

**2019 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT**

**COAL COMBUSTION RESIDUE (CCR) LANDFILL
PERMIT NO. #70-SDP-06-82P**

**MUSCATINE POWER & WATER
MUSCATINE, IOWA**

January 2020

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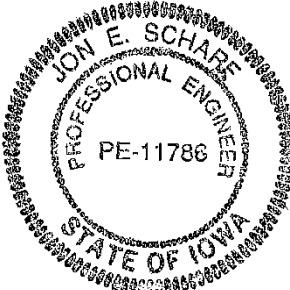

CERTIFICATION

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AND CORRECTIVE ACTION REPORT**

**CCR LANDFILL
Permit No. #70-SDP-06-82P**

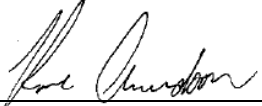
**MUSCATINE POWER & WATER
MUSCATINE, IOWA**

January 2020

| | |
|--|---|
|  | <p>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.</p> |
| | <p> Date: 01/30/2019</p> <p>_____ Jon E. Scharf, P.E. License No. 11786 My renewal date is December 31, 2021</p> <p>Pages or sheets covered by this seal: ENTIRE DOCUMENT</p> <p>_____</p> |

Prepared By:

Name: Rose Amundson, CGP

Signature: 

Date: 01/30/2020

HR Green, Inc.
8710 Earhart Lane SW
Cedar Rapids, IA 52404
Phone: (319) 841-4000; Fax: (319) 841-4012

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I. GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

Under Federal CCR Rule 40 CFR Part 257.90 – *Groundwater Monitoring and Corrective Action*, Muscatine Power and Water (MP&W) as the owner of an existing coal combustion residue (CCR) landfill must prepare annually a Groundwater Monitoring and Corrective Action Report. The report must, for the preceding calendar year, document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. The prepared annual report must be placed in the facility’s operating record as required under Part 257.105(h)(1).

The following sections cover the annual report’s content requirements under Part 257.90(e) for calendar year 2019.

A. LOCATION AND SITE MAPS – §257.90(e)(1)

MP&W maintains a private CCR landfill that provides for the controlled disposal of CCR originating at its power generating facility located at 1700 Dick Drake Way in Muscatine. The approximate 80-acre landfill site is located 7.5 miles west of the power plant in the SW¼ of Section 16, Township 76 North, Range 3 West in Muscatine County (Figure 1, Appendix A).

The landfill has been in continuous operation since 1985. The CCR includes a mixture of gypsum, fly ash, bottom ash, and slag. The permitted disposal area is approximately 34 acres which is being developed in four phases, where the cells are constructed and filled in sequential order from east to west. Currently Phases I and II are open and actively being filled with CCR (Figure 2, Appendix A). Ongoing construction activities at this facility began in 2019 to improve stormwater and leachate management, and construct final landfill cover in areas that have reached final design grades. This construction is expected to be complete in the Spring of 2020.

The site is regulated by the Iowa Department of Natural Resources (IDNR) under [567] Iowa Administrative Code (IAC) Chapter 103 and by state Sanitary Disposal Project Permit #70-SDP-06-82P, issued August 9, 2010 and last revised June 20, 2019. The permit expires August 9, 2020.

A comprehensive list of references for this facility is provided in Section II. Of primary interest herein is: *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, revised May 2, 2017). That document addresses the groundwater monitoring and corrective action requirements of the Federal CCR Rule Part 257.90-98 and is posted as a reference on MP&W’s publicly accessible Internet site at <https://www.mpw.org/utilities/electric/ccr-rule>.

B. IDENTIFICATION OF WELLS – §257.90(e)(2)

Table 1 provides a summary of the existing groundwater monitoring wells for the federal groundwater monitoring program under 257.90 (Appendix B).

Well MW-22 was installed in February 2018 to provide an additional background quality monitoring point. This well is incorporated into the statistical analysis and interpretations herein.

It was determined that well MW-13 was no longer an effective monitoring point and was abandoned in April 2019 following IDNR approval. In March 2019, bentonite was observed in the casing of MW-18A, indicating damage to the point where it could no longer be used and it was abandoned in August 2019. No other monitoring wells under the federal monitoring program were decommissioned or abandoned in 2019.

In addition, there are other facility wells which are not part of the current federal CCR groundwater monitoring system because under §257.95(f-g) there has been no statistical trigger to further characterize the nature of a release. These other wells are part of the State of Iowa CCR rule [567] IAC Chapter 103 and include: MW-23, MW-24, and MW-25 installed in 2018, and MW-26 proposed for 2020. In 2020, MW-23 will be included into the federal monitoring system as an additional background quality monitoring point.

C. SUMMARY OF SAMPLE COLLECTION AND ANALYSIS – §257.90(e)(3)

Sample Collection and Results

Under 40 CFR Part 257.93(a) the Groundwater Monitoring Program (GMP) includes the following groundwater monitoring points: Upgradient wells: MW-8, MW-10, and MW-22 used to establish background quality; and Downgradient wells: MW-4A, MW-5B, MW-6A, MW-13, MW-14A, MW-15A, MW-18A, and MW-21 to monitor for downgradient impacts. A further discussion of MW-13 and MW-18A are included above in Section I.B.

Table 1 provides a summary of the groundwater monitoring points (Appendix B), including:

- (1) Location coordinates (see also Figure 2),
- (2) Construction details,
- (3) Function as a monitoring well or water level measuring point,
- (4) Hydrogeologic unit monitored, and
- (5) Recent water level measurement used for the current evaluation of horizontal groundwater flow pattern and vertical gradients.

The monitoring wells are sampled for the constituents specified in Appendix III and Appendix IV of Part 257, as follows:

- Appendix III: boron, calcium, chloride, fluoride, pH, sulfates, and total dissolved solids.
- Appendix IV: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium,

and radium 226 & 228 combined.

Table 2 (Appendix B) provides the implementation schedule for the GMP, consisting of:

- (1) Well function as either an upgradient or downgradient monitoring point
- (2) Number of samples collected in each monitoring program,
- (3) Dates of completed sampling events, constituents tested, and reason for sampling including:
 - a. Establish background quality,
 - b. Detection monitoring,
 - c. Resampling events to verify an initial SSI,
 - d. Assessment monitoring, and
 - e. Corrective action monitoring.

Samples are collected and handled as described in *Procedure for Groundwater and Surface Water Sampling* (HR Green). Samples are then analyzed for the Appendix III and/or Appendix IV lists by certified testing laboratory TestAmerica Laboratories, Inc. in Cedar Falls, Iowa.

A summary tabulation of the groundwater sampling data obtained under §257.90 through §257.98 is provided in Appendix C. This tabulation covers the period of June 2016 through December 2019, including 13 events used to establish background quality, the first detection (compliance) event, a resampling event, and the assessment monitoring events in 2019.

The laboratory's analytical reports, the field low-flow sampling forms, and the DNR Sampling Forms are also provided for the sampling events in Appendix C.

Analysis

The analyzed data were then used to calculate statistical limits for each well/constituent pair. Statistical calculations were performed by Groundwater Stats Consulting using industry standard SANITAS™ Statistical Software, an EPA-compliant package (EPA 2009, Unified Guidance). The full procedure is as detailed in the document entitled: *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, revised May 2, 2017).

The statistical report dated November 4, 2019 incorporates all data collected through 2019 and the corresponding statistical analyses, including narratives, background limits, prediction limits, statistically significant increases (SSI), trend tests, confidence intervals, statistically significant Levels (SSL), and groundwater protection standards (GWPS), etc., and is provided herein for reference (Appendix D) and discussed below.

D. DISCUSSION OF FINDINGS – §257.90(e)(4)

The review was being conducted in accordance with the statistical methodologies presented in *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, May 2017; see Tables III-4, III-6, III-8, and III-9 in Appendix D).

The implementation schedule (Table 2) and monitoring program summary (Table 3) track the major milestones of the MP&W groundwater monitoring system and sampling and analysis program.

Appendix III constituents include: boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids.

Appendix IV constituents include: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226+228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.

Year 2017

Establishment of background water quality occurred by testing all wells for Appendix III & IV constituents during the period of June 2016 through August 2017 (8 sampling events, spaced to capture seasonality), following which the detection monitoring program was initiated.

The first detection monitoring event was on October 16, 2017, where Appendix III constituents were tested. An initial 22 well/constituent pairs were determined to exceed their respective statistical limits (Groundwater Stats Consulting, November 15, 2017), which are called initial SSI, or statistically significant increase above background concentration.

A resampling event for the 22 well/constituent pairs was conducted on November 28, 2017 to confirm that each is in fact an SSI and not a false positive. Based on re-sampling and statistical analysis there were 3 false positives (calcium, sulfate, and total dissolved solids at MW-13) and 19 confirmed SSI (Groundwater Stats Consulting, December 19, 2017).

Under §257.95(a), the confirmed SSI directed the facility transition into assessment monitoring beginning in 2018.

Year 2018

Assessment monitoring commenced in 2018 with the analysis of Appendix III & IV constituents. The events were conducted March 6, June 19, and August 28, 2018. These events were intended to satisfy the requirements of both the initial scan and the semi-annual and assessment monitoring requirements.¹ Specifically,

¹ Under §257.95(b), assessment monitoring requires an initial scan of Appendix IV constituents, followed under §257.95(d)(1) by semi-annual testing for Appendix III list plus detected Appendix IV constituents. To streamline the tracking of sampling requirements and results, and to align the federal and state sampling schedules, MP&W elects to test for full Appendix III and Appendix IV

assessment monitoring was initiated at the March 6, 2018 event, where the full Appendix III and Appendix IV constituent lists were tested.

Year 2019

For additional assessment monitoring, Appendix III & IV constituents were tested during 2019. The events were conducted March 18 and August 6, 2019. These events are intended to satisfy the requirements of both the initial scan and the semi-annual and assessment monitoring requirements.²

Assessment monitoring continued during the 2019 events, where the full Appendix III and Appendix IV constituent lists were tested. The Appendix IV constituents that were detected are shown below.

| | MW- | 4A | 5B | 6A | 8 | 10 | 14A | 15A | 21 | 22 |
|-------------------------|-----|----|----|----|---|----|-----|-----|----|----|
| Arsenic | | | | | | X | | | | |
| Barium | | X | X | X | X | X | X | X | X | X |
| Chromium | | | | | | | | | X | |
| Cobalt | | | | | X | X | | | | |
| Fluoride | | X | | X | X | X | | X | | X |
| Lithium | | | | | | | | | X | |
| Molybdenum | | | X | | | X | | | | X |
| Selenium | | | | | | | X | | X | |
| Combined Radium 226+226 | | X | X | X | | | | | | |

Table 3 (Appendix B) provides a groundwater monitoring program summary including:

- (1) The current monitoring program status,
- (2) Planned change in monitoring program status for the next sampling event,
- (3) Confirmed statistically significant increases (SSI) over background,
- (4) Statistically significant trends,
- (5) Statistically significant level (SSL) over a groundwater protection standard (GWPS), and
- (6) Upcoming sampling dates and constituents (as best as can be determined at this point in time).

The information shown in Table 3 shows that the concentrations of several constituents remain at statistically significant levels above background (i.e., SSI), but that all confidence interval concentrations are below the GWPS, that is, there were no SSLs determined.

Because there were no SSL's determined during 2019, the facility is required to

constituent lists during each sampling event, except for combined radium which has not been detected over a reporting limit.

² Under §257.95(b), assessment monitoring requires an initial scan of Appendix IV constituents, followed under §257.95(d)(1) by semi-annual testing for Appendix III list plus detected Appendix IV constituents. To streamline the tracking of sampling requirements and results, and to align the federal and state sampling schedules, MP&W elects to test for full Appendix III and Appendix IV constituent lists during each sampling event, except for combined radium which has not been detected over a reporting limit.

continue in assessment monitoring in 2019, as shown in Table 3.

The GWPS values are shown in Table 4 and were established as the appropriate Maximum Contaminant Level (MCL) or Regional Screening Level (RSL)³. Also shown in Table 4 is the background statistical limit.

1. SUMMARY

In brief narrative summary, the current-year review indicates:

1. Monitoring wells remain viable sampling points as they are physically intact, void of excessive sediment, and provide the anticipated recharge during sampling with the exception of MW-13 and MW-18A.
2. Horizontal and vertical groundwater flow gradients appear stable and consistent with historic observations. The primary groundwater flow path is lateral, with flow across the filled landfill area traveling from the southeast toward the northwest (Figure 2).
3. Analytical results indicate the landfill's primary impact on groundwater quality is from Appendix III constituents, including boron, calcium, sulfate, and TDS in the immediate area downgradient of the active landfill (MW-14A and MW-15A) and vicinity of the sediment runoff control pond (MW-21). These are areas where CCR has been historically deposited and/or accumulated. All wells are within 50 feet of a waste fill perimeter or accumulation/deposition area.

Statistical analysis indicates that the concentrations of multiple constituents remain above background limits (see SSI on Table 3), however, during 2019 there were no Appendix IV constituents that exhibited a statistically significant level (SSL) above a groundwater protection standard (GWPS). As such, under Assessment Monitoring Program §257.95(f) this site must continue in assessment monitoring.

E. SUPPLEMENTAL INFORMATION – §257.90(e)(5)

The following information is provided to fill in context for the MP&W CCR facility.

Monitored Hydrogeologic Unit

For a full discussion of the GMP, reference the document *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, Revised May 2, 2017, original May 18, 2016).

Of particular relevance herein is that the GMP wells monitor (1) water levels to determine horizontal and vertical groundwater flow paths, and (2) for downgradient groundwater quality impacts to the uppermost continuous aquifer beneath the site.

³ The RSL values under §257.95(h)(2) were set for cobalt, lithium and molybdenum in Federal Register Volume 83, No. 146 dated July 30, 2018. These four constituents do not have an established MCL.

The aquifer and gradients are discussed below.

Uppermost Continuous Aquifer:

As a whole, a deep un-weathered and un-oxidized clay-rich glacial till functions as a lower confining unit with field hydraulic conductivity values of less than $1 \times 10E-7$ cm/sec. Over most of the site, this underlying low permeability glacial till confining unit is overlain by a sequence of weathered oxidized till, sand, and clayey silt (loess) which collectively constitute the uppermost continuous aquifer beneath the site. This aquifer exhibits hydraulic conductivity values as great as $1.7 \times 10E-4$ cm/sec and which are two to three orders of magnitude greater than the underlying confining unit. Therefore, the assemblage of deposits generally at depths of less than 50 feet is interpreted to function as the uppermost continuous aquifer beneath the landfill. This is also the unit, within which the water table fluctuates, which means the uppermost continuous aquifer is one in the same hydrogeologic unit as the shallow water table aquifer. This uppermost continuous aquifer is the unit monitored by the GMP groundwater monitoring wells.

Groundwater Flow:

The pre-landfill groundwater flow direction in the uppermost aquifer was dominantly horizontal from the southeast toward the northwest with natural convergence along an ephemeral stream that formerly drained the undeveloped site.

Under current conditions the dominant flow direction remains the same except that convergence is now to the runoff control pond located west of the landfill in the area of the original ephemeral stream. The current year water table contours and primary flow path directions are depicted on Figure 2.

The observed vertical flow components are recharge (downward) in the upland area of the southeast corner of the site (MW-8/9) and discharge (upward) in the lowland area along the drainage way in the northeast corner of the site (MW-10/11) (see Table 1).

State Monitoring Requirements

Monitoring at this facility is also conducted under the State of Iowa Department of Natural Resources in accordance with Sanitary Disposal Permit #70-SDP-06-82P and per the approved Hydrologic Monitoring System Plan (HMSP).

The state's monitoring and analysis requirements are not addressed further herein but can be found in the Annual Water Quality Report to Iowa DNR (submitted to DNR annually by January 31).

Regulatory Status

The facility is regulated by the Iowa Department of Natural Resources (IDNR) under [567] Iowa Administrative Code (IAC) Chapter 103 and by state Sanitary Disposal Project Permit, issued August 9, 2010, revised November 29, 2018 and

March 4 and 20, April 29, and June 20, 2019, and with an expiration date of August 9, 2020.

The IDNR also regulates the site under the National Pollution Discharge Elimination System NPDES Permit #7000109. MP&W is authorized to discharge storm water runoff from the sediment runoff pond and two groundwater cut-off drains. Quarterly monitoring of the designated Farm Pond outfall and quarterly reporting are completed by MP&W in accordance with this permit.

II. REFERENCES CITED

- Green Environmental Services (GES), November 21, 1991. Coal Combustion Residue Landfill Development Plans and Supporting Documentation, Muscatine Power and Water; and Supplemental Plan Sheets 16 and 18 dated January 29, 1993.
- Green Environmental Services (GES), October 25, 1991. Hydrogeologic Evaluation of the Muscatine Power and Water Coal Combustion Residue Landfill.
- Green Environmental Services (GES), June, 1990. Hydrogeologic Evaluation Work Plan for the Muscatine Power and Water Coal Combustion Residue Landfill.
- Groundwater Stats Consulting, November 4, 2019. Summary of statistical analysis used to establish baseline water quality, SSI and SSL. Includes the analysis of 46 sample events conducted from June 2016 through August 2019.
- HR Green, January, 2020. Annual Water Quality Report, addressing State of Iowa [567] IAC Chapter 103 rule and landfill operating permit requirements.
- HR Green, December 23, 2019. Annual Inspection Report, Muscatine Power & Water, CCR Landfill.
- HR Green, December 19, 2019. Annual CCR Fugitive Dust Control Report, Muscatine Power & Water, CCR Landfill.
- HR Green, April 22, 2019. Existing Final Cover Verification Report, Muscatine Power & Water, CCR Landfill.
- HR Green, December 5, 2018. CCR Fugitive Dust Prevention and Control Plan, Muscatine Power & Water, CCR Landfill (original October 19, 2015).
- HR Green, June 2017. Procedure for Groundwater and Surface Water Sampling. (Updated November 2018.)
- HR Green, October 17, 2016. Closure and Post-Closure Plan, Muscatine Power & Water, CCR Landfill.
- HR Green, October 17, 2016. Run-On and Run-Off Control System Plan, Muscatine Power & Water, CCR Landfill.
- HR Green, May 2, 2017. Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill (original May 18, 2016).
- HR Green, January 17, 2012. CCR Landfill Cell Development – Phase II Expansion Plans, Muscatine Power and Water.

Iowa Administrative Code [567], Chapter 103 Sanitary Landfills: Coal Combustion Residue.

Iowa Department of Natural Resources (IDNR) Landfill Operating Permit No. 70-SDP-06-82P dated August 9, 2010 and revised November 29, 2018 and March 4 and 20, April 29, and June 20, 2019, Muscatine Power and Water.

Iowa Geological Survey, 2010. The Iowa State-Wide Trace Element Soil Sampling Project: Design and Implementation: Iowa Department of Natural Resources, Iowa Geological and Water Survey, Open File Report 10-1, June 2010.

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. Supplemental Information relating to landfill development.

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* published in Federal Register Volume 80, No. 127 on July 2, 2015 (correcting the effective date); and Volume 83, No. 146 on July 30, 2018 (revising groundwater protection standards for four constituents which do not have an established MCL).

U.S. Environmental Protection Agency (EPA), March 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Resource Conservation and Recovery Program Implementation and Information Division, U.S. EPA, Washington, DC. EPA 530/R-09-007.

APPENDIX A

FIGURES

Figure 1: Location Map

Figure 2: Site Map

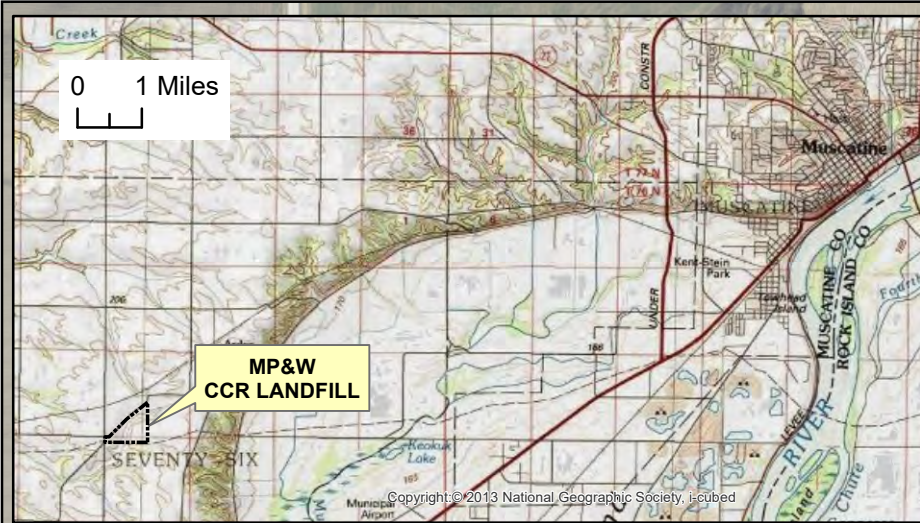


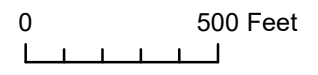


Figure 1
LOCATION MAP

CCR Landfill
Muscatine Power and Water

Legend

-  Property Line (Approx.)
-  Permitted Fill Area



Projected Coordinate System:
NAD 1983 StatePlane Iowa_South



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

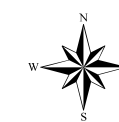
Figure 2
SITE MAP

CCR Landfill
Muscatine Power and Water

Legend

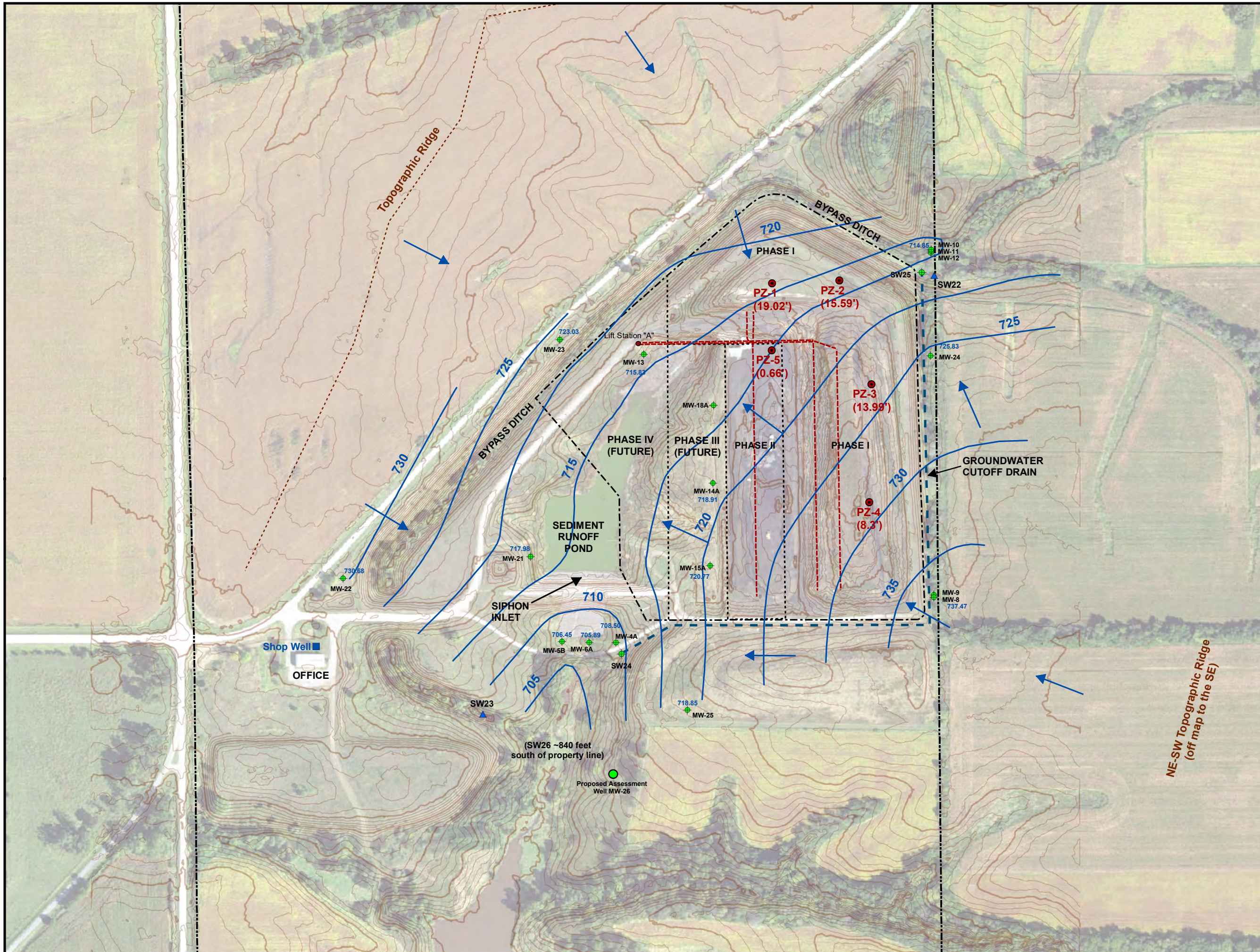
- ▲ Surface Water Points
- ◆ Groundwater Points
- Piezometers (Head, in feet)
- Shop Well
- Water Table (3/20/2019)
- - - Leachate Collection System
- - - Groundwater Cut-Off Drain
- Permitted Fill Area
- Phase Boundaries
- Property Line (Approx.)
- ← Groundwater Flow Direction
- Proposed Assessment Well

MW-13, MW-18A, PZ-1, PZ-2, PZ-3, and PZ-4 were abandoned in 2019.



0 320 Feet

Projected Coordinate System:
NAD 1983 StatePlane Iowa_South



APPENDIX B

TABLES

| | |
|---------|---|
| Table 1 | Summary of Monitoring Wells and Piezometers |
| Table 2 | Implementation Schedule |
| Table 3 | Groundwater Monitoring Program Summary |
| Table 4 | Groundwater Protection Standards (GWPS) |

Table 1

Summary of Monitoring Wells and Piezometers
2019 Groundwater Monitoring and Corrective Action Report
Muscatine Power & Water CCR Landfill
Permit No. #70-SDP-06-82P

| Well ID | State Plane ⁽¹⁾ | | WELL CONSTRUCTION ⁽²⁾ | | | | | Function | Hydrogeologic Unit | WATER LEVELS (Feet, amsl) ⁽³⁾ | | | | |
|----------------------|----------------------------|-----------|----------------------------------|--------|------------|---------------|--------------------|------------|----------------------|---|--------|--|----------|-----------|
| | | | Elevation | | Well Depth | Screen Length | Screened Lithology | | | Low | High | Vertical Gradient 3/2019 ⁽⁴⁾ | 8/6/2019 | 3/20/2019 |
| | | | Top of Well Casing | Ground | | | | | | | | | | |
| PZ-1 | 511,728 | 2,269,506 | 751.05 | 749.00 | 38.75 | 1 | CCR | Piezometer | CCR | 727.78 | 730.4 | N/A | N/A | 731.32 |
| PZ-2 | 511,736 | 2,269,740 | 746.47 | 744.34 | 41.65 | 1 | CCR | Piezometer | CCR | 719.08 | 719.77 | N/A | N/A | 720.41 |
| PZ-3 | 511,377 | 2,269,851 | 761.14 | 758.99 | 40.95 | 1 | CCR | Piezometer | CCR | 730.24 | 731.63 | N/A | N/A | 734.18 |
| PZ-4 | 510,967 | 2,269,843 | 768.05 | 765.90 | 45.85 | 1 | CCR | Piezometer | CCR | 729.82 | 730.93 | N/A | N/A | 730.50 |
| PZ-5 | 511,495 | 2,269,505 | 729.63 | 727 | 10.00 | 1 | CCR | Piezometer | CCR | DRY | DRY | N/A | N/A | 719.97 |
| MW-4A | 510,481 | 2,268,964 | 713.45 | 711.18 | 24.55 | 10 | Clay, Silt | Monitoring | Uppermost Aquifer | 705.73 | 710.01 | N/A | 707.57 | 708.50 |
| MW-5B | 510,485 | 2,268,777 | 709.10 | 706.73 | 25.30 | 10 | Silt, Clay | Monitoring | Uppermost Aquifer | 704.07 | 707.48 | N/A | 706.25 | 706.45 |
| MW-6A | 510,482 | 2,268,871 | 708.92 | 706.49 | 25.35 | 10 | Silt, Sand | Monitoring | Uppermost Aquifer | 704.47 | 706.82 | N/A | 705.40 | 705.89 |
| MW-8 | 510,639 | 2,270,068 | 747.36 | 744.37 | 42.95 | 10 | Till | Monitoring | Uppermost Aquifer | 728.06 | 737.74 | 0.526 | 732.91 | 737.47 |
| MW-9 | 510,646 | 2,270,068 | 747.12 | 744.40 | 58.74 | 10 | Till | Piezometer | Uppermost Aquifer | 721.96 | 729.75 | N/A | N/A | 729.16 |
| MW-10 | 511,846 | 2,270,058 | 718.51 | 716.32 | 20.32 | 10 | Silt, Till | Monitoring | Uppermost Aquifer | 710.89 | 715.10 | -0.011 | 713.96 | 714.85 |
| MW-11 | 511,840 | 2,270,058 | 718.34 | 716.00 | 55.97 | 10 | Till, Sand | Piezometer | Uppermost Aquifer | 713.44 | 718.34 | -0.035 | N/A | 715.24 |
| MW-12 | 511,833 | 2,270,057 | 717.75 | 715.40 | 86.42 | 5 | Till | Piezometer | Lower Confining Unit | 713.13 | 717.75 | N/A | N/A | 716.39 |
| MW-13 | 511,481 | 2,269,061 | 717.63 | 715.44 | 20.00 | 10 | Silt, Till, Sand | Monitoring | Uppermost Aquifer | 709.35 | 719.13 | N/A | NA | 715.83 |
| MW-14A | 511,035 | 2,269,301 | 729.00 | 726.19 | 20.50 | 10 | Silt, Till, Clay | Monitoring | Uppermost Aquifer | 712.59 | 718.91 | N/A | 718.39 | 718.91 |
| MW-15A | 510,748 | 2,269,291 | 729.99 | 727.12 | 20.50 | 10 | Silt, Clay | Monitoring | Uppermost Aquifer | 713.83 | 720.77 | N/A | 720.14 | 720.77 |
| MW-18A | 511,304 | 2,269,303 | 729.13 | 726.06 | 23.10 | 10 | Clay, Silt | Monitoring | Uppermost Aquifer | 711.92 | 714.82 | N/A | NA | NA |
| MW-21 | 510,779 | 2,268,668 | 725.75 | 722.81 | 22.20 | 10 | Silt, Clay | Monitoring | Uppermost Aquifer | 713.16 | 721.01 | N/A | 715.92 | 717.98 |
| MW-22 ⁽⁵⁾ | 510,704 | 2,268,017 | 744.27 | 741.13 | 41 | 10 | Clay Till | Monitoring | Uppermost Aquifer | 727.43 | 730.68 | N/A | 729.12 | 730.68 |
| MW-23 ⁽⁵⁾ | 511,532 | 2,268,770 | 726.90 | 723.73 | 25 | 10 | Clay Till | Assessment | Uppermost Aquifer | 719.37 | 721.50 | N/A | 720.95 | 723.03 |
| MW-24 ⁽⁵⁾ | 511,476 | 2,270,056 | 735.32 | 732.10 | 20 | 10 | Clay Till | Assessment | Uppermost Aquifer | 718.47 | 725.83 | N/A | 720.28 | 725.83 |
| MW-25 ⁽⁵⁾ | 510,247 | 2,269,213 | 739.12 | 736.14 | 35 | 10 | Clay Till | Assessment | Uppermost Aquifer | 717.60 | 718.85 | N/A | 720.58 | 718.85 |

From: MuscF

Well #
LPZ-01
LPZ-02
LPZ-03
LPZ-04
LPZ-05
MW-4A
MW-5B
MW-6A
MW-08
MW-09
MW-10
MW-11
MW-12
MW-13
MW-14A
MW-15A
MW-18A
MW-21

(1) State Plane coordinates from MP&W in email dated 1/20/16 and 6/28/18. MP&W has transitioned away from Site System coordinates-see 2017 AWQR Table I-1.

(2) DNR original well construction forms. Top of casings at piezometers re-surveyed May 2018.

(3) Period of record: 2002-2019 (except for the A-series wells which started in 2012). Current review uses March 18, 2019.

(4) Negative value is a discharge gradient; positive value is a recharge gradient. Well clusters are MW-8/MW-9 and MW-10/11/12.

(5) MW-22 installed February 20, 2018. MW-23 installed 5/15/2018. MW-24 installed June 5, 2018. MW-25 installed June 7, 2018. Wells MW-23, MW-24, and MW-25 are currently being utilized as assessment wells under the State of low a CCR rule.

NA not available; N/A not applicable.

VERTICAL C

8-9

10-11

11-12

Table 2

Implementation Schedule
 2019 Groundwater Monitoring and Corrective Action Report
 Muscatine Power & Water CCR Landfill
 Permit No. #70-SDP-06-82P

| Monitoring Well | Well Function | Number Of Samples Collected In Each Monitoring Program June 2016 through 2019 | | | | Dates Of Completed Sampling Events And Constituents Tested | | | | | |
|-----------------------|---------------|---|-----------|------------|-------------------|--|--|----------------------|---|---|-------------------|
| | | | | | | Establish Background Levels (Initial 8 Events) | | Detection Monitoring | Resampling Events To Verify Initial SSI Over Background | Assessment Monitoring ⁽¹⁾ | Corrective Action |
| | | Background | Detection | Assessment | Corrective Action | 2016: Jun 6, Aug 15, Oct 10, Dec 12 | 2017: Feb 17, Apr 17, Jun 19, Aug 7, | 10/16/2017 | 11/28/2017 | 3/6/2018 / 6/19/2018 / 8/29/2018 / 3/18/2019 / 8/6/2019 | None in 2019 |
| MW-4A | Downgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | | Appendix III & IV | N/A |
| MW-5B | Downgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | Chloride | Appendix III & IV | N/A |
| MW-6A | Downgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | | Appendix III & IV | N/A |
| MW-8 | Upgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | | Appendix III & IV | N/A |
| MW-10 | Upgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | | Appendix III & IV | N/A |
| MW-13 ⁽⁴⁾ | Downgradient | 11 | 1 | 3 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | Boron, calcium, sulfate, TDS | Appendix III & IV | N/A |
| MW-14A | Downgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | Boron, calcium, chloride, sulfate, TDS | Appendix III & IV | N/A |
| MW-15A | Downgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | Boron, calcium, chloride, sulfate, TDS | Appendix III & IV | N/A |
| MW-18A ⁽⁴⁾ | Downgradient | 11 | 1 | 3 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | Boron, calcium, chloride, sulfate, TDS | Appendix III & IV | N/A |
| MW-21 | Downgradient | 13 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | Appendix III | Boron, pH | Appendix III & IV | N/A |
| | | | | | | 2018: Mar 6, June 19, Aug 29 | 2019: Mar 18, Aug 6 | | | | |
| MW-22 ⁽²⁾ | Upgradient | 5 | 1 | 5 | N/A | Appendix III & IV | Appendix III & IV | N/A | N/A | N/A | N/A |

(1) Assessment monitoring: the full Appendix III & IV constituent lists are tested, except for radium which is not tested because it was not flagged as an SSI. Radium is tested annually in all wells (March 2019).
 (2) MW-22 installed in February 2018 as an additional background well.
 (3) Additional assessment wells MW-23, MW-24 and MW-25 were installed in May/June 2018 under the State of Iowa CCR Rule. Incorporation of new data into this federal report will occur as federal rule-triggers apply.
 (4) MW-13 and MW-18A were closed in 2019 due to damage and site construction following IDNR approval.

