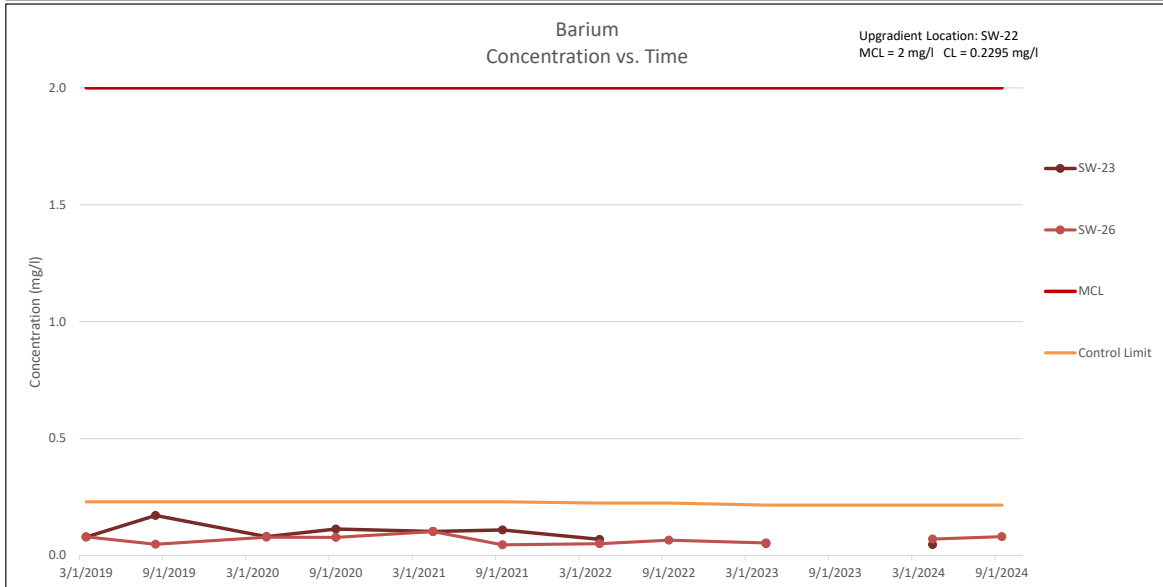
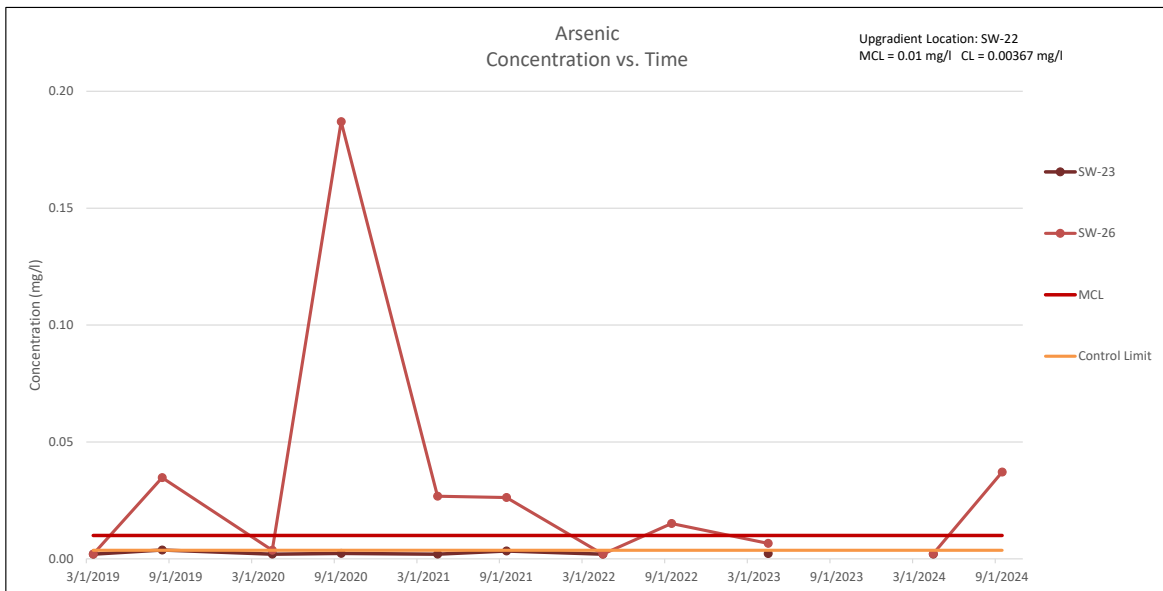
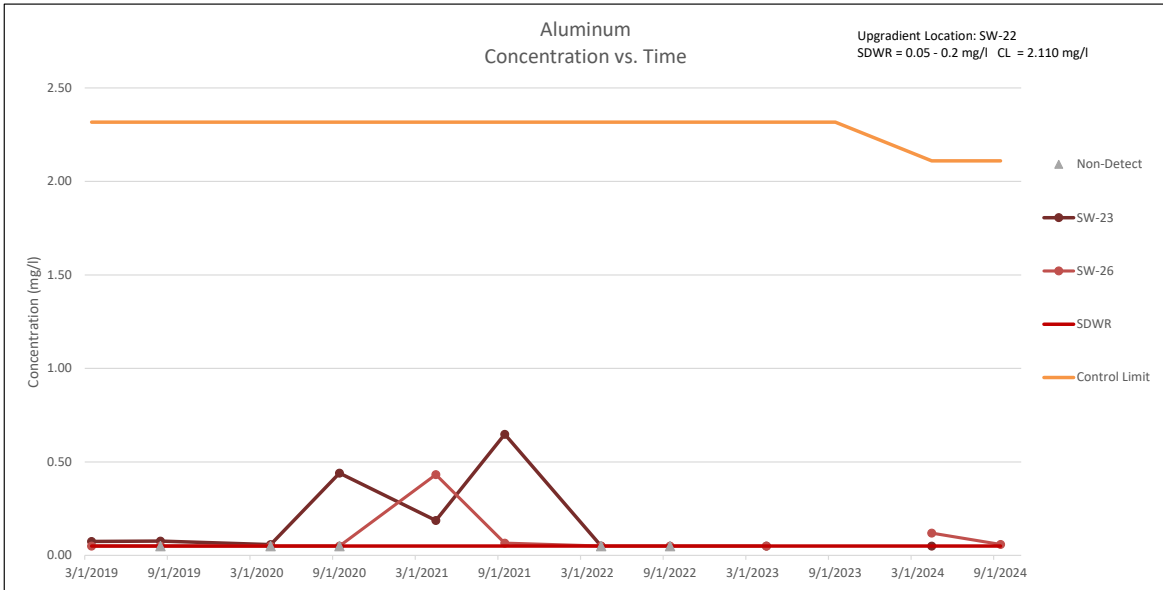