Table 3

Groundwater Monitoring Program Summary
 2019 Groundwater Monitoring and Corrective Action Report
 Muscatine Power & Water CCR Landfill
 Permit No. #70-SDP-06-82P

| Monitoring Well | Current Monitoring Program Status | Planned Change in Monitoring Program Status For The Next Sampling Event | Confirmed Statistically Signifiant Increase (SSI) Over Background | Statistically Significant Trends | Statistically Significant Level (SSL) Over GWPS | Upcoming Sampling Dates And Constituents | | | |
|-----------------|-----------------------------------|---|---|----------------------------------|---|--|---|---|-----------------------|
| | | | | | | Resample | Semi-Annual Assessment Monitoring: March 2020 | Semi-Annual Assessment Monitoring: September 2020 | Others TBD, if needed |
| MW-4A | Assessment | None | None | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-5B | Assessment | None | Chloride | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-6A | Assessment | None | None | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-8 | Background | None | None | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-10 | Background | None | None | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-13 | Abandoned ⁽¹⁾ | None | N/A | N/A | N/A | N/A | N/A | N/A | |
| MW-14A | Assessment | None | Boron, calcium, sulfate, TDS | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-15A | Assessment | None | Boron, TDS | Downward: Boron | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-18A | Abandoned ⁽¹⁾ | None | N/A | N/A | N/A | N/A | N/A | N/A | |
| MW-21 | Assessment | None | Boron, pH, Sulfate, TDS | Downward: TDS | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-22 | Background | None | None | None | None | N/A | Appendix III & IV | Appendix III & IV | |
| MW-23 | Background | None | None | None | None | N/A | Appendix III & IV | Appendix III & IV | |

Assessment monitoring program triggered upon receipt of confirmed (by resample) SSI on December 19, 2017 and continuing SSI in 2018.

To simplify the sampling program, MP&W elects to sample for Appendix III & IV constituents, except radium, during all events (as opposed to Appendix III + detected Appendix IV constituents).

SSI = Statistically Significant Increase above background

SSL = Statistically Significant Level above a groundwater protection standard (GWPS)

N/A = Not Applicable

(1) MW-13 and MW-18A were closed in 2019 due to damage and site construction following IDNR approval.

Table 4

**Groundwater Protection Standards
 2019 Groundwater Monitoring and Corrective Action Report
 Muscatine Power & Water CCR Landfill
 Permit No. #70-SDP-06-82P**

| Constituent | Unit | MCL | RSL | Statistical Background Limit | GWPS |
|-----------------|---------|-------|-------|------------------------------|-------|
| Antimony | (mg/L) | 0.006 | | 0.001 | 0.006 |
| Arsenic | (mg/L) | 0.01 | | 0.0078 | 0.01 |
| Barium | (mg/L) | 2 | | 0.22 | 2 |
| Beryllium | (mg/L) | 0.004 | | 0.001 | 0.004 |
| Cadmium | (mg/L) | 0.005 | | 0.0005 | 0.005 |
| Chromium | (mg/L) | 0.1 | | 0.005 | 0.1 |
| Cobalt | (mg/L) | N/A | 0.006 | 0.0056 | 0.006 |
| Combined Radium | (pCi/L) | 5 | | 0.88 | 5 |
| Fluoride | (mg/L) | 4 | | 0.83 | 4 |
| Lead | (mg/L) | 0.015 | | 0.0005 | 0.015 |
| Lithium | (mg/L) | N/A | 0.04 | 0.01 | 0.04 |
| Mercury | (mg/L) | 0.002 | | 0.0002 | 0.002 |
| Molybdenum | (mg/L) | N/A | 0.1 | 0.0057 | 0.1 |
| Selenium | (mg/L) | 0.05 | | 0.005 | 0.05 |
| Thallium | (mg/L) | 0.002 | | 0.001 | 0.002 |

All metals as Total recoverable.
 MCL: Maximum Contaminant Level
 RSL: Regional Screening Level
 Statistical Background Limit: Groundwater Stats Consulting, 11/4/2019
 GWPS: Ground Water Protection Standard

APPENDIX C

SAMPLING DATA

- March 18 and August 6, 2019 Sampling Events
 - Laboratory analytical Reports
 - Ground water sampling forms
 - Low Flow Sampling Forms
- Summary Tabulations of Analytical Results

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Cedar Falls

704 Enterprise Drive

Cedar Falls, IA 50613

Tel: (319)277-2401

TestAmerica Job ID: 310-151604-1

Client Project/Site: Muscatine Power & Water CCR

For:

Muscatine Power & Water

1700 Dick Drake Way

PO BOX 899

Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:

4/3/2019 3:23:32 PM

Shawn Hayes, Senior Project Manager

(319)229-8211

shawn.hayes@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

TestAmerica Job ID: 310-151604-1

Job ID: 310-151604-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-151604-1

Comments

No additional comments.

Receipt

The samples were received on 3/22/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.3° C.

HPLC/IC

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

Metals

Method(s) 6020A: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample: MW-25 (310-151604-3).

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

General Chemistry

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



Sample Summary

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

TestAmerica Job ID: 310-151604-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 310-151604-1 | MW-23 | Water | 03/19/19 10:50 | 03/22/19 09:00 |

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

Detection Summary

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

TestAmerica Job ID: 310-151604-1

Client Sample ID: MW-23

Lab Sample ID: 310-151604-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil | Fac | D | Method | Prep Type |
|------------------------|---------|-----------|----------|-----|------|-----|-----|---|--------------|-----------|
| Chloride | 10.5 | | 5.00 | | mg/L | | 5 | | 9056A | Total/NA |
| Sulfate | 26.2 | | 5.00 | | mg/L | | 5 | | 9056A | Total/NA |
| Barium | 0.0922 | | 0.00200 | | mg/L | | 1 | | 6020A | Total/NA |
| Calcium | 59.7 | | 0.500 | | mg/L | | 1 | | 6020A | Total/NA |
| Cobalt | 0.00176 | | 0.000500 | | mg/L | | 1 | | 6020A | Total/NA |
| Lead | 0.00204 | | 0.000500 | | mg/L | | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 296 | | 30.0 | | mg/L | | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil | Fac | D | Method | Prep Type |
| pH | 7.5 | HF | 0.1 | | SU | | 1 | | SM 4500 H+ B | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Cedar Falls

Client Sample Results

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

TestAmerica Job ID: 310-151604-1

Client Sample ID: MW-23
Date Collected: 03/19/19 10:50
Date Received: 03/22/19 09:00

Lab Sample ID: 310-151604-1
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 10.5 | | 5.00 | | mg/L | | | 03/26/19 10:43 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/26/19 10:43 | 5 |
| Sulfate | 26.2 | | 5.00 | | mg/L | | | 03/26/19 10:43 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Barium | 0.0922 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Boron | <0.200 | | 0.200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Calcium | 59.7 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Cobalt | 0.00176 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Lead | 0.00204 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:14 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 13:04 | 03/26/19 11:11 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 296 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.5 | HF | 0.1 | | SU | | | 03/22/19 15:35 | 1 |

Definitions/Glossary

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

TestAmerica Job ID: 310-151604-1

Qualifiers

General Chemistry

| Qualifier | Qualifier Description |
|-----------|--|
| HF | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |

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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

TestAmerica Job ID: 310-151604-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-233635/3
Matrix: Water
Analysis Batch: 233635

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 | | | 03/26/19 10:04 | 1 |
| Fluoride | <0.100 | | 0.100 | | mg/L | | | 03/26/19 10:04 | 1 |
| Sulfate | <1.00 | | 1.00 | | mg/L | | | 03/26/19 10:04 | 1 |

Lab Sample ID: LCS 310-233635/4
Matrix: Water
Analysis Batch: 233635

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Chloride | 7.50 | 7.132 | | mg/L | | 95 | 90 - 110 |
| Fluoride | 1.50 | 1.534 | | mg/L | | 102 | 90 - 110 |
| Sulfate | 7.50 | 7.558 | | mg/L | | 101 | 90 - 110 |

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-233322/1-A
Matrix: Water
Analysis Batch: 233992

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233322

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Barium | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Boron | <0.200 | | 0.200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Calcium | <0.500 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/28/19 15:07 | 1 |

Lab Sample ID: LCS 310-233322/2-A
Matrix: Water
Analysis Batch: 233992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233322

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|-----------|-------------|------------|---------------|------|---|------|--------------|
| Antimony | 0.0200 | 0.01741 | | mg/L | | 87 | 80 - 120 |
| Arsenic | 0.0400 | 0.03970 | | mg/L | | 99 | 80 - 120 |
| Barium | 0.0400 | 0.03464 | | mg/L | | 87 | 80 - 120 |
| Beryllium | 0.0200 | 0.01723 | | mg/L | | 86 | 80 - 120 |
| Boron | 0.880 | 0.7331 | | mg/L | | 83 | 80 - 120 |
| Cadmium | 0.0200 | 0.01752 | | mg/L | | 88 | 80 - 120 |
| Calcium | 2.00 | 1.763 | | mg/L | | 88 | 80 - 120 |
| Chromium | 0.0400 | 0.03577 | | mg/L | | 89 | 80 - 120 |

TestAmerica Cedar Falls

QC Sample Results

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

TestAmerica Job ID: 310-151604-1

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

Lab Sample ID: LCS 310-233322/2-A
Matrix: Water
Analysis Batch: 233992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233322

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|------------|-------------|------------|---------------|------|---|------|----------|
| Cobalt | 0.0200 | 0.01830 | | mg/L | | 91 | 80 - 120 |
| Lead | 0.0200 | 0.01728 | | mg/L | | 86 | 80 - 120 |
| Molybdenum | 0.0400 | 0.03628 | | mg/L | | 91 | 80 - 120 |
| Selenium | 0.0400 | 0.03389 | | mg/L | | 85 | 80 - 120 |
| Thallium | 0.0160 | 0.01412 | | mg/L | | 88 | 80 - 120 |

Lab Sample ID: LCS 310-233322/2-A
Matrix: Water
Analysis Batch: 234056

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233322

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| Lithium | 0.100 | 0.09127 | | mg/L | | 91 | 80 - 120 |

Lab Sample ID: 310-151604-1 DU
Matrix: Water
Analysis Batch: 233992

Client Sample ID: MW-23
Prep Type: Total/NA
Prep Batch: 233322

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|------------|---------------|------------------|-----------|--------------|------|---|-----|-------|
| Antimony | <0.00100 | | <0.00100 | | mg/L | | NC | 20 |
| Arsenic | <0.00200 | | <0.00200 | | mg/L | | NC | 20 |
| Barium | 0.0922 | | 0.1061 | | mg/L | | 14 | 20 |
| Beryllium | <0.00100 | | <0.00100 | | mg/L | | NC | 20 |
| Boron | <0.200 | | <0.200 | | mg/L | | NC | 20 |
| Cadmium | <0.000500 | | <0.000500 | | mg/L | | NC | 20 |
| Calcium | 59.7 | | 66.86 | | mg/L | | 11 | 20 |
| Chromium | <0.00500 | | <0.00500 | | mg/L | | NC | 20 |
| Cobalt | 0.00176 | | 0.002073 | | mg/L | | 16 | 20 |
| Lead | 0.00204 | | 0.002369 | | mg/L | | 15 | 20 |
| Lithium | <0.0100 | | <0.0100 | | mg/L | | NC | 20 |
| Molybdenum | <0.00200 | | <0.00200 | | mg/L | | NC | 20 |
| Selenium | <0.00500 | | <0.00500 | | mg/L | | NC | 20 |
| Thallium | <0.00100 | | <0.00100 | | mg/L | | NC | 20 |

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-233442/1-A
Matrix: Water
Analysis Batch: 233627

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233442

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 13:04 | 03/26/19 10:35 | 1 |

Lab Sample ID: LCS 310-233442/2-A
Matrix: Water
Analysis Batch: 233627

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233442

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| Mercury | 0.00167 | 0.001669 | | mg/L | | 100 | 80 - 120 |

TestAmerica Cedar Falls

QC Sample Results

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

TestAmerica Job ID: 310-151604-1

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

Lab Sample ID: MB 310-233311/1
Matrix: Water
Analysis Batch: 233311

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 | <30.0 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |

Lab Sample ID: LCS 310-233311/2
Matrix: Water
Analysis Batch: 233311

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 | 1004 | | mg/L | | 100 | 90 - 110 |

Lab Sample ID: 310-151604-1 DU
Matrix: Water
Analysis Batch: 233311

Client Sample ID: MW-23
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|------------------------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| Total Dissolved Solids | 296 | | 312.0 | | mg/L | | NC | 24 |

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-233319/1
Matrix: Water
Analysis Batch: 233319

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: 310-151604-1 DU
Matrix: Water
Analysis Batch: 233319

Client Sample ID: MW-23
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 | | 0.3 | 20 |

QC Association Summary

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

TestAmerica Job ID: 310-151604-1

HPLC/IC

Analysis Batch: 233635

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | 9056A | |
| MB 310-233635/3 | Method Blank | Total/NA | Water | 9056A | |
| LCS 310-233635/4 | Lab Control Sample | Total/NA | Water | 9056A | |

Metals

Prep Batch: 233322

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | 3010A | |
| MB 310-233322/1-A | Method Blank | Total/NA | Water | 3010A | |
| LCS 310-233322/2-A | Lab Control Sample | Total/NA | Water | 3010A | |
| 310-151604-1 DU | MW-23 | Total/NA | Water | 3010A | |

Prep Batch: 233442

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | 7470A | |
| MB 310-233442/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 310-233442/2-A | Lab Control Sample | Total/NA | Water | 7470A | |

Analysis Batch: 233627

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | 7470A | 233442 |
| MB 310-233442/1-A | Method Blank | Total/NA | Water | 7470A | 233442 |
| LCS 310-233442/2-A | Lab Control Sample | Total/NA | Water | 7470A | 233442 |

Analysis Batch: 233992

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | 6020A | 233322 |
| MB 310-233322/1-A | Method Blank | Total/NA | Water | 6020A | 233322 |
| LCS 310-233322/2-A | Lab Control Sample | Total/NA | Water | 6020A | 233322 |
| 310-151604-1 DU | MW-23 | Total/NA | Water | 6020A | 233322 |

Analysis Batch: 234056

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| LCS 310-233322/2-A | Lab Control Sample | Total/NA | Water | 6020A | 233322 |

General Chemistry

Analysis Batch: 233311

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | SM 2540C | |
| MB 310-233311/1 | Method Blank | Total/NA | Water | SM 2540C | |
| LCS 310-233311/2 | Lab Control Sample | Total/NA | Water | SM 2540C | |
| 310-151604-1 DU | MW-23 | Total/NA | Water | SM 2540C | |

Analysis Batch: 233319

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | SM 4500 H+ B | |
| LCS 310-233319/1 | Lab Control Sample | Total/NA | Water | SM 4500 H+ B | |
| 310-151604-1 DU | MW-23 | Total/NA | Water | SM 4500 H+ B | |

TestAmerica Cedar Falls

Lab Chronicle

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

TestAmerica Job ID: 310-151604-1

Client Sample ID: MW-23

Date Collected: 03/19/19 10:50

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151604-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233635 | 03/26/19 10:43 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233322 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233992 | 03/28/19 15:14 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233442 | 03/25/19 13:04 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 11:11 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233311 | 03/22/19 14:03 | MDK | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:35 | JWG | TAL CF |

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

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

TestAmerica Job ID: 310-151604-1

Laboratory: TestAmerica Cedar Falls

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | | 101044 | 11-01-20 |
| Georgia | State Program | 4 | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 5 | 200024 | 11-29-19 |
| Iowa | State Program | 7 | 007 | 12-01-19 |
| Kansas | NELAP | 7 | E-10341 | 01-31-20 |
| Minnesota | NELAP | 5 | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 1 | 3349 | 08-22-19 |
| North Dakota | State Program | 8 | R-186 | 09-29-19 |
| Oregon | NELAP | 10 | IA100001 | 09-29-19 |
| USDA | Federal | | P330-19-00003 | 01-02-22 |

Method Summary

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

TestAmerica Job ID: 310-151604-1

| Method | Method Description | Protocol | Laboratory |
|--------------|-------------------------------|----------|------------|
| 9056A | Anions, Ion Chromatography | SW846 | TAL CF |
| 6020A | Metals (ICP/MS) | SW846 | TAL CF |
| 7470A | Mercury (CVAA) | SW846 | TAL CF |
| SM 2540C | Solids, Total Dissolved (TDS) | SM | TAL CF |
| SM 4500 H+ B | pH | SM | TAL CF |
| 3010A | Preparation, Total Metals | SW846 | TAL CF |
| 7470A | Preparation, Mercury | SW846 | TAL CF |

Protocol References:

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.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401



Cooler/Sample Receipt and Temperature Log Form

| | |
|---|---|
| Client Information | |
| Client: Muscatine Power & Water | |
| City/State: Muscatine IA | Project: Muscatine Power & Water |
| Receipt Information | |
| Date/Time Received: 3/22/19 0900 | Received By: JB |
| 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"/> TA Courier <input type="checkbox"/> TA 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 checked="" type="checkbox"/> No | If yes: Cooler # 1 of 1 |
| Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | If yes: Cooler custody seals intact? <input 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: M | Correction Factor (°C): -0.1 |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | |
| Uncorrected Temp (°C): 0.4 | Corrected Temp (°C): 0.3 |
| • Sample Container Temperature | |
| Container type(s) used: _____ | |
| 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 Company: Muscatine Power & Water Address: 1700 Dick Drake Way City: Muscatine State, Zip: IA, 52761 Phone: 563-262-3583 (Tel) Email: sbennett@mpw.org Project Name: Muscatine Power & Water CCR Site: Iowa | | Sampler: Sam Bennett/ Neil Hoskins Lab PM: Hayes, Shawn M Phone: 563-262-3583 E-Mail: shawn.hayes@testamericainc.com | | Carrier Tracking No(s): Page: Page 1 of 1 Job #: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------|---|------------------------------|--|------------------------------|--------------------------------------|-------------------|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-------|---------|------|---|-------|--|-----|---------|------|---|-------|--|---|--|--|--|
| Due Date Requested: TAT Requested (days): PO #: 191195 WO #: Project #: SSOW#: | | Analysis Requested Appendix III / Appendix IV (minus Radium) per quote 31010959-0 Appendix III / Appendix IV per quote 31010959-0 State Parameters per quote 31010959-0 Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Total Number of Containers: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample Identification | | 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: M - Hexane N - None O - AshNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sample ID</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=comp, G=grab)</th> <th>Matrix (Water, Solid, On-site, etc.)</th> <th>Preservation Code</th> </tr> </thead> <tbody> <tr><td>MW-23</td><td>3/19/19</td><td>1050</td><td>G</td><td>Water</td><td></td></tr> <tr><td>MW-24</td><td>3/18/19</td><td>1315</td><td>G</td><td>Water</td><td></td></tr> <tr><td>MW-25</td><td>3/18/19</td><td>1415</td><td>G</td><td>Water</td><td></td></tr> <tr><td>SW-22</td><td>3/20/19</td><td>1430</td><td>G</td><td>Water</td><td></td></tr> <tr><td>SW-23</td><td>3/20/19</td><td>1335</td><td>G</td><td>Water</td><td></td></tr> <tr><td>SW-24</td><td>3/20/19</td><td>1310</td><td>G</td><td>Water</td><td></td></tr> <tr><td>SW-25</td><td>3/20/19</td><td>1410</td><td>G</td><td>Water</td><td></td></tr> <tr><td>SW-26</td><td>3/18/19</td><td>1520</td><td>G</td><td>Water</td><td></td></tr> <tr><td>DUP</td><td>3/18/19</td><td>1200</td><td>G</td><td>Water</td><td></td></tr> </tbody> </table> | | Sample ID | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (Water, Solid, On-site, etc.) | Preservation Code | MW-23 | 3/19/19 | 1050 | G | Water | | MW-24 | 3/18/19 | 1315 | G | Water | | MW-25 | 3/18/19 | 1415 | G | Water | | SW-22 | 3/20/19 | 1430 | G | Water | | SW-23 | 3/20/19 | 1335 | G | Water | | SW-24 | 3/20/19 | 1310 | G | Water | | SW-25 | 3/20/19 | 1410 | G | Water | | SW-26 | 3/18/19 | 1520 | G | Water | | DUP | 3/18/19 | 1200 | G | Water | | Special Instructions/Note: Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months | | | |
| Sample ID | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (Water, Solid, On-site, etc.) | Preservation Code | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MW-23 | 3/19/19 | 1050 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MW-24 | 3/18/19 | 1315 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MW-25 | 3/18/19 | 1415 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW-22 | 3/20/19 | 1430 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW-23 | 3/20/19 | 1335 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW-24 | 3/20/19 | 1310 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW-25 | 3/20/19 | 1410 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW-26 | 3/18/19 | 1520 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DUP | 3/18/19 | 1200 | G | Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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) 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: | | Method of Shipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: <i>Sam Bennett</i> | | Date/Time: 3-21-19 0830 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: | | Date/Time: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: | | Date/Time: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | | Cooler Temperature(s) °C and Other Remarks: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|----------------|----------------------------------|---------------------|---------------------------------|--------------|
| MW-23 | 310-151604-A-1 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-23 | 310-151604-C-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-23 | 310-151604-D-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-24 | 310-151604-A-2 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-25 | 310-151604-A-3 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-22 | 310-151604-A-4 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-23 | 310-151604-A-5 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-24 | 310-151604-A-6 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-25 | 310-151604-A-7 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-26 | 310-151604-A-8 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151604-A-9 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |

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

Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151604-1

Login Number: 151604

List Source: TestAmerica Cedar Falls

List Number: 1

Creator: Bovy, Lorrainna L

| 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

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-151604-2
Client Project/Site: Muscatine Power & Water CCR

For:
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:
5/6/2019 11:26:00 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

Job ID: 310-151604-2

Job ID: 310-151604-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-151604-2

Comments

No additional comments.

Receipt

The samples were received on 3/22/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.3° C.

RAD

Method(s) 9315: Ra-226 Prep Batch 160-423097

The LCS spike recovery (73%) is just below the lower QC limit (75%) indicating a potential low bias to sample results. The MS and MSD spike recoveries are within limits demonstrating acceptable method performance, the MS/MSD RPD is within limits demonstrating good replicate precision, and the MB is less than the MDC. All of the sample results are well below the Ra-226 RL of 1 pCi/L (maximum result of 0.22 pCi/L), and the Combined Ra-226 + Ra-228 results are considerably (~5 times or more) below the CCR regulatory limit of 5 pCi/L. The laboratory does not believe this excursion significantly affects the data."

Method(s) PrecSep_0: Radium 228 Prep Batch 160-423098:

The following sample was prepared at a reduced aliquot due to discoloration and heavy sediment levels: MW-23 (310-151604-1).

Method(s) PrecSep-21: Radium 226 Prep Batch 160-423097:

The following sample was prepared at a reduced aliquot due to discoloration and heavy sediment levels: MW-23 (310-151604-1).

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

Sample Summary

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

Job ID: 310-151604-2

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 310-151604-1 | MW-23 | Water | 03/19/19 10:50 | 03/22/19 09:00 |

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Client Sample Results

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

Job ID: 310-151604-2

Client Sample ID: MW-23

Lab Sample ID: 310-151604-1

Date Collected: 03/19/19 10:50

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-226 | 0.215 | | 0.145 | 0.147 | 1.00 | 0.196 | pCi/L | 04/09/19 06:13 | 05/01/19 07:06 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 88.5 | | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:06 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.785 | | 0.490 | 0.496 | 1.00 | 0.749 | pCi/L | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 88.5 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Y Carrier | 90.5 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |

Method: 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 | 1.00 | | 0.511 | 0.517 | 5.00 | 0.749 | pCi/L | | 05/06/19 11:12 | 1 |

Definitions/Glossary

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

Job ID: 310-151604-2

Qualifiers

Rad

| Qualifier | Qualifier Description |
|-----------|---|
| * | LCS or LCSD is outside acceptance limits. |
| 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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

Job ID: 310-151604-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-423097/24-A
 Matrix: Water
 Analysis Batch: 426332

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 423097

| Analyte | MB | MB | Count | Total | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|-----------------|-----------------|----------------|----------------|---------|----------------|----------------|---------|
| | Result | Qualifier | Uncert. (2σ+/-) | Uncert. (2σ+/-) | | | | | | |
| Radium-226 | 0.01750 | U | 0.0379 | 0.0379 | 1.00 | 0.0709 | pCi/L | 04/09/19 06:13 | 05/01/19 07:10 | 1 |
| Carrier | MB %Yield | MB Qualifier | Limits | | Prepared | Analyzed | Dil Fac | | | |
| Ba Carrier | 108 | | 40 - 110 | | 04/09/19 06:13 | 05/01/19 07:10 | 1 | | | |

Lab Sample ID: LCS 160-423097/1-A
 Matrix: Water
 Analysis Batch: 426333

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 423097

| Analyte | Spike Added | LCS Result | LCS Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|-------------|---------------|----------|-----------------|------|--------|-------|------|--------------|
| | | | | Uncert. (2σ+/-) | | | | | |
| Radium-226 | 11.4 | 8.305 | * | 0.903 | 1.00 | 0.0784 | pCi/L | 73 | 75 - 125 |
| Carrier | LCS %Yield | LCS Qualifier | Limits | | | | | | |
| Ba Carrier | 97.1 | | 40 - 110 | | | | | | |

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-423098/24-A
 Matrix: Water
 Analysis Batch: 425108

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 423098

| Analyte | MB | MB | Count | Total | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|-----------------|-----------------|----------------|----------------|---------|----------------|----------------|---------|
| | Result | Qualifier | Uncert. (2σ+/-) | Uncert. (2σ+/-) | | | | | | |
| Radium-228 | -0.06022 | U | 0.185 | 0.186 | 1.00 | 0.342 | pCi/L | 04/09/19 06:46 | 04/23/19 08:59 | 1 |
| Carrier | MB %Yield | MB Qualifier | Limits | | Prepared | Analyzed | Dil Fac | | | |
| Ba Carrier | 108 | | 40 - 110 | | 04/09/19 06:46 | 04/23/19 08:59 | 1 | | | |
| Y Carrier | 89.3 | | 40 - 110 | | 04/09/19 06:46 | 04/23/19 08:59 | 1 | | | |

Lab Sample ID: LCS 160-423098/1-A
 Matrix: Water
 Analysis Batch: 425247

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 423098

| Analyte | Spike Added | LCS Result | LCS Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|-------------|---------------|----------|-----------------|------|-------|-------|------|--------------|
| | | | | Uncert. (2σ+/-) | | | | | |
| Radium-228 | 9.27 | 8.862 | | 1.02 | 1.00 | 0.335 | pCi/L | 96 | 75 - 125 |
| Carrier | LCS %Yield | LCS Qualifier | Limits | | | | | | |
| Ba Carrier | 97.1 | | 40 - 110 | | | | | | |
| Y Carrier | 90.1 | | 40 - 110 | | | | | | |

QC Association Summary

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

Job ID: 310-151604-2

Rad

Prep Batch: 423097

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|------------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | PrecSep-21 | |
| MB 160-423097/24-A | Method Blank | Total/NA | Water | PrecSep-21 | |
| LCS 160-423097/1-A | Lab Control Sample | Total/NA | Water | PrecSep-21 | |

Prep Batch: 423098

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|-----------|------------|
| 310-151604-1 | MW-23 | Total/NA | Water | PrecSep_0 | |
| MB 160-423098/24-A | Method Blank | Total/NA | Water | PrecSep_0 | |
| LCS 160-423098/1-A | Lab Control Sample | Total/NA | Water | PrecSep_0 | |

Lab Chronicle

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

Job ID: 310-151604-2

Client Sample ID: MW-23

Lab Sample ID: 310-151604-1

Date Collected: 03/19/19 10:50

Matrix: Water

Date Received: 03/22/19 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423097 | 04/09/19 06:13 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426331 | 05/01/19 07:06 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423098 | 04/09/19 06:46 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 425247 | 04/23/19 08:53 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426780 | 05/06/19 11:12 | SMP | TAL SL |

Laboratory References:

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



Accreditation/Certification Summary

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

Job ID: 310-151604-2

Laboratory: Eurofins TestAmerica, Cedar Falls

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | | 101044 | 11-01-20 |
| Georgia | State Program | 4 | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 5 | 200024 | 11-29-19 |
| Iowa | State Program | 7 | 007 | 12-01-19 |
| Kansas | NELAP | 7 | E-10341 | 01-31-20 |
| Minnesota | NELAP | 5 | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 1 | 3349 | 08-22-19 |
| North Dakota | State Program | 8 | R-186 | 09-29-19 |
| Oregon | NELAP | 10 | IA100001 | 09-29-19 |
| USDA | Federal | | P330-19-00003 | 01-02-22 |

Laboratory: Eurofins TestAmerica, St. Louis

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska | State Program | 10 | MO00054 | 06-30-19 |
| ANAB | DoD | | L2305 | 04-06-22 |
| Arizona | State Program | 9 | AZ0813 | 12-08-19 |
| California | State Program | 9 | 2886 | 06-30-19 * |
| Connecticut | State Program | 1 | PH-0241 | 03-31-21 |
| Florida | NELAP | 4 | E87689 | 06-30-19 * |
| Hawaii | State Program | 9 | NA | 06-30-19 |
| Illinois | NELAP | 5 | 200023 | 11-30-19 |
| Iowa | State Program | 7 | 373 | 12-01-20 |
| Kansas | NELAP | 7 | E-10236 | 10-31-19 |
| Kentucky (DW) | State Program | 4 | KY90125 | 12-31-19 |
| Louisiana | NELAP | 6 | 04080 | 06-30-19 |
| Louisiana (DW) | NELAP | 6 | LA011 | 12-31-19 |
| Maryland | State Program | 3 | 310 | 09-30-19 |
| Michigan | State Program | 5 | 9005 | 06-30-19 |
| Missouri | State Program | 7 | 780 | 06-30-19 |
| Nevada | State Program | 9 | MO000542018-1 | 07-31-19 |
| New Jersey | NELAP | 2 | MO002 | 06-30-19 * |
| New York | NELAP | 2 | 11616 | 03-31-20 |
| North Dakota | State Program | 8 | R207 | 06-30-19 * |
| NRC | NRC | | 24-24817-01 | 12-31-22 |
| Oklahoma | State Program | 6 | 9997 | 08-31-19 |
| Pennsylvania | NELAP | 3 | 68-00540 | 02-28-20 |
| South Carolina | State Program | 4 | 85002001 | 06-30-19 |
| Texas | NELAP | 6 | T104704193-18-13 | 07-31-19 |
| US Fish & Wildlife | Federal | | 058448 | 07-31-19 |
| USDA | Federal | | P330-17-0028 | 02-02-20 |
| Utah | NELAP | 8 | MO000542018-10 | 07-31-19 |
| Virginia | NELAP | 3 | 460230 | 06-14-19 * |
| Washington | State Program | 10 | C592 | 08-30-19 |
| West Virginia DEP | State Program | 3 | 381 | 08-31-19 |

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

Method Summary

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

Job ID: 310-151604-2

| Method | Method Description | Protocol | Laboratory |
|-------------|--|----------|------------|
| 9315 | Radium-226 (GFPC) | SW846 | TAL SL |
| 9320 | Radium-228 (GFPC) | SW846 | TAL SL |
| Ra226_Ra228 | Combined Radium-226 and Radium-228 | TAL-STL | TAL SL |
| PrecSep_0 | Preparation, Precipitate Separation | None | TAL SL |
| PrecSep-21 | Preparation, Precipitate Separation (21-Day In-Growth) | None | TAL SL |

Protocol References:

None = None

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

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

Laboratory References:

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



Cooler/Sample Receipt and Temperature Log Form

| | |
|---|---|
| Client Information | |
| Client: Muscatine Power & Water | |
| City/State: Muscatine IA | Project: Muscatine Power & Water Res |
| Receipt Information | |
| Date/Time Received: 3/22/19 0900 | Received By: JB |
| 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"/> TA Courier <input type="checkbox"/> TA 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 checked="" type="checkbox"/> No | If yes: Cooler # 1 of 1 |
| Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | If yes: Cooler custody seals intact? <input 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: M | Correction Factor (°C): -0.1 |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | |
| Uncorrected Temp (°C): 0.4 | Corrected Temp (°C): 0.3 |
| • Sample Container Temperature | |
| Container type(s) used: _____ | |
| 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 | | Lab PM: Hayes, Shawn M | | Carrier Tracking No(s): | | COC No: | |
| Samer: Sam Bennett/ Neil Hoskins Phone: 563-262-3583 E-Mail: shawn.hayes@testamericainc.com | | PO #: 191195 WO #: Project #: SSOW#: Site: Iowa | | Due Date Requested: TAT Requested (days): Address: 1700 Dick Drake Way City: Muscatine State, Zip: IA, 52761 Phone: 563-262-3583(Tel) Email: sbennett@mpw.org Project Name: Muscatine Power & Water CCR | | Page: Page 1 of 1 Job #: | |
| Company: Muscatine Power & Water | | | | Analysis Requested | | | |
| 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 | | | | Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | State Parameters per quote 31010959-0 <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No | |
| | | | | Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | Appendix III / Appendix IV per quote 31010959-0 <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No | |
| 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 | | | |
| Empty Kit Relinquished by: | | | | Special Instructions/QC Requirements: | | | |
| Relinquished by: <i>Sam Bennett</i> Date/Time: 3-21-19 0830 Company: <i>Sam Bennett</i> | | | | Method of Shipment: Date/Time: 3/22/19 0900 Company: <i>TP</i> | | | |
| Relinquished by: | | | | Date/Time: | | | |
| Relinquished by: | | | | Date/Time: | | | |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | Cooler Temperature(s) °C and Other Remarks: | | | |



Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|----------------|----------------------------------|---------------------|---------------------------------|--------------|
| MW-23 | 310-151604-A-1 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-23 | 310-151604-C-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-23 | 310-151604-D-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-24 | 310-151604-A-2 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-25 | 310-151604-A-3 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-22 | 310-151604-A-4 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-23 | 310-151604-A-5 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-24 | 310-151604-A-6 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-25 | 310-151604-A-7 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| SW-26 | 310-151604-A-8 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151604-A-9 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |

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- 14

Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151604-2

Login Number: 151604

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

| 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: 310-151604-2

Login Number: 151604

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 03/25/19 08:09 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. | N/A | |
| 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. | N/A | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 22.0 |
| 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. | N/A | |
| 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

Job ID: 310-151604-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

| | | Percent Yield (Acceptance Limits) | |
|--------------------|--------------------|-----------------------------------|--|
| Lab Sample ID | Client Sample ID | Ba Carrier (40-110) | |
| 310-151604-1 | MW-23 | 88.5 | |
| LCS 160-423097/1-A | Lab Control Sample | 97.1 | |
| MB 160-423097/24-A | Method Blank | 108 | |

Tracer/Carrier Legend
Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

| | | Percent Yield (Acceptance Limits) | |
|--------------------|--------------------|-----------------------------------|-----------------------|
| Lab Sample ID | Client Sample ID | Ba Carrier (40-110) | Y Carrier (40-110) |
| 310-151604-1 | MW-23 | 88.5 | 90.5 |
| LCS 160-423098/1-A | Lab Control Sample | 97.1 | 90.1 |
| MB 160-423098/24-A | Method Blank | 108 | 89.3 |

Tracer/Carrier Legend
Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Cedar Falls

704 Enterprise Drive

Cedar Falls, IA 50613

Tel: (319)277-2401

TestAmerica Job ID: 310-151614-1

Client Project/Site: Muscatine Power & Water CCR

For:

Muscatine Power & Water

1700 Dick Drake Way

PO BOX 899

Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:

4/3/2019 4:40:53 PM

Shawn Hayes, Senior Project Manager

(319)229-8211

shawn.hayes@testamericainc.com

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results through

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www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

TestAmerica Job ID: 310-151614-1

Job ID: 310-151614-1

Laboratory: TestAmerica Cedar Falls

Narrative

**Job Narrative
310-151614-1**

Comments

No additional comments.

Receipt

The samples were received on 3/22/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

HPLC/IC

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

Metals

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

General Chemistry

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



Sample Summary

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

TestAmerica Job ID: 310-151614-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 310-151614-1 | MW-14A | Water | 03/20/19 11:20 | 03/22/19 09:00 |
| 310-151614-2 | MW-15A | Water | 03/20/19 10:00 | 03/22/19 09:00 |
| 310-151614-3 | MW-21 | Water | 03/20/19 08:20 | 03/22/19 09:00 |
| 310-151614-4 | MW-22 | Water | 03/19/19 11:45 | 03/22/19 09:00 |
| 310-151614-5 | DUP | Water | 03/20/19 12:00 | 03/22/19 09:00 |

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

Detection Summary

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-14A

Lab Sample ID: 310-151614-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 25.8 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 1050 | | 50.0 | | mg/L | 50 | | 9056A | Total/NA |
| Barium | 0.0328 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 15.5 | | 1.40 | | mg/L | 7 | | 6020A | Total/NA |
| Calcium | 290 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Selenium | 0.00569 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 1690 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 7.1 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-15A

Lab Sample ID: 310-151614-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 8.54 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.523 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 351 | | 50.0 | | mg/L | 50 | | 9056A | Total/NA |
| Barium | 0.0370 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 8.35 | | 0.800 | | mg/L | 4 | | 6020A | Total/NA |
| Calcium | 118 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 724 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 7.5 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-21

Lab Sample ID: 310-151614-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 8.30 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 442 | | 20.0 | | mg/L | 20 | | 9056A | Total/NA |
| Barium | 0.0511 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 6.95 | | 0.800 | | mg/L | 4 | | 6020A | Total/NA |
| Calcium | 142 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Chromium | 0.00647 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Lithium | 0.0277 | | 0.0100 | | mg/L | 1 | | 6020A | Total/NA |
| Selenium | 0.0102 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 872 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 6.7 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-22

Lab Sample ID: 310-151614-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|----------|-----------|
| Chloride | 27.6 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 134 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.209 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 0.299 | | 0.200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 91.6 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Molybdenum | 0.00263 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 456 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Cedar Falls

Detection Summary

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-22 (Continued)

Lab Sample ID: 310-151614-4

| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
|---------|--------|-----------|-----|----|------|---------|---|--------------|-----------|
| pH | 7.6 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: DUP

Lab Sample ID: 310-151614-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|----------|-----------|
| Chloride | 9.04 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 447 | | 20.0 | | mg/L | 20 | | 9056A | Total/NA |
| Barium | 0.0516 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 6.73 | | 0.800 | | mg/L | 4 | | 6020A | Total/NA |
| Calcium | 139 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Chromium | 0.00635 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Lithium | 0.0258 | | 0.0100 | | mg/L | 1 | | 6020A | Total/NA |
| Molybdenum | 0.00981 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Selenium | 0.00997 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 892 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |

| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
|---------|--------|-----------|-----|----|------|---------|---|--------------|-----------|
| pH | 6.7 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Cedar Falls

Client Sample Results

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-14A

Lab Sample ID: 310-151614-1

Date Collected: 03/20/19 11:20

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 25.8 | | 5.00 | | mg/L | | | 03/27/19 12:16 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 12:16 | 5 |
| Sulfate | 1050 | | 50.0 | | mg/L | | | 03/27/19 12:29 | 50 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Barium | 0.0328 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Boron | 15.5 | | 1.40 | | mg/L | | 03/25/19 08:00 | 03/27/19 13:44 | 7 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Calcium | 290 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Selenium | 0.00569 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:37 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:47 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|-------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 1690 | | 30.0 | | mg/L | | | 03/25/19 14:37 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.1 | HF | 0.1 | | SU | | | 03/22/19 15:38 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-15A

Lab Sample ID: 310-151614-2

Date Collected: 03/20/19 10:00

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 8.54 | | 5.00 | | mg/L | | | 03/27/19 12:42 | 5 |
| Fluoride | 0.523 | | 0.500 | | mg/L | | | 03/27/19 12:42 | 5 |
| Sulfate | 351 | | 50.0 | | mg/L | | | 03/27/19 12:54 | 50 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Barium | 0.0370 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Boron | 8.35 | | 0.800 | | mg/L | | 03/25/19 08:00 | 03/27/19 13:47 | 4 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Calcium | 118 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:40 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:50 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 724 | | 30.0 | | mg/L | | | 03/25/19 14:37 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.5 | HF | 0.1 | | SU | | | 03/22/19 15:40 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-21

Date Collected: 03/20/19 08:20

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 8.30 | | 5.00 | | mg/L | | | 03/27/19 13:48 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 13:48 | 5 |
| Sulfate | 442 | | 20.0 | | mg/L | | | 03/27/19 14:01 | 20 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Barium | 0.0511 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Boron | 6.95 | | 0.800 | | mg/L | | 03/25/19 08:00 | 03/27/19 13:51 | 4 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Calcium | 142 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Chromium | 0.00647 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Lithium | 0.0277 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Selenium | 0.0102 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:43 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:56 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 872 | | 30.0 | | mg/L | | | 03/25/19 14:37 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 6.7 | HF | 0.1 | | SU | | | 03/22/19 15:41 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-22
Date Collected: 03/19/19 11:45
Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-4
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 27.6 | | 5.00 | | mg/L | | | 03/27/19 14:14 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 14:14 | 5 |
| Sulfate | 134 | | 5.00 | | mg/L | | | 03/27/19 14:14 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Barium | 0.209 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Boron | 0.299 | | 0.200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Calcium | 91.6 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Molybdenum | 0.00263 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:47 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:52 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 456 | | 30.0 | | mg/L | | | 03/25/19 14:37 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.6 | HF | 0.1 | | SU | | | 03/22/19 15:47 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: DUP
Date Collected: 03/20/19 12:00
Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-5
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 9.04 | | 5.00 | | mg/L | | | 03/27/19 14:27 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 14:27 | 5 |
| Sulfate | 447 | | 20.0 | | mg/L | | | 03/27/19 14:41 | 20 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Barium | 0.0516 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Boron | 6.73 | | 0.800 | | mg/L | | 03/25/19 08:00 | 03/27/19 13:54 | 4 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Calcium | 139 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Chromium | 0.00635 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Lithium | 0.0258 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Molybdenum | 0.00981 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Selenium | 0.00997 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 22:50 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:54 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 892 | | 30.0 | | mg/L | | | 03/25/19 14:37 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 6.7 | HF | 0.1 | | SU | | | 03/22/19 15:25 | 1 |

Definitions/Glossary

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

TestAmerica Job ID: 310-151614-1

Qualifiers

General Chemistry

| Qualifier | Qualifier Description |
|-----------|--|
| HF | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |

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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

TestAmerica Job ID: 310-151614-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-233804/3
Matrix: Water
Analysis Batch: 233804

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 | | | 03/27/19 08:38 | 1 |
| Fluoride | <0.100 | | 0.100 | | mg/L | | | 03/27/19 08:38 | 1 |
| Sulfate | <1.00 | | 1.00 | | mg/L | | | 03/27/19 08:38 | 1 |

Lab Sample ID: LCS 310-233804/4
Matrix: Water
Analysis Batch: 233804

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Chloride | 7.50 | 7.209 | | mg/L | | 96 | 90 - 110 |
| Fluoride | 1.50 | 1.516 | | mg/L | | 101 | 90 - 110 |
| Sulfate | 7.50 | 7.559 | | mg/L | | 101 | 90 - 110 |

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-233321/1-A
Matrix: Water
Analysis Batch: 233682

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233321

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Barium | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Boron | <0.200 | | 0.200 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Calcium | <0.500 | | 0.500 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Molybdenum | 0.003067 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/25/19 08:00 | 03/26/19 21:08 | 1 |

Lab Sample ID: MB 310-233321/1-A
Matrix: Water
Analysis Batch: 233844

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233321

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|---------|-----|------|---|----------------|----------------|---------|
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/25/19 08:00 | 03/27/19 13:41 | 1 |

Lab Sample ID: LCS 310-233321/2-A
Matrix: Water
Analysis Batch: 233682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233321

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Antimony | 0.0200 | 0.01908 | | mg/L | | 95 | 80 - 120 |
| Arsenic | 0.0400 | 0.04063 | | mg/L | | 102 | 80 - 120 |

TestAmerica Cedar Falls

QC Sample Results

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

TestAmerica Job ID: 310-151614-1

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

Lab Sample ID: LCS 310-233321/2-A
Matrix: Water
Analysis Batch: 233682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233321

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|------------|-------------|------------|---------------|------|---|------|--------------|
| Barium | 0.0400 | 0.03873 | | mg/L | | 97 | 80 - 120 |
| Beryllium | 0.0200 | 0.01863 | | mg/L | | 93 | 80 - 120 |
| Boron | 0.880 | 0.8397 | | mg/L | | 95 | 80 - 120 |
| Cadmium | 0.0200 | 0.01924 | | mg/L | | 96 | 80 - 120 |
| Calcium | 2.00 | 1.977 | | mg/L | | 99 | 80 - 120 |
| Chromium | 0.0400 | 0.03843 | | mg/L | | 96 | 80 - 120 |
| Cobalt | 0.0200 | 0.01871 | | mg/L | | 94 | 80 - 120 |
| Lead | 0.0200 | 0.01872 | | mg/L | | 94 | 80 - 120 |
| Lithium | 0.100 | 0.09683 | | mg/L | | 97 | 80 - 120 |
| Molybdenum | 0.0400 | 0.03737 | | mg/L | | 93 | 80 - 120 |
| Selenium | 0.0400 | 0.03809 | | mg/L | | 95 | 80 - 120 |
| Thallium | 0.0160 | 0.01498 | | mg/L | | 94 | 80 - 120 |

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-233467/1-A
Matrix: Water
Analysis Batch: 233627

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233467

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:43 | 1 |

Lab Sample ID: LCS 310-233467/2-A
Matrix: Water
Analysis Batch: 233627

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233467

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|-------------|------------|---------------|------|---|------|--------------|
| Mercury | 0.00167 | 0.001701 | | mg/L | | 102 | 80 - 120 |

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

Lab Sample ID: MB 310-233456/1
Matrix: Water
Analysis Batch: 233456

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 | <30.0 | | 30.0 | | mg/L | | | 03/25/19 14:37 | 1 |

Lab Sample ID: LCS 310-233456/2
Matrix: Water
Analysis Batch: 233456

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 | 982.0 | | mg/L | | 98 | 90 - 110 |

TestAmerica Cedar Falls

QC Sample Results

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

TestAmerica Job ID: 310-151614-1

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-233319/1
Matrix: Water
Analysis Batch: 233319

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 |

- 1
- 2
- 3
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- 10
- 11
- 12
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- 14

QC Association Summary

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

TestAmerica Job ID: 310-151614-1

HPLC/IC

Analysis Batch: 233804

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | 9056A | |
| 310-151614-1 | MW-14A | Total/NA | Water | 9056A | |
| 310-151614-2 | MW-15A | Total/NA | Water | 9056A | |
| 310-151614-2 | MW-15A | Total/NA | Water | 9056A | |
| 310-151614-3 | MW-21 | Total/NA | Water | 9056A | |
| 310-151614-3 | MW-21 | Total/NA | Water | 9056A | |
| 310-151614-4 | MW-22 | Total/NA | Water | 9056A | |
| 310-151614-5 | DUP | Total/NA | Water | 9056A | |
| 310-151614-5 | DUP | Total/NA | Water | 9056A | |
| MB 310-233804/3 | Method Blank | Total/NA | Water | 9056A | |
| LCS 310-233804/4 | Lab Control Sample | Total/NA | Water | 9056A | |

Metals

Prep Batch: 233321

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | 3010A | |
| 310-151614-2 | MW-15A | Total/NA | Water | 3010A | |
| 310-151614-3 | MW-21 | Total/NA | Water | 3010A | |
| 310-151614-4 | MW-22 | Total/NA | Water | 3010A | |
| 310-151614-5 | DUP | Total/NA | Water | 3010A | |
| MB 310-233321/1-A | Method Blank | Total/NA | Water | 3010A | |
| LCS 310-233321/2-A | Lab Control Sample | Total/NA | Water | 3010A | |

Prep Batch: 233467

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | 7470A | |
| 310-151614-2 | MW-15A | Total/NA | Water | 7470A | |
| 310-151614-3 | MW-21 | Total/NA | Water | 7470A | |
| 310-151614-4 | MW-22 | Total/NA | Water | 7470A | |
| 310-151614-5 | DUP | Total/NA | Water | 7470A | |
| MB 310-233467/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 310-233467/2-A | Lab Control Sample | Total/NA | Water | 7470A | |

Analysis Batch: 233627

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | 7470A | 233467 |
| 310-151614-2 | MW-15A | Total/NA | Water | 7470A | 233467 |
| 310-151614-3 | MW-21 | Total/NA | Water | 7470A | 233467 |
| 310-151614-4 | MW-22 | Total/NA | Water | 7470A | 233467 |
| 310-151614-5 | DUP | Total/NA | Water | 7470A | 233467 |
| MB 310-233467/1-A | Method Blank | Total/NA | Water | 7470A | 233467 |
| LCS 310-233467/2-A | Lab Control Sample | Total/NA | Water | 7470A | 233467 |

Analysis Batch: 233682

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | 6020A | 233321 |
| 310-151614-2 | MW-15A | Total/NA | Water | 6020A | 233321 |
| 310-151614-3 | MW-21 | Total/NA | Water | 6020A | 233321 |
| 310-151614-4 | MW-22 | Total/NA | Water | 6020A | 233321 |

TestAmerica Cedar Falls

QC Association Summary

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

TestAmerica Job ID: 310-151614-1

Metals (Continued)

Analysis Batch: 233682 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151614-5 | DUP | Total/NA | Water | 6020A | 233321 |
| MB 310-233321/1-A | Method Blank | Total/NA | Water | 6020A | 233321 |
| LCS 310-233321/2-A | Lab Control Sample | Total/NA | Water | 6020A | 233321 |

Analysis Batch: 233685

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151614-4 | MW-22 | Total/NA | Water | 6020A | 233321 |
| MB 310-233321/1-A | Method Blank | Total/NA | Water | 6020A | 233321 |
| LCS 310-233321/2-A | Lab Control Sample | Total/NA | Water | 6020A | 233321 |

Analysis Batch: 233844

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|------------------|-----------|--------|--------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | 6020A | 233321 |
| 310-151614-2 | MW-15A | Total/NA | Water | 6020A | 233321 |
| 310-151614-3 | MW-21 | Total/NA | Water | 6020A | 233321 |
| 310-151614-5 | DUP | Total/NA | Water | 6020A | 233321 |
| MB 310-233321/1-A | Method Blank | Total/NA | Water | 6020A | 233321 |

General Chemistry

Analysis Batch: 233319

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | SM 4500 H+ B | |
| 310-151614-2 | MW-15A | Total/NA | Water | SM 4500 H+ B | |
| 310-151614-3 | MW-21 | Total/NA | Water | SM 4500 H+ B | |
| 310-151614-4 | MW-22 | Total/NA | Water | SM 4500 H+ B | |
| 310-151614-5 | DUP | Total/NA | Water | SM 4500 H+ B | |
| LCS 310-233319/1 | Lab Control Sample | Total/NA | Water | SM 4500 H+ B | |

Analysis Batch: 233456

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | SM 2540C | |
| 310-151614-2 | MW-15A | Total/NA | Water | SM 2540C | |
| 310-151614-3 | MW-21 | Total/NA | Water | SM 2540C | |
| 310-151614-4 | MW-22 | Total/NA | Water | SM 2540C | |
| 310-151614-5 | DUP | Total/NA | Water | SM 2540C | |
| MB 310-233456/1 | Method Blank | Total/NA | Water | SM 2540C | |
| LCS 310-233456/2 | Lab Control Sample | Total/NA | Water | SM 2540C | |

Lab Chronicle

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-14A

Date Collected: 03/20/19 11:20

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 12:16 | MLU | TAL CF |
| Total/NA | Analysis | 9056A | | 50 | 233804 | 03/27/19 12:29 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233682 | 03/26/19 22:37 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 7 | 233844 | 03/27/19 13:44 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 13:47 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233456 | 03/25/19 14:37 | LBB | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:38 | JWG | TAL CF |

Client Sample ID: MW-15A

Date Collected: 03/20/19 10:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 12:42 | MLU | TAL CF |
| Total/NA | Analysis | 9056A | | 50 | 233804 | 03/27/19 12:54 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233682 | 03/26/19 22:40 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 233844 | 03/27/19 13:47 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 13:50 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233456 | 03/25/19 14:37 | LBB | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:40 | JWG | TAL CF |

Client Sample ID: MW-21

Date Collected: 03/20/19 08:20

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 13:48 | MLU | TAL CF |
| Total/NA | Analysis | 9056A | | 20 | 233804 | 03/27/19 14:01 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233682 | 03/26/19 22:43 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 233844 | 03/27/19 13:51 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 13:56 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233456 | 03/25/19 14:37 | LBB | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:41 | JWG | TAL CF |

TestAmerica Cedar Falls

Lab Chronicle

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

TestAmerica Job ID: 310-151614-1

Client Sample ID: MW-22

Date Collected: 03/19/19 11:45

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 14:14 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233682 | 03/26/19 22:47 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233685 | 03/26/19 22:47 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 13:52 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233456 | 03/25/19 14:37 | LBB | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:47 | JWG | TAL CF |

Client Sample ID: DUP

Date Collected: 03/20/19 12:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151614-5

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 14:27 | MLU | TAL CF |
| Total/NA | Analysis | 9056A | | 20 | 233804 | 03/27/19 14:41 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 233682 | 03/26/19 22:50 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 233321 | 03/25/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 233844 | 03/27/19 13:54 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 13:54 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233456 | 03/25/19 14:37 | LBB | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:25 | JWG | TAL CF |

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

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

TestAmerica Job ID: 310-151614-1

Laboratory: TestAmerica Cedar Falls

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | | 101044 | 11-01-20 |
| Georgia | State Program | 4 | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 5 | 200024 | 11-29-19 |
| Iowa | State Program | 7 | 007 | 12-01-19 |
| Kansas | NELAP | 7 | E-10341 | 01-31-20 |
| Minnesota | NELAP | 5 | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 1 | 3349 | 08-22-19 |
| North Dakota | State Program | 8 | R-186 | 09-29-19 |
| Oregon | NELAP | 10 | IA100001 | 09-29-19 |
| USDA | Federal | | P330-19-00003 | 01-02-22 |

Method Summary

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

TestAmerica Job ID: 310-151614-1

| Method | Method Description | Protocol | Laboratory |
|--------------|-------------------------------|----------|------------|
| 9056A | Anions, Ion Chromatography | SW846 | TAL CF |
| 6020A | Metals (ICP/MS) | SW846 | TAL CF |
| 7470A | Mercury (CVAA) | SW846 | TAL CF |
| SM 2540C | Solids, Total Dissolved (TDS) | SM | TAL CF |
| SM 4500 H+ B | pH | SM | TAL CF |
| 3010A | Preparation, Total Metals | SW846 | TAL CF |
| 7470A | Preparation, Mercury | SW846 | TAL CF |

Protocol References:

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.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401





Cooler/Sample Receipt and Temperature Log Form

| | |
|---|--|
| Client Information | |
| Client: Muscatine Power & Water | |
| City/State: Muscatine IA | Project: |
| Receipt Information | |
| Date/Time Received: 3/22/19 0900 | Received By: ZB |
| 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"/> TA Courier <input type="checkbox"/> TA 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 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: M | Correction Factor (°C): -0.1 |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | |
| Uncorrected Temp (°C): 1.8 | Corrected Temp (°C): 1.7 |
| • Sample Container Temperature | |
| Container type(s) used: | |
| 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 | |
| MW-14A on COC's bottles 25 3/22/19 | |

Chain of Custody Record

| Client Information | | | | Lab PM: Hayes, Shawn M | | | | Carrier Tracking No(s): | | | | COC No: | | | |
|--|--|-------------|-------------|---|--|-----------------------------------|----------------------------|---|--|--|----------------------------|----------------------------|---|--|--|
| Client Contact: Sam Bennett | | | | Phone: 563-262-3583 | | | | E-Mail: shawn.hayes@testamericainc.com | | | | Page 1 of 1 | | | |
| Company: Muscatine Power & Water | | | | Address: 1700 Dick Drake Way | | | | City: Muscatine | | | | State, Zip: IA, 52761 | | | |
| Phone: 563-262-3583(Tel) | | | | PO #: 191195 | | | | WO #: | | | | Project #: | | | |
| Email: sbennett@mpw.org | | | | Project Name: Muscatine Power & Water CCR | | | | Site: Iowa | | | | SSOW#: | | | |
| Due Date Requested: | | | | TAT Requested (days): | | | | Analysis Requested | | | | Total Number of Containers | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (G=grab) | Matrix (W=water, S=solid, O=wastewat, W=water) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | State Parameters per quote 31010959-0 | Appendix III / Appendix IV (minus Radium) per quote 31010959-0 | Appendix III / Appendix IV (minus Radium) per quote 31010959-0 | Special Instructions/Note: | Preservation Codes: | | | |
| MW-14A | | 3/20/19 | 1120 | G | Water | X | X | X | X | | | A - HCL | M - Hexane | | |
| MW-15A | | 3/20/19 | 1000 | G | Water | X | X | X | X | | | B - NaOH | N - None | | |
| MW-21 | | 3/20/19 | 0820 | G | Water | X | X | X | X | | | C - Zn Acetate | O - As/NaO2 | | |
| MW-22 | | 3/19/19 | 1145 | G | Water | X | X | X | X | | | D - Nitric Acid | P - Na2O4S | | |
| DUP | | 3/20/19 | 1200 | G | Water | X | X | X | X | | | E - NaHSO4 | Q - Na2SO3 | | |
| 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: 3-21-19 0830 | | | | Company | | | | Received by: <i>Jamie</i> | | | |
| Relinquished by: | | | | Date/Time: | | | | Company | | | | Received by: | | | |
| Relinquished by: | | | | Date/Time: | | | | Company | | | | Received by: | | | |
| Custody Seals Intact: Δ Yes Δ No | | | | Custody Seal No.: | | | | Cooler Temperature(s) °C and Other Remarks: | | | | Ver: 08/04/2016 | | | |



Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|----------------|----------------------------------|---------------------|---------------------------------|--------------|
| MW-14A | 310-151614-A-1 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-14A | 310-151614-C-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-14A | 310-151614-D-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-151614-A-2 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-151614-C-2 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-151614-D-2 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-151614-A-3 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-151614-C-3 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-151614-D-3 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-151614-A-4 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-151614-C-4 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-151614-D-4 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151614-A-5 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151614-C-5 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151614-D-5 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151614-1

Login Number: 151614

List Source: TestAmerica Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

| 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 | Time on bottles for DUP says 0820, logged per COC. |
| 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

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-151614-2

Client Project/Site: Muscatine Power & Water CCR

For:

Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:
5/6/2019 11:32:39 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

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

Job ID: 310-151614-2

Job ID: 310-151614-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-151614-2

Comments

No additional comments.

Receipt

The samples were received on 3/22/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

RAD

Method(s) 9315: Ra-226 Prep Batch 160-423095

The Laboratory Control Sample Duplicate (LCSD) recovered just below the 75% threshold (74.4%). The Laboratory Control Sample (LCS) recovered within our parameters (81%), and each sample's activity and MDC was well below the RL. The laboratory does not believe this excursion significantly affects the data. MW-21 (310-151614-3) and MW-22 (310-151614-4)

Method(s) 904.0, 9320: Radium-228 Prep Batch 160-423142

The Radium-228 laboratory control sample (LCS) recovery (129%) associated with the following samples is outside the upper QC limit of 125%, indicating a potential positive bias for that analyte. This analyte was not observed above the RL in the associated samples; therefore the sample data is not adversely affected by this excursion. The data have been reported with this narrative. MW-14A (310-151614-1) and MW-15A (310-151614-2)

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



Sample Summary

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

Job ID: 310-151614-2

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 310-151614-1 | MW-14A | Water | 03/20/19 11:20 | 03/22/19 09:00 |
| 310-151614-2 | MW-15A | Water | 03/20/19 10:00 | 03/22/19 09:00 |
| 310-151614-3 | MW-21 | Water | 03/20/19 08:20 | 03/22/19 09:00 |
| 310-151614-4 | MW-22 | Water | 03/19/19 11:45 | 03/22/19 09:00 |

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

Client Sample Results

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

Job ID: 310-151614-2

Client Sample ID: MW-14A

Lab Sample ID: 310-151614-1

Date Collected: 03/20/19 11:20

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.0588 | U | 0.0499 | 0.0502 | 1.00 | 0.0711 | pCi/L | 04/09/19 11:22 | 05/01/19 21:42 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 96.5 | | 40 - 110 | | | | | 04/09/19 11:22 | 05/01/19 21:42 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|---------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | -0.0365 | U * | 0.204 | 0.204 | 1.00 | 0.376 | pCi/L | 04/09/19 11:39 | 04/16/19 16:00 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 96.5 | | 40 - 110 | | | | | 04/09/19 11:39 | 04/16/19 16:00 | 1 |
| Y Carrier | 84.9 | | 40 - 110 | | | | | 04/09/19 11:39 | 04/16/19 16:00 | 1 |

Method: 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 | 0.0223 | U | 0.210 | 0.210 | 5.00 | 0.376 | pCi/L | | 05/06/19 10:34 | 1 |

Client Sample Results

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

Job ID: 310-151614-2

Client Sample ID: MW-15A

Lab Sample ID: 310-151614-2

Date Collected: 03/20/19 10:00

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.0609 | U | 0.0518 | 0.0521 | 1.00 | 0.0751 | pCi/L | 04/09/19 11:22 | 05/01/19 21:42 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 92.9 | | 40 - 110 | | | | | 04/09/19 11:22 | 05/01/19 21:42 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.330 | U * | 0.252 | 0.254 | 1.00 | 0.396 | pCi/L | 04/09/19 11:39 | 04/16/19 16:00 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 92.9 | | 40 - 110 | | | | | 04/09/19 11:39 | 04/16/19 16:00 | 1 |
| Y Carrier | 85.2 | | 40 - 110 | | | | | 04/09/19 11:39 | 04/16/19 16:00 | 1 |

Method: 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 | 0.391 | U | 0.257 | 0.259 | 5.00 | 0.396 | pCi/L | | 05/06/19 10:34 | 1 |

Client Sample Results

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

Job ID: 310-151614-2

Client Sample ID: MW-21

Lab Sample ID: 310-151614-3

Date Collected: 03/20/19 08:20

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.117 | * | 0.0686 | 0.0694 | 1.00 | 0.0841 | pCi/L | 04/09/19 05:49 | 05/01/19 23:50 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 91.2 | | 40 - 110 | | | | | 04/09/19 05:49 | 05/01/19 23:50 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.170 | U | 0.203 | 0.203 | 1.00 | 0.334 | pCi/L | 04/09/19 06:11 | 04/22/19 09:07 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 95.3 | | 40 - 110 | | | | | 04/09/19 06:11 | 04/22/19 09:07 | 1 |
| Y Carrier | 89.7 | | 40 - 110 | | | | | 04/09/19 06:11 | 04/22/19 09:07 | 1 |

Method: 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 | 0.287 | U | 0.214 | 0.215 | 5.00 | 0.334 | pCi/L | | 05/06/19 10:34 | 1 |

Client Sample Results

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

Job ID: 310-151614-2

Client Sample ID: MW-22

Lab Sample ID: 310-151614-4

Date Collected: 03/19/19 11:45

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.116 | * | 0.0680 | 0.0688 | 1.00 | 0.0821 | pCi/L | 04/09/19 05:49 | 05/01/19 23:50 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 92.1 | | 40 - 110 | | | | | 04/09/19 05:49 | 05/01/19 23:50 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.226 | U | 0.250 | 0.251 | 1.00 | 0.411 | pCi/L | 04/09/19 06:11 | 04/22/19 09:07 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 96.2 | | 40 - 110 | | | | | 04/09/19 06:11 | 04/22/19 09:07 | 1 |
| Y Carrier | 90.8 | | 40 - 110 | | | | | 04/09/19 06:11 | 04/22/19 09:07 | 1 |

Method: 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 | 0.343 | U | 0.259 | 0.260 | 5.00 | 0.411 | pCi/L | | 05/06/19 10:34 | 1 |

Definitions/Glossary

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

Job ID: 310-151614-2

Qualifiers

Rad

| Qualifier | Qualifier Description |
|-----------|---|
| * | LCS or LCSD is outside acceptance limits. |
| 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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

Job ID: 310-151614-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-423095/23-A
Matrix: Water
Analysis Batch: 426506

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423095

| Analyte | MB | MB | Count | Total | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|----------|-----------|-----------------|-----------------|----------------|----------------|---------|----------------|----------------|---------|
| | Result | Qualifier | Uncert. (2σ+/-) | Uncert. (2σ+/-) | | | | | | |
| Radium-226 | -0.02645 | U | 0.0297 | 0.0298 | 1.00 | 0.0861 | pCi/L | 04/09/19 05:49 | 05/02/19 07:40 | 1 |
| Carrier | MB | MB | Limits | | Prepared | Analyzed | Dil Fac | | | |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | | | |
| Ba Carrier | 97.2 | | | | 04/09/19 05:49 | 05/02/19 07:40 | 1 | | | |

Lab Sample ID: LCS 160-423095/1-A
Matrix: Water
Analysis Batch: 426331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423095

| Analyte | Spike Added | LCS Result | LCS Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|-------------|------------|----------|-----------------|----------------|----------------|---------|------|--------------|
| | | | | Uncert. (2σ+/-) | | | | | |
| Radium-226 | 11.4 | 9.174 | | 0.971 | 1.00 | 0.0883 | pCi/L | 81 | 75 - 125 |
| Carrier | LCS | LCS | Limits | | Prepared | Analyzed | Dil Fac | | |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | | |
| Ba Carrier | 92.7 | | | | 04/09/19 05:49 | 05/02/19 07:40 | 1 | | |

Lab Sample ID: LCSD 160-423095/2-A
Matrix: Water
Analysis Batch: 426331

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 423095

| Analyte | Spike Added | LCSD Result | LCSD Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits | RER | Limit |
|------------|-------------|-------------|-----------|-----------------|----------------|----------------|---------|------|--------------|------|-------|
| | | | | Uncert. (2σ+/-) | | | | | | | |
| Radium-226 | 11.4 | 8.450 | * | 0.901 | 1.00 | 0.0771 | pCi/L | 74 | 75 - 125 | 0.39 | 1 |
| Carrier | LCSD | LCSD | Limits | | Prepared | Analyzed | Dil Fac | | | | |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | | | | |
| Ba Carrier | 98.6 | | | | 04/09/19 11:22 | 05/01/19 23:48 | 1 | | | | |

Lab Sample ID: MB 160-423138/18-A
Matrix: Water
Analysis Batch: 426331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423138

| Analyte | MB | MB | Count | Total | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|---------|-----------|-----------------|-----------------|----------------|----------------|---------|----------------|----------------|---------|
| | Result | Qualifier | Uncert. (2σ+/-) | Uncert. (2σ+/-) | | | | | | |
| Radium-226 | 0.01499 | U | 0.0315 | 0.0315 | 1.00 | 0.0590 | pCi/L | 04/09/19 11:22 | 05/01/19 23:48 | 1 |
| Carrier | MB | MB | Limits | | Prepared | Analyzed | Dil Fac | | | |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | | | |
| Ba Carrier | 108 | | | | 04/09/19 11:22 | 05/01/19 23:48 | 1 | | | |

Lab Sample ID: LCS 160-423138/1-A
Matrix: Water
Analysis Batch: 426331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423138

| Analyte | Spike Added | LCS Result | LCS Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|-------------|------------|----------|-----------------|------|--------|-------|------|--------------|
| | | | | Uncert. (2σ+/-) | | | | | |
| Radium-226 | 11.4 | 8.462 | | 0.918 | 1.00 | 0.0958 | pCi/L | 75 | 75 - 125 |

QC Sample Results

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

Job ID: 310-151614-2

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-423138/1-A
 Matrix: Water
 Analysis Batch: 426331

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 423138

| Carrier | LCS %Yield | LCS Qualifier | Limits |
|------------|---------------|------------------|----------|
| Ba Carrier | 74.3 | | 40 - 110 |

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-423096/23-A
 Matrix: Water
 Analysis Batch: 424954

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 423096

| Analyte | MB Result | MB Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------------|-----------------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.1189 | U | 0.193 | 0.193 | 1.00 | 0.326 | pCi/L | 04/09/19 06:11 | 04/22/19 09:10 | 1 |

| Carrier | MB %Yield | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|--------------|-----------------|----------|----------------|----------------|---------|
| Ba Carrier | 101 | | 40 - 110 | 04/09/19 06:11 | 04/22/19 09:10 | 1 |
| Y Carrier | 91.6 | | 40 - 110 | 04/09/19 06:11 | 04/22/19 09:10 | 1 |

Lab Sample ID: LCS 160-423096/1-A
 Matrix: Water
 Analysis Batch: 424956

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 423096

| Analyte | Spike Added | LCS Result | LCS Qual | Total Uncert. (2σ+/-) | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|----------------|---------------|-------------|-----------------------------|------|-------|-------|------|-----------------|
| Radium-228 | 9.28 | 9.141 | | 1.05 | 1.00 | 0.341 | pCi/L | 99 | 75 - 125 |

| Carrier | LCS %Yield | LCS Qualifier | Limits |
|------------|---------------|------------------|----------|
| Ba Carrier | 96.8 | | 40 - 110 |
| Y Carrier | 92.0 | | 40 - 110 |

Lab Sample ID: LCSD 160-423096/2-A
 Matrix: Water
 Analysis Batch: 424956

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 423096

| Analyte | Spike Added | LCSD Result | LCSD Qual | Total Uncert. (2σ+/-) | RL | MDC | Unit | %Rec | %Rec. Limits | RER | RER Limit |
|------------|----------------|----------------|--------------|-----------------------------|------|-------|-------|------|-----------------|------|--------------|
| Radium-228 | 9.28 | 8.206 | | 0.943 | 1.00 | 0.295 | pCi/L | 88 | 75 - 125 | 0.47 | 1 |

| Carrier | LCSD %Yield | LCSD Qualifier | Limits |
|------------|----------------|-------------------|----------|
| Ba Carrier | 103 | | 40 - 110 |
| Y Carrier | 95.3 | | 40 - 110 |

Lab Sample ID: MB 160-423142/18-A
 Matrix: Water
 Analysis Batch: 424048

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 423142

| Analyte | MB Result | MB Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------------|-----------------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.1947 | U | 0.226 | 0.227 | 1.00 | 0.372 | pCi/L | 04/09/19 11:39 | 04/16/19 16:05 | 1 |

Eurofins TestAmerica, Cedar Falls

QC Sample Results

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

Job ID: 310-151614-2

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

Lab Sample ID: MB 160-423142/18-A
Matrix: Water
Analysis Batch: 424048

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423142

| Carrier | MB MB | | Limits | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|----------|----------------|----------------|---------|
| | %Yield | Qualifier | | | | |
| Ba Carrier | 108 | | 40 - 110 | 04/09/19 11:39 | 04/16/19 16:05 | 1 |
| Y Carrier | 81.9 | | 40 - 110 | 04/09/19 11:39 | 04/16/19 16:05 | 1 |

Lab Sample ID: LCS 160-423142/1-A
Matrix: Water
Analysis Batch: 424031

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423142

| Analyte | Spike Added | LCS Result | LCS Qual | Total Uncert. (2σ+/-) | RL | MDC | Unit | %Rec | %Rec. |
|------------|-------------|------------|----------|-----------------------|------|-------|-------|------|----------|
| | | | | | | | | | Limits |
| Radium-228 | 9.29 | 11.96 | * | 1.42 | 1.00 | 0.540 | pCi/L | 129 | 75 - 125 |

| Carrier | LCS LCS | | Limits |
|------------|---------|-----------|----------|
| | %Yield | Qualifier | |
| Ba Carrier | 74.3 | | 40 - 110 |
| Y Carrier | 81.1 | | 40 - 110 |

QC Association Summary

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

Job ID: 310-151614-2

Rad

Prep Batch: 423095

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|------------|------------|
| 310-151614-3 | MW-21 | Total/NA | Water | PrecSep-21 | |
| 310-151614-4 | MW-22 | Total/NA | Water | PrecSep-21 | |
| MB 160-423095/23-A | Method Blank | Total/NA | Water | PrecSep-21 | |
| LCS 160-423095/1-A | Lab Control Sample | Total/NA | Water | PrecSep-21 | |
| LCSD 160-423095/2-A | Lab Control Sample Dup | Total/NA | Water | PrecSep-21 | |

Prep Batch: 423096

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|-----------|------------|
| 310-151614-3 | MW-21 | Total/NA | Water | PrecSep_0 | |
| 310-151614-4 | MW-22 | Total/NA | Water | PrecSep_0 | |
| MB 160-423096/23-A | Method Blank | Total/NA | Water | PrecSep_0 | |
| LCS 160-423096/1-A | Lab Control Sample | Total/NA | Water | PrecSep_0 | |
| LCSD 160-423096/2-A | Lab Control Sample Dup | Total/NA | Water | PrecSep_0 | |

Prep Batch: 423138

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|------------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | PrecSep-21 | |
| 310-151614-2 | MW-15A | Total/NA | Water | PrecSep-21 | |
| MB 160-423138/18-A | Method Blank | Total/NA | Water | PrecSep-21 | |
| LCS 160-423138/1-A | Lab Control Sample | Total/NA | Water | PrecSep-21 | |