Water Quality Results
2016 - 2023



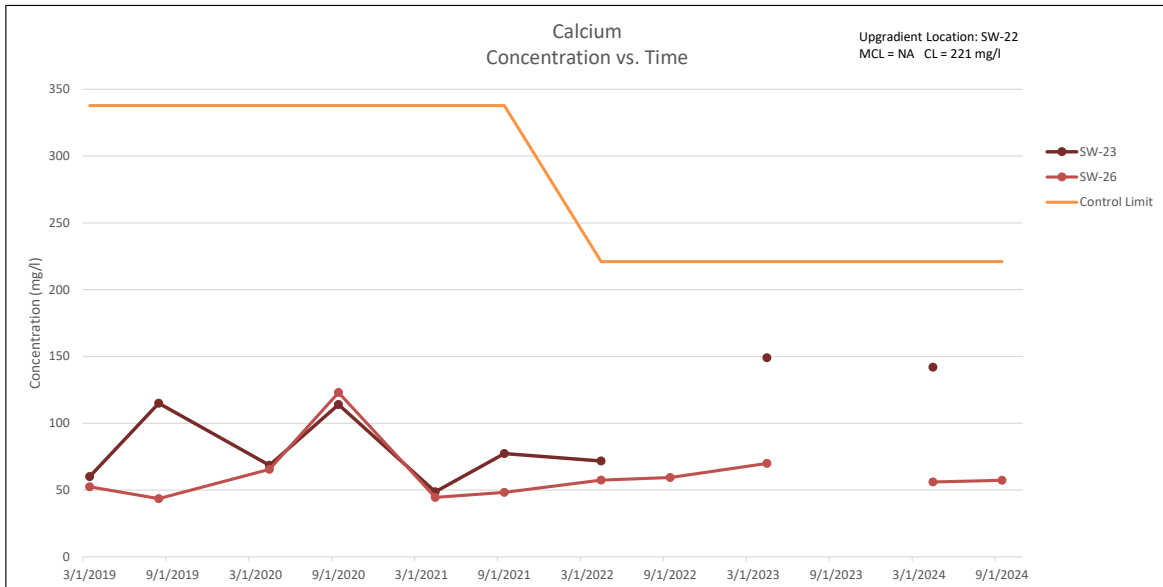
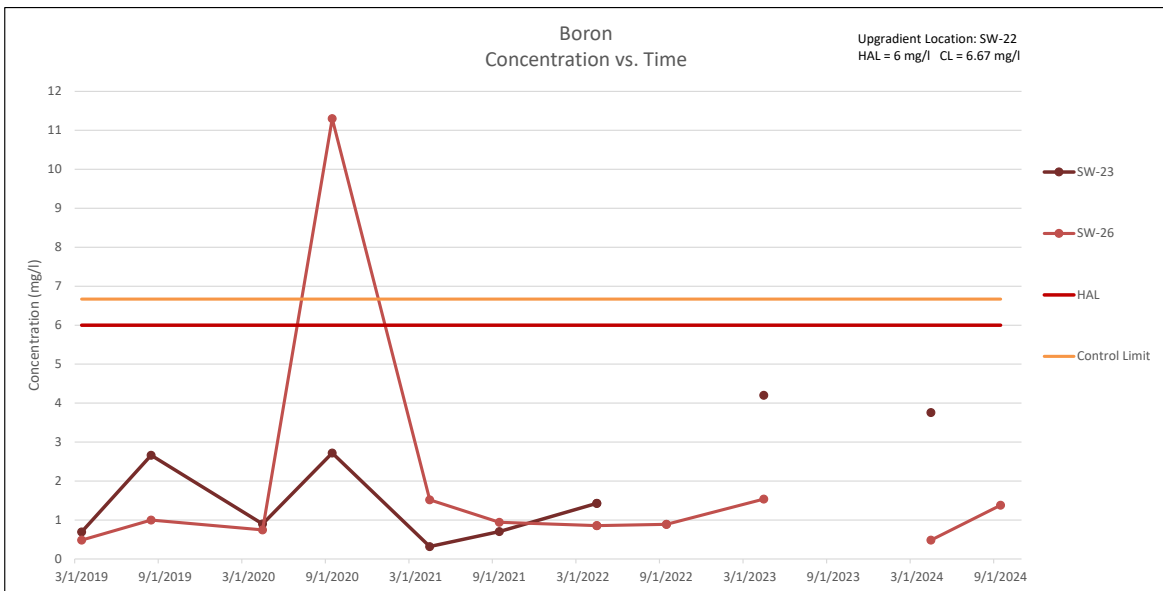
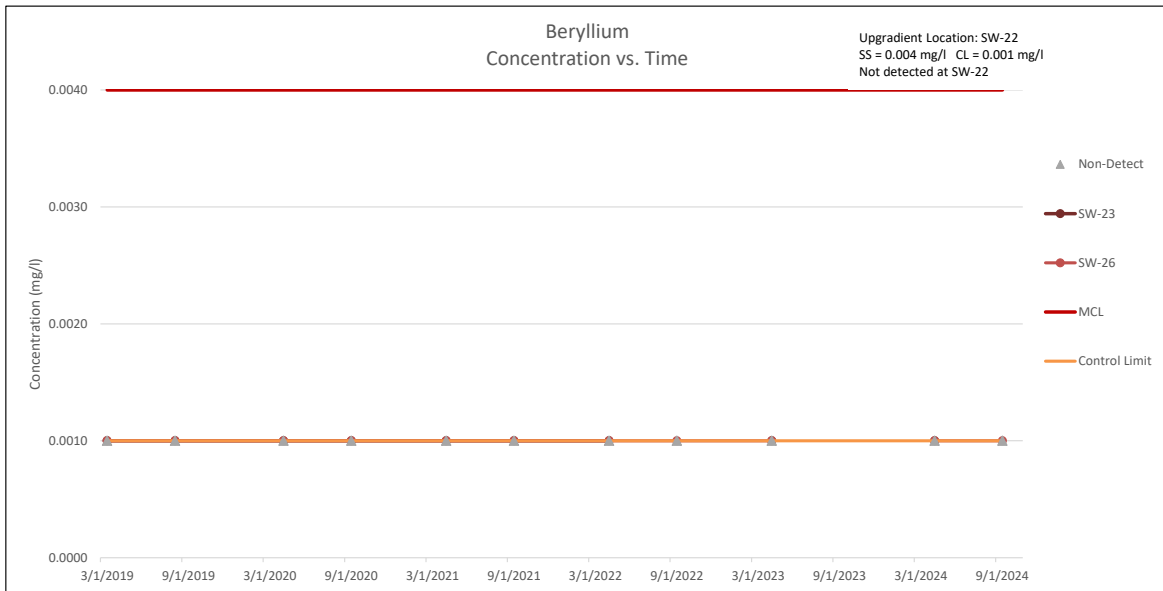