Prep Batch: 423142

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|-----------|------------|
| 310-151614-1 | MW-14A | Total/NA | Water | PrecSep_0 | |
| 310-151614-2 | MW-15A | Total/NA | Water | PrecSep_0 | |
| MB 160-423142/18-A | Method Blank | Total/NA | Water | PrecSep_0 | |
| LCS 160-423142/1-A | Lab Control Sample | Total/NA | Water | PrecSep_0 | |

Lab Chronicle

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

Job ID: 310-151614-2

Client Sample ID: MW-14A

Lab Sample ID: 310-151614-1

Date Collected: 03/20/19 11:20

Matrix: Water

Date Received: 03/22/19 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423138 | 04/09/19 11:22 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426331 | 05/01/19 21:42 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423142 | 04/09/19 11:39 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 424031 | 04/16/19 16:00 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426774 | 05/06/19 10:34 | SMP | TAL SL |

Client Sample ID: MW-15A

Lab Sample ID: 310-151614-2

Date Collected: 03/20/19 10:00

Matrix: Water

Date Received: 03/22/19 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423138 | 04/09/19 11:22 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426331 | 05/01/19 21:42 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423142 | 04/09/19 11:39 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 424031 | 04/16/19 16:00 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426774 | 05/06/19 10:34 | SMP | TAL SL |

Client Sample ID: MW-21

Lab Sample ID: 310-151614-3

Date Collected: 03/20/19 08:20

Matrix: Water

Date Received: 03/22/19 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423095 | 04/09/19 05:49 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426331 | 05/01/19 23:50 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423096 | 04/09/19 06:11 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 424956 | 04/22/19 09:07 | TJR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426774 | 05/06/19 10:34 | SMP | TAL SL |

Client Sample ID: MW-22

Lab Sample ID: 310-151614-4

Date Collected: 03/19/19 11:45

Matrix: Water

Date Received: 03/22/19 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423095 | 04/09/19 05:49 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426331 | 05/01/19 23:50 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423096 | 04/09/19 06:11 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 424956 | 04/22/19 09:07 | TJR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426774 | 05/06/19 10:34 | SMP | TAL SL |

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 310-151614-2

Laboratory: Eurofins TestAmerica, Cedar Falls

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | | 101044 | 11-01-20 |
| Georgia | State Program | 4 | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 5 | 200024 | 11-29-19 |
| Iowa | State Program | 7 | 007 | 12-01-19 |
| Kansas | NELAP | 7 | E-10341 | 01-31-20 |
| Minnesota | NELAP | 5 | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 1 | 3349 | 08-22-19 |
| North Dakota | State Program | 8 | R-186 | 09-29-19 |
| Oregon | NELAP | 10 | IA100001 | 09-29-19 |
| USDA | Federal | | P330-19-00003 | 01-02-22 |

Laboratory: Eurofins TestAmerica, St. Louis

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska | State Program | 10 | MO00054 | 06-30-19 |
| ANAB | DoD | | L2305 | 04-06-22 |
| Arizona | State Program | 9 | AZ0813 | 12-08-19 |
| California | State Program | 9 | 2886 | 06-30-19 * |
| Connecticut | State Program | 1 | PH-0241 | 03-31-21 |
| Florida | NELAP | 4 | E87689 | 06-30-19 * |
| Hawaii | State Program | 9 | NA | 06-30-19 |
| Illinois | NELAP | 5 | 200023 | 11-30-19 |
| Iowa | State Program | 7 | 373 | 12-01-20 |
| Kansas | NELAP | 7 | E-10236 | 10-31-19 |
| Kentucky (DW) | State Program | 4 | KY90125 | 12-31-19 |
| Louisiana | NELAP | 6 | 04080 | 06-30-19 |
| Louisiana (DW) | NELAP | 6 | LA011 | 12-31-19 |
| Maryland | State Program | 3 | 310 | 09-30-19 |
| Michigan | State Program | 5 | 9005 | 06-30-19 |
| Missouri | State Program | 7 | 780 | 06-30-19 |
| Nevada | State Program | 9 | MO000542018-1 | 07-31-19 |
| New Jersey | NELAP | 2 | MO002 | 06-30-19 * |
| New York | NELAP | 2 | 11616 | 03-31-20 |
| North Dakota | State Program | 8 | R207 | 06-30-19 * |
| NRC | NRC | | 24-24817-01 | 12-31-22 |
| Oklahoma | State Program | 6 | 9997 | 08-31-19 |
| Pennsylvania | NELAP | 3 | 68-00540 | 02-28-20 |
| South Carolina | State Program | 4 | 85002001 | 06-30-19 |
| Texas | NELAP | 6 | T104704193-18-13 | 07-31-19 |
| US Fish & Wildlife | Federal | | 058448 | 07-31-19 |
| USDA | Federal | | P330-17-0028 | 02-02-20 |
| Utah | NELAP | 8 | MO000542018-10 | 07-31-19 |
| Virginia | NELAP | 3 | 460230 | 06-14-19 * |
| Washington | State Program | 10 | C592 | 08-30-19 |
| West Virginia DEP | State Program | 3 | 381 | 08-31-19 |

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

Method Summary

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

Job ID: 310-151614-2

| Method | Method Description | Protocol | Laboratory |
|-------------|--|----------|------------|
| 9315 | Radium-226 (GFPC) | SW846 | TAL SL |
| 9320 | Radium-228 (GFPC) | SW846 | TAL SL |
| Ra226_Ra228 | Combined Radium-226 and Radium-228 | TAL-STL | TAL SL |
| PrecSep_0 | Preparation, Precipitate Separation | None | TAL SL |
| PrecSep-21 | Preparation, Precipitate Separation (21-Day In-Growth) | None | TAL SL |

Protocol References:

None = None

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

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

Laboratory References:

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





Cooler/Sample Receipt and Temperature Log Form

| | |
|---|--|
| Client Information | |
| Client: Muscatine Power & Water | |
| City/State: Muscatine IA | Project: |
| Receipt Information | |
| Date/Time Received: 3/22/19 0900 | Received By: JB |
| 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"/> TA Courier <input type="checkbox"/> TA 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 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: M | Correction Factor (°C): -0.1 |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | |
| Uncorrected Temp (°C): 1.8 | Corrected Temp (°C): 1.7 |
| • Sample Container Temperature | |
| Container type(s) used: | |
| 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 | |
| MW-14A on COC's bottles JB 3/22/19 | |

Chain of Custody Record

Client Information
 Client Contact: Sam Bennett
 Phone: 563-262-3583
 Company: Muscatine Power & Water
 Address: 1700 Dick Drake Way
 City: Muscatine
 State, Zip: IA, 52761
 PO #: 191195
 Email: sbennett@mpw.org
 Project Name: Muscatine Power & Water CCR
 Site: Iowa

Sampler: Sam Bennett/ Neil Hoskins
Lab PM: Hayes, Shawn M
E-Mail: shawn.hayes@testamericainc.com

Carrier Tracking No(s):

Analysis Requested

| Sample Identification | Sample Date | Sample Time | Sample Type (G=grab) | Matrix (W=water, S=solid, O=wastewater) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | State Parameters per quote 31010959-0 | Appendix III / Appendix IV (minus Radium) per quote 31010959-0 | Appendix III / Appendix IV (minus Radium) per quote 31010959-0 | Total Number of Containers | Special Instructions/Note: |
|-----------------------|-------------|-------------|----------------------|---|-----------------------------------|----------------------------|---------------------------------------|--|--|----------------------------|----------------------------|
| MW-14A | 3/20/19 | 1120 | G | Water | X | X | X | X | X | | |
| MW-15A | 3/20/19 | 1000 | G | Water | X | X | X | X | X | | |
| MW-21 | 3/20/19 | 0820 | G | Water | X | X | X | X | X | | |
| MW-22 | 3/19/19 | 1145 | G | Water | X | X | X | X | X | | |
| DUP | 3/20/19 | 1200 | G | Water | X | X | X | X | X | | |

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:

Preservation Codes:
 M - Hexane
 N - None
 O - AshNaO2
 P - Na2O4S
 Q - Na2SO3
 R - Na2SO3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4-5
 Z - other (specify)

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

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:

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: Sam Bennett 3/21/19 0830 Company
 Relinquished by: _____ Date/Time: _____ Company
 Relinquished by: _____ Date/Time: _____ Company

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

Method of Shipment: _____
Received by: _____ Date/Time: 3/22/19 0940 Company
Received by: _____ Date/Time: _____ Company
Received by: _____ Date/Time: _____ Company

Cooler Temperature(s) °C and Other Remarks:

Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|----------------|----------------------------------|-------------------------|-------------------------------------|--------------|
| MW-14A | 310-151614-A-1 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-14A | 310-151614-C-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-14A | 310-151614-D-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-151614-A-2 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-151614-C-2 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-151614-D-2 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-151614-A-3 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-151614-C-3 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-151614-D-3 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-151614-A-4 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-151614-C-4 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-151614-D-4 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151614-A-5 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151614-C-5 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| DUP | 310-151614-D-5 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |

Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151614-2

Login Number: 151614

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

| 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 | Time on bottles for DUP says 0820, logged per COC. |
| 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 | |

Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151614-2

Login Number: 151614

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 03/25/19 08:09 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. | N/A | |
| 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. | N/A | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 22.0 |
| 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. | N/A | |
| 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

Job ID: 310-151614-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

| | | Percent Yield (Acceptance Limits) | |
|------------------------------|------------------------|-----------------------------------|--|
| Lab Sample ID | Client Sample ID | Ba Carrier (40-110) | |
| 310-151614-1 | MW-14A | 96.5 | |
| 310-151614-2 | MW-15A | 92.9 | |
| 310-151614-3 | MW-21 | 91.2 | |
| 310-151614-4 | MW-22 | 92.1 | |
| LCS 160-423095/1-A | Lab Control Sample | 92.7 | |
| LCS 160-423138/1-A | Lab Control Sample | 74.3 | |
| LCSD 160-423095/2-A | Lab Control Sample Dup | 98.6 | |
| MB 160-423095/23-A | Method Blank | 97.2 | |
| MB 160-423138/18-A | Method Blank | 108 | |
| Tracer/Carrier Legend | | | |
| Ba Carrier = Ba Carrier | | | |

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

| | | Percent Yield (Acceptance Limits) | |
|------------------------------|------------------------|-----------------------------------|-----------------------|
| Lab Sample ID | Client Sample ID | Ba Carrier (40-110) | Y Carrier (40-110) |
| 310-151614-1 | MW-14A | 96.5 | 84.9 |
| 310-151614-2 | MW-15A | 92.9 | 85.2 |
| 310-151614-3 | MW-21 | 95.3 | 89.7 |
| 310-151614-4 | MW-22 | 96.2 | 90.8 |
| LCS 160-423096/1-A | Lab Control Sample | 96.8 | 92.0 |
| LCS 160-423142/1-A | Lab Control Sample | 74.3 | 81.1 |
| LCSD 160-423096/2-A | Lab Control Sample Dup | 103 | 95.3 |
| MB 160-423096/23-A | Method Blank | 101 | 91.6 |
| MB 160-423142/18-A | Method Blank | 108 | 81.9 |
| Tracer/Carrier Legend | | | |
| Ba Carrier = Ba Carrier | | | |
| Y Carrier = Y Carrier | | | |

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Cedar Falls

704 Enterprise Drive

Cedar Falls, IA 50613

Tel: (319)277-2401

TestAmerica Job ID: 310-151622-1

Client Project/Site: Muscatine Power & Water CCR

For:

Muscatine Power & Water

1700 Dick Drake Way

PO BOX 899

Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:

4/3/2019 4:55:38 PM

Shawn Hayes, Senior Project Manager

(319)229-8211

shawn.hayes@testamericainc.com

LINKS

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results through

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www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

TestAmerica Job ID: 310-151622-1

Job ID: 310-151622-1

Laboratory: TestAmerica Cedar Falls

Narrative

**Job Narrative
310-151622-1**

Comments

No additional comments.

Receipt

The samples were received on 3/22/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.4° C.

HPLC/IC

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

Metals

Method(s) 6020A: The continuing calibration verification (CCV) associated with batch 310-234169 recovered above the upper control limit for Boron. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: MW-4B (310-151622-1), MW-5B (310-151622-2), MW-6A (310-151622-3), MW-08 (310-151622-4) and MW-10 (310-151622-5).

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

General Chemistry

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



Sample Summary

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

TestAmerica Job ID: 310-151622-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 310-151622-1 | MW-4B | Water | 03/19/19 13:05 | 03/22/19 09:00 |
| 310-151622-2 | MW-5B | Water | 03/19/19 15:00 | 03/22/19 09:00 |
| 310-151622-3 | MW-6A | Water | 03/19/19 14:00 | 03/22/19 09:00 |
| 310-151622-4 | MW-08 | Water | 03/18/19 12:15 | 03/22/19 09:00 |
| 310-151622-5 | MW-10 | Water | 03/19/19 09:40 | 03/22/19 09:00 |

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

Detection Summary

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-4B

Lab Sample ID: 310-151622-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 16.0 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.771 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 48.0 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.161 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 99.7 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 398 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 7.7 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-5B

Lab Sample ID: 310-151622-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 55.0 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 85.0 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.326 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 134 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Molybdenum | 0.00212 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 562 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 7.3 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-6A

Lab Sample ID: 310-151622-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Barium | 0.200 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 73.2 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 320 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 7.4 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-08

Lab Sample ID: 310-151622-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|----------|-----|------|---------|---|--------------|-----------|
| Chloride | 16.1 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 223 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.0751 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 97.6 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Cobalt | 0.00177 | | 0.000500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 612 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil Fac | D | Method | Prep Type |
| pH | 7.3 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-10

Lab Sample ID: 310-151622-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---------|---------|-----------|---------|-----|------|---------|---|--------|-----------|
| Sulfate | 42.8 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Arsenic | 0.00560 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Barium | 0.185 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 76.3 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Cedar Falls

Detection Summary

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-10 (Continued)

Lab Sample ID: 310-151622-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil | Fac | D | Method | Prep Type |
|------------------------|----------|-----------|----------|-----|------|-----|-----|---|--------------|-----------|
| Cobalt | 0.000783 | | 0.000500 | | mg/L | 1 | | | 6020A | Total/NA |
| Molybdenum | 0.00341 | | 0.00200 | | mg/L | 1 | | | 6020A | Total/NA |
| Total Dissolved Solids | 326 | | 30.0 | | mg/L | 1 | | | SM 2540C | Total/NA |
| Analyte | Result | Qualifier | RL | RL | Unit | Dil | Fac | D | Method | Prep Type |
| pH | 7.3 | HF | 0.1 | | SU | 1 | | | SM 4500 H+ B | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Cedar Falls



Client Sample Results

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-4B

Date Collected: 03/19/19 13:05

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 16.0 | | 5.00 | | mg/L | | | 03/27/19 14:53 | 5 |
| Fluoride | 0.771 | | 0.500 | | mg/L | | | 03/27/19 14:53 | 5 |
| Sulfate | 48.0 | | 5.00 | | mg/L | | | 03/27/19 14:53 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Barium | 0.161 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Calcium | 99.7 | | 0.500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:26 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:58 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 398 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.7 | HF | 0.1 | | SU | | | 03/22/19 20:13 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-5B

Date Collected: 03/19/19 15:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 55.0 | | 5.00 | | mg/L | | | 03/27/19 15:06 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 15:06 | 5 |
| Sulfate | 85.0 | | 5.00 | | mg/L | | | 03/27/19 15:06 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Barium | 0.326 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Calcium | 134 | | 0.500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Molybdenum | 0.00212 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:29 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 14:00 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 562 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.3 | HF | 0.1 | | SU | | | 03/22/19 15:53 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-6A

Date Collected: 03/19/19 14:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | <5.00 | | 5.00 | | mg/L | | | 03/27/19 15:19 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 15:19 | 5 |
| Sulfate | <5.00 | | 5.00 | | mg/L | | | 03/27/19 15:19 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|--------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Barium | 0.200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Calcium | 73.2 | | 0.500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:33 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 14:07 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 320 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.4 | HF | 0.1 | | SU | | | 03/22/19 15:52 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-08
Date Collected: 03/18/19 12:15
Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-4
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 16.1 | | 5.00 | | mg/L | | | 03/27/19 15:31 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 15:31 | 5 |
| Sulfate | 223 | | 5.00 | | mg/L | | | 03/27/19 15:31 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Barium | 0.0751 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Calcium | 97.6 | | 0.500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Cobalt | 0.00177 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:36 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 14:09 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 612 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.3 | HF | 0.1 | | SU | | | 03/22/19 15:50 | 1 |

Client Sample Results

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-10
Date Collected: 03/19/19 09:40
Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-5
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | <5.00 | | 5.00 | | mg/L | | | 03/27/19 15:44 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 03/27/19 15:44 | 5 |
| Sulfate | 42.8 | | 5.00 | | mg/L | | | 03/27/19 15:44 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------|-----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Arsenic | 0.00560 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Barium | 0.185 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Calcium | 76.3 | | 0.500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Cobalt | 0.000783 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Molybdenum | 0.00341 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 03/29/19 23:39 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 14:11 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 326 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.3 | HF | 0.1 | | SU | | | 03/22/19 15:48 | 1 |

Definitions/Glossary

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

TestAmerica Job ID: 310-151622-1

Qualifiers

Metals

| Qualifier | Qualifier Description |
|-----------|--|
| ^ | ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits. |

General Chemistry

| Qualifier | Qualifier Description |
|-----------|--|
| HF | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |

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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

TestAmerica Job ID: 310-151622-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-233804/3
Matrix: Water
Analysis Batch: 233804

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 | | | 03/27/19 08:38 | 1 |
| Fluoride | <0.100 | | 0.100 | | mg/L | | | 03/27/19 08:38 | 1 |
| Sulfate | <1.00 | | 1.00 | | mg/L | | | 03/27/19 08:38 | 1 |

Lab Sample ID: LCS 310-233804/4
Matrix: Water
Analysis Batch: 233804

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Chloride | 7.50 | 7.209 | | mg/L | | 96 | 90 - 110 |
| Fluoride | 1.50 | 1.516 | | mg/L | | 101 | 90 - 110 |
| Sulfate | 7.50 | 7.559 | | mg/L | | 101 | 90 - 110 |

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-233449/1-A
Matrix: Water
Analysis Batch: 234466

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233449

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Barium | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Boron | <0.200 | | 0.200 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Calcium | <0.500 | | 0.500 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 03/26/19 08:00 | 04/02/19 14:46 | 1 |

Lab Sample ID: LCS 310-233449/2-A
Matrix: Water
Analysis Batch: 234466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233449

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|-----------|-------------|------------|---------------|------|---|------|--------------|
| Antimony | 0.0200 | 0.01943 | | mg/L | | 97 | 80 - 120 |
| Arsenic | 0.0400 | 0.04408 | | mg/L | | 110 | 80 - 120 |
| Barium | 0.0400 | 0.04078 | | mg/L | | 102 | 80 - 120 |
| Beryllium | 0.0200 | 0.01935 | | mg/L | | 97 | 80 - 120 |
| Boron | 0.880 | 1.037 | | mg/L | | 118 | 80 - 120 |
| Cadmium | 0.0200 | 0.01948 | | mg/L | | 97 | 80 - 120 |
| Calcium | 2.00 | 2.025 | | mg/L | | 101 | 80 - 120 |
| Chromium | 0.0400 | 0.03562 | | mg/L | | 89 | 80 - 120 |

TestAmerica Cedar Falls

QC Sample Results

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

TestAmerica Job ID: 310-151622-1

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

Lab Sample ID: LCS 310-233449/2-A
 Matrix: Water
 Analysis Batch: 234466

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 233449
 %Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|------------|-------------|------------|---------------|------|---|------|----------|
| Cobalt | 0.0200 | 0.01994 | | mg/L | | 100 | 80 - 120 |
| Lead | 0.0200 | 0.01979 | | mg/L | | 99 | 80 - 120 |
| Lithium | 0.100 | 0.1074 | | mg/L | | 107 | 80 - 120 |
| Molybdenum | 0.0400 | 0.03937 | | mg/L | | 98 | 80 - 120 |
| Selenium | 0.0400 | 0.04272 | | mg/L | | 107 | 80 - 120 |
| Thallium | 0.0160 | 0.01564 | | mg/L | | 98 | 80 - 120 |

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-233467/1-A
 Matrix: Water
 Analysis Batch: 233627

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 233467

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 03/25/19 14:51 | 03/26/19 13:43 | 1 |

Lab Sample ID: LCS 310-233467/2-A
 Matrix: Water
 Analysis Batch: 233627

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 233467
 %Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| Mercury | 0.00167 | 0.001701 | | mg/L | | 102 | 80 - 120 |

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

Lab Sample ID: MB 310-233311/1
 Matrix: Water
 Analysis Batch: 233311

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 | <30.0 | | 30.0 | | mg/L | | | 03/22/19 14:03 | 1 |

Lab Sample ID: LCS 310-233311/2
 Matrix: Water
 Analysis Batch: 233311

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 %Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|------------------------|-------------|------------|---------------|------|---|------|----------|
| Total Dissolved Solids | 1000 | 1004 | | mg/L | | 100 | 90 - 110 |

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-233319/1
 Matrix: Water
 Analysis Batch: 233319

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 %Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| pH | 7.00 | 7.0 | | SU | | 100 | 98 - 102 |

TestAmerica Cedar Falls

QC Sample Results

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

TestAmerica Job ID: 310-151622-1

Method: SM 4500 H+ B - pH (Continued)

Lab Sample ID: LCS 310-233344/1
 Matrix: Water
 Analysis Batch: 233344

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 | | 99 | 98 - 102 |

Lab Sample ID: LCS 310-233344/27
 Matrix: Water
 Analysis Batch: 233344

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 |

- 1
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QC Association Summary

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

TestAmerica Job ID: 310-151622-1

HPLC/IC

Analysis Batch: 233804

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | 9056A | |
| 310-151622-2 | MW-5B | Total/NA | Water | 9056A | |
| 310-151622-3 | MW-6A | Total/NA | Water | 9056A | |
| 310-151622-4 | MW-08 | Total/NA | Water | 9056A | |
| 310-151622-5 | MW-10 | Total/NA | Water | 9056A | |
| MB 310-233804/3 | Method Blank | Total/NA | Water | 9056A | |
| LCS 310-233804/4 | Lab Control Sample | Total/NA | Water | 9056A | |

Metals

Prep Batch: 233449

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | 3010A | |
| 310-151622-2 | MW-5B | Total/NA | Water | 3010A | |
| 310-151622-3 | MW-6A | Total/NA | Water | 3010A | |
| 310-151622-4 | MW-08 | Total/NA | Water | 3010A | |
| 310-151622-5 | MW-10 | Total/NA | Water | 3010A | |
| MB 310-233449/1-A | Method Blank | Total/NA | Water | 3010A | |
| LCS 310-233449/2-A | Lab Control Sample | Total/NA | Water | 3010A | |

Prep Batch: 233467

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | 7470A | |
| 310-151622-2 | MW-5B | Total/NA | Water | 7470A | |
| 310-151622-3 | MW-6A | Total/NA | Water | 7470A | |
| 310-151622-4 | MW-08 | Total/NA | Water | 7470A | |
| 310-151622-5 | MW-10 | Total/NA | Water | 7470A | |
| MB 310-233467/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 310-233467/2-A | Lab Control Sample | Total/NA | Water | 7470A | |

Analysis Batch: 233627

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | 7470A | 233467 |
| 310-151622-2 | MW-5B | Total/NA | Water | 7470A | 233467 |
| 310-151622-3 | MW-6A | Total/NA | Water | 7470A | 233467 |
| 310-151622-4 | MW-08 | Total/NA | Water | 7470A | 233467 |
| 310-151622-5 | MW-10 | Total/NA | Water | 7470A | 233467 |
| MB 310-233467/1-A | Method Blank | Total/NA | Water | 7470A | 233467 |
| LCS 310-233467/2-A | Lab Control Sample | Total/NA | Water | 7470A | 233467 |

Analysis Batch: 234169

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | 6020A | 233449 |
| 310-151622-2 | MW-5B | Total/NA | Water | 6020A | 233449 |
| 310-151622-3 | MW-6A | Total/NA | Water | 6020A | 233449 |
| 310-151622-4 | MW-08 | Total/NA | Water | 6020A | 233449 |
| 310-151622-5 | MW-10 | Total/NA | Water | 6020A | 233449 |

TestAmerica Cedar Falls

QC Association Summary

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

TestAmerica Job ID: 310-151622-1

Metals (Continued)

Analysis Batch: 234466

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| MB 310-233449/1-A | Method Blank | Total/NA | Water | 6020A | 233449 |
| LCS 310-233449/2-A | Lab Control Sample | Total/NA | Water | 6020A | 233449 |

General Chemistry

Analysis Batch: 233311

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | SM 2540C | |
| 310-151622-2 | MW-5B | Total/NA | Water | SM 2540C | |
| 310-151622-3 | MW-6A | Total/NA | Water | SM 2540C | |
| 310-151622-4 | MW-08 | Total/NA | Water | SM 2540C | |
| 310-151622-5 | MW-10 | Total/NA | Water | SM 2540C | |
| MB 310-233311/1 | Method Blank | Total/NA | Water | SM 2540C | |
| LCS 310-233311/2 | Lab Control Sample | Total/NA | Water | SM 2540C | |

Analysis Batch: 233319

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------------|------------|
| 310-151622-2 | MW-5B | Total/NA | Water | SM 4500 H+ B | |
| 310-151622-3 | MW-6A | Total/NA | Water | SM 4500 H+ B | |
| 310-151622-4 | MW-08 | Total/NA | Water | SM 4500 H+ B | |
| 310-151622-5 | MW-10 | Total/NA | Water | SM 4500 H+ B | |
| LCS 310-233319/1 | Lab Control Sample | Total/NA | Water | SM 4500 H+ B | |

Analysis Batch: 233344

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | SM 4500 H+ B | |
| LCS 310-233344/1 | Lab Control Sample | Total/NA | Water | SM 4500 H+ B | |
| LCS 310-233344/27 | Lab Control Sample | Total/NA | Water | SM 4500 H+ B | |

Lab Chronicle

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-4B

Date Collected: 03/19/19 13:05

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 14:53 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233449 | 03/26/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 234169 | 03/29/19 23:26 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 13:58 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233311 | 03/22/19 14:03 | MDK | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233344 | 03/22/19 20:13 | JMH | TAL CF |

Client Sample ID: MW-5B

Date Collected: 03/19/19 15:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 15:06 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233449 | 03/26/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 234169 | 03/29/19 23:29 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 14:00 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233311 | 03/22/19 14:03 | MDK | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:53 | JWG | TAL CF |

Client Sample ID: MW-6A

Date Collected: 03/19/19 14:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 15:19 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233449 | 03/26/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 234169 | 03/29/19 23:33 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 14:07 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233311 | 03/22/19 14:03 | MDK | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:52 | JWG | TAL CF |

Client Sample ID: MW-08

Date Collected: 03/18/19 12:15

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 15:31 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233449 | 03/26/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 234169 | 03/29/19 23:36 | SAD | TAL CF |

TestAmerica Cedar Falls

Lab Chronicle

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

TestAmerica Job ID: 310-151622-1

Client Sample ID: MW-08

Date Collected: 03/18/19 12:15

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 14:09 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233311 | 03/22/19 14:03 | MDK | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:50 | JWG | TAL CF |

Client Sample ID: MW-10

Date Collected: 03/19/19 09:40

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-5

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 233804 | 03/27/19 15:44 | MLU | TAL CF |
| Total/NA | Prep | 3010A | | | 233449 | 03/26/19 08:00 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 234169 | 03/29/19 23:39 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 233467 | 03/25/19 14:51 | JNR | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 233627 | 03/26/19 14:11 | JNR | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 233311 | 03/22/19 14:03 | MDK | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 233319 | 03/22/19 15:48 | JWG | TAL CF |

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

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

TestAmerica Job ID: 310-151622-1

Laboratory: TestAmerica Cedar Falls

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | | 101044 | 11-01-20 |
| Georgia | State Program | 4 | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 5 | 200024 | 11-29-19 |
| Iowa | State Program | 7 | 007 | 12-01-19 |
| Kansas | NELAP | 7 | E-10341 | 01-31-20 |
| Minnesota | NELAP | 5 | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 1 | 3349 | 08-22-19 |
| North Dakota | State Program | 8 | R-186 | 09-29-19 |
| Oregon | NELAP | 10 | IA100001 | 09-29-19 |
| USDA | Federal | | P330-19-00003 | 01-02-22 |

Method Summary

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

TestAmerica Job ID: 310-151622-1

| Method | Method Description | Protocol | Laboratory |
|--------------|-------------------------------|----------|------------|
| 9056A | Anions, Ion Chromatography | SW846 | TAL CF |
| 6020A | Metals (ICP/MS) | SW846 | TAL CF |
| 7470A | Mercury (CVAA) | SW846 | TAL CF |
| SM 2540C | Solids, Total Dissolved (TDS) | SM | TAL CF |
| SM 4500 H+ B | pH | SM | TAL CF |
| 3010A | Preparation, Total Metals | SW846 | TAL CF |
| 7470A | Preparation, Mercury | SW846 | TAL CF |

Protocol References:

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.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401





Cooler/Sample Receipt and Temperature Log Form

| | |
|---|--|
| Client Information | |
| Client: <i>Muscataine Power & Water</i> | |
| City/State: <i>Muscataine IA</i> | Project: <i>MUSCATAINE Power & Water CCR</i> |
| Receipt Information | |
| Date/Time Received: <i>3/22/19 0900</i> | Received By: <i>ZB</i> |
| 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"/> TA Courier <input type="checkbox"/> TA 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 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: <i>M</i> | Correction Factor (°C): <i>-0.1</i> |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | |
| Uncorrected Temp (°C): <i>0.5</i> | Corrected Temp (°C): <i>0.4</i> |
| • Sample Container Temperature | |
| Container type(s) used: _____ | |
| 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 | |
| <i>MW-4B on COC-bottles say MW-4A</i> | |

Chain of Custody Record

| | | | | | |
|--|--|---|--|--|--|
| Client Information Client Contact: Sam Bennett Phone: 563-262-3583 E-Mail: shawn.hayes@testamericainc.com | | Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com | | Carrier Tracking No(s): Page: Page 1 of 1 Job #: | |
| Company: Muscatine Power & Water Address: 1700 Dick Drake Way City: Muscatine State, Zip: IA, 52761 Phone: 563-262-3583 (Tel) Email: sbennett@mpw.org Project Name: Muscatine Power & Water CCR Site: Iowa | | Due Date Requested: TAT Requested (days): PO #: 191195 WO #: Project #: SSOW#: | | Analysis Requested State Parameters per quote 31010959-0 Appendix III / Appendix IV per quote 31010959-0 Appendix III / Appendix IV (minus Radium) per quote 31010959-0 Total Number of containers | |
| Sample Identification MW-4B MW-5B MW-6A MW-08 MW-10 | | Sample Date 3/19/19 3/19/19 3/19/19 3/18/19 3/19/19 | | Sample Time 1305 1500 1400 1215 0940 | |
| Sample Type (C=comp, G=grab) G G G G G | | Matrix (Water, Solid, Oil, etc.) Water Water Water Water Water | | Preservation Code: D N X X X X X | |
| Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) State Parameters per quote 31010959-0 Appendix III / Appendix IV per quote 31010959-0 Appendix III / Appendix IV (minus Radium) per quote 31010959-0 | | Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) State Parameters per quote 31010959-0 Appendix III / Appendix IV per quote 31010959-0 Appendix III / Appendix IV (minus Radium) per quote 31010959-0 | | Special Instructions/Note: 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: M - Hexane N - None O - AsNaO2 P - Naz2O4S Q - NazSO3 R - Naz2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify) | |
| 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: Sam Bennett Relinquished by: Sam Bennett Relinquished by: Relinquished by: | | Date/Time: 3-20-19 0830 Date/Time: Date/Time: | | Method of Shipment: Date/Time: 3/22/19 0900 Date/Time: Date/Time: | |
| Custody Seals Intact: Δ Yes Δ No | | Custody Seal No.: | | Cooler Temperature(s) °C and Other Remarks: | |



Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|----------------|----------------------------------|---------------------|---------------------------------|--------------|
| MW-4B | 310-151622-A-1 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-4B | 310-151622-C-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-4B | 310-151622-D-1 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-5B | 310-151622-A-2 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-5B | 310-151622-C-2 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-5B | 310-151622-D-2 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-6A | 310-151622-A-3 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-6A | 310-151622-C-3 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-6A | 310-151622-D-3 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-08 | 310-151622-A-4 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-08 | 310-151622-C-4 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-08 | 310-151622-D-4 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-10 | 310-151622-A-5 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-10 | 310-151622-C-5 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |
| MW-10 | 310-151622-D-5 | Plastic 1 liter - Nitric Acid | <2 | _____ | _____ |

- 1
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Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151622-1

Login Number: 151622

List Source: TestAmerica Cedar Falls

List Number: 1

Creator: Bovy, Lorrainna L

| 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

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-151622-2

Client Project/Site: Muscatine Power & Water CCR

For:

Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:
5/6/2019 12:07:34 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

Job ID: 310-151622-2

Job ID: 310-151622-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-151622-2

Comments

No additional comments.

Receipt

The samples were received on 3/22/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.4° C.

RAD

Method(s) 9315: Ra-226 Prep Batch 160-423097

The LCS spike recovery (73%) is just below the lower QC limit (75%) indicating a potential low bias to sample results. The MS and MSD spike recoveries are within limits demonstrating acceptable method performance, the MS/MSD RPD is within limits demonstrating good replicate precision, and the MB is less than the MDC. All of the sample results are well below the Ra-226 RL of 1 pCi/L (maximum result of 0.22 pCi/L), and the Combined Ra-226 + Ra-228 results are considerably (~5 times or more) below the CCR regulatory limit of 5 pCi/L. The laboratory does not believe this excursion significantly affects the data.