Water Quality Results
2016 - 2023



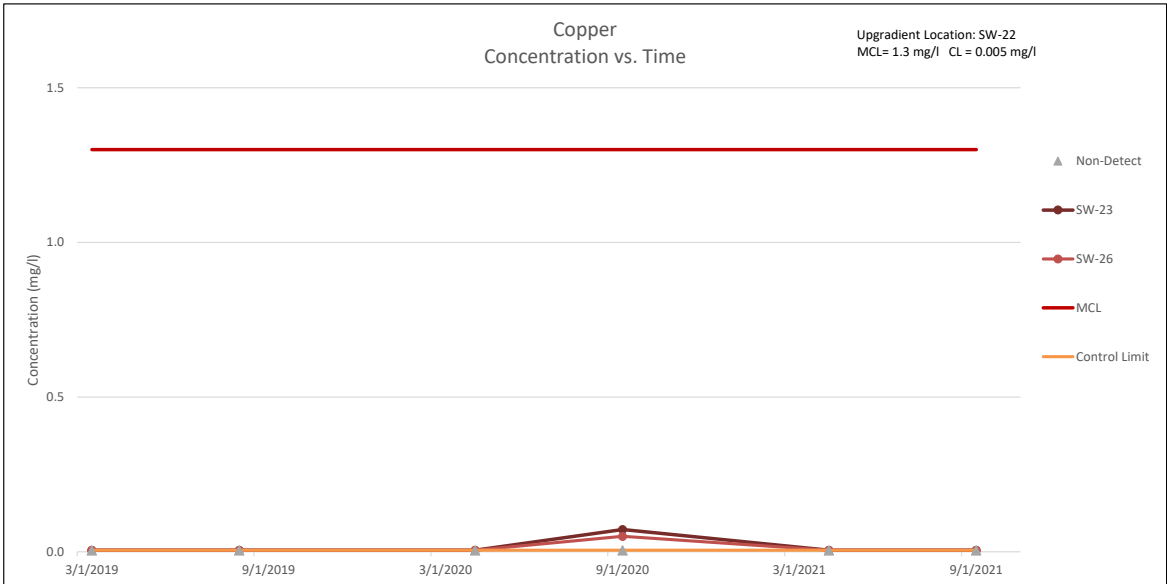
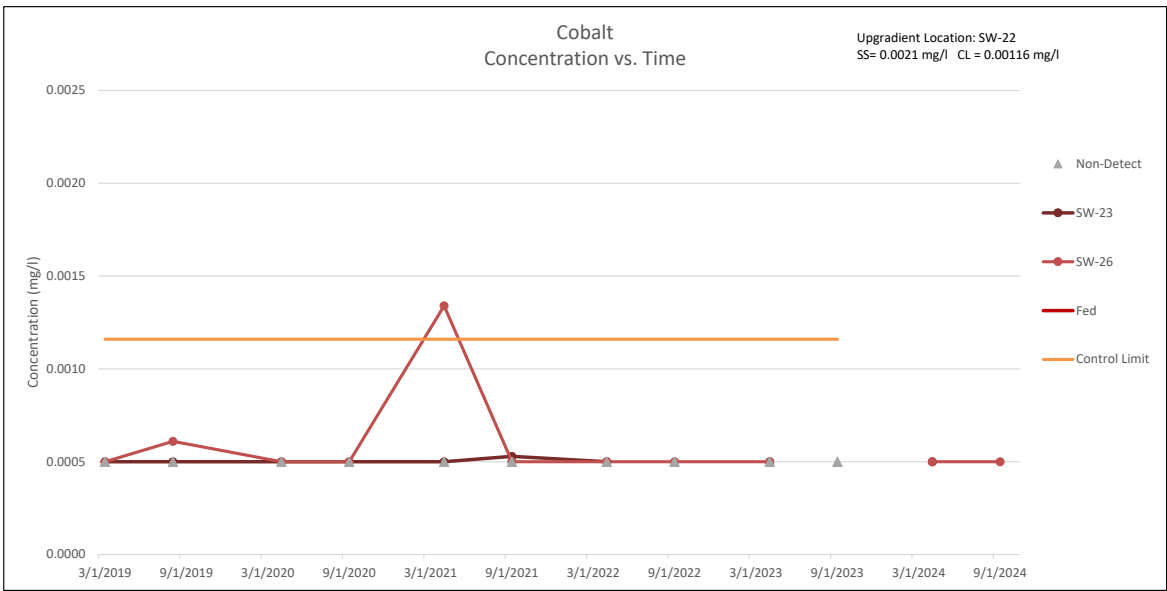
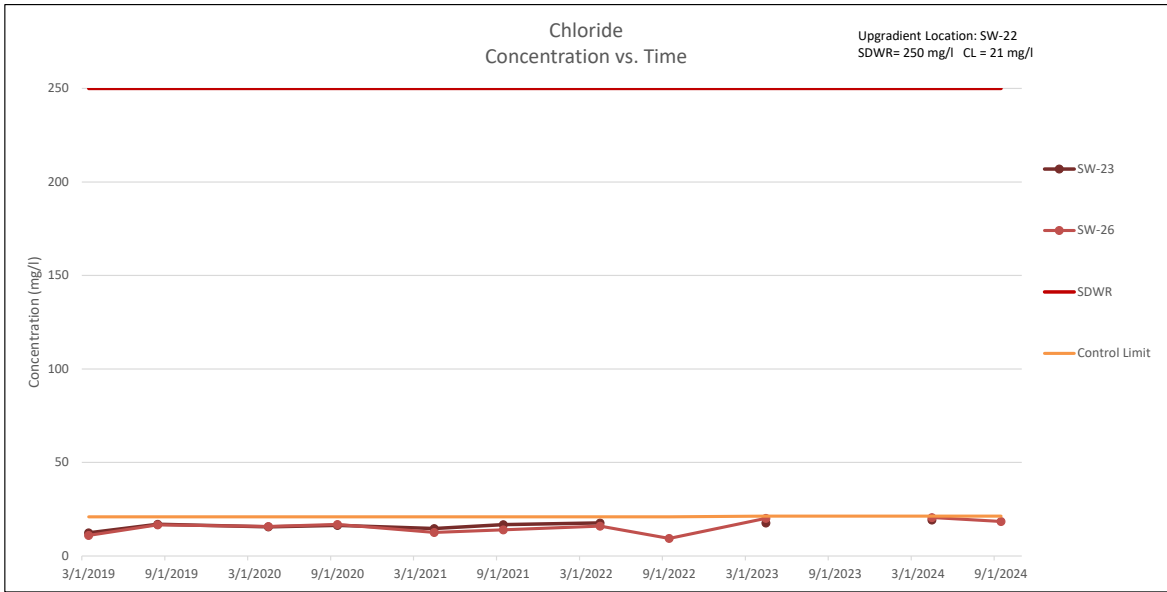
Water Quality Results
2016 - 2023



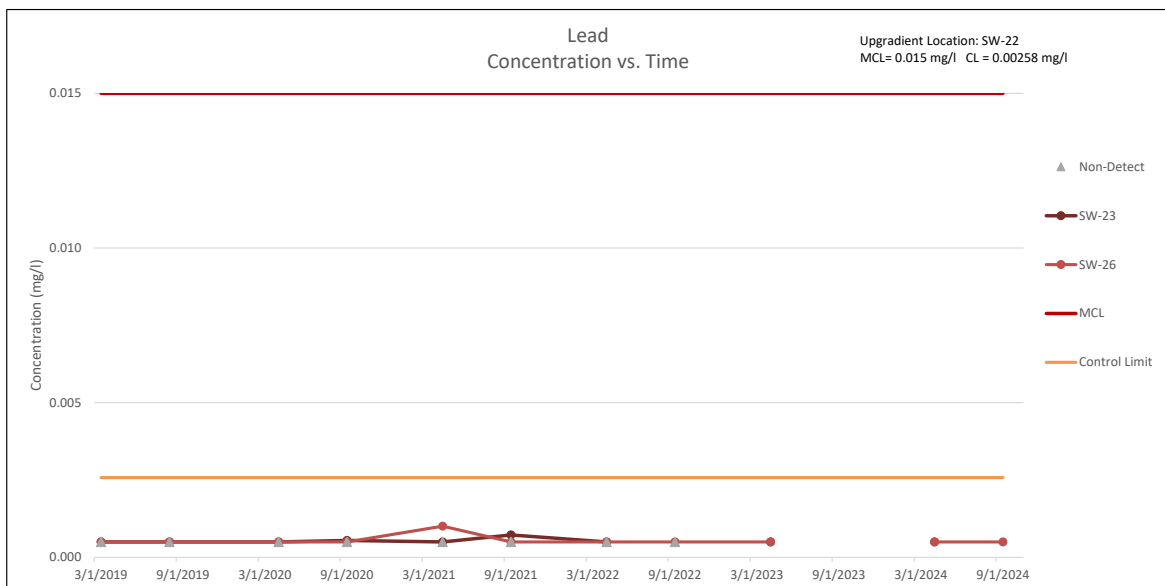