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

Sample Summary

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

Job ID: 310-151622-2

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 310-151622-1 | MW-4B | Water | 03/19/19 13:05 | 03/22/19 09:00 |
| 310-151622-2 | MW-5B | Water | 03/19/19 15:00 | 03/22/19 09:00 |
| 310-151622-3 | MW-6A | Water | 03/19/19 14:00 | 03/22/19 09:00 |
| 310-151622-4 | MW-08 | Water | 03/18/19 12:15 | 03/22/19 09:00 |
| 310-151622-5 | MW-10 | Water | 03/19/19 09:40 | 03/22/19 09:00 |

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

Client Sample Results

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

Job ID: 310-151622-2

Client Sample ID: MW-4B

Lab Sample ID: 310-151622-1

Date Collected: 03/19/19 13:05

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.218 | * | 0.0904 | 0.0926 | 1.00 | 0.0936 | pCi/L | 04/09/19 06:13 | 05/01/19 07:04 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 99.4 | | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:04 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.218 | U | 0.206 | 0.207 | 1.00 | 0.333 | pCi/L | 04/09/19 06:46 | 04/23/19 08:52 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 99.4 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:52 | 1 |
| Y Carrier | 90.5 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:52 | 1 |

Method: 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 | 0.436 | | 0.225 | 0.227 | 5.00 | 0.333 | pCi/L | | 05/06/19 11:12 | 1 |

Client Sample Results

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

Job ID: 310-151622-2

Client Sample ID: MW-5B

Lab Sample ID: 310-151622-2

Date Collected: 03/19/19 15:00

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|-------------------|--------------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-226 | 0.196 | * | 0.0918 | 0.0935 | 1.00 | 0.108 | pCi/L | 04/09/19 06:13 | 05/01/19 07:04 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 97.9 | | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:04 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|-------------------|--------------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.372 | | 0.234 | 0.236 | 1.00 | 0.360 | pCi/L | 04/09/19 06:46 | 04/23/19 08:52 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 97.9 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:52 | 1 |
| Y Carrier | 91.6 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:52 | 1 |

Method: 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 | 0.568 | | 0.251 | 0.254 | 5.00 | 0.360 | pCi/L | | 05/06/19 11:12 | 1 |

Client Sample Results

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

Job ID: 310-151622-2

Client Sample ID: MW-6A

Lab Sample ID: 310-151622-3

Date Collected: 03/19/19 14:00

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|----------------|---------------|------------------|-----------------------------|-----------------------------|------|--------|-------|-----------------|-----------------|----------------|
| Radium-226 | 0.220 | * | 0.0919 | 0.0940 | 1.00 | 0.0903 | pCi/L | 04/09/19 06:13 | 05/01/19 07:04 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 90.0 | | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:04 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|----------------|---------------|------------------|-----------------------------|-----------------------------|------|-------|-------|-----------------|-----------------|----------------|
| Radium-228 | 0.260 | U | 0.219 | 0.220 | 1.00 | 0.348 | pCi/L | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 90.0 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Y Carrier | 92.7 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |

Method: 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 | 0.481 | | 0.238 | 0.239 | 5.00 | 0.348 | pCi/L | | 05/06/19 11:12 | 1 |

Client Sample Results

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

Job ID: 310-151622-2

Client Sample ID: MW-08

Lab Sample ID: 310-151622-4

Date Collected: 03/18/19 12:15

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.0229 | U * | 0.0529 | 0.0530 | 1.00 | 0.0980 | pCi/L | 04/09/19 06:13 | 05/01/19 07:05 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 95.9 | | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:05 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.194 | U | 0.181 | 0.182 | 1.00 | 0.291 | pCi/L | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 95.9 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Y Carrier | 97.2 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |

Method: 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 | 0.217 | U | 0.189 | 0.190 | 5.00 | 0.291 | pCi/L | | 05/06/19 11:12 | 1 |

Client Sample Results

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

Job ID: 310-151622-2

Client Sample ID: MW-10

Lab Sample ID: 310-151622-5

Date Collected: 03/19/19 09:40

Matrix: Water

Date Received: 03/22/19 09:00

Method: 9315 - Radium-226 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|--------|-------|----------------|----------------|---------|
| Radium-226 | 0.153 | * | 0.0808 | 0.0820 | 1.00 | 0.0936 | pCi/L | 04/09/19 06:13 | 05/01/19 07:05 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 90.3 | | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:05 | 1 |

Method: 9320 - Radium-228 (GFPC)

| Analyte | Result | Qualifier | Count Uncert. (2σ+/-) | Total Uncert. (2σ+/-) | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|--------|-----------|-----------------------------|-----------------------------|------|-------|-------|----------------|----------------|---------|
| Radium-228 | 0.178 | U | 0.220 | 0.221 | 1.00 | 0.365 | pCi/L | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Carrier | %Yield | Qualifier | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | 90.3 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |
| Y Carrier | 92.7 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:53 | 1 |

Method: 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 | 0.331 | U | 0.234 | 0.236 | 5.00 | 0.365 | pCi/L | | 05/06/19 11:12 | 1 |

Definitions/Glossary

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

Job ID: 310-151622-2

Qualifiers

Rad

| Qualifier | Qualifier Description |
|-----------|---|
| * | LCS or LCSD is outside acceptance limits. |
| 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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

Job ID: 310-151622-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-423097/24-A
Matrix: Water
Analysis Batch: 426332

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423097

| Analyte | MB MB | | Count | Total | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|---------|-----------|-----------------|-----------------|------|--------|-------|----------------|----------------|---------|
| | Result | Qualifier | Uncert. (2σ+/-) | Uncert. (2σ+/-) | | | | | | |
| Radium-226 | 0.01750 | U | 0.0379 | 0.0379 | 1.00 | 0.0709 | pCi/L | 04/09/19 06:13 | 05/01/19 07:10 | 1 |
| Carrier | MB MB | | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | 04/09/19 06:13 | 05/01/19 07:10 | 1 |
| | 108 | | | | | | | | | |

Lab Sample ID: LCS 160-423097/1-A
Matrix: Water
Analysis Batch: 426333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423097

| Analyte | Spike Added | LCS Result | LCS Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|-------------|------------|----------|-----------------|------|--------|-------|------|--------------|
| | | | | Uncert. (2σ+/-) | | | | | |
| Radium-226 | 11.4 | 8.305 | * | 0.903 | 1.00 | 0.0784 | pCi/L | 73 | 75 - 125 |

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-423098/24-A
Matrix: Water
Analysis Batch: 425108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423098

| Analyte | MB MB | | Count | Total | RL | MDC | Unit | Prepared | Analyzed | Dil Fac |
|------------|----------|-----------|-----------------|-----------------|------|-------|-------|----------------|----------------|---------|
| | Result | Qualifier | Uncert. (2σ+/-) | Uncert. (2σ+/-) | | | | | | |
| Radium-228 | -0.06022 | U | 0.185 | 0.186 | 1.00 | 0.342 | pCi/L | 04/09/19 06:46 | 04/23/19 08:59 | 1 |
| Carrier | MB MB | | Limits | | | | | Prepared | Analyzed | Dil Fac |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:59 | 1 |
| Y Carrier | 89.3 | | 40 - 110 | | | | | 04/09/19 06:46 | 04/23/19 08:59 | 1 |

Lab Sample ID: LCS 160-423098/1-A
Matrix: Water
Analysis Batch: 425247

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423098

| Analyte | Spike Added | LCS Result | LCS Qual | Total | RL | MDC | Unit | %Rec | %Rec. Limits |
|------------|-------------|------------|----------|-----------------|------|-------|-------|------|--------------|
| | | | | Uncert. (2σ+/-) | | | | | |
| Radium-228 | 9.27 | 8.862 | | 1.02 | 1.00 | 0.335 | pCi/L | 96 | 75 - 125 |
| Carrier | LCS LCS | | Limits | | | | | | |
| Ba Carrier | %Yield | Qualifier | 40 - 110 | | | | | | |
| Y Carrier | 97.1 | | 40 - 110 | | | | | | |
| | 90.1 | | 40 - 110 | | | | | | |

QC Association Summary

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

Job ID: 310-151622-2

Rad

Prep Batch: 423097

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|------------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | PrecSep-21 | |
| 310-151622-2 | MW-5B | Total/NA | Water | PrecSep-21 | |
| 310-151622-3 | MW-6A | Total/NA | Water | PrecSep-21 | |
| 310-151622-4 | MW-08 | Total/NA | Water | PrecSep-21 | |
| 310-151622-5 | MW-10 | Total/NA | Water | PrecSep-21 | |
| MB 160-423097/24-A | Method Blank | Total/NA | Water | PrecSep-21 | |
| LCS 160-423097/1-A | Lab Control Sample | Total/NA | Water | PrecSep-21 | |

Prep Batch: 423098

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|-----------|------------|
| 310-151622-1 | MW-4B | Total/NA | Water | PrecSep_0 | |
| 310-151622-2 | MW-5B | Total/NA | Water | PrecSep_0 | |
| 310-151622-3 | MW-6A | Total/NA | Water | PrecSep_0 | |
| 310-151622-4 | MW-08 | Total/NA | Water | PrecSep_0 | |
| 310-151622-5 | MW-10 | Total/NA | Water | PrecSep_0 | |
| MB 160-423098/24-A | Method Blank | Total/NA | Water | PrecSep_0 | |
| LCS 160-423098/1-A | Lab Control Sample | Total/NA | Water | PrecSep_0 | |

Lab Chronicle

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

Job ID: 310-151622-2

Client Sample ID: MW-4B

Date Collected: 03/19/19 13:05

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423097 | 04/09/19 06:13 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426333 | 05/01/19 07:04 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423098 | 04/09/19 06:46 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 425247 | 04/23/19 08:52 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426780 | 05/06/19 11:12 | SMP | TAL SL |

Client Sample ID: MW-5B

Date Collected: 03/19/19 15:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423097 | 04/09/19 06:13 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426333 | 05/01/19 07:04 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423098 | 04/09/19 06:46 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 425247 | 04/23/19 08:52 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426780 | 05/06/19 11:12 | SMP | TAL SL |

Client Sample ID: MW-6A

Date Collected: 03/19/19 14:00

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423097 | 04/09/19 06:13 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426333 | 05/01/19 07:04 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423098 | 04/09/19 06:46 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 425247 | 04/23/19 08:53 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426780 | 05/06/19 11:12 | SMP | TAL SL |

Client Sample ID: MW-08

Date Collected: 03/18/19 12:15

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | PrecSep-21 | | | 423097 | 04/09/19 06:13 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426333 | 05/01/19 07:05 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423098 | 04/09/19 06:46 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 425247 | 04/23/19 08:53 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426780 | 05/06/19 11:12 | SMP | TAL SL |

Lab Chronicle

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

Job ID: 310-151622-2

Client Sample ID: MW-10

Date Collected: 03/19/19 09:40

Date Received: 03/22/19 09:00

Lab Sample ID: 310-151622-5

Matrix: Water

| <u>Prep Type</u> | <u>Batch Type</u> | <u>Batch Method</u> | <u>Run</u> | <u>Dilution Factor</u> | <u>Batch Number</u> | <u>Prepared or Analyzed</u> | <u>Analyst</u> | <u>Lab</u> |
|------------------|-------------------|---------------------|------------|------------------------|---------------------|-----------------------------|----------------|------------|
| Total/NA | Prep | PrecSep-21 | | | 423097 | 04/09/19 06:13 | JLC | TAL SL |
| Total/NA | Analysis | 9315 | | 1 | 426333 | 05/01/19 07:05 | CDR | TAL SL |
| Total/NA | Prep | PrecSep_0 | | | 423098 | 04/09/19 06:46 | JLC | TAL SL |
| Total/NA | Analysis | 9320 | | 1 | 425247 | 04/23/19 08:53 | CDR | TAL SL |
| Total/NA | Analysis | Ra226_Ra228 | | 1 | 426780 | 05/06/19 11:12 | SMP | TAL SL |

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 310-151622-2

Laboratory: Eurofins TestAmerica, Cedar Falls

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | | 101044 | 11-01-20 |
| Georgia | State Program | 4 | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 5 | 200024 | 11-29-19 |
| Iowa | State Program | 7 | 007 | 12-01-19 |
| Kansas | NELAP | 7 | E-10341 | 01-31-20 |
| Minnesota | NELAP | 5 | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 1 | 3349 | 08-22-19 |
| North Dakota | State Program | 8 | R-186 | 09-29-19 |
| Oregon | NELAP | 10 | IA100001 | 09-29-19 |
| USDA | Federal | | P330-19-00003 | 01-02-22 |

Laboratory: Eurofins TestAmerica, St. Louis

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska | State Program | 10 | MO00054 | 06-30-19 |
| ANAB | DoD | | L2305 | 04-06-22 |
| Arizona | State Program | 9 | AZ0813 | 12-08-19 |
| California | State Program | 9 | 2886 | 06-30-19 * |
| Connecticut | State Program | 1 | PH-0241 | 03-31-21 |
| Florida | NELAP | 4 | E87689 | 06-30-19 * |
| Hawaii | State Program | 9 | NA | 06-30-19 |
| Illinois | NELAP | 5 | 200023 | 11-30-19 |
| Iowa | State Program | 7 | 373 | 12-01-20 |
| Kansas | NELAP | 7 | E-10236 | 10-31-19 |
| Kentucky (DW) | State Program | 4 | KY90125 | 12-31-19 |
| Louisiana | NELAP | 6 | 04080 | 06-30-19 |
| Louisiana (DW) | NELAP | 6 | LA011 | 12-31-19 |
| Maryland | State Program | 3 | 310 | 09-30-19 |
| Michigan | State Program | 5 | 9005 | 06-30-19 |
| Missouri | State Program | 7 | 780 | 06-30-19 |
| Nevada | State Program | 9 | MO000542018-1 | 07-31-19 |
| New Jersey | NELAP | 2 | MO002 | 06-30-19 * |
| New York | NELAP | 2 | 11616 | 03-31-20 |
| North Dakota | State Program | 8 | R207 | 06-30-19 * |
| NRC | NRC | | 24-24817-01 | 12-31-22 |
| Oklahoma | State Program | 6 | 9997 | 08-31-19 |
| Pennsylvania | NELAP | 3 | 68-00540 | 02-28-20 |
| South Carolina | State Program | 4 | 85002001 | 06-30-19 |
| Texas | NELAP | 6 | T104704193-18-13 | 07-31-19 |
| US Fish & Wildlife | Federal | | 058448 | 07-31-19 |
| USDA | Federal | | P330-17-0028 | 02-02-20 |
| Utah | NELAP | 8 | MO000542018-10 | 07-31-19 |
| Virginia | NELAP | 3 | 460230 | 06-14-19 * |
| Washington | State Program | 10 | C592 | 08-30-19 |
| West Virginia DEP | State Program | 3 | 381 | 08-31-19 |

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

Eurofins TestAmerica, Cedar Falls

Method Summary

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

Job ID: 310-151622-2

| Method | Method Description | Protocol | Laboratory |
|-------------|--|----------|------------|
| 9315 | Radium-226 (GFPC) | SW846 | TAL SL |
| 9320 | Radium-228 (GFPC) | SW846 | TAL SL |
| Ra226_Ra228 | Combined Radium-226 and Radium-228 | TAL-STL | TAL SL |
| PrecSep_0 | Preparation, Precipitate Separation | None | TAL SL |
| PrecSep-21 | Preparation, Precipitate Separation (21-Day In-Growth) | None | TAL SL |

Protocol References:

None = None

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

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

Laboratory References:

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



Cooler/Sample Receipt and Temperature Log Form

| | |
|---|---|
| Client Information | |
| Client: <u>Muscatare Power & Water</u> | |
| City/State: <u>Muscatare IA</u> | Project: <u>MUSCATARE Power & Water CCR</u> |
| Receipt Information | |
| Date/Time Received: <u>3/22/19 0900</u> | Received By: <u>ZB</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"/> TA Courier <input type="checkbox"/> TA 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 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>M</u> | Correction Factor (°C): <u>-0.1</u> |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | |
| Uncorrected Temp (°C): <u>0.5</u> | Corrected Temp (°C): <u>0.4</u> |
| • Sample Container Temperature | |
| Container type(s) used: _____ | |
| 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 | |
| <u>MW-4B on COC-bottles say MW-4A</u> | |

Chain of Custody Record

| | | | | | |
|--|---------|--|-------------|---|----------------------------|
| Client Information | | Lab PM: Hayes, Shawn M | | Carrier Tracking No(s): | |
| Client Contact: Sam Bennett | | Phone: 563-262-3583 | | E-Mail: shawn.hayes@testamericainc.com | |
| Company: Muscatine Power & Water | | Address: 1700 Dick Drake Way | | City: Muscatine | |
| State, Zip: IA, 52761 | | PO #: 191195 | | WO #: sbennett@mpw.org | |
| Project Name: Muscatine Power & Water CCR | | Project #: | | SSOW#: Iowa | |
| Due Date Requested: | | TAT Requested (days): | | Analysis Requested | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (Water, Solid, Oil) |
| MW-4B | 3/19/19 | 1305 | G | Water | |
| MW-5B | 3/19/19 | 1500 | G | Water | |
| MW-6A | 3/19/19 | 1400 | G | Water | |
| MW-08 | 3/18/19 | 1215 | G | Water | |
| MW-10 | 3/19/19 | 0940 | G | Water | |
| 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 | | State Parameters per quote 31010959-0: <input checked="" type="checkbox"/> D <input checked="" type="checkbox"/> N Appendix III / Appendix IV per quote 31010959-0: <input type="checkbox"/> <input type="checkbox"/> Appendix III / Appendix IV (minus Radium) per quote 31010959-0: <input type="checkbox"/> <input type="checkbox"/> 31010959-0 | |
| Deliverable Requested: I, II, III, IV, Other (specify) | | <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months | | Special Instructions/Note: Total Number of containers: <input checked="" type="checkbox"/> | |
| Empty Kit Relinquished by: Sam Bennett | | Date: 3-20-19 0830 | | Method of Shipment: | |
| Relinquished by: Sam Bennett | | Date/Time: 3-22-19 0900 | | Company: TA | |
| Relinquished by: | | Date/Time: | | Company: | |
| Relinquished by: | | Date/Time: | | Company: | |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | | Custody Seal No.: | | Cooler Temperature(s) °C and Other Remarks: | |



Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|----------------|----------------------------------|-------------------------|-------------------------------------|--------------|
| MW-4B | 310-151622-A-1 | Plastic 250ml - with Nitric Acid | < | _____ | _____ |
| MW-4B | 310-151622-C-1 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-4B | 310-151622-D-1 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-5B | 310-151622-A-2 | Plastic 250ml - with Nitric Acid | < | _____ | _____ |
| MW-5B | 310-151622-C-2 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-5B | 310-151622-D-2 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-6A | 310-151622-A-3 | Plastic 250ml - with Nitric Acid | < | _____ | _____ |
| MW-6A | 310-151622-C-3 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-6A | 310-151622-D-3 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-08 | 310-151622-A-4 | Plastic 250ml - with Nitric Acid | < | _____ | _____ |
| MW-08 | 310-151622-C-4 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-08 | 310-151622-D-4 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-10 | 310-151622-A-5 | Plastic 250ml - with Nitric Acid | < | _____ | _____ |
| MW-10 | 310-151622-C-5 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |
| MW-10 | 310-151622-D-5 | Plastic 1 liter - Nitric Acid | < | _____ | _____ |

Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151622-2

Login Number: 151622

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

| 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 | |



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151622-2

Login Number: 151622

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 03/25/19 08:09 AM

| Question | Answer | Comment |
|---|--------|---------|
| Radioactivity wasn't checked or is \leq background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | N/A | |
| 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. | N/A | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 22.0 |
| 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 <math><6\text{mm}</math> (1/4"). | N/A | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |



Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-151622-2

Login Number: 151622

List Number: 3

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 03/25/19 08:13 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. | N/A | |
| 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. | N/A | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 22.0 |
| 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. | N/A | |
| 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

Job ID: 310-151622-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

| | | Percent Yield (Acceptance Limits) | |
|------------------------------|------------------|-----------------------------------|--|
| Lab Sample ID | Client Sample ID | Ba Carrier (40-110) | |
| 310-151622-1 | MW-4B | 99.4 | |
| 310-151622-2 | MW-5B | 97.9 | |
| 310-151622-3 | MW-6A | 90.0 | |
| 310-151622-4 | MW-08 | 95.9 | |
| 310-151622-5 | MW-10 | 90.3 | |
| MB 160-423097/24-A | Method Blank | 108 | |
| Tracer/Carrier Legend | | | |
| Ba Carrier = Ba Carrier | | | |

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

| | | Percent Yield (Acceptance Limits) | |
|------------------------------|--------------------|-----------------------------------|-----------------------|
| Lab Sample ID | Client Sample ID | Ba Carrier (40-110) | Y Carrier (40-110) |
| 310-151622-1 | MW-4B | 99.4 | 90.5 |
| 310-151622-2 | MW-5B | 97.9 | 91.6 |
| 310-151622-3 | MW-6A | 90.0 | 92.7 |
| 310-151622-4 | MW-08 | 95.9 | 97.2 |
| 310-151622-5 | MW-10 | 90.3 | 92.7 |
| LCS 160-423098/1-A | Lab Control Sample | 97.1 | 90.1 |
| MB 160-423098/24-A | Method Blank | 108 | 89.3 |
| Tracer/Carrier Legend | | | |
| Ba Carrier = Ba Carrier | | | |
| Y Carrier = Y Carrier | | | |

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|---|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-4A | |
| Upgradient | Downgradient <input checked="" type="checkbox"/> |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 713.45 | Ground Elevation 711.18 | | |
| Depth of Well 24.55 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/19/2019 12:40 | 4.95 | 708.5 |
| *After Purging | 3/19/2019 13:05 | 5.67 | 707.78 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.66 | |
| No. of Well Volumes (based on current water level) 0.21 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

| *D. FIELD MEASUREMENT | |
|--|-------------------|
| Weather Conditions 45DF, NW wind 8 mph, Mostly Cloudy | |
| Field Measurements (after stabilization): | |
| Temperature 13.6 | Units C |
| Equipment Used Horiba U-50 | |
| pH 7.26 | |
| Equipment Used Horiba U-50 | |
| Specific Conductance 0.658 | Units mS/m |
| Equipment Used Horiba U-50 | |

| Comments |
|-----------------|
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| CERTIFICATION | | |
|--|---------------------|-----------------------------------|
| I certify under penalty of law I believe the information reported above is true, accurate and complete. | | |
| Signature  | Date 1/23/20 | |
| Telephone 563-262-3582 | Fax | Email neil.hoskins@mpw.org |
| NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round. | | |

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-5B | |
| Upgradient | Downgradient X |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 709.10 | Ground Elevation 706.73 | | |
| Depth of Well 25.30 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/19/2019 14:35 | 2.95 | 706.15 |
| *After Purging | 3/19/2019 15:00 | 3.29 | 705.81 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.66 | |
| No. of Well Volumes (based on current water level) 0.18 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|---|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-6A | |
| Upgradient | Downgradient <input checked="" type="checkbox"/> |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 708.92 | Ground Elevation 706.49 | | |
| Depth of Well 25.35 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/19/2019 13:35 | 3.03 | 705.89 |
| *After Purging | 3/19/2019 14:00 | 3.27 | 705.65 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.66 | |
| No. of Well Volumes (based on current water level) 0.18 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

***D. FIELD MEASUREMENT**

Weather Conditions 47 DF, NW wind @ 13 mph, Mostly Cloudy

Field Measurements (after stabilization):

Temperature 10.31

Units C

Equipment Used Horiba U-50

pH 7.15

Equipment Used Horiba U-50

Specific Conductance 0.595

Units mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature

SBH

Date

1-23-20

Telephone

563-262-3583

Fax

Email

sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-08 | |
| Upgradient <input checked="" type="checkbox"/> | Downgradient <input type="checkbox"/> |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 747.36 | Ground Elevation 744.37 | | |
| Depth of Well 42.95 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/18/2019 11:25 | 9.89 | 737.47 |
| *After Purging | 3/18/2019 12:15 | 16.49 | 730.87 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 1.32 | |
| No. of Well Volumes (based on current water level) 0.24 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

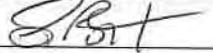
Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

| *D. FIELD MEASUREMENT | |
|--|-------------------|
| Weather Conditions 46 DF, WSW wind @ 8 mph, Mostly Cloudy | |
| Field Measurements (after stabilization): | |
| Temperature 11.3 | Units C |
| Equipment Used Horiba U-50 | |
| pH 7.08 | |
| Equipment Used Horiba U-50 | |
| Specific Conductance 0.82 | Units mS/m |
| Equipment Used Horiba U-50 | |

| Comments |
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CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

| | |
|--|---------------------|
| Signature  | Date 1-23-20 |
| Telephone 563-262-3583 | Fax |
| Email sbennett@mpw.org | |
| NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round. | |

*Omit if only measuring groundwater elevations.

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-10 | |
| Upgradient <input checked="" type="checkbox"/> | Downgradient <input type="checkbox"/> |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 718.51 | Ground Elevation 716.32 | | |
| Depth of Well 20.32 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/19/2019 9:00 | 3.66 | 714.85 |
| *After Purging | 3/19/2019 9:40 | 3.71 | 714.8 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 1.06 | |
| No. of Well Volumes (based on current water level) 0.39 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

***D. FIELD MEASUREMENT**

Weather Conditions 41 DF, Variable wind @ 3 mph, Fair

Field Measurements (after stabilization):

Temperature 6.06 **Units** C

Equipment Used Horiba U-50

pH 7.10

Equipment Used Horiba U-50

Specific Conductance 0.657 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature  **Date** 1-23-20

Telephone 563-262-3583 **Fax** **Email** sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 ½" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|--|---|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-14A | |
| Upgradient | Downgradient <input checked="" type="checkbox"/> |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|-----------------------------|------------------------------|
| Elevation: | | | |
| Top of inner well casing 729.00 | Ground Elevation 726.19 | | |
| Depth of Well 20.50 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model S1453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/20/2019 10:45 | 10.09 | 718.91 |
| *After Purging | 3/20/2019 11:20 | 12.32 | 716.68 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.92 | |
| No. of Well Volumes (based on current water level) 0.54 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

D. FIELD MEASUREMENT*Weather Conditions** 46 DF, W wind @10 mph, Cloudy**Field Measurements (after stabilization):****Temperature** 7.95 **Units** C**Equipment Used** Horiba U-50**pH** 6.97**Equipment Used** Horiba U-50**Specific Conductance** 2.19 **Units** mS/m**Equipment Used** Horiba U-50**Comments****CERTIFICATION**

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature **Date** 1/23/20**Telephone** 563-262-3582**Fax****Email** neil.hoskins@mpw.org**NOTE:** Attach Laboratory Report and 8 ½" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|--|----------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-15A | |
| Upgradient | Downgradient ^X |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (+ 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 729.99 | Ground Elevation 727.12 | | |
| Depth of Well 20.50 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (+ 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/20/2019 9:40 | 9.22 | 720.77 |
| *After Purging | 3/20/2019 10:00 | 10.77 | 719.22 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.53 | |
| No. of Well Volumes (based on current water level) 0.29 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

D. FIELD MEASUREMENT*Weather Conditions** 44 DF WSW wind @ 7 mph, Haze**Field Measurements (after stabilization):****Temperature** 7.27 **Units** C**Equipment Used** Horiba U-50**pH** 7.76**Equipment Used** Horiba U-50**Specific Conductance** 1.11 **Units** mS/m**Equipment Used** Horiba U-50**Comments****CERTIFICATION**

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature **Date** 1/23/20**Telephone** 563-262-3582**Fax****Email** neil.hoskins@mpw.org**NOTE:** Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|---|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-21 | |
| Upgradient | Downgradient <input checked="" type="checkbox"/> |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 725.75 | Ground Elevation 722.81 | | |
| Depth of Well 22.20 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/20/2019 7:45 | 7.77 | 717.98 |
| *After Purging | 3/20/2019 8:20 | 8.11 | 717.64 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.92 | |
| No. of Well Volumes (based on current water level) 0.39 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

| *D. FIELD MEASUREMENT | |
|---|-------------------|
| Weather Conditions 41 DF, CALM, Cloudy | |
| Field Measurements (after stabilization): | |
| Temperature 7.41 | Units C |
| Equipment Used Horiba U-50 | |
| pH 6.41 | |
| Equipment Used Horiba U-50 | |
| Specific Conductance 1.260 | Units mS/m |
| Equipment Used Horiba U-50 | |

| Comments |
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| CERTIFICATION | | |
|--|---------------------|-----------------------------------|
| I certify under penalty of law I believe the information reported above is true, accurate and complete. | | |
| Signature  | Date 1/23/20 | |
| Telephone 563-262-3582 | Fax | Email neil.hoskins@mpw.org |
| NOTE: Attach Laboratory Report and 8 ½" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round. | | |

*Omit if only measuring groundwater elevations.

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-22 | |
| Upgradient | Downgradient X |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|-----------------|--|-----------------------|
| Elevation: | | | |
| Top of inner well casing 744.75 | | Ground Elevation 742.00 | |
| Depth of Well 43.33 | | Inside Casing Diameter (in inches) 2" | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 3/19/2019 11:25 | 13.59 | 730.68 |
| *After Purging | 3/19/2019 11:45 | 18.29 | 725.98 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.53 | |
| No. of Well Volumes (based on current water level) 0.11 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

***D. FIELD MEASUREMENT**

Weather Conditions 46 DF WSW wind @ 8 mph, Mostly Cloudy

Field Measurements (after stabilization):

Temperature 11.17

Units C

Equipment Used Horiba U-50

pH 7.21

Equipment Used Horiba U-50

Specific Conductance 0.726

Units mS/m

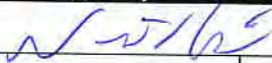
Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature



Date

1/23/20

Telephone 563-262-3582

Fax

Email neil.hoskins@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name Muscatine Power and Water Permit No. 70-SDP-6_82P
 Monitoring Well/Piezometer No. MW-23
 Upgradient Downgradient _____
 Name of person sampling Neil Hoskins

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? (please check) YES NO

If no, explain _____

Standing Water or Litter? (please check) YES NO

If yes, explain _____

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)

Elevation:

Top of inner well casing 726.90 Ground Elevation 723.73

Depth of Well 27.17 Inside Casing Diameter (in inches) 2

Equipment Used Slope Indicator Co. Water level indicator Model 51453

Groundwater Level (± 0.01 foot below top of inner casing, MSL):

| | Date/Time | Depth to Groundwater | Groundwater Elevation |
|-----------------|---------------|----------------------|-----------------------|
| Before Purging | 3/19/19 10:25 | 3.87 | 723.03 |
| *After Purging | 3/19/19 10:50 | 8.12 | 718.78 |
| *Before Purging | | | |

*C. WELL PURGING

Quantity of Water Removed from Well (gallons) 0.66

No. of Well Volumes (based on current water level) 0.17

Was well pumped/bailed dry? No

Equipment used:

Bailer type _____ Dedicated Bailer? _____

Pump type Peristaltic Dedicated Pump? Yes

If not dedicated, method of cleaning _____

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319.

Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, nina.booker@dnr.iowa.gov

***D. FIELD MEASUREMENT**

Weather Conditions Partly Cloudy, WNW wind 7 mph

Field Measurements (after stabilization):

Temperature 7.51 Units F

Equipment Used Horiba U-50

pH 7.24

Equipment Used Horiba U-50

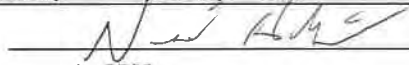
Specific Conductance 0.493 Units mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature  Date 1/23/20

Telephone 563-262-3582 Fax _____ Email neil.hoskins@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319.

Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, nina.booker@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name Muscatine Power and Water Permit No. 70-SDP-6_82P
 Monitoring Well/Piezometer No. MW-24
 Upgradient Downgradient _____
 Name of person sampling Sam Bennett

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? (please check) YES NO

If no, explain _____

Standing Water or Litter? (please check) YES NO

If yes, explain _____

B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL)

Elevation:

Top of inner well casing 735.32 Ground Elevation 732.10

Depth of Well 22.22 Inside Casing Diameter (in inches) 2

Equipment Used Slope Indicator Co. Water level indicator Model 51453

Groundwater Level (\pm 0.01 foot below top of inner casing, MSL):

| | Date/Time | Depth to Groundwater | Groundwater Elevation |
|-----------------|----------------|----------------------|-----------------------|
| Before Purging | 8/6/2019 11:20 | 14.91 | 720.41 |
| *After Purging | 8/6/2019 12:00 | 15.54 | 719.78 |
| *Before Purging | | | |

*C. WELL PURGING

Quantity of Water Removed from Well (gallons) 1.06

No. of Well Volumes (based on current water level) 0.89

Was well pumped/bailed dry? No

Equipment used:

Bailer type _____ Dedicated Bailer? _____

Pump type Peristaltic Dedicated Pump? Yes

If not dedicated, method of cleaning _____

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319.

Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, nina.booker@dnr.iowa.gov

***D. FIELD MEASUREMENT**

Weather Conditions 70°F, Calm, Partly cloudy

Field Measurements (after stabilization):

Temperature 15.92 Units F

Equipment Used Horiba U-50

pH 6.87

Equipment Used Horiba U-50

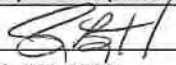
Specific Conductance 0.826 Units mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature  Date 1-23-20

Telephone 563-262-3583 Fax _____ Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 ½" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319.

Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, nina.booker@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name Muscatine Power and Water Permit No. 70-SDP-6_82P
 Monitoring Well/Piezometer No. MW-25
 Upgradient _____ Downgradient X
 Name of person sampling Sam Bennett

A. MONITORING WELL/PIEZOMETER CONDITIONS

Well/Piezometer Properly Capped? (please check) YES NO

If no, explain _____

Standing Water or Litter? (please check) YES NO

If yes, explain _____

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)

Elevation:

Top of inner well casing 739.12 Ground Elevation 736.14

Depth of Well 36.98 Inside Casing Diameter (in inches) 2

Equipment Used Slope Indicator Co. Water level indicator Model 51453

Groundwater Level (± 0.01 foot below top of inner casing, MSL):

| | Date/Time | Depth to Groundwater | Groundwater Elevation |
|-----------------|----------------|----------------------|-----------------------|
| Before Purging | 8/6/2019 15:00 | 18.54 | 720.58 |
| *After Purging | 8/6/2019 15:20 | 18.79 | 720.3 |
| *Before Purging | | | |

*C. WELL PURGING

Quantity of Water Removed from Well (gallons) 0.53

No. of Well Volumes (based on current water level) 0.18

Was well pumped/bailed dry? No

Equipment used:

Bailer type _____ Dedicated Bailer? _____

Pump type Peristaltic Dedicated Pump? Yes

If not dedicated, method of cleaning _____

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319.

Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, nina.booker@dnr.iowa.gov

***D. FIELD MEASUREMENT**

Weather Conditions Mostly Sunny, 78°F NW wind 5mph

Field Measurements (after stabilization):

Temperature 19.22 Units F

Equipment Used Horiba U-50

pH 6.91

Equipment Used Horiba U-50

Specific Conductance 0.967 Units mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature  Date 1-23-20

Telephone 563-262-3583 Fax _____ Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 ½" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319.

Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, nina.booker@dnr.iowa.gov

LOW FLOW SAMPLING FORM

DATE 3/19/2019 WELL ID MW-4A SAMPLE DATE / TIME 3/19/2019 13:05
 SITE Muscatine Power & Water DTW 4.95 NOTE _____
 PROJECT # _____ WELL DEPTH 24.55 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 19.5'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|-----------------|------|-------|------|------|----------|-----------|------------------|-----------------|--|
| 12:40 | | | 4.95 | | | | | | | | |
| 12:45 | 100 | 500 | 5.41 | 13.14 | 7.24 | -4 | 0.704 | 5.6 | 0.00 | | |
| 12:50 | 100 | 1000 | 5.55 | 13.90 | 7.26 | -37 | 0.650 | 0.0 | 0.00 | | |
| 12:55 | 100 | 1500 | 5.60 | 13.76 | 7.26 | -120 | 0.654 | 0.0 | 0.00 | | |
| 13:00 | 100 | 2000 | 5.63 | 13.65 | 7.26 | -122 | 0.656 | 0.0 | 0.00 | | |
| 13:05 | 100 | 2500 | 5.67 | 13.60 | 7.26 | -123 | 0.658 | 0.0 | 0.00 | Sample Start | |
| 13:30 | | | 5.75 | | | | | | | Sample End | |
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| | | | | | | | | | Preservative | # of Containers | |
| | | | | | | | | | HCl | | |
| | | | | | | | | | HNO ₃ | 3 | |
| | | | | | | | | | None | 1 | |

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

LOW FLOW SAMPLING FORM

DATE 3/19/2019 WELL ID MW-5B SAMPLE DATE / TIME 3/19/2019 15:00
 SITE Muscatine Power & Water DTW 2.95 NOTE _____
 PROJECT # _____ WELL DEPTH 25.30 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 25'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|-----------------|------|-------|------|-----|----------|-----------|------|------------------|-----------------|
| 14:35 | | | 2.95 | | | | | | | | |
| 14:40 | 100 | 500 | 3.21 | 9.89 | 7.06 | -86 | 0.962 | 4.0 | 0.00 | | |
| 14:45 | 100 | 1000 | 3.25 | 10.02 | 7.06 | -87 | 0.968 | 2.6 | 0.00 | | |
| 14:50 | 100 | 1500 | 3.27 | 10.06 | 7.06 | -87 | 0.969 | 0.0 | 0.00 | | |
| 14:55 | 100 | 2000 | 3.28 | 9.98 | 7.05 | -87 | 0.978 | 0.0 | 0.00 | | |
| 15:00 | 100 | 2500 | 3.29 | 9.95 | 7.05 | -88 | 0.976 | 0.0 | 0.00 | Sample Start | |
| 15:35 | | | 3.31 | | | | | | | Sample End | |
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| | | | | | | | | | | Preservative | # of Containers |
| | | | | | | | | | | HCl | |
| | | | | | | | | | | HNO ₃ | 3 |
| | | | | | | | | | | NaOH | |
| | | | | | | | | | | None | 1 |

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

LOW FLOW SAMPLING FORM

DATE 3/19/2019 WELL ID MW-6A SAMPLE DATE / TIME 3/19/2019 14:00
 SITE Muscatine Power & Water DTW 3.03 NOTE _____
 PROJECT # _____ WELL DEPTH 25.35 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 20'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|------|-------|------|------|----------|-----------|-------|------------------|-----------------|--|
| 13:35 | | | 3.03 | | | | | | | | | |
| 13:40 | 100 | 500 | 3.25 | 5.37 | 8.41 | -406 | 99.900 | 1.4 | 23.22 | Reset monitor | | |
| 13:50 | 100 | 1500 | 3.26 | 10.49 | 7.15 | -124 | 0.596 | 0.0 | 0.00 | | | |
| 13:55 | 100 | 2000 | 3.26 | 10.31 | 7.15 | -126 | 0.595 | 0.0 | 0.00 | | | |
| 14:00 | 100 | 2500 | 3.27 | 10.31 | 7.15 | -128 | 0.595 | 0.0 | 0.00 | Sample Start | | |
| 14:30 | | | 3.31 | | | | | | | Sample End | | |
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| | | | | | | | | | | Preservative | # of Containers | |
| | | | | | | | | | | HCl | | |
| | | | | | | | | | | HNO ₃ | 3 | |
| | | | | | | | | | | NaOH | | |
| | | | | | | | | | | None | 1 | |

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

LOW FLOW SAMPLING FORM

DATE 3/18/2019 WELL ID MW-08 SAMPLE DATE / TIME 3/18/2019 12:15
 SITE Muscatine Power & Water DTW 9.89 NOTE _____
 PROJECT # _____ WELL DEPTH 42.95 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|-------|-------|------|-----|----------|-----------|------|------------------|-----------------|--|
| 11:25 | | | 9.89 | | | | | | | | | |
| 11:30 | 100 | 500 | 11.58 | 12.33 | 6.61 | 5 | 0.874 | 0.0 | 0.00 | | | |
| 11:35 | 100 | 1000 | 12.92 | 11.98 | 6.81 | -35 | 0.916 | 0.0 | 0.00 | | | |
| 11:40 | 100 | 1500 | 13.82 | 11.67 | 6.94 | -86 | 0.935 | 0.0 | 0.00 | | | |
| 11:45 | 100 | 2000 | 14.65 | 11.30 | 7.00 | -78 | 0.831 | 0.0 | 0.00 | | | |
| 11:50 | 100 | 2500 | 16.37 | 11.07 | 7.08 | -88 | 0.805 | 0.0 | 0.00 | | | |
| 11:55 | 100 | 3000 | 16.04 | 11.13 | 7.11 | -55 | 0.803 | 0.0 | 0.00 | | | |
| 12:00 | 100 | 3500 | 16.29 | 11.40 | 7.11 | -46 | 0.805 | 0.0 | 0.00 | | | |
| 12:05 | 100 | 4000 | 16.39 | 11.31 | 7.11 | -39 | 0.802 | 0.0 | 0.00 | | | |
| 12:10 | 100 | 4500 | 16.45 | 11.19 | 7.09 | -35 | 0.812 | 0.0 | 0.00 | | | |
| 12:15 | 100 | 5000 | 16.49 | 11.3 | 7.08 | -31 | 0.82 | 0.0 | 0.00 | Sample Start | | |
| 13:35 | | | 17.20 | | | | | | | Sample End | | |
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| | | | | | | | | | | Preservative | # of Containers | |
| | | | | | | | | | | HCl | | |
| | | | | | | | | | | HNO ₃ | 3 | |
| | | | | | | | | | | NaOH | | |
| | | | | | | | | | | None | 1 | |

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

LOW FLOW SAMPLING FORM

DATE 3/19/2019 WELL ID MW-10 SAMPLE DATE / TIME 3/19/2019 9:40
 SITE Muscatine Power & Water DTW 3.66 NOTE _____
 PROJECT # _____ WELL DEPTH 20.32 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 15.5'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|------|------|------|------|----------|-----------|-------|------------------|-----------------|--|
| 9:00 | | | 3.66 | | | | | | | | | |
| 9:05 | 100 | 500 | 3.69 | 6.15 | 6.85 | -107 | 0.666 | 76.3 | 40.39 | | | |
| 9:10 | 100 | 1000 | 3.71 | 6.16 | 7.08 | -134 | 0.661 | 85.3 | 0.00 | | | |
| 9:15 | 100 | 1500 | 3.71 | 6.14 | 7.12 | -140 | 0.658 | 69.3 | 0.00 | | | |
| 9:20 | 100 | 2000 | 3.71 | 6.06 | 7.17 | -145 | 0.655 | 66.4 | 0.00 | | | |
| 9:25 | 100 | 2500 | 3.71 | 6.05 | 7.18 | -143 | 0.654 | 26.1 | 0.00 | | | |
| 9:30 | 100 | 3000 | 3.71 | 6.02 | 7.13 | -134 | 0.654 | 11.2 | 0.00 | | | |
| 9:35 | 100 | 3500 | 3.71 | 5.99 | 7.11 | -129 | 0.656 | 10.1 | 0.00 | | | |
| 9:40 | 100 | 4000 | 3.71 | 6.06 | 7.10 | -126 | 0.657 | 10.5 | 0.00 | Sample Start | | |
| 10:05 | | | 3.71 | | | | | | | Sample End | | |
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| | | | | | | | | | | Preservative | # of Containers | |
| | | | | | | | | | | HCl | | |
| | | | | | | | | | | HNO ₃ | 3 | |
| | | | | | | | | | | NaOH | | |
| | | | | | | | | | | None | 1 | |

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

LOW FLOW SAMPLING FORM

DATE 3/20/2019 WELL ID MW-14A SAMPLE DATE / TIME 3/20/2019 11:20
 SITE Muscatine Power & Water DTW 10.09 NOTE _____
 PROJECT # _____ WELL DEPTH 20.50 _____
 WEATHER Cloudy, 35F, NW wind 1-3 mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 15.5'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|-------|------|------|-----|----------|-----------|------|------------------|-----------------|-------|
| 10:45 | | | 10.09 | | | | | | | | | |
| 10:50 | 100 | 500 | 10.93 | 7.98 | 7.00 | 189 | 2.13 | 9.7 | 0.00 | | | |
| 10:55 | 100 | 1000 | 11.27 | 7.99 | 6.98 | 190 | 2.16 | 8.7 | 0.00 | | | |
| 11:00 | 100 | 1500 | 11.57 | 7.93 | 6.97 | 189 | 2.17 | 8.9 | 0.00 | | | |
| 11:05 | 100 | 2000 | 11.80 | 7.93 | 6.97 | 189 | 2.18 | 7.8 | 0.00 | | | |
| 11:10 | 100 | 2500 | 11.99 | 7.95 | 6.97 | 189 | 2.18 | 6.9 | 0.00 | | | |
| 11:15 | 100 | 3000 | 12.15 | 7.94 | 6.97 | 189 | 2.18 | 6.5 | 0.00 | | | |
| 11:20 | 100 | 3500 | 12.32 | 7.95 | 6.97 | 189 | 2.19 | 6.3 | 0.00 | Sample Start | | |
| | | | 13.32 | | | | | | | Sample End | | |
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| | | | | | | | | | | Preservative | # of Containers | DUP-1 |
| | | | | | | | | | | HCl | | |
| | | | | | | | | | | HNO ₃ | 3 | 3 |
| | | | | | | | | | | NaOH | | |
| | | | | | | | | | | None | 1 | 1 |

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

LOW FLOW SAMPLING FORM

DATE 3/20/2019 WELL ID MW-21 SAMPLE DATE / TIME 3/20/2019 8:20
 SITE Muscatine Power & Water DTW 7.77 NOTE Duplicate
 PROJECT # _____ WELL DEPTH 22.20 _____
 WEATHER Cloudy 31F, Calm PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 17'

| TIME | PURGE RATE(ml) | VOL REMOVED(m) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|------|----------------|----------------|------|------|------|-----|----------|-----------|------|------------------|-----------------|
| 7:45 | | | 7.77 | | | | | | | | |
| 7:50 | 100 | 500 | 8.02 | 8.12 | 5.92 | 231 | 1.120 | 0.9 | 1.25 | | |
| 7:55 | 100 | 1000 | 8.04 | 7.76 | 6.39 | 207 | 1.170 | 0.0 | 0.00 | | |
| 8:00 | 100 | 1500 | 8.07 | 7.70 | 6.41 | 200 | 1.200 | 0.0 | 0.00 | | |
| 8:05 | 100 | 2000 | 8.12 | 7.65 | 6.41 | 196 | 1.220 | 0.9 | 0.00 | | |
| 8:10 | 100 | 2500 | 8.08 | 7.55 | 6.41 | 195 | 1.240 | 1.7 | 0.00 | | |
| 8:15 | 100 | 3000 | 8.13 | 7.48 | 6.41 | 196 | 1.250 | 1.7 | 0.00 | | |
| 8:20 | 100 | 3500 | 8.11 | 7.41 | 6.41 | 197 | 1.260 | 1.8 | 0.00 | Sample Start | |
| 8:45 | | | 8.09 | | | | | | | Sample End | |
| 9:05 | | | 8.14 | | | | | | | Duplicate End | |
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| | | | | | | | | | | HCl | |
| | | | | | | | | | | HNO ₃ | 3 |
| | | | | | | | | | | NaOH | |
| | | | | | | | | | | None | 1 |

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

LOW FLOW SAMPLING FORM

DATE 3/19/2019 WELL ID MW-22 SAMPLE DATE / TIME 3/19/2019 11:45
 SITE Muscatine Power & Water DTW 13.59 NOTE _____
 PROJECT # _____ WELL DEPTH 43.33 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(m) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|----------------|-------|-------|------|-----|----------|-----------|------|------------------|-----------------|
| 11:25 | | | 13.59 | | | | | | | | |
| 11:30 | 100 | 500 | 14.86 | 11.01 | 7.30 | 113 | 0.720 | 13.0 | 0.00 | | |
| 11:35 | 100 | 1000 | 16.01 | 10.91 | 7.22 | 108 | 0.726 | 5.3 | 0.00 | | |
| 11:40 | 100 | 1500 | 17.17 | 11.06 | 7.21 | 103 | 0.727 | 5.2 | 0.00 | | |
| 11:45 | 100 | 2000 | 18.29 | 11.17 | 7.21 | 98 | 0.726 | 5.9 | 0.00 | Sample Start | |
| | | | 21.15 | | | | | | | Sample End | |
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| | | | | | | | | | | Preservative | # of Containers |
| | | | | | | | | | | HCl | |
| | | | | | | | | | | HNO ₃ | 3 |
| | | | | | | | | | | NaOH | |
| | | | | | | | | | | None | 1 |

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

LOW FLOW SAMPLING FORM

DATE 3/19/2019 WELL ID MW-23 SAMPLE DATE / TIME 3/19/2019 10:50
 SITE Muscatine Power & Water DTW 3.87 NOTE _____
 PROJECT # _____ WELL DEPTH 43.33 _____
 WEATHER _____ PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|-------|------|------|-----|----------|-----------|------|------------------|-----------------|--|
| 10:25 | | | 3.87 | | | | | | | | | |
| 10:30 | 100 | 500 | 5.82 | 6.47 | 7.16 | -27 | 0.574 | 57.0 | 0.00 | | | |
| 10:35 | 100 | 1000 | 6.51 | 7.00 | 7.22 | 74 | 0.488 | 181.0 | 0.00 | | | |
| 10:40 | 100 | 1500 | 7.17 | 7.26 | 7.22 | 79 | 0.489 | 281.0 | 0.00 | | | |
| 10:45 | 100 | 2000 | 7.69 | 7.48 | 7.23 | 81 | 0.492 | 265.0 | 0.00 | | | |
| 10:50 | 100 | 2500 | 8.12 | 7.51 | 7.24 | 82 | 0.493 | 280.0 | 0.00 | Sample Started | | |
| 11:15 | | | 10.15 | | | | | | | Sample Ended | | |
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| | | | | | | | | | | 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

LOW FLOW SAMPLING FORM

DATE 3/18/2019 WELL ID MW-24 SAMPLE DATE / TIME 3/18/2019 13:15
 SITE Muscatine Power & Water DTW 9.49 NOTE _____
 PROJECT # _____ WELL DEPTH 43.33 _____
 WEATHER Cloudy, 45°F W wind 5 mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(m) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|----------------|------|-------|------|-----|----------|-----------|------|------------------|-----------------|--|
| 12:50 | | | 9.49 | | | | | | | | | |
| 12:55 | 100 | 500 | 9.67 | 13.20 | 7.50 | 82 | 0.635 | 0.0 | 2.41 | | | |
| 13:00 | 100 | 1000 | 9.81 | 12.47 | 7.24 | 90 | 0.654 | 0.0 | 0.00 | | | |
| 13:05 | 100 | 1500 | 9.87 | 12.05 | 7.19 | 95 | 0.656 | 0.0 | 0.00 | | | |
| 13:10 | 100 | 2000 | 9.91 | 11.78 | 7.18 | 99 | 0.660 | 0.0 | 0.00 | | | |
| 13:15 | 100 | 2500 | 9.92 | 11.68 | 7.16 | 102 | 0.665 | 0.0 | 0.00 | Sample Started | | |
| 13:22 | | | 9.92 | | | | | | | Sample Ended | | |
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| | | | | | | | | | | 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

LOW FLOW SAMPLING FORM

DATE 3/18/2019 WELL ID MW-25 SAMPLE DATE / TIME 3/18/2019 14:15
 SITE Muscatine Power & Water DTW 20.27 NOTE _____
 PROJECT # _____ WELL DEPTH 43.33 _____
 WEATHER Cloudy, 45°F N wind 5mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|-----------------|-------|-------|------|-----|----------|-----------|------|------------------|-----------------|
| 13:55 | | | 20.27 | | | | | | | | |
| 14:00 | 100 | 500 | 20.46 | 11.19 | 7.33 | 130 | 0.989 | 0.0 | 1.39 | | |
| 14:05 | 100 | 1000 | 20.48 | 10.89 | 7.18 | 129 | 1.010 | 0.0 | 0.00 | | |
| 14:10 | 100 | 1500 | 20.51 | 10.85 | 7.16 | 130 | 1.030 | 0.0 | 0.00 | | |
| 14:15 | 100 | 2000 | 20.52 | 10.87 | 7.15 | 131 | 1.030 | 0.0 | 0.00 | Sample Start | |
| 14:24 | | | 20.53 | | | | | | | Sample End | |
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| | | | | | | | | | | 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

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-162164-1
Client Project/Site: Muscatine Power & Water CCR

For:
Muscatine Power & Water
1700 Dick Drake Way
PO BOX 899
Muscatine, Iowa 52761

Attn: Sam Bennett



Authorized for release by:
8/23/2019 2:15:16 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

Job ID: 310-162164-1

Job ID: 310-162164-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

**Job Narrative
310-162164-1**

Comments

No additional comments.

Receipt

The samples were received on 8/9/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.0° C.

HPLC/IC

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

Metals

Method(s) 6020A: The continuing calibration verification (CCV) associated with batch 310-249700 recovered above the upper control limit for Boron. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: MW-10 (310-162164-2), MW-22 (310-162164-3), MW-23 (310-162164-4), MW-4A (310-162164-5), MW-5B (310-162164-6), MW-6A (310-162164-7) and MW-24 (310-162164-11).

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

General Chemistry

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



Sample Summary

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

Job ID: 310-162164-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received | Asset ID |
|---------------|------------------|--------------|----------------|----------------|----------|
| 310-162164-1 | MW-08 | Ground Water | 08/06/19 10:40 | 08/09/19 09:10 | |
| 310-162164-2 | MW-10 | Ground Water | 08/07/19 10:25 | 08/09/19 09:10 | |
| 310-162164-3 | MW-22 | Ground Water | 08/06/19 13:25 | 08/09/19 09:10 | |
| 310-162164-4 | MW-23 | Ground Water | 08/06/19 14:30 | 08/09/19 09:10 | |
| 310-162164-5 | MW-4A | Ground Water | 08/07/19 11:30 | 08/09/19 09:10 | |
| 310-162164-6 | MW-5B | Ground Water | 08/07/19 13:30 | 08/09/19 09:10 | |
| 310-162164-7 | MW-6A | Ground Water | 08/07/19 12:50 | 08/09/19 09:10 | |
| 310-162164-8 | MW-14A | Ground Water | 08/07/19 15:40 | 08/09/19 09:10 | |
| 310-162164-9 | MW-15A | Ground Water | 08/07/19 14:25 | 08/09/19 09:10 | |
| 310-162164-10 | MW-21 | Ground Water | 08/07/19 09:10 | 08/09/19 09:10 | |
| 310-162164-11 | MW-24 | Ground Water | 08/06/19 12:00 | 08/09/19 09:10 | |
| 310-162164-12 | MW-25 | Ground Water | 08/06/19 15:20 | 08/09/19 09:10 | |
| 310-162164-13 | DUP-1 | Ground Water | 08/06/19 12:00 | 08/09/19 09:10 | |

Detection Summary

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

Job ID: 310-162164-1

Client Sample ID: MW-08

Lab Sample ID: 310-162164-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|----------|-----|------|---------|---|--------------|-----------|
| Chloride | 17.1 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.643 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 276 | | 10.0 | | mg/L | 10 | | 9056A | Total/NA |
| Barium | 0.0733 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 0.205 | | 0.200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 132 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Cobalt | 0.00558 | | 0.000500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 702 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.2 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-10

Lab Sample ID: 310-162164-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|----------|-----------|----------|-----|------|---------|---|--------------|-----------|
| Fluoride | 0.596 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 28.8 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Arsenic | 0.00784 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Barium | 0.215 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 78.9 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Cobalt | 0.000572 | | 0.000500 | | mg/L | 1 | | 6020A | Total/NA |
| Molybdenum | 0.00219 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 320 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.7 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-22

Lab Sample ID: 310-162164-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 26.9 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.507 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 139 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.215 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 83.8 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Molybdenum | 0.00574 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 428 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.6 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-23

Lab Sample ID: 310-162164-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|----------|-----------|----------|-----|------|---------|---|--------------|-----------|
| Chloride | 13.8 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 29.7 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.0635 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 59.5 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Lead | 0.000663 | | 0.000500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 336 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.4 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-4A

Lab Sample ID: 310-162164-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|----------|--------|-----------|---------|-----|------|---------|---|--------|-----------|
| Chloride | 15.6 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.525 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 47.0 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.147 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Detection Summary

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

Job ID: 310-162164-1

Client Sample ID: MW-4A (Continued)

Lab Sample ID: 310-162164-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|-------|-----|------|---------|---|--------------|-----------|
| Calcium | 93.8 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 422 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.6 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-5B

Lab Sample ID: 310-162164-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 64.1 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 112 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.301 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 139 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 596 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.3 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-6A

Lab Sample ID: 310-162164-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Fluoride | 0.535 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.211 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 80.9 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 308 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.4 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-14A

Lab Sample ID: 310-162164-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 22.1 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 837 | | 50.0 | | mg/L | 50 | | 9056A | Total/NA |
| Barium | 0.0398 | | 0.00800 | | mg/L | 4 | | 6020A | Total/NA |
| Boron | 17.6 | | 1.40 | | mg/L | 7 | | 6020A | Total/NA |
| Calcium | 255 | | 2.00 | | mg/L | 4 | | 6020A | Total/NA |
| Total Dissolved Solids | 1510 | | 60.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.3 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-15A

Lab Sample ID: 310-162164-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 9.91 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.625 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 327 | | 50.0 | | mg/L | 50 | | 9056A | Total/NA |
| Barium | 0.0470 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 7.56 | | 0.800 | | mg/L | 4 | | 6020A | Total/NA |
| Calcium | 111 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 786 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.4 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-21

Lab Sample ID: 310-162164-10

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|----------|--------|-----------|---------|-----|------|---------|---|--------|-----------|
| Chloride | 14.0 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 529 | | 20.0 | | mg/L | 20 | | 9056A | Total/NA |
| Barium | 0.0624 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 8.46 | | 0.800 | | mg/L | 4 | | 6020A | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Detection Summary

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

Job ID: 310-162164-1

Client Sample ID: MW-21 (Continued)

Lab Sample ID: 310-162164-10

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Calcium | 145 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Chromium | 0.00637 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Lithium | 0.0279 | | 0.0100 | | mg/L | 1 | | 6020A | Total/NA |
| Selenium | 0.0108 | | 0.00500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 960 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 6.7 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-24

Lab Sample ID: 310-162164-11

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 22.4 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 169 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Barium | 0.128 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 103 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 542 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.7 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: MW-25

Lab Sample ID: 310-162164-12

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|--------|-----------|---------|-----|------|---------|---|--------------|-----------|
| Chloride | 11.6 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 325 | | 20.0 | | mg/L | 20 | | 9056A | Total/NA |
| Barium | 0.0448 | | 0.00800 | | mg/L | 4 | | 6020A | Total/NA |
| Boron | 11.5 | | 0.800 | | mg/L | 4 | | 6020A | Total/NA |
| Calcium | 160 | | 2.00 | | mg/L | 4 | | 6020A | Total/NA |
| Total Dissolved Solids | 768 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.4 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

Client Sample ID: DUP-1

Lab Sample ID: 310-162164-13

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------|---------|-----------|----------|-----|------|---------|---|--------------|-----------|
| Chloride | 17.4 | | 5.00 | | mg/L | 5 | | 9056A | Total/NA |
| Fluoride | 0.628 | | 0.500 | | mg/L | 5 | | 9056A | Total/NA |
| Sulfate | 282 | | 10.0 | | mg/L | 10 | | 9056A | Total/NA |
| Barium | 0.0736 | | 0.00200 | | mg/L | 1 | | 6020A | Total/NA |
| Boron | 0.267 | | 0.200 | | mg/L | 1 | | 6020A | Total/NA |
| Calcium | 135 | | 0.500 | | mg/L | 1 | | 6020A | Total/NA |
| Cobalt | 0.00582 | | 0.000500 | | mg/L | 1 | | 6020A | Total/NA |
| Total Dissolved Solids | 690 | | 30.0 | | mg/L | 1 | | SM 2540C | Total/NA |
| pH | 7.3 | HF | 0.1 | | SU | 1 | | SM 4500 H+ B | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-08

Lab Sample ID: 310-162164-1

Date Collected: 08/06/19 10:40

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 17.1 | | 5.00 | | mg/L | | | 08/13/19 17:48 | 5 |
| Fluoride | 0.643 | | 0.500 | | mg/L | | | 08/13/19 17:48 | 5 |
| Sulfate | 276 | | 10.0 | | mg/L | | | 08/14/19 09:11 | 10 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Barium | 0.0733 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Boron | 0.205 | | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Calcium | 132 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Cobalt | 0.00558 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:17 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:02 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 702 | | 30.0 | | mg/L | | | 08/12/19 14:10 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.2 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-10

Lab Sample ID: 310-162164-2

Date Collected: 08/07/19 10:25

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|--------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | <5.00 | | 5.00 | | mg/L | | | 08/13/19 18:37 | 5 |
| Fluoride | 0.596 | | 0.500 | | mg/L | | | 08/13/19 18:37 | 5 |
| Sulfate | 28.8 | | 5.00 | | mg/L | | | 08/13/19 18:37 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------|-----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Arsenic | 0.00784 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Barium | 0.215 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Calcium | 78.9 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Cobalt | 0.000572 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Molybdenum | 0.00219 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:37 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:04 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 320 | | 30.0 | | mg/L | | | 08/12/19 14:10 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.7 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-22

Lab Sample ID: 310-162164-3

Date Collected: 08/06/19 13:25

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 26.9 | | 5.00 | | mg/L | | | 08/13/19 18:53 | 5 |
| Fluoride | 0.507 | | 0.500 | | mg/L | | | 08/13/19 18:53 | 5 |
| Sulfate | 139 | | 5.00 | | mg/L | | | 08/13/19 18:53 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Barium | 0.215 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Calcium | 83.8 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Molybdenum | 0.00574 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:41 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:07 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 428 | | 30.0 | | mg/L | | | 08/12/19 14:58 | 1 |

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| pH | 7.6 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-23

Lab Sample ID: 310-162164-4

Date Collected: 08/06/19 14:30

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 13.8 | | 5.00 | | mg/L | | | 08/13/19 19:09 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 08/13/19 19:09 | 5 |
| Sulfate | 29.7 | | 5.00 | | mg/L | | | 08/13/19 19:09 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|-----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Barium | 0.0635 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Calcium | 59.5 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Lead | 0.000663 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:44 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:09 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 336 | | 30.0 | | mg/L | | | 08/12/19 14:58 | 1 |
| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.4 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-4A

Lab Sample ID: 310-162164-5

Date Collected: 08/07/19 11:30

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 15.6 | | 5.00 | | mg/L | | | 08/13/19 19:25 | 5 |
| Fluoride | 0.525 | | 0.500 | | mg/L | | | 08/13/19 19:25 | 5 |
| Sulfate | 47.0 | | 5.00 | | mg/L | | | 08/13/19 19:25 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Barium | 0.147 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Calcium | 93.8 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:47 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:15 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 422 | | 30.0 | | mg/L | | | 08/12/19 14:58 | 1 |
| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.6 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-5B

Lab Sample ID: 310-162164-6

Date Collected: 08/07/19 13:30

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 64.1 | | 5.00 | | mg/L | | | 08/13/19 19:41 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 08/13/19 19:41 | 5 |
| Sulfate | 112 | | 5.00 | | mg/L | | | 08/13/19 19:41 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|--------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Barium | 0.301 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Calcium | 139 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:51 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:17 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 596 | | 30.0 | | mg/L | | | 08/12/19 14:58 | 1 |
| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.3 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-6A

Lab Sample ID: 310-162164-7

Date Collected: 08/07/19 12:50

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|--------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | <5.00 | | 5.00 | | mg/L | | | 08/13/19 20:29 | 5 |
| Fluoride | 0.535 | | 0.500 | | mg/L | | | 08/13/19 20:29 | 5 |
| Sulfate | <5.00 | | 5.00 | | mg/L | | | 08/13/19 20:29 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|--------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Barium | 0.211 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Calcium | 80.9 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:54 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:19 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 308 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.4 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-14A

Lab Sample ID: 310-162164-8

Date Collected: 08/07/19 15:40

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 22.1 | | 5.00 | | mg/L | | | 08/13/19 20:45 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 08/13/19 20:45 | 5 |
| Sulfate | 837 | | 50.0 | | mg/L | | | 08/13/19 21:01 | 50 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|---------------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00400 | | 0.00400 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Arsenic | <0.00800 | | 0.00800 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Barium | 0.0398 | | 0.00800 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Beryllium | <0.00400 | | 0.00400 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Boron | 17.6 | | 1.40 | | mg/L | | 08/13/19 07:59 | 08/19/19 16:52 | 7 |
| Cadmium | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Calcium | 255 | | 2.00 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Chromium | <0.0200 | | 0.0200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Cobalt | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Lead | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Lithium | <0.0400 | | 0.0400 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Molybdenum | <0.00800 | | 0.00800 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Selenium | <0.0200 | | 0.0200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |
| Thallium | <0.00400 | | 0.00400 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:58 | 4 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:21 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|-------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 1510 | | 60.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.3 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-15A

Lab Sample ID: 310-162164-9

Date Collected: 08/07/19 14:25

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 9.91 | | 5.00 | | mg/L | | | 08/13/19 21:18 | 5 |
| Fluoride | 0.625 | | 0.500 | | mg/L | | | 08/13/19 21:18 | 5 |
| Sulfate | 327 | | 50.0 | | mg/L | | | 08/13/19 21:34 | 50 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Barium | 0.0470 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Boron | 7.56 | | 0.800 | | mg/L | | 08/13/19 07:59 | 08/19/19 16:55 | 4 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Calcium | 111 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:01 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:24 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 786 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.4 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-21
Date Collected: 08/07/19 09:10
Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-10
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 14.0 | | 5.00 | | mg/L | | | 08/13/19 21:50 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 08/13/19 21:50 | 5 |
| Sulfate | 529 | | 20.0 | | mg/L | | | 08/13/19 22:06 | 20 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|----------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Barium | 0.0624 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Boron | 8.46 | | 0.800 | | mg/L | | 08/13/19 07:59 | 08/19/19 16:59 | 4 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Calcium | 145 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Chromium | 0.00637 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Lithium | 0.0279 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Selenium | 0.0108 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:04 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:26 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 960 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 6.7 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-24
Date Collected: 08/06/19 12:00
Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-11
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 22.4 | | 5.00 | | mg/L | | | 08/13/19 22:22 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 08/13/19 22:22 | 5 |
| Sulfate | 169 | | 5.00 | | mg/L | | | 08/13/19 22:22 | 5 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|--------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Barium | 0.128 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Boron | <0.200 | ^ | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Calcium | 103 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:08 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 12:28 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 542 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.7 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: MW-25

Lab Sample ID: 310-162164-12

Date Collected: 08/06/19 15:20

Matrix: Ground Water

Date Received: 08/09/19 09:10

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|-------------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 11.6 | | 5.00 | | mg/L | | | 08/13/19 22:38 | 5 |
| Fluoride | <0.500 | | 0.500 | | mg/L | | | 08/13/19 22:38 | 5 |
| Sulfate | 325 | | 20.0 | | mg/L | | | 08/13/19 22:54 | 20 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|---------------|-----------|---------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00400 | | 0.00400 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Arsenic | <0.00800 | | 0.00800 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Barium | 0.0448 | | 0.00800 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Beryllium | <0.00400 | | 0.00400 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Boron | 11.5 | | 0.800 | | mg/L | | 08/13/19 07:59 | 08/19/19 17:02 | 4 |
| Cadmium | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Calcium | 160 | | 2.00 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Chromium | <0.0200 | | 0.0200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Cobalt | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Lead | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Lithium | <0.0400 | | 0.0400 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Molybdenum | <0.00800 | | 0.00800 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Selenium | <0.0200 | | 0.0200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |
| Thallium | <0.00400 | | 0.00400 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:25 | 4 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:54 | 08/14/19 12:43 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------|------------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 768 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.4 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Client Sample Results

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

Job ID: 310-162164-1

Client Sample ID: DUP-1
Date Collected: 08/06/19 12:00
Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-13
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------|--------|-----------|-------|-----|------|---|----------|----------------|---------|
| Chloride | 17.4 | | 5.00 | | mg/L | | | 08/13/19 23:42 | 5 |
| Fluoride | 0.628 | | 0.500 | | mg/L | | | 08/13/19 23:42 | 5 |
| Sulfate | 282 | | 10.0 | | mg/L | | | 08/14/19 10:00 | 10 |

Method: 6020A - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Barium | 0.0736 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Boron | 0.267 | | 0.200 | | mg/L | | 08/13/19 07:59 | 08/19/19 17:06 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Calcium | 135 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Cobalt | 0.00582 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 18:28 | 1 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:54 | 08/14/19 12:45 | 1 |

General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------|--------|-----------|------|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | 690 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| pH | 7.3 | HF | 0.1 | | SU | | | 08/10/19 14:14 | 1 |

Definitions/Glossary

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

Job ID: 310-162164-1

Qualifiers

HPLC/IC

| 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. |

Metals

| Qualifier | Qualifier Description |
|-----------|---|
| ^ | ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits. |
| 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 | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |

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 |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

QC Sample Results

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

Job ID: 310-162164-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-249348/3
Matrix: Water
Analysis Batch: 249348

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 | | | 08/13/19 17:16 | 1 |
| Fluoride | <0.100 | | 0.100 | | mg/L | | | 08/13/19 17:16 | 1 |
| Sulfate | <1.00 | | 1.00 | | mg/L | | | 08/13/19 17:16 | 1 |

Lab Sample ID: LCS 310-249348/4
Matrix: Water
Analysis Batch: 249348

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 | 10.40 | | mg/L | | 104 | 90 - 110 |
| Fluoride | 2.00 | 2.014 | | mg/L | | 101 | 90 - 110 |
| Sulfate | 10.0 | 10.45 | | mg/L | | 105 | 90 - 110 |

Lab Sample ID: 310-162164-1 MS
Matrix: Ground Water
Analysis Batch: 249348

Client Sample ID: MW-08
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|---------------|------------------|-------------|-----------|--------------|------|---|------|--------------|
| Chloride | 17.1 | | 50.0 | 68.53 | | mg/L | | 103 | 80 - 120 |
| Fluoride | 0.643 | | 10.0 | 10.35 | | mg/L | | 97 | 80 - 120 |

Lab Sample ID: 310-162164-1 MS
Matrix: Ground Water
Analysis Batch: 249348

Client Sample ID: MW-08
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|---------------|------------------|-------------|-----------|--------------|------|---|------|--------------|
| Sulfate | 276 | | 50.0 | 321.8 | 4 | mg/L | | 91 | 80 - 120 |

Lab Sample ID: 310-162164-1 MSD
Matrix: Ground Water
Analysis Batch: 249348

Client Sample ID: MW-08
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|----------|---------------|------------------|-------------|------------|---------------|------|---|------|--------------|-----|-----------|
| Chloride | 17.1 | | 50.0 | 68.42 | | mg/L | | 103 | 80 - 120 | 0 | 15 |
| Fluoride | 0.643 | | 10.0 | 10.33 | | mg/L | | 97 | 80 - 120 | 0 | 15 |

Lab Sample ID: 310-162164-1 MSD
Matrix: Ground Water
Analysis Batch: 249348

Client Sample ID: MW-08
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---------|---------------|------------------|-------------|------------|---------------|------|---|------|--------------|-----|-----------|
| Sulfate | 276 | | 50.0 | 318.6 | 4 | mg/L | | 85 | 80 - 120 | 1 | 15 |

QC Sample Results

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

Job ID: 310-162164-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-249019/1-A
Matrix: Water
Analysis Batch: 249700

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249019

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Antimony | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Arsenic | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Barium | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Beryllium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Boron | <0.200 | | 0.200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Cadmium | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Calcium | <0.500 | | 0.500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Chromium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Cobalt | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Lead | <0.000500 | | 0.000500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Lithium | <0.0100 | | 0.0100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Molybdenum | <0.00200 | | 0.00200 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Selenium | <0.00500 | | 0.00500 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |
| Thallium | <0.00100 | | 0.00100 | | mg/L | | 08/13/19 07:59 | 08/16/19 17:10 | 1 |

Lab Sample ID: LCS 310-249019/2-A
Matrix: Water
Analysis Batch: 249700

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249019

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|------------|-------------|------------|---------------|------|---|------|----------|
| Antimony | 0.0200 | 0.02036 | | mg/L | | 102 | 80 - 120 |
| Arsenic | 0.0400 | 0.03918 | | mg/L | | 98 | 80 - 120 |
| Barium | 0.0400 | 0.04214 | | mg/L | | 105 | 80 - 120 |
| Beryllium | 0.0200 | 0.01984 | | mg/L | | 99 | 80 - 120 |
| Boron | 0.880 | 0.8453 | | mg/L | | 96 | 80 - 120 |
| Cadmium | 0.0200 | 0.02070 | | mg/L | | 103 | 80 - 120 |
| Calcium | 2.00 | 2.183 | | mg/L | | 109 | 80 - 120 |
| Chromium | 0.0400 | 0.04006 | | mg/L | | 100 | 80 - 120 |
| Cobalt | 0.0200 | 0.01956 | | mg/L | | 98 | 80 - 120 |
| Lead | 0.0200 | 0.02001 | | mg/L | | 100 | 80 - 120 |
| Lithium | 0.100 | 0.09715 | | mg/L | | 97 | 80 - 120 |
| Molybdenum | 0.0400 | 0.04048 | | mg/L | | 101 | 80 - 120 |
| Selenium | 0.0400 | 0.03919 | | mg/L | | 98 | 80 - 120 |
| Thallium | 0.0160 | 0.01628 | | mg/L | | 102 | 80 - 120 |

Lab Sample ID: 310-162164-1 MS
Matrix: Ground Water
Analysis Batch: 249700

Client Sample ID: MW-08
Prep Type: Total/NA
Prep Batch: 249019

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | Limits |
|-----------|---------------|------------------|-------------|-----------|--------------|------|---|------|----------|
| Antimony | <0.00100 | | 0.0200 | 0.02116 | | mg/L | | 106 | 75 - 125 |
| Arsenic | <0.00200 | | 0.0400 | 0.04299 | | mg/L | | 105 | 75 - 125 |
| Barium | 0.0733 | | 0.0400 | 0.1158 | | mg/L | | 106 | 75 - 125 |
| Beryllium | <0.00100 | | 0.0200 | 0.02168 | | mg/L | | 108 | 75 - 125 |
| Boron | 0.205 | | 0.880 | 1.064 | | mg/L | | 98 | 75 - 125 |
| Cadmium | <0.000500 | | 0.0200 | 0.02147 | | mg/L | | 107 | 75 - 125 |
| Calcium | 132 | | 2.00 | 133.7 | 4 | mg/L | | 84 | 75 - 125 |
| Chromium | <0.00500 | | 0.0400 | 0.04307 | | mg/L | | 108 | 75 - 125 |
| Cobalt | 0.00558 | | 0.0200 | 0.02585 | | mg/L | | 101 | 75 - 125 |

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QC Sample Results

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

Job ID: 310-162164-1

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

Lab Sample ID: 310-162164-1 MS
Matrix: Ground Water
Analysis Batch: 249700

Client Sample ID: MW-08
Prep Type: Total/NA
Prep Batch: 249019

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|------------|---------------|------------------|-------------|-----------|--------------|------|---|------|--------------|
| Lead | <0.000500 | | 0.0200 | 0.02074 | | mg/L | | 104 | 75 - 125 |
| Lithium | <0.0100 | | 0.100 | 0.1075 | | mg/L | | 104 | 75 - 125 |
| Molybdenum | <0.00200 | | 0.0400 | 0.04273 | | mg/L | | 103 | 75 - 125 |
| Selenium | <0.00500 | | 0.0400 | 0.04276 | | mg/L | | 107 | 75 - 125 |
| Thallium | <0.00100 | | 0.0160 | 0.01727 | | mg/L | | 108 | 75 - 125 |

Lab Sample ID: 310-162164-1 MSD
Matrix: Ground Water
Analysis Batch: 249700

Client Sample ID: MW-08
Prep Type: Total/NA
Prep Batch: 249019

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | Limit |
|------------|---------------|------------------|-------------|------------|---------------|------|---|------|--------------|-----|-------|
| Antimony | <0.00100 | | 0.0200 | 0.02024 | | mg/L | | 101 | 75 - 125 | 4 | 20 |
| Arsenic | <0.00200 | | 0.0400 | 0.04116 | | mg/L | | 101 | 75 - 125 | 4 | 20 |
| Barium | 0.0733 | | 0.0400 | 0.1112 | | mg/L | | 95 | 75 - 125 | 4 | 20 |
| Beryllium | <0.00100 | | 0.0200 | 0.02087 | | mg/L | | 104 | 75 - 125 | 4 | 20 |
| Boron | 0.205 | | 0.880 | 1.049 | | mg/L | | 96 | 75 - 125 | 1 | 20 |
| Cadmium | <0.000500 | | 0.0200 | 0.02096 | | mg/L | | 105 | 75 - 125 | 2 | 20 |
| Calcium | 132 | | 2.00 | 130.6 | 4 | mg/L | | -71 | 75 - 125 | 2 | 20 |
| Chromium | <0.00500 | | 0.0400 | 0.04078 | | mg/L | | 102 | 75 - 125 | 5 | 20 |
| Cobalt | 0.00558 | | 0.0200 | 0.02486 | | mg/L | | 96 | 75 - 125 | 4 | 20 |
| Lead | <0.000500 | | 0.0200 | 0.01986 | | mg/L | | 99 | 75 - 125 | 4 | 20 |
| Lithium | <0.0100 | | 0.100 | 0.1057 | | mg/L | | 102 | 75 - 125 | 2 | 20 |
| Molybdenum | <0.00200 | | 0.0400 | 0.04048 | | mg/L | | 98 | 75 - 125 | 5 | 20 |
| Selenium | <0.00500 | | 0.0400 | 0.04086 | | mg/L | | 102 | 75 - 125 | 5 | 20 |
| Thallium | <0.00100 | | 0.0160 | 0.01651 | | mg/L | | 103 | 75 - 125 | 5 | 20 |

Lab Sample ID: 310-162164-11 DU
Matrix: Ground Water
Analysis Batch: 249700

Client Sample ID: MW-24
Prep Type: Total/NA
Prep Batch: 249019

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|------------|---------------|------------------|-----------|--------------|------|---|-----|-------|
| Antimony | <0.00100 | | <0.00100 | | mg/L | | NC | 20 |
| Arsenic | <0.00200 | | <0.00200 | | mg/L | | NC | 20 |
| Barium | 0.128 | | 0.1322 | | mg/L | | 3 | 20 |
| Beryllium | <0.00100 | | <0.00100 | | mg/L | | NC | 20 |
| Boron | <0.200 | ^ | <0.200 | ^ | mg/L | | NC | 20 |
| Cadmium | <0.000500 | | <0.000500 | | mg/L | | NC | 20 |
| Calcium | 103 | | 105.0 | | mg/L | | 2 | 20 |
| Chromium | <0.00500 | | <0.00500 | | mg/L | | NC | 20 |
| Cobalt | <0.000500 | | <0.000500 | | mg/L | | NC | 20 |
| Lead | <0.000500 | | 0.0005060 | | mg/L | | NC | 20 |
| Lithium | <0.0100 | | <0.0100 | | mg/L | | NC | 20 |
| Molybdenum | <0.00200 | | <0.00200 | | mg/L | | NC | 20 |
| Selenium | <0.00500 | | <0.00500 | | mg/L | | NC | 20 |
| Thallium | <0.00100 | | <0.00100 | | mg/L | | NC | 20 |

QC Sample Results

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

Job ID: 310-162164-1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-249128/1-A
Matrix: Water
Analysis Batch: 249331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249128

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:50 | 08/14/19 11:34 | 1 |

Lab Sample ID: LCS 310-249128/2-A
Matrix: Water
Analysis Batch: 249331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249128
%Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| Mercury | 0.00167 | 0.001656 | | mg/L | | 99 | 80 - 120 |

Lab Sample ID: MB 310-249129/1-A
Matrix: Water
Analysis Batch: 249331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249129

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|----------|-----|------|---|----------------|----------------|---------|
| Mercury | <0.000200 | | 0.000200 | | mg/L | | 08/13/19 12:54 | 08/14/19 12:34 | 1 |

Lab Sample ID: LCS 310-249129/2-A
Matrix: Water
Analysis Batch: 249331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249129
%Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------|-------------|------------|---------------|------|---|------|----------|
| Mercury | 0.00167 | 0.001695 | | mg/L | | 102 | 80 - 120 |

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

Lab Sample ID: MB 310-248961/1
Matrix: Water
Analysis Batch: 248961

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 | <30.0 | | 30.0 | | mg/L | | | 08/12/19 14:10 | 1 |

Lab Sample ID: LCS 310-248961/2
Matrix: Water
Analysis Batch: 248961

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
%Rec.

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|------------------------|-------------|------------|---------------|------|---|------|----------|
| Total Dissolved Solids | 1000 | 960.0 | | mg/L | | 96 | 90 - 110 |

Lab Sample ID: MB 310-248984/1
Matrix: Water
Analysis Batch: 248984

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 | <30.0 | | 30.0 | | mg/L | | | 08/12/19 15:30 | 1 |

QC Sample Results

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

Job ID: 310-162164-1

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

Lab Sample ID: LCS 310-248984/2
Matrix: Water
Analysis Batch: 248984

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 | 976.0 | | mg/L | | 98 | 90 - 110 |

Lab Sample ID: 310-162164-7 DU
Matrix: Ground Water
Analysis Batch: 248984

Client Sample ID: MW-6A
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|------------------------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| Total Dissolved Solids | 308 | | 340.0 | | mg/L | | 10 | 24 |

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-248814/1
Matrix: Water
Analysis Batch: 248814

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: 310-162164-3 DU
Matrix: Ground Water
Analysis Batch: 248814

Client Sample ID: MW-22
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| pH | 7.6 | HF | 7.5 | | SU | | 1 | 20 |

Lab Sample ID: 310-162164-5 DU
Matrix: Ground Water
Analysis Batch: 248814

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

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| pH | 7.6 | HF | 7.7 | | SU | | 1 | 20 |

QC Association Summary

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

Job ID: 310-162164-1

HPLC/IC

Analysis Batch: 249348

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------------|--------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | 9056A | |
| 310-162164-1 | MW-08 | Total/NA | Ground Water | 9056A | |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | 9056A | |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | 9056A | |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | 9056A | |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | 9056A | |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | 9056A | |
| 310-162164-7 | MW-6A | Total/NA | Ground Water | 9056A | |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 9056A | |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 9056A | |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 9056A | |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 9056A | |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 9056A | |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 9056A | |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | 9056A | |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 9056A | |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 9056A | |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 9056A | |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 9056A | |
| MB 310-249348/3 | Method Blank | Total/NA | Water | 9056A | |
| LCS 310-249348/4 | Lab Control Sample | Total/NA | Water | 9056A | |
| 310-162164-1 MS | MW-08 | Total/NA | Ground Water | 9056A | |
| 310-162164-1 MS | MW-08 | Total/NA | Ground Water | 9056A | |
| 310-162164-1 MSD | MW-08 | Total/NA | Ground Water | 9056A | |
| 310-162164-1 MSD | MW-08 | Total/NA | Ground Water | 9056A | |

Metals

Prep Batch: 249019

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------------|--------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | 3010A | |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | 3010A | |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | 3010A | |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | 3010A | |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | 3010A | |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | 3010A | |
| 310-162164-7 | MW-6A | Total/NA | Ground Water | 3010A | |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 3010A | |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 3010A | |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 3010A | |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | 3010A | |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 3010A | |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 3010A | |
| MB 310-249019/1-A | Method Blank | Total/NA | Water | 3010A | |
| LCS 310-249019/2-A | Lab Control Sample | Total/NA | Water | 3010A | |
| 310-162164-1 MS | MW-08 | Total/NA | Ground Water | 3010A | |
| 310-162164-1 MSD | MW-08 | Total/NA | Ground Water | 3010A | |
| 310-162164-11 DU | MW-24 | Total/NA | Ground Water | 3010A | |

QC Association Summary

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

Job ID: 310-162164-1

Metals

Prep Batch: 249128

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------------|--------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | 7470A | |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | 7470A | |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | 7470A | |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | 7470A | |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | 7470A | |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | 7470A | |
| 310-162164-7 | MW-6A | Total/NA | Ground Water | 7470A | |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 7470A | |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 7470A | |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 7470A | |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | 7470A | |
| MB 310-249128/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 310-249128/2-A | Lab Control Sample | Total/NA | Water | 7470A | |

Prep Batch: 249129

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------------|--------|------------|
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 7470A | |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 7470A | |
| MB 310-249129/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 310-249129/2-A | Lab Control Sample | Total/NA | Water | 7470A | |

Analysis Batch: 249331

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------------|--------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-7 | MW-6A | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | 7470A | 249128 |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 7470A | 249129 |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 7470A | 249129 |
| MB 310-249128/1-A | Method Blank | Total/NA | Water | 7470A | 249128 |
| MB 310-249129/1-A | Method Blank | Total/NA | Water | 7470A | 249129 |
| LCS 310-249128/2-A | Lab Control Sample | Total/NA | Water | 7470A | 249128 |
| LCS 310-249129/2-A | Lab Control Sample | Total/NA | Water | 7470A | 249129 |

Analysis Batch: 249700

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------------|--------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-7 | MW-6A | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 6020A | 249019 |

Eurofins TestAmerica, Cedar Falls

QC Association Summary

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

Job ID: 310-162164-1

Metals (Continued)

Analysis Batch: 249700 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------------|--------|------------|
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 6020A | 249019 |
| MB 310-249019/1-A | Method Blank | Total/NA | Water | 6020A | 249019 |
| LCS 310-249019/2-A | Lab Control Sample | Total/NA | Water | 6020A | 249019 |
| 310-162164-1 MS | MW-08 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-1 MSD | MW-08 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-11 DU | MW-24 | Total/NA | Ground Water | 6020A | 249019 |

Analysis Batch: 249868

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------------|--------|------------|
| 310-162164-8 | MW-14A | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | 6020A | 249019 |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | 6020A | 249019 |

General Chemistry

Analysis Batch: 248814

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------------|--------------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-7 | MW-6A | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | SM 4500 H+ B | |
| LCS 310-248814/1 | Lab Control Sample | Total/NA | Water | SM 4500 H+ B | |
| 310-162164-3 DU | MW-22 | Total/NA | Ground Water | SM 4500 H+ B | |
| 310-162164-5 DU | MW-4A | Total/NA | Ground Water | SM 4500 H+ B | |

Analysis Batch: 248961

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------------|----------|------------|
| 310-162164-1 | MW-08 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-2 | MW-10 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-3 | MW-22 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-4 | MW-23 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-5 | MW-4A | Total/NA | Ground Water | SM 2540C | |
| 310-162164-6 | MW-5B | Total/NA | Ground Water | SM 2540C | |
| MB 310-248961/1 | Method Blank | Total/NA | Water | SM 2540C | |
| LCS 310-248961/2 | Lab Control Sample | Total/NA | Water | SM 2540C | |

QC Association Summary

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

Job ID: 310-162164-1

General Chemistry

Analysis Batch: 248984

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------------|----------|------------|
| 310-162164-7 | MW-6A | Total/NA | Ground Water | SM 2540C | |
| 310-162164-8 | MW-14A | Total/NA | Ground Water | SM 2540C | |
| 310-162164-9 | MW-15A | Total/NA | Ground Water | SM 2540C | |
| 310-162164-10 | MW-21 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-11 | MW-24 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-12 | MW-25 | Total/NA | Ground Water | SM 2540C | |
| 310-162164-13 | DUP-1 | Total/NA | Ground Water | SM 2540C | |
| MB 310-248984/1 | Method Blank | Total/NA | Water | SM 2540C | |
| LCS 310-248984/2 | Lab Control Sample | Total/NA | Water | SM 2540C | |
| 310-162164-7 DU | MW-6A | Total/NA | Ground Water | SM 2540C | |

Lab Chronicle

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

Job ID: 310-162164-1

Client Sample ID: MW-08

Date Collected: 08/06/19 10:40

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-1

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 17:48 | SAD | TAL CF |
| Total/NA | Analysis | 9056A | | 10 | 249348 | 08/14/19 09:11 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:17 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:02 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248961 | 08/12/19 14:10 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-10

Date Collected: 08/07/19 10:25

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-2

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 18:37 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:37 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:04 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248961 | 08/12/19 14:10 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-22

Date Collected: 08/06/19 13:25

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-3

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 18:53 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:41 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:07 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248961 | 08/12/19 14:58 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-23

Date Collected: 08/06/19 14:30

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-4

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 19:09 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:44 | SAD | TAL CF |

Lab Chronicle

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

Job ID: 310-162164-1

Client Sample ID: MW-23

Date Collected: 08/06/19 14:30

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-4

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:09 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248961 | 08/12/19 14:58 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-4A

Date Collected: 08/07/19 11:30

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-5

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 19:25 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:47 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:15 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248961 | 08/12/19 14:58 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-5B

Date Collected: 08/07/19 13:30

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-6

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 19:41 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:51 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:17 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248961 | 08/12/19 14:58 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-6A

Date Collected: 08/07/19 12:50

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-7

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 20:29 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 17:54 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:19 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Lab Chronicle

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

Job ID: 310-162164-1

Client Sample ID: MW-14A

Lab Sample ID: 310-162164-8

Date Collected: 08/07/19 15:40

Matrix: Ground Water

Date Received: 08/09/19 09:10

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 20:45 | SAD | TAL CF |
| Total/NA | Analysis | 9056A | | 50 | 249348 | 08/13/19 21:01 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 249700 | 08/16/19 17:58 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 7 | 249868 | 08/19/19 16:52 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:21 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-15A

Lab Sample ID: 310-162164-9

Date Collected: 08/07/19 14:25

Matrix: Ground Water

Date Received: 08/09/19 09:10

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 21:18 | SAD | TAL CF |
| Total/NA | Analysis | 9056A | | 50 | 249348 | 08/13/19 21:34 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 18:01 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 249868 | 08/19/19 16:55 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:24 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-21

Lab Sample ID: 310-162164-10

Date Collected: 08/07/19 09:10

Matrix: Ground Water

Date Received: 08/09/19 09:10

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 21:50 | SAD | TAL CF |
| Total/NA | Analysis | 9056A | | 20 | 249348 | 08/13/19 22:06 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 18:04 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 249868 | 08/19/19 16:59 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:26 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Lab Chronicle

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

Job ID: 310-162164-1

Client Sample ID: MW-24

Date Collected: 08/06/19 12:00

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-11

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 22:22 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 18:08 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249128 | 08/13/19 12:50 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:28 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: MW-25

Date Collected: 08/06/19 15:20

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-12

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 22:38 | SAD | TAL CF |
| Total/NA | Analysis | 9056A | | 20 | 249348 | 08/13/19 22:54 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 249700 | 08/16/19 18:25 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 4 | 249868 | 08/19/19 17:02 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249129 | 08/13/19 12:54 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:43 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Client Sample ID: DUP-1

Date Collected: 08/06/19 12:00

Date Received: 08/09/19 09:10

Lab Sample ID: 310-162164-13

Matrix: Ground Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|--------|
| Total/NA | Analysis | 9056A | | 5 | 249348 | 08/13/19 23:42 | SAD | TAL CF |
| Total/NA | Analysis | 9056A | | 10 | 249348 | 08/14/19 10:00 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249700 | 08/16/19 18:28 | SAD | TAL CF |
| Total/NA | Prep | 3010A | | | 249019 | 08/13/19 07:59 | HED | TAL CF |
| Total/NA | Analysis | 6020A | | 1 | 249868 | 08/19/19 17:06 | SAD | TAL CF |
| Total/NA | Prep | 7470A | | | 249129 | 08/13/19 12:54 | ACJ | TAL CF |
| Total/NA | Analysis | 7470A | | 1 | 249331 | 08/14/19 12:45 | ACJ | TAL CF |
| Total/NA | Analysis | SM 2540C | | 1 | 248984 | 08/12/19 15:30 | SAS | TAL CF |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | 248814 | 08/10/19 14:14 | JMR | TAL CF |

Laboratory References:

TAL CF = Eurofins TestAmerica, 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

Job ID: 310-162164-1

Laboratory: Eurofins TestAmerica, Cedar Falls

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

| Authority | Program | Identification Number | Expiration Date |
|-----------------------|---------------------|-----------------------|-----------------|
| AIHA-LAP, LLC | IHLAP | 101044 | 11-01-20 |
| Georgia | State | IA100001 (OR) | 09-29-19 |
| Georgia | State Program | IA100001 (OR) | 09-29-19 |
| Illinois | NELAP | 200024 | 11-29-19 |
| Illinois | NELAP | 200024 | 11-29-19 |
| Iowa | State Program | 007 | 12-01-19 |
| Kansas | NELAP | E-10341 | 01-31-20 |
| Kansas | NELAP | E-10341 | 01-31-20 |
| Minnesota | NELAP | 019-999-319 | 12-31-19 |
| Minnesota | NELAP | 019-999-319 | 12-31-19 |
| Minnesota (Petrofund) | State Program | 3349 | 08-22-21 |
| North Dakota | State Program | R-186 | 09-29-19 |
| Oregon | NELAP | IA100001 | 09-29-19 |
| Oregon | NELAP | IA100001 | 09-29-19 |
| USDA | Federal | P330-19-00003 | 01-02-22 |
| USDA | US Federal Programs | P330-19-00003 | 01-02-22 |

Method Summary

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

Job ID: 310-162164-1

| Method | Method Description | Protocol | Laboratory |
|--------------|-------------------------------|----------|------------|
| 9056A | Anions, Ion Chromatography | SW846 | TAL CF |
| 6020A | Metals (ICP/MS) | SW846 | TAL CF |
| 7470A | Mercury (CVAA) | SW846 | TAL CF |
| SM 2540C | Solids, Total Dissolved (TDS) | SM | TAL CF |
| SM 4500 H+ B | pH | SM | TAL CF |
| 3010A | Preparation, Total Metals | SW846 | TAL CF |
| 7470A | Preparation, Mercury | SW846 | TAL CF |

Protocol References:

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.

Laboratory References:

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





Environment Testing
TestAmerica



310-162164 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

| | | |
|---|---|--|
| Client Information | | |
| Client: Muscatine Power + Water | | |
| City/State: ^{CITY} Muscatine ^{STATE} IA | Project: Muscatine Power + Water CER Landfill | |
| Receipt Information | | |
| Date/Time Received: ^{DATE} 8/19/19 ^{TIME} 0910 | Received By: JC | |
| 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: 706 |
| 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: M | Correction Factor (°C): -0.1 | |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature | | |
| Uncorrected Temp (°C): 0.1 | Corrected Temp (°C): 0.0 | |
| • 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

TestAmerica

| | | | | | | | | | | |
|--|---------------------|---|---------------------------------|---|-----------------------|--|---|-----------------------------|--------------------------|-----------------------------------|
| Client Information Company: Muscatine Power & Water Address: 1700 Dick Drake Way City: Muscatine State, Zip: IA, 52761 Phone: 563-262-3583 Email: sbennett@mpw.org and ramundson@hrgreen.com Project Name: Muscatine Power & Water CCR Landfill Site: Iowa | | Status: <input checked="" type="checkbox"/> Active Status: <input type="checkbox"/> Archived Email: ramundson@testamericainc.com | | | | | | | | |
| Date Requested: 8-6-19 TAT Requested (days): 10 | | Analysis Requested: | | | | | | | | |
| Preservation Codes: A - Ac B - NaCl C - Zn Acetate D - NiCl ₂ x 6H ₂ O E - NiSO ₄ x 6H ₂ O F - NiCl ₂ x 6H ₂ O G - As ₂ S ₃ H - As ₂ O ₃ I - Cd J - Di Water K - EDTA L - EDTA Other: | | Preservation Codes: V - Hexane W - Xylene X - AcNaO2 Y - Na2OAS Z - Na2SO3 AA - Na2S2O3 AB - Na2SO4 AC - Na2CO3 AD - Acetone AE - VCAA AF - Am 4-5 AG - Other (specify) | | | | | | | | |
| Total Number of Containers: <input checked="" type="checkbox"/> | | Special Instructions/Note: | | | | | | | | |
| Sample Identification: MW-06 | Sample Date: 8-6-19 | Sample Time: 1040 | Sample Type (C=Comp, G=Grab): G | Matrix (W=Water, S=solid, D=wastewater, BT=Bottom, A=Air) | Preservation Code: GW | Field Filtered Sample (Yes or No): <input checked="" type="checkbox"/> | Perform MSM/SD (Yes or No): <input checked="" type="checkbox"/> | 602A CCR Lab, 7470A Mercury | 2540C TDS, SM4500, H+ pH | 9056A Chloride, Fluoride, Sulfate |
| MW-10 | 8-7-19 | 1025 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-22 | 8-6-19 | 1325 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-23 | 8-6-19 | 1430 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-4A | 8-7-19 | 1130 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-5B | 8-7-19 | 1330 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-5A | 8-7-19 | 1250 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-14A | 8-7-19 | 1540 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-15A | 8-7-19 | 1425 | G | | GW | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |
| MW-16A | Abandoned | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | X | X | X |

Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

| | | | |
|-------------------------------------|--------|-------|-------------------------|
| Empty Kit Relinquished by | Date: | Time: | Method of Shipment: |
| Relinquished by: <i>Sam Bennett</i> | 8-8-19 | 0820 | Company: <i>M&A</i> |
| Relinquished by: | | | Company: |
| Relinquished by: | | | Company: |

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

Custody Seal No.: _____
 Custody Seals Intact: Yes No
 Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record

Company: Muscatine Power & Water
 Address: 1700 Dick Drive Way
 City: Muscatine
 State: IA 52761
 Phone: 563-262-3585
 Email: sbennett@mpw.org and ramundson@hrgreen.com
 Project Name: Muscatine Power & Water CCR Landfill
 Site: Iowa

Client Information
 Company: Sam Bennett
 Contact: 563-262-3585

Analysis Requested
 9056A Chloride, Fluoride, Sulfate
 2540C TDS, 5M4500 H+ pH
 6020A CCR List, 7479A Mercury
 Perform MSMSD (Yes or No)
 Field Filtered Sample (Yes or No)

Preservation Codes:
 A - HCl
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHCO3
 F - MeOH
 G - Amberlite
 H - Ascorbic Acid
 I - DI Water
 J - EDTA
 K - EDTA
 L - EDTA
 Other:

Special Instructions/Note:
 Total Number of Containers

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, B=soil, BI=issue, A=air) | Preservation Code | Field Filtered Sample (Yes or No) | Perform MSMSD (Yes or No) | 6020A CCR List, 7479A Mercury | 2540C TDS, 5M4500 H+ pH | 9056A Chloride, Fluoride, Sulfate | Analysis Requested | Preservation Codes | Special Instructions/Note |
|-----------------------|-------------|-------------|------------------------------|--|-------------------|-----------------------------------|---------------------------|-------------------------------|-------------------------|-----------------------------------|--------------------|--|---------------------------|
| MW-21 | 8-7-19 | 0910 | G | GW | | X | X | X | X | | | V - Vinegar W - W-pp 4.5 Z - other (specify) | |
| MW-24 | 8-6-19 | 1200 | G | GW | | X | X | X | X | | | | |
| MW-25 | 8-6-19 | 1520 | G | GW | | X | X | X | X | | | | |
| DUP-1 | 8-6-19 | 1700 | G | GW | | X | X | X | X | | | | |

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant
 Deliverable Requested: I, II, III, IV, Other (specify)

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/OC Requirements

Empty Kit Relinquished by: _____ Date: _____
 Requested by: Sam Bennett Date/Time: 8-8-19 0820
 Received by: _____ Date/Time: _____
 Company: MAW Company

Custody Seal No: _____
 Cooler Temperature(s): _____
 Method of Shipment: _____
 Received by: _____ Date/Time: 8/21/19 0810
 Company: _____
 Received by: _____ Date/Time: _____
 Company: _____
 Received by: _____ Date/Time: _____
 Company: _____



Temperature readings: _____

| <u>Client Sample ID</u> | <u>Lab ID</u> | <u>Container Type</u> | <u>Container pH</u> | <u>Preservative Added (mls)</u> | <u>Lot #</u> |
|-------------------------|-----------------|----------------------------------|-------------------------|-------------------------------------|--------------|
| MW-08 | 310-162164-A-1 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-10 | 310-162164-A-2 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-22 | 310-162164-A-3 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-23 | 310-162164-A-4 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-4A | 310-162164-A-5 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-5B | 310-162164-A-6 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-6A | 310-162164-A-7 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-14A | 310-162164-A-8 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-15A | 310-162164-A-9 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-21 | 310-162164-A-10 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-24 | 310-162164-A-11 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| MW-25 | 310-162164-A-12 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |
| DUP-1 | 310-162164-A-13 | Plastic 250ml - with Nitric Acid | <2 | _____ | _____ |

Login Sample Receipt Checklist

Client: Muscatine Power & Water

Job Number: 310-162164-1

Login Number: 162164

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Spoerre, Autumn 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. | 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 | |



GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|----------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-4A | |
| Upgradient | Downgradient ^X |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 713.45 | Ground Elevation 711.18 | | |
| Depth of Well 24.55 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/2019 11:00 | 5.88 | 707.57 |
| *After Purging | 8/7/2019 11:30 | 6.92 | 706.53 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.79 | |
| No. of Well Volumes (based on current water level) 0.26 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Clear, 73DF, NW wind @ 2-5mph

Field Measurements (after stabilization):

Temperature 16.60 **Units** C

Equipment Used Horiba U-50

pH 7.22

Equipment Used Horiba U-50

Specific Conductance 0.693 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature *SBH*

Date 8-16-19

Telephone 563-262-3583

Fax

Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|----------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-5B | |
| Upgradient | Downgradient ^X |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (\pm 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 709.10 | Ground Elevation 706.73 | | |
| Depth of Well 25.30 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (\pm 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/2019 13:10 | 2.85 | 706.25 |
| *After Purging | 8/7/2019 13:30 | 3.71 | 705.39 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.53 | |
| No. of Well Volumes (based on current water level) 0.14 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Light snow, 33.8oF, WNW 8-10mph wind , 29.74" rising

Field Measurements (after stabilization):

| | |
|--------------------------|----------------|
| Temperature 21.38 | Units C |
|--------------------------|----------------|

Equipment Used Horiba U-50

pH 7.02

Equipment Used Horiba U-50

| | |
|-----------------------------------|-------------------|
| Specific Conductance 0.966 | Units mS/m |
|-----------------------------------|-------------------|

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature 

Date 8-16-19

Telephone 563-262-3583

Fax

Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-22 | |
| Upgradient <input checked="" type="checkbox"/> | Downgradient <input type="checkbox"/> |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 744.27 | Ground Elevation 741.00 | | |
| Depth of Well 44.27 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/6/18 12:30 | 15.15 | 729.12 |
| *After Purging | 8/6/18 13:35 | 23.51 | 720.76 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 1.72 | |
| No. of Well Volumes (based on current water level) 0.36 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Partly Cloudy, 75DF, NW wind @ 2-5 mph

Field Measurements (after stabilization):

Temperature 23.13 **Units** C

Equipment Used Horiba U-50

pH 7.12

Equipment Used Horiba U-50

Specific Conductance 0.660 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature *SBH*

Date *8-16-19*

Telephone 563-262-3583

Fax

Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-21 | |
| Upgradient | Downgradient X |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 725.75 | Ground Elevation 722.81 | | |
| Depth of Well 22.20 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/19 8:40 | 9.83 | 715.92 |
| *After Purging | 8/7/19 9:10 | 10.18 | 715.57 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.79 | |
| No. of Well Volumes (based on current water level) 0.39 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Clear, 68oF, W wind @ 2 mph

Field Measurements (after stabilization):

Temperature 18.60 **Units** C

Equipment Used Horiba U-50

pH 6.33

Equipment Used Horiba U-50

Specific Conductance 1.26 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature 

Date 8-16-19

Telephone 563-262-3583

Fax

Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|--|----------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-15A | |
| Upgradient | Downgradient ^X |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|-----------------------------|------------------------------|
| Elevation: | | | |
| Top of inner well casing 729.99 | Ground Elevation 727.12 | | |
| Depth of Well 20.50 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/2019 13:55 | 9.85 | 720.14 |
| *After Purging | 8/7/2019 14:25 | 11.57 | 718.42 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.79 | |
| No. of Well Volumes (based on current water level) 0.46 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Sunny 80DF, W wind 5 mph

Field Measurements (after stabilization):

Temperature 22.05 **Units** C

Equipment Used Horiba U-50

pH 7.11

Equipment Used Horiba U-50

Specific Conductance 1.14 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature *SBH*

Date *8-16-19*

Telephone 563-262-3583

Fax

Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|--|----------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-14A | |
| Upgradient | Downgradient ^X |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 729.00 | Ground Elevation 726.19 | | |
| Depth of Well 20.50 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/2019 14:50 | 10.61 | 718.39 |
| *After Purging | 8/7/2019 15:40 | 13.83 | 715.17 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 1.32 | |
| No. of Well Volumes (based on current water level) 0.82 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-10 | |
| Upgradient <input checked="" type="checkbox"/> | Downgradient <input type="checkbox"/> |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 718.51 | Ground Elevation 716.32 | | |
| Depth of Well 20.32 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/2019 9:55 | 4.55 | 713.96 |
| *After Purging | 8/7/2019 10:25 | 4.64 | 713.87 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.79 | |
| No. of Well Volumes (based on current water level) 0.31 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|--------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-08 | |
| Upgradient ^X | Downgradient |
| Name of person sampling Sam Bennett | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 747.36 | Ground Elevation 744.37 | | |
| Depth of Well 42.95 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/6/2019 9:35 | 14.45 | 732.91 |
| *After Purging | 8/6/2019 10:40 | 20.67 | 726.69 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 1.72 | |
| No. of Well Volumes (based on current water level) 0.37 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Clear, 68DF, Calm

Field Measurements (after stabilization):

Temperature 14.34 **Units** C

Equipment Used Horiba U-50

pH 6.64

Equipment Used Horiba U-50

Specific Conductance 0.999 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature *SBH*

Date 8-16-19

Telephone 563-262-3583

Fax

Email sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

| | |
|---|----------------------------------|
| Site Name Muscatine Power and Water | Permit No. 70-SDP-6_82P |
| Monitoring Well/Piezometer No. MW-6A | |
| Upgradient | Downgradient ^X |
| Name of person sampling Neil Hoskins | |

| A. MONITORING WELL/PIEZOMETER CONDITIONS | |
|--|---|
| Well/Piezometer Properly Capped? (please check) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| If no, explain | |
| Standing Water or Litter? (please check) | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| If yes, explain | |

| B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL) | | | |
|---|--|----------------------|-----------------------|
| Elevation: | | | |
| Top of inner well casing 708.92 | Ground Elevation 706.49 | | |
| Depth of Well 25.35 | Inside Casing Diameter (in inches) 2" | | |
| Equipment Used Slope Indicator Co. Water level indicator Model 51453 | | | |
| Groundwater Level (± 0.01 foot below top of inner casing, MSL): | | | |
| | Date/Time | Depth to Groundwater | Groundwater Elevation |
| Before Purging | 8/7/2019 12:30 | 3.52 | 705.4 |
| *After Purging | 8/7/2019 12:50 | 3.91 | 705.01 |
| *Before Purging | | | |

| *C. WELL PURGING | |
|--|----------------------------|
| Quantity of Water Removed from Well (gallons) 0.66 | |
| No. of Well Volumes (based on current water level) 0.19 | |
| Was well pumped/bailed dry? No | |
| Equipment used: | |
| Bailer type | Dedicated Bailer? |
| Pump type Peristaltic | Dedicated Pump? Yes |
| If not dedicated, method of cleaning | |

***D. FIELD MEASUREMENT**

Weather Conditions Clear, 82DF, Calm

Field Measurements (after stabilization):

Temperature 20.88 **Units** C

Equipment Used Horiba U-50

pH 7.12

Equipment Used Horiba U-50


Specific Conductance 0.545 **Units** mS/m

Equipment Used Horiba U-50

Comments

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature  **Date** 8-16-19

Telephone 563-262-3583 **Fax** **Email** sbennett@mpw.org

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

LOW FLOW SAMPLING FORM

DATE 8/7/2019 WELL ID MW-5B SAMPLE DATE / TIME 8/7/2019 13:30
 SITE Muscatine Power & Water DTW 2.85 NOTE _____
 PROJECT # _____ WELL DEPTH 25.30 _____
 WEATHER Mostly Sunny, 80 DF W wind 5 mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 25'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|------|-------|------|-----|----------|-----------|-------|------------------|-----------------|--|
| 13:10 | | | 2.85 | | | | | | | | | |
| 13:15 | 100 | 500 | 3.38 | 23.26 | 7.04 | -85 | 0.953 | 1.5 | 0.610 | | | |
| 13:20 | 100 | 1000 | 3.53 | 22.29 | 7.02 | -87 | 0.958 | 1.8 | 0.613 | | | |
| 13:25 | 100 | 1500 | 3.62 | 21.67 | 7.01 | -86 | 0.963 | 1.5 | 0.616 | | | |
| 13:30 | 100 | 2000 | 3.70 | 21.38 | 7.02 | -89 | 0.966 | 1.6 | 0.618 | Sample Start | | |
| | | | 3.71 | | | | | | | Sample End | | |
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| | | | | | | | | | | 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.

LOW FLOW SAMPLING FORM

DATE 8/7/2019 WELL ID MW-6A SAMPLE DATE / TIME 8/7/2019 12:50
 SITE Muscatine Power & Water DTW 3.03 NOTE _____
 PROJECT # _____ WELL DEPTH 25.35 _____
 WEATHER Sunny 82DF Calm PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 20'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|------|-------|------|------|----------|-----------|-------|------------------|-----------------|--|
| 12:30 | | | 3.52 | | | | | | | | | |
| 12:35 | 100 | 500 | 3.82 | 23.59 | 7.20 | -103 | 0.561 | 0.9 | 0.359 | | | |
| 12:40 | 100 | 1500 | 3.86 | 21.93 | 7.15 | -113 | 0.550 | 0.2 | 0.352 | | | |
| 12:45 | 100 | 2000 | 3.90 | 21.11 | 7.13 | -120 | 0.548 | 0.1 | 0.351 | | | |
| 12:50 | 100 | 2500 | 3.91 | 20.88 | 7.12 | -123 | 0.545 | 0.3 | 0.348 | Sample Start | | |
| | | | 3.91 | | | | | | | Sample End | | |
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| | | | | | | | | | | 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.

LOW FLOW SAMPLING FORM

DATE 8/7/2019 WELL ID MW-10 SAMPLE DATE / TIME 8/7/2019 10:25
 SITE Muscatine Power & Water DTW 4.55 NOTE _____
 PROJECT # _____ WELL DEPTH 20.32 _____
 WEATHER Sunny 72DF Calm PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 15.5'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|-----------------|------|-------|------|------|----------|-----------|-------|------------------|-----------------|
| 9:55 | | | 4.55 | | | | | | | | |
| 10:00 | 100 | 500 | 4.60 | 19.08 | 7.21 | -153 | 0.629 | 103.0 | 0.403 | | |
| 10:05 | 100 | 1000 | 4.62 | 17.32 | 7.17 | -129 | 0.637 | 16.7 | 0.408 | | |
| 10:10 | 100 | 1500 | 4.64 | 16.62 | 7.17 | -126 | 0.637 | 4.6 | 0.408 | | |
| 10:15 | 100 | 2000 | 4.64 | 16.45 | 7.13 | -123 | 0.632 | 2.6 | 0.405 | | |
| 10:20 | 100 | 2500 | 4.63 | 16.34 | 7.10 | -119 | 0.630 | 2.1 | 0.403 | | |
| 10:25 | 100 | 3000 | 4.63 | 16.27 | 7.07 | -113 | 0.626 | 2.4 | 0.401 | Sample Start | |
| | | | 4.64 | | | | | | | Sample End | |
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| | | | | | | | | | | 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.