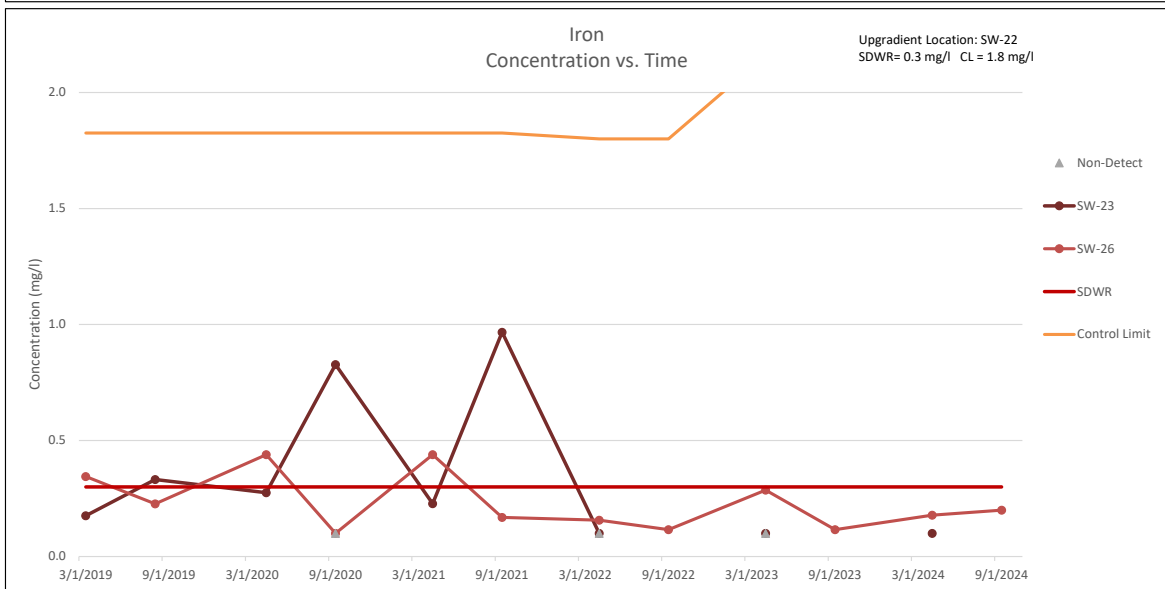
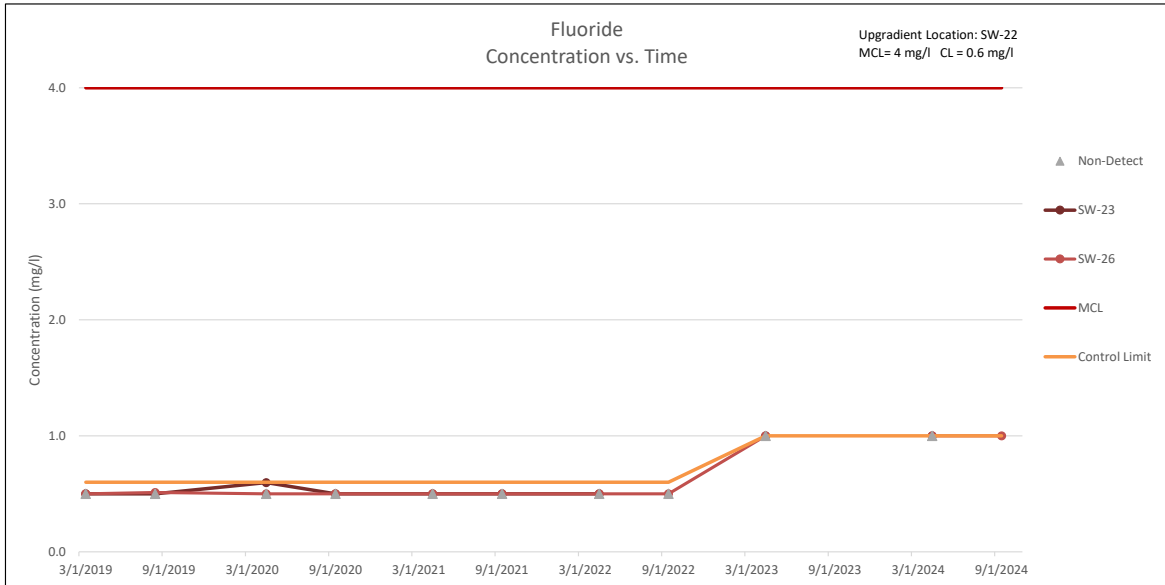
Water Quality Results
2016 - 2023



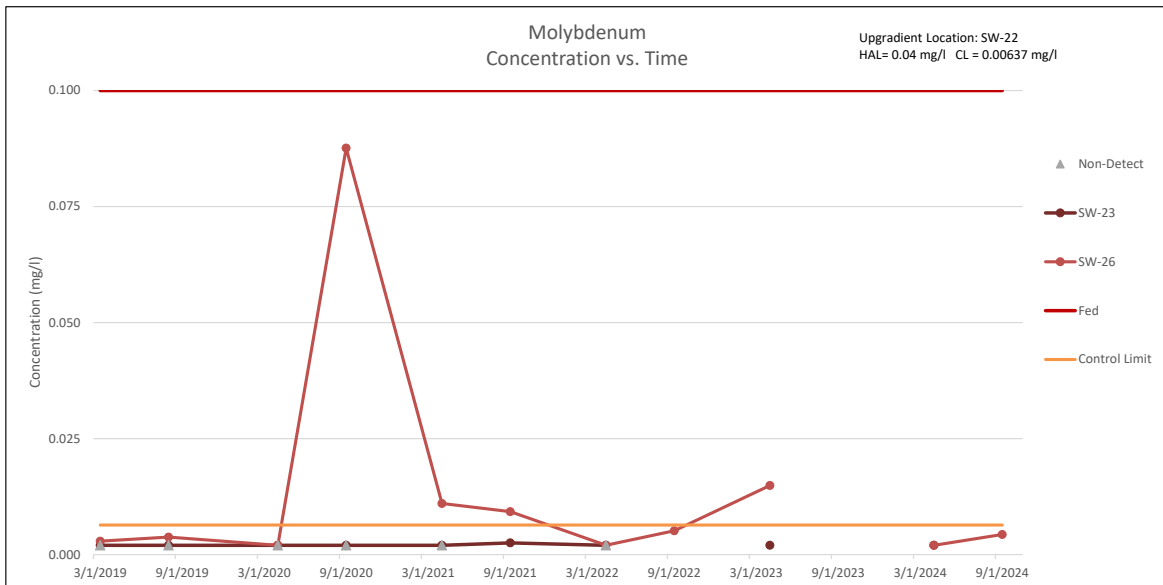
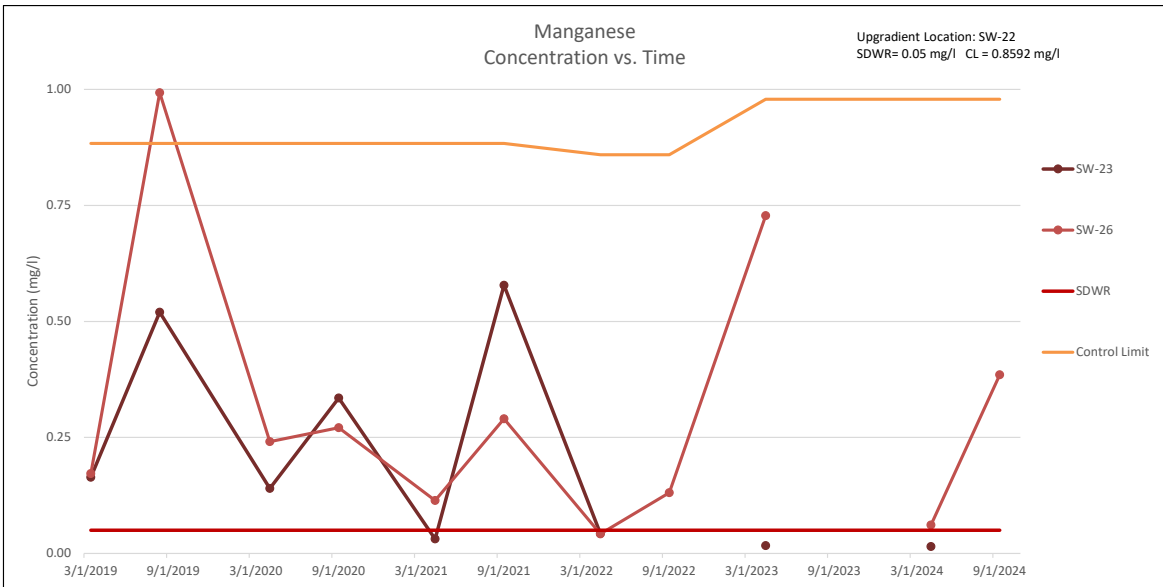
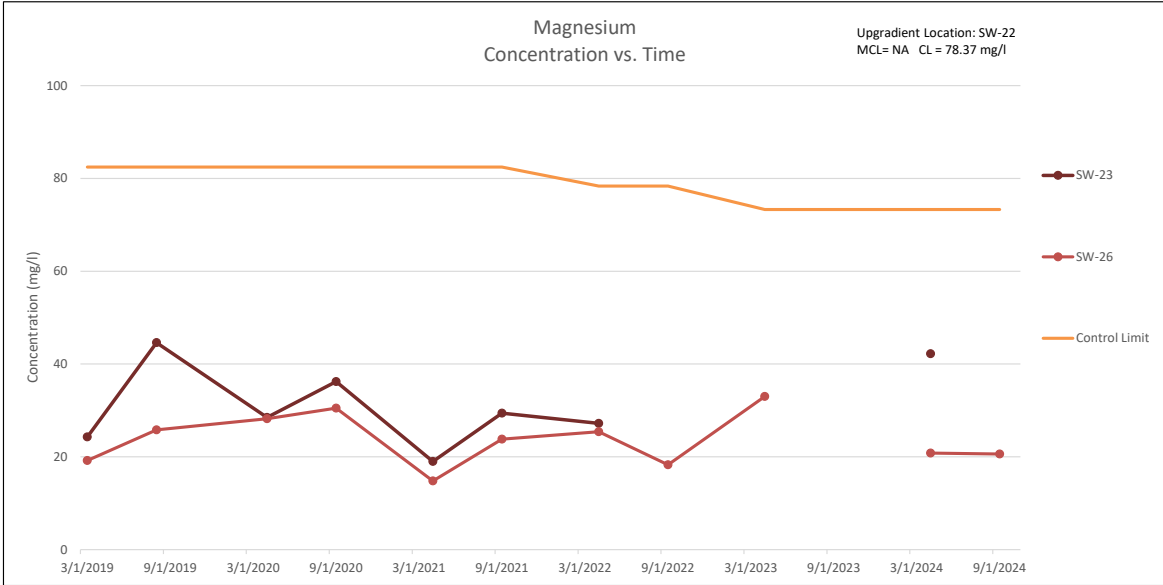
Water Quality Results
2016 - 2023



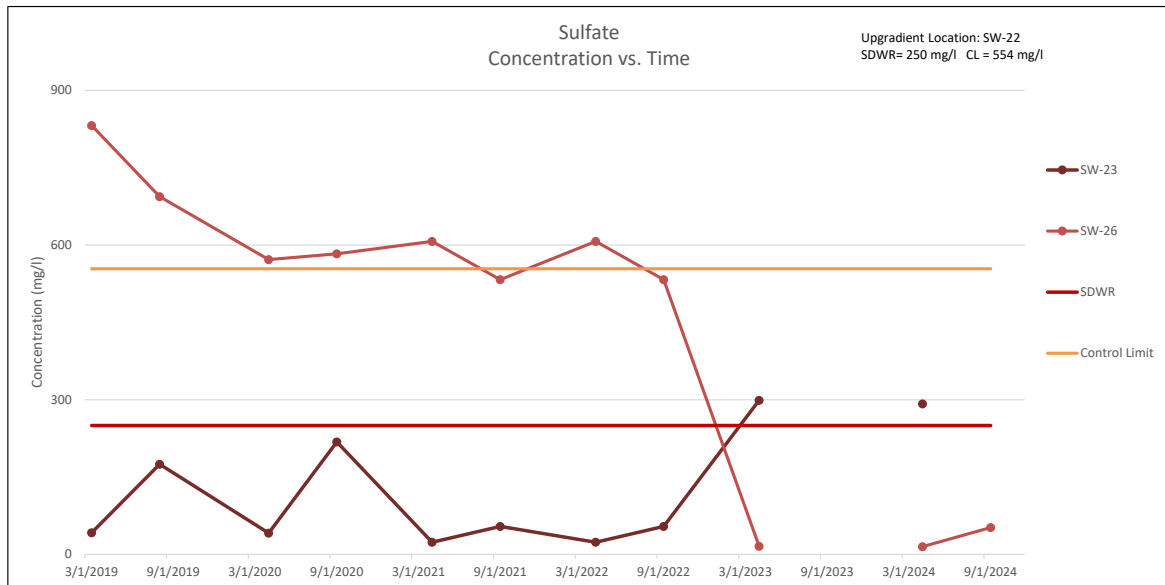
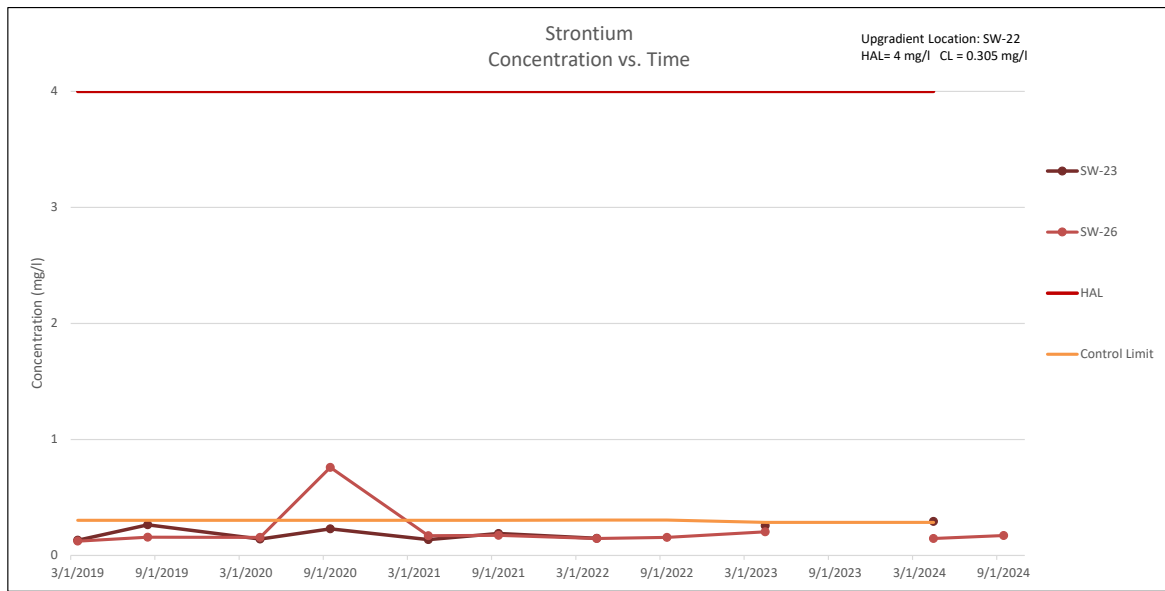
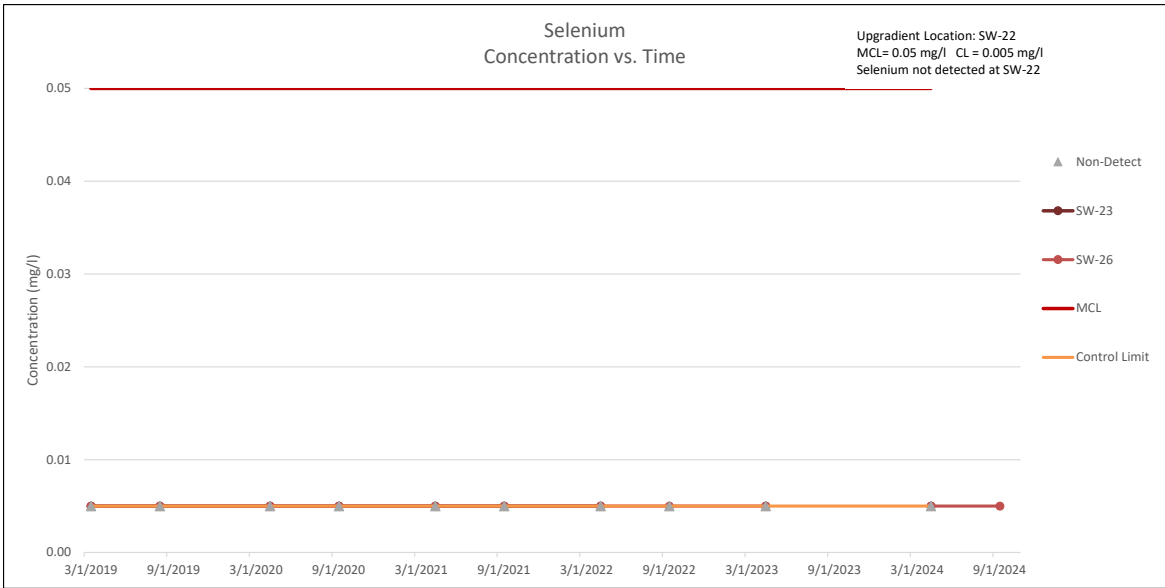
Water Quality Results
2016 - 2023



Water Quality Results
2016 - 2023



Water Quality Results
2016 - 2023



Water Quality Results
2016 - 2023