LOW FLOW SAMPLING FORM

DATE 8/7/2019 WELL ID MW-14A SAMPLE DATE / TIME 8/7/2019 15:40
 SITE Muscatine Power & Water DTW 10.61 NOTE _____
 PROJECT # _____ WELL DEPTH 20.50 _____
 WEATHER Sunny, 80DF, W wind 5-8 mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 15.5'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | | |
|-------|----------------|-----------------|-------|-------|------|-----|----------|-----------|------|------------------|-----------------|-------|
| 14:50 | | | 10.61 | | | | | | | | | |
| 14:55 | 100 | 500 | 10.96 | 25.77 | 7.08 | 72 | 1.82 | 22.3 | 1.21 | | | |
| 15:00 | 100 | 1000 | 11.44 | 23.49 | 6.98 | 100 | 1.85 | 20.2 | 1.18 | | | |
| 15:05 | 100 | 1500 | 11.76 | 22.50 | 6.96 | 110 | 1.90 | 22.2 | 1.22 | | | |
| 15:10 | 100 | 2000 | 12.12 | 22.03 | 6.96 | 114 | 1.91 | 20.6 | 1.22 | | | |
| 15:15 | 100 | 2500 | 12.32 | 21.75 | 6.96 | 119 | 1.92 | 17.8 | 1.23 | | | |
| 15:20 | 100 | 3000 | 12.56 | 21.88 | 6.98 | 119 | 1.86 | 1.7 | 1.19 | | | |
| 15:25 | 100 | 3500 | 12.79 | 22.04 | 7.01 | 121 | 1.80 | 4.1 | 1.15 | | | |
| 15:30 | 100 | 4000 | 13.02 | 21.82 | 7.03 | 122 | 1.76 | 0.2 | 1.13 | | | |
| 15:35 | 100 | 4500 | 13.30 | 22.00 | 7.08 | 121 | 1.73 | 0.5 | 1.11 | | | |
| 15:40 | 100 | 5000 | 13.52 | 21.89 | 7.09 | 123 | 1.72 | 0.5 | 1.10 | Sample Start | | |
| | | | 13.83 | | | | | | | Sample End | | |
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| | | | | | | | | | | Preservative | # of Containers | DUP-1 |
| | | | | | | | | | | 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

LOW FLOW SAMPLING FORM

DATE 8/7/2019 WELL ID MW-21 SAMPLE DATE / TIME 8/7/2019 9:10
 SITE Muscatine Power & Water DTW 9.83 NOTE _____
 PROJECT # _____ WELL DEPTH 22.20 _____
 WEATHER Sunny 68DF, W Wind 2mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 17'

| TIME | PURGE RATE(ml) | VOL REMOVED(m) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|------|----------------|----------------|-------|-------|------|-----|----------|-----------|-------|------------------|-----------------|
| 8:40 | | | 9.83 | | | | | | | | |
| 8:45 | 100 | 500 | 10.06 | 21.93 | 6.26 | 202 | 1.20 | 0.1 | 0.770 | | |
| 8:50 | 100 | 1000 | 10.10 | 20.47 | 6.34 | 197 | 1.22 | 0.5 | 0.780 | | |
| 8:55 | 100 | 1500 | 10.13 | 19.56 | 6.33 | 197 | 1.33 | 0.5 | 0.790 | | |
| 9:00 | 100 | 2000 | 10.16 | 19.05 | 6.34 | 197 | 1.24 | 0.3 | 0.795 | | |
| 9:05 | 100 | 2500 | 10.16 | 18.69 | 6.34 | 198 | 1.25 | 0.2 | 0.803 | | |
| 9:10 | 100 | 3000 | 10.17 | 18.60 | 6.33 | 199 | 1.26 | 0.2 | 0.808 | Sample Start | |
| | | | 10.18 | | | | | | | Sample End | |
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| | | | | | | | | | | 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

LOW FLOW SAMPLING FORM

DATE 8/6/2019 WELL ID MW-23 SAMPLE DATE / TIME 8/6/2019 14:30
 SITE Muscatine Power & Water DTW 5.95 NOTE _____
 PROJECT # _____ WELL DEPTH 25.00 _____
 WEATHER Mostly Sunny 78DF NE Wind 5 mph PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|-----------------|------|-------|------|-----|----------|-----------|-------|------------------|-----------------|
| 14:10 | | | 5.95 | | | | | | | | |
| 14:15 | 100 | 500 | 7.15 | 21.27 | 6.89 | 80 | 0.509 | 0.4 | 0.326 | | |
| 14:20 | 100 | 1000 | 7.79 | 19.49 | 6.79 | 86 | 0.519 | 0.4 | 0.332 | | |
| 14:25 | 100 | 1500 | 8.42 | 19.11 | 6.76 | 89 | 0.523 | 1.0 | 0.335 | | |
| 14:30 | 100 | 2000 | 9.10 | 18.89 | 6.75 | 92 | 0.524 | 0.4 | 0.336 | Sample Started | |
| | | | 9.99 | | | | | | | Sample Ended | |
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| | | | | | | | | | | 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

LOW FLOW SAMPLING FORM

DATE 8/6/2019 WELL ID MW-24 SAMPLE DATE / TIME 8/6/2019 12:00
 SITE Muscatine Power & Water DTW 20.00 NOTE _____
 PROJECT # _____ WELL DEPTH 43.33 _____
 WEATHER Mostly Sunny, 70°F calm PUMP TYPE GeoTech Peristaltic DEPTH TO INTAKE 38'

| TIME | PURGE RATE(ml) | VOL REMOVED(ml) | DTW | TEMP | Ph | ORP | SpecCond | Turbidity | DO | NOTES | |
|-------|----------------|-----------------|-------|-------|------|-----|----------|-----------|-------|------------------|-----------------|
| 11:20 | | | 15.04 | | | | | | | | |
| 11:25 | 100 | 500 | 15.17 | 17.34 | 6.96 | 28 | 0.812 | 1.3 | 0.520 | | |
| 11:30 | 100 | 1000 | 15.25 | 16.62 | 6.86 | 33 | 0.822 | 1.1 | 0.526 | | |
| 11:35 | 100 | 1500 | 15.31 | 16.42 | 6.86 | 48 | 0.824 | 0.2 | 0.527 | | |
| 11:40 | 100 | 2000 | 15.37 | 16.20 | 6.87 | 57 | 0.824 | 0.5 | 0.528 | | |
| 11:45 | 100 | 2500 | 15.42 | 16.10 | 6.87 | 62 | 0.822 | 0.2 | 0.526 | | |
| 11:50 | 100 | 3000 | 15.44 | 16.16 | 6.87 | 70 | 0.822 | 0.3 | 0.526 | | |
| 11:55 | 100 | 3500 | 15.48 | 16.21 | 6.88 | 74 | 0.828 | 0.4 | 0.530 | | |
| 12:00 | 100 | 4000 | 15.51 | 15.92 | 6.87 | 77 | 0.826 | 0.4 | 0.529 | Sample Started | |
| | | | 15.54 | | | | | | | Sample Ended | |
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| | | | | | | | | | | 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

| | | | | | | | | | | | | | | | |
|--|---------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-08 Upgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | | |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|-------|-------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | 0.205 |
| Calcium | mg/L | 152 | 117 | 118 | 109 | 89.9 | 96.5 | 113 | 91.3 | 77 | 74.7 | 115 | 83.6 | 97.6 | 132 | |
| Chloride | mg/L | 19.8 | 17.8 | 16.2 | 17.2 | 15.4 | 17.1 | 14.1 | 14 | 14.4 | 14.5 | 14.9 | 15.6 | 16.1 | 17.1 | |
| Fluoride | mg/L | < .5 | < .5 | < .5 | 0.72 | < .5 | 1.69 | < .5 | < .5 | < .5 | < .5 | 0.826 | < .5 | < .5 | 0.643 | |
| pH | SU | 8.26 | 6.82 | 7.03 | | 7.03 | 7.05 | 7.59 | 6.77 | 7.24 | 7.3 | 7.56 | 7.2 | 7.08 | 6.64 | |
| Sulfate | mg/L | 366 | 187 | 187 | 149 | 145 | 145 | 190 | 119 | 106 | 87.3 | 136 | 94.7 | 223 | 276 | |
| Total Dissolved Solids | mg/L | 836 | 664 | 708 | 634 | 578 | 624 | 656 | 488 | 470 | 376 | 502 | 414 | 612 | 702 | |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | | |
|---------------------------|------|---------|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|---------|---------|--|
| Antimony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | 0.001 | < .001 | < .001 | |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | 0.002 | < .002 | < .002 | |
| Barium | mg/L | 0.0861 | 0.0671 | 0.0706 | 0.0645 | 0.0594 | 0.0636 | 0.076 | 0.0596 | | 0.0617 | 0.0761 | 0.0649 | 0.0751 | 0.0733 | |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | 0.001 | < .001 | < .001 | |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | |
| Cobalt | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | 0.000601 | 0.00051 | | < .0005 | < .0005 | < .0005 | 0.00177 | 0.00558 | |
| Fluoride | mg/L | < .5 | < .5 | < .5 | 0.72 | < .5 | 1.69 | < .5 | < .5 | | < .5 | 0.826 | < .5 | < .5 | 0.643 | |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | < .01 | < .01 | < .01 | < .01 | < .01 | |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | |
| Molybdenum | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | 0.0022 | < .002 | 0.00224 | < .002 | < .002 | |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 | |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 | |
| Radium-226 | mg/L | 0.152 | 0.4086 | 0.0139 | 0.234 | 0.0604 | 0.0229 | 0.0596 | 0.087 | | 0.022 | | | | <0.0229 | |
| Radium-228 | mg/L | 0.224 | 0.0663 | 0.336 | 0.102 | 0.161 | 0.104 | 0.144 | 0.249 | | 0.646 | | | | <0.194 | |
| Combined Radium 226 + 228 | mg/L | 0.375 | 0.115 | 0.35 | 0.336 | 0.221 | 0.126 | 0.204 | 0.336 | | 0.668 | | | | <0.217 | |

| | | | | | | | | | | | | | | | |
|--|---------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-10 Upgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | |
|------------------------|------|-------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 |
| Calcium | mg/L | 89.3 | 80.7 | 83.3 | 86.5 | 81.2 | 79.2 | 83.6 | 85.5 | 83.3 | 77.3 | 88.5 | 85.4 | 76.3 | 78.9 |
| Chloride | mg/L | 6.22 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Fluoride | mg/L | 0.731 | < .5 | < .5 | < .5 | < .5 | 0.774 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | 0.596 |
| pH | SU | 8.68 | 7.12 | 7.27 | | 7.51 | 7.18 | 7.45 | 6.34 | 7.18 | 7.04 | 7.72 | 7.23 | 7.1 | 7.07 |
| Sulfate | mg/L | 42.1 | 7.3 | 36.4 | 38.4 | 47.3 | 38.3 | 35.4 | 39 | 46.9 | 51.4 | 37.3 | 34.3 | 42.8 | 28.8 |
| Total Dissolved Solids | mg/L | 468 | 412 | 444 | 428 | 498 | 538 | 524 | 458 | 414 | 314 | 396 | 392 | 326 | 320 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | |
|---------------------------|------|----------|---------|----------|----------|----------|----------|----------|----------|--------|----------|---------|---------|----------|----------|
| Animony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | 0.00298 | 0.00369 | 0.00328 | 0.00312 | 0.00298 | < .002 | 0.00262 | 0.00317 | | < .002 | 0.00211 | 0.0036 | 0.0056 | 0.00784 |
| Barium | mg/L | 0.168 | 0.161 | 0.163 | 0.15 | 0.151 | 0.138 | 0.154 | 0.157 | | 0.129 | 0.162 | 0.216 | 0.185 | 0.215 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | 89.3 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | 0.000555 | < .0005 | 0.000523 | 0.000638 | 0.000663 | 0.000779 | 0.000621 | 0.000695 | | 0.000627 | 0.00107 | 0.00088 | 0.000783 | 0.000572 |
| Fluoride | mg/L | 0.731 | < .5 | < .5 | < .5 | < .5 | 0.774 | < .5 | < .5 | | < .5 | < .5 | < .5 | < .5 | 0.596 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | < .01 | < .01 | < .01 | < .01 | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | < .002 | < .002 | 0.0022 | 0.00341 | 0.00219 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.19 | 0.413 | 0.119 | 0.422 | 0.199 | 0.139 | 0.206 | 0.273 | | 0.188 | | | 0.153 | |
| Radium-228 | mg/L | 0.0326 | 0.255 | 0.575 | 0.377 | 0.314 | 0.332 | -0.00196 | 0.558 | | 0.0884 | | | < .178 | |
| Combined Radium 226 + 228 | mg/L | 0.223 | 0.668 | 0.694 | 0.799 | 0.513 | 0.47 | 0.204 | 0.831 | | 0.276 | | | < .331 | |

| | | | | | | | | | | | | | | | |
|--|-----------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-4A Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | | |
|------------------------|------|------|------|------|------|-------|-------|------|------|------|--|------|------|------|-------|-------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | | 0.66 | < .2 | < .2 | < .2 | < .2 |
| Calcium | mg/L | 98.1 | 88.8 | 89.3 | 94.5 | 86.8 | 85.9 | 88.7 | 89.7 | 85.3 | | 95.8 | 91.4 | 91.3 | 99.7 | 93.8 |
| Chloride | mg/L | 12.6 | 13.2 | 13.6 | 13.5 | 15.1 | 12.5 | 13.2 | 13.2 | 14.7 | | 8.81 | 15.3 | 19.4 | 16 | 15.6 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 | 0.664 | 0.801 | < .5 | < .5 | < .5 | | < .5 | < .5 | < .5 | 0.771 | 0.525 |
| pH | SU | 8.9 | 7.3 | 7.38 | | 7.42 | 7.33 | 8.16 | 6.53 | 7.49 | | 7.36 | 7.53 | 7.44 | 7.26 | 7.22 |
| Sulfate | mg/L | 32.2 | 28.4 | 27.2 | 32.7 | 36 | 39.5 | 33 | 35.3 | 45.4 | | 162 | 51.3 | 52.2 | 48 | 47 |
| Total Dissolved Solids | mg/L | 507 | 426 | 450 | 450 | 460 | 442 | 452 | 420 | 466 | | 586 | 440 | 420 | 398 | 422 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | | |
|---------------------------|------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|--|---------|---------|---------|---------|---------|
| Animony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | < .002 | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 0.15 | 0.128 | 0.131 | 0.139 | 0.143 | 0.111 | 0.133 | 0.133 | | | 0.117 | 0.144 | 0.149 | 0.161 | 0.147 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | < .000681 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 | 0.664 | 0.801 | < .5 | < .5 | | | < .5 | < .5 | < .5 | 0.771 | 0.525 |
| Lead | mg/L | < .00147 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | < .01 | < .01 | < .01 | < .01 | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .002 | < .002 | M .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | < .002 | < .002 | < .002 | < .002 | < .002 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.54 | 0.326 | 0.285 | 0.585 | 0.215 | 0.0818 | 0.177 | 0.255 | | | 0.111 | | | | 0.218 |
| Radium-228 | mg/L | 0.171 | 0.612 | 0.388 | 0.0872 | 0.313 | 0.227 | 0.192 | 0.188 | | | 0.339 | | | | < .218 |
| Combined Radium 226 + 228 | mg/L | 0.711 | 0.938 | 0.674 | 0.672 | 0.528 | 0.309 | 0.368 | 0.443 | | | 0.45 | | | | 0.436 |

| | | | | | | | | | | | | | | | |
|--|-----------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-5B Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | | |
|------------------------|------|------|---------|------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | | < .2 | < .2 | < .2 | < .2 | < .2 |
| Calcium | mg/L | 147 | < .0005 | 140 | 147 | 126 | 130 | 140 | 139 | 136 | | 134 | 147 | 146 | 134 | 139 |
| Chloride | mg/L | 67 | 65.9 | 66 | 67 | 70.4 | 62.1 | 63.4 | 64 | 73 | 67.8 | 68.2 | 65 | 70.8 | 55 | 64.1 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | 1.88 | 2.14 | 0.627 | < .5 | < .5 | < .5 | | < .5 | < .5 | < .5 | < .5 | < .5 |
| pH | SU | 8.49 | 7.08 | 7.1 | | 6.05 | 7 | 7.89 | 6.95 | 7.08 | 7 | 7.23 | 7.3 | 7.14 | 7.05 | 7.02 |
| Sulfate | mg/L | 109 | 109 | 105 | 109 | 111 | 108 | 108 | 114 | 135 | | 122 | 119 | 120 | 85 | 112 |
| Total Dissolved Solids | mg/L | 920 | 672 | 646 | 636 | 684 | 680 | 656 | 734 | 688 | | 620 | 828 | 622 | 562 | 596 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | | |
|---------------------------|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|---------|---------|---------|---------|---------|
| Animony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | < .002 | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 0.331 | 0.295 | 0.304 | 0.315 | 0.316 | 0.296 | 0.31 | 0.300 | | | 0.341 | 0.336 | 0.357 | 0.326 | 0.301 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | 1.88 | 2.14 | 0.627 | < .5 | < .5 | | | < .5 | < .5 | < .5 | < .5 | < .5 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | < .01 | < .01 | < .0005 | < .0005 | < .0005 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | < .002 | < .002 | < .002 | 0.00212 | < .002 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.365 | 0.449 | 0.598 | 0.509 | 0.464 | 0.357 | 0.433 | 0.213 | | | 0.349 | | | | 0.196 |
| Radium-228 | mg/L | 0.3 | 0.405 | -0.169 | 0.541 | 0.386 | 0.664 | 0.54 | 0.294 | | | 0.61 | | | | 0.372 |
| Combined Radium 226 + 228 | mg/L | 0.665 | 0.854 | 0.428 | 1.05 | 0.85 | 1.02 | 0.973 | 0.507 | | | 0.959 | | | | 0.568 |

| | | | | | | | | | | | | | | | |
|--|-----------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-6A Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | |
|------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 | < .2 |
| Calcium | mg/L | 81.4 | 75.4 | 75.7 | 85.6 | 68.8 | 56.3 | 72.9 | 71.2 | 71.9 | 74.1 | 80.1 | 73.3 | 73.2 | 80.9 |
| Chloride | mg/L | 5.97 | < 5 | < 5 | 9.08 | 9.93 | < 5 | < 5 | < 5 | < 5 | 5.33 | < 5 | < 5 | < 5 | < 5 |
| Fluoride | mg/L | < 5 | < 5 | < 5 | 2.02 | 1.89 | 0.814 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | 0.535 |
| pH | SU | 8.71 | 6.79 | 7.21 | | 7.2 | 7.14 | 7.7 | 6.73 | 7.58 | 7.4 | 7.58 | 7.18 | 7.15 | 7.12 |
| Sulfate | mg/L | < 5 | < 5 | < 5 | < 5 | 5.94 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Total Dissolved Solids | mg/L | 440 | 340 | 370 | 368 | 336 | 402 | 486 | 364 | 424 | 292 | 368 | 298 | 320 | 308 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | |
|---------------------------|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Animony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 0.209 | 0.199 | 0.196 | 0.216 | 0.197 | 0.152 | 0.197 | 0.19 | | 0.206 | 0.222 | 0.206 | 0.2 | 0.211 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | 2.02 | 1.89 | 0.814 | < .5 | < .5 | | < .5 | < .5 | < .5 | < .5 | 0.535 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .01 | < .01 | < .01 | < .01 | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.226 | 0.278 | 0.202 | 0.462 | 0.166 | 0.116 | 0.21 | 0.136 | | 0.179 | | | 0.22 | |
| Radium-228 | mg/L | 0.178 | 0.599 | 0.311 | 0.432 | 0.148 | 0.182 | 0.23 | 0.197 | | 0.439 | | | <.26 | |
| Combined Radium 226 + 228 | mg/L | 0.405 | 0.876 | 0.512 | 0.894 | 0.314 | 0.298 | 0.44 | 0.333 | | 0.618 | | | 0.481 | |

| | | | | | | | | | | | | | | | |
|--|-----------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-13 Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | |
|------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|-------|------|--|
| Boron | mg/L | 47.2 | 13.3 | 74.8 | 7.03 | 4.35 | 5.93 | 2.77 | 2.72 | 50 | 2.92 | 21.7 | 1.34 | 1.45 | |
| Calcium | mg/L | 218 | 112 | 276 | 105 | 87.6 | 97.5 | 92.8 | 95.4 | 208 | 93.2 | 149 | 89.5 | 93.1 | |
| Chloride | mg/L | 22.9 | 17.1 | 29.8 | 12.7 | 14.8 | 12.8 | 9.17 | 9.62 | 15.2 | | 19.9 | 5.84 | 7.24 | |
| Fluoride | mg/L | < .5 | 1.21 | 3.25 | < .5 | < .5 | 0.997 | < .5 | < .5 | < .5 | | 2.08 | 0.528 | < .5 | |
| pH | SU | 7.82 | 7.3 | 7.1 | | 7.72 | 7.31 | 7.76 | 7.08 | 7.14 | 7.04 | 7.72 | 8.03 | 7.37 | |
| Sulfate | mg/L | 975 | 197 | 1170 | 117 | 110 | 174 | 86.7 | 99.4 | 931 | 102 | 506 | 62.1 | 72.7 | |
| Total Dissolved Solids | mg/L | 1970 | 694 | 2740 | 616 | 554 | 574 | 502 | 536 | 2150 | 562 | 1120 | 472 | 384 | |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | |
|---------------------------|------|---------|----------|---------|----------|----------|----------|----------|----------|--|--|----------|---------|---------|--|
| Animony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | < .002 | < .002 | |
| Barium | mg/L | 0.0302 | 0.0616 | 477 | 0.0945 | 0.0872 | 0.0559 | 0.0783 | 0.0857 | | | 0.132 | 0.118 | 0.122 | |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | |
| Chromium | mg/L | 0.0191 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | 0.00658 | | | < .005 | < .005 | < .005 | |
| Cobalt | mg/L | 0.00172 | 0.000637 | 0.00179 | 0.000717 | 0.000727 | 0.000695 | 0.000682 | 0.000686 | | | 0.000964 | < .0005 | < .0005 | |
| Fluoride | mg/L | < .5 | 1.21 | 3.25 | < .5 | < .5 | 0.997 | < .5 | < .5 | | | 2.08 | 0.528 | < .5 | |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | |
| Lithium | mg/L | < .100 | < .05 | < .150 | < .05 | < .05 | < .05 | < .05 | < .05 | | | 0.0122 | < .01 | < .01 | |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | | < .0002 | < .0002 | < .0002 | |
| Molybdenum | mg/L | 0.0227 | 0.00867 | 0.0176 | 0.00676 | 0.00416 | 0.00443 | 0.00346 | 0.00329 | | | 0.00732 | 0.00296 | 0.00278 | |
| Selenium | mg/L | < .005 | < .005 | 0.0364 | < .005 | < .005 | < .005 | < .005 | < .005 | | | 0.0195 | < .005 | < .005 | |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | |
| Radium-226 | mg/L | 0.0909 | 0.142 | 0.312 | 0.0896 | 0.11 | 0.103 | 0.179 | 0.164 | | | 0.12 | | | |
| Radium-228 | mg/L | 0.114 | 0.0795 | 0.832 | 0.173 | 0.241 | 0.262 | 0.0132 | 0.359 | | | 0.665 | | | |
| Combined Radium 226 + 228 | mg/L | 0.205 | 0.222 | 1.14 | 0.262 | 0.35 | 0.365 | 0.192 | 0.523 | | | 0.785 | | | |

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|--|------------------------|---------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|--|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | | | | | | | | | | | | | | | | | |
| | MW-14A Downgradient | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | | |
|------------------------|------|------|------|-------|------|------|------|------|------|------|------|------|-------|------|------|------|
| Boron | mg/L | 15.8 | 17.9 | 19.3 | 14.7 | 13.1 | 11.3 | 16.3 | 13 | 16 | 13.7 | 11 | 15 | 14 | 15.5 | 17.6 |
| Calcium | mg/L | 281 | 311 | 308 | 333 | 268 | 310 | 307 | 296 | 310 | 301 | 278 | 297 | 309 | 290 | 255 |
| Chloride | mg/L | 28.7 | 28.7 | 37 | 31.9 | 33.5 | 39.4 | 29.7 | 32.9 | 35.4 | 33.2 | 37.4 | 29 | 33.1 | 25.8 | 22.1 |
| Fluoride | mg/L | < .5 | < .5 | 0.867 | < .5 | < .5 | 1.93 | < .5 | < .5 | < .5 | < .5 | < .5 | 0.684 | < .5 | < .5 | < .5 |
| pH | SU | 7.88 | 7.1 | 7.15 | | 7.52 | 7.25 | 7.57 | 6.85 | 6.68 | 7 | 7.35 | 7.26 | 7.09 | 6.97 | 7.09 |
| Sulfate | mg/L | 1050 | 1040 | 1010 | 1140 | 1190 | 1200 | 1020 | 1110 | 1210 | 1140 | 1110 | 1090 | 1070 | 1050 | 837 |
| Total Dissolved Solids | mg/L | 2000 | 1980 | 2500 | 2080 | 1010 | 2260 | 2250 | 2170 | 2080 | 2650 | 1820 | 1800 | 1900 | 1690 | 1510 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | | |
|---------------------------|------|---------|---------|---------|---------|---------|---------|---------|---------|--|--|---------|---------|---------|---------|---------|
| Anitmony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .004 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | < .002 | < .002 | < .002 | < .008 |
| Barium | mg/L | 0.0443 | 0.0402 | 0.0391 | 0.0383 | 0.0306 | 0.0341 | 0.0338 | 0.031 | | | 0.0285 | 0.0314 | 0.0344 | 0.0328 | 0.0398 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .004 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .002 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | | < .005 | < .005 | < .005 | < .005 | < .02 |
| Cobalt | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .002 |
| Fluoride | mg/L | < .5 | < .5 | 0.867 | < .5 | < .5 | 1.93 | < .5 | < .5 | | | < .5 | 0.684 | < .5 | < .5 | < .5 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .05 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .002 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | | < .01 | < .01 | < .01 | < .01 | < .04 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | < .002 | < .002 | < .002 | < .008 |
| Selenium | mg/L | 0.0071 | 0.00811 | 0.00821 | 0.00834 | 0.00752 | 0.00823 | 0.00829 | 0.00759 | | | < .005 | 0.00739 | 0.00827 | 0.00569 | < .02 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .004 |
| Radium-226 | mg/L | 0.0496 | 0.095 | 0.0604 | 0.137 | 0.0624 | 0.0561 | 0.0545 | 0.0506 | | | 0.0335 | | | | < .0588 |
| Radium-228 | mg/L | 0.0956 | 0.107 | 0.462 | 0.122 | 0.23 | 0.424 | -0.0414 | 0.406 | | | 0.224 | | | | < .0365 |
| Combined Radium 226 + 228 | mg/L | 0.145 | 0.202 | 0.523 | 0.26 | 0.293 | 0.48 | 0.0131 | 0.456 | | | 0.258 | | | | < .0223 |

| | | | | | | | | | | | | | | | |
|--|------------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-15A Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | | |
|------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Boron | mg/L | 16.8 | 20.6 | 17.9 | 18.4 | 14.9 | 14.7 | 16.4 | 14.7 | 19.2 | 12.9 | 11 | 10.5 | 14.6 | 8.35 | 7.56 |
| Calcium | mg/L | 206 | 199 | 203 | 244 | 233 | 226 | 186 | 206 | 218 | 217 | 278 | 102 | 155 | 118 | 111 |
| Chloride | mg/L | 17.1 | 17.2 | 17.6 | 19 | 21.5 | 47.4 | 12.8 | 15.4 | 20.5 | 20.7 | 37.4 | < 5 | 10.1 | 8.54 | 9.91 |
| Fluoride | mg/L | < .5 | 0.549 | < .5 | < .5 | < .5 | 6.7 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | 0.523 | 0.625 |
| pH | SU | 7.97 | 7.16 | 7.27 | | 7.2 | 7.31 | 7.84 | 6.96 | 6.94 | 7 | 7.35 | 7.5 | 7.25 | 7.76 | 7.11 |
| Sulfate | mg/L | 827 | 605 | 607 | 732 | 849 | 853 | 537 | 664 | 835 | 779 | 1110 | 210 | 400 | 351 | 327 |
| Total Dissolved Solids | mg/L | 1620 | 1270 | 1500 | 1600 | 1470 | 1780 | 1280 | 1390 | 1520 | 1670 | 1820 | 676 | 948 | 724 | 786 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | | |
|---------------------------|------|---------|---------|---------|---------|---------|---------|---------|---------|--|--|---------|---------|---------|---------|---------|
| Animony | mg/L | < .05 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .1 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 2.13 | 0.044 | 0.0426 | 0.0406 | 0.0402 | 0.0364 | 0.0327 | 0.0338 | | | 0.0285 | >0338 | 0.0335 | 0.037 | 0.047 |
| Beryllium | mg/L | < .05 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .025 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .250 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | < .025 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Fluoride | mg/L | < .5 | 0.549 | < .5 | < .5 | < .5 | 6.7 | < .5 | < .5 | | | < .5 | < .5 | < .5 | < .5 | 0.625 |
| Lead | mg/L | < .025 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | | < .0005 | < .01 | < .01 | < .01 | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .1 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | < .002 | < .002 | < .002 | < .002 |
| Selenium | mg/L | < .25 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | | < .005 | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .05 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.0942 | 0.0703 | 0.164 | 0.106 | 0.0814 | 0.0124 | 0.100 | 0.047 | | | 0.0518 | | | | <0.609 |
| Radium-228 | mg/L | 0.216 | 0.18 | 0.123 | 0.145 | 0.0218 | 0.0842 | 0.121 | 0.197 | | | 0.0715 | | | | <.33 |
| Combined Radium 226 + 228 | mg/L | 0.31 | 0.251 | 0.286 | 0.251 | 0.103 | 0.0966 | 0.221 | 0.244 | | | 0.123 | | | | <.391 |

| | | | | | | | | | | | | | | | |
|--|------------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-18A Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | |
|------------------------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|--|
| Boron | mg/L | 13.7 | 15.1 | 14.2 | 11.8 | 12.7 | 10.5 | 11.5 | 10.8 | 13.1 | 10.7 | 8.81 | 13.3 | 10.5 | |
| Calcium | mg/L | 294 | 294 | 280 | 291 | 266 | 237 | 255 | 258 | 239 | 232 | 191 | 264 | 223 | |
| Chloride | mg/L | 30.4 | 27.6 | 35.3 | 29.2 | 28.1 | 44.2 | 27.2 | 27 | 29.3 | 27.4 | 27.1 | 25.6 | 26.9 | |
| Fluoride | mg/L | < .5 | < .5 | 0.791 | < .5 | < .5 | 3.16 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | |
| pH | SU | 7.88 | 7.1 | 7.2 | | 7.18 | 7.05 | 7.38 | 6.96 | 6.34 | 7 | 7.28 | 7.19 | 7.12 | |
| Sulfate | mg/L | 1100 | 874 | 855 | 886 | 917 | 863 | 796 | 801 | 808 | 737 | 624 | 709 | 675 | |
| Total Dissolved Solids | mg/L | 1750 | 1720 | 1850 | 2320 | 1800 | 4160 | 1970 | 1530 | 1420 | 1430 | 1150 | 1890 | 1330 | |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | |
|---------------------------|------|----------|----------|---------|---------|---------|---------|-----------|---------|--|--|---------|---------|---------|--|
| Animony | mg/L | < .05 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | 0.00195 | < .001 | < .001 | |
| Arsenic | mg/L | < .1 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | 0.00265 | < .002 | < .002 | |
| Barium | mg/L | < .1 | 0.0391 | 0.0381 | 0.0394 | 0.0403 | 0.0297 | 0.0313 | 0.0329 | | | 0.0281 | 0.0352 | 0.036 | |
| Beryllium | mg/L | < .05 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | |
| Cadmium | mg/L | < .025 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | |
| Chromium | mg/L | < .250 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | | < .005 | < .005 | < .005 | |
| Cobalt | mg/L | < .025 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | |
| Fluoride | mg/L | < .5 | < .5 | 0.791 | < .5 | < .5 | 3.16 | < .5 | < .5 | | | < .5 | < .5 | < .5 | |
| Lead | mg/L | < .025 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | | < .0005 | < .01 | < .01 | |
| Mercury | mg/L | 0.000245 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | | < .0002 | < .0002 | < .0002 | |
| Molybdenum | mg/L | < .1 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | < .002 | < .002 | |
| Selenium | mg/L | < .25 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | < .005 | | | < .005 | < .005 | < .005 | |
| Thallium | mg/L | < .05 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | |
| Radium-226 | mg/L | 0.0607 | -0.00906 | 0.106 | 0.226 | 0.0909 | 0.0175 | -0.000744 | 0.0546 | | | 0.0456 | | | |
| Radium-228 | mg/L | 0.344 | 0.228 | 0.605 | 0.407 | 0.195 | 0.387 | 0.185 | 0.23 | | | 0.339 | | | |
| Combined Radium 226 + 228 | mg/L | 0.405 | 0.218 | 0.711 | 0.633 | 0.286 | 0.405 | 0.184 | 0.284 | | | 0.384 | | | |

| | | | | | | | | | | | | | | | |
|--|-----------------------|-----------|------------|-------------|-------------|----------|---------|-----------|------------|-------------|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | June-16 | August-16 | October-16 | December-16 | February-17 | April-17 | June-17 | August-17 | October-17 | November-17 | March-18 | June-18 | August-18 | March-19 | August-19 |
| | MW-21 Downgradient | | | | | | | | | | | | | | |

Appendix III Parameters:

| | | | | | | | | | | | | | | | | |
|------------------------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|------|------|
| Boron | mg/L | < 2 | 7.23 | 8.45 | 6.93 | 4.87 | 4.49 | 7.36 | 7.05 | 3.33 | 2.24 | 8.81 | 6.84 | 1.36 | 6.95 | 8.46 |
| Calcium | mg/L | 37.2 | 146 | 185 | 178 | 118 | 110 | 149 | 163 | 62.3 | | 191 | 159 | 78.7 | 142 | 145 |
| Chloride | mg/L | 27.7 | 16.6 | 24.4 | 19.2 | 14.2 | 15.6 | 15.1 | 16.1 | 5.09 | | 27.1 | 10.9 | < 5 | 8.3 | 14 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 | 0.993 | 0.768 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 | < .5 |
| pH | SU | 7.56 | 6.56 | 6.66 | | 5.9 | 6.6 | 7.34 | 6.77 | 6.76 | 6.87 | 7.28 | 7.25 | 7.07 | 6.41 | 6.33 |
| Sulfate | mg/L | 713 | 520 | 603 | 645 | 415 | 461 | 541 | 590 | 206 | | 624 | 489 | 96.6 | 442 | 529 |
| Total Dissolved Solids | mg/L | 1440 | 1110 | 1420 | 1240 | 1010 | 1060 | 1140 | 1220 | 514 | | 1150 | 952 | 416 | 872 | 960 |

Appendix IV Parameters:

| | | | | | | | | | | | | | | | | |
|---------------------------|------|---------|---------|---------|---------|-----------|----------|---------|---------|--|--|---------|----------|---------|---------|---------|
| Antimony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | 0.00195 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | 0.00265 | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 0.0573 | 0.0482 | 0.0606 | 0.056 | 0.0735 | 0.0356 | 0.0461 | 0.0499 | | | 0.0281 | 0.0515 | 0.0622 | 0.0511 | 0.0624 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | 0.00694 | 0.00538 | 0.00582 | 0.00561 | < .005 | < .005 | 0.00586 | 0.00572 | | | < .005 | 0.00726 | < .005 | 0.00647 | 0.00637 |
| Cobalt | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 | 0.993 | 0.768 | < .5 | < .5 | | | < .5 | < .5 | < .5 | < .5 | < .5 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 | | | < .0005 | 0.000633 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | < .05 | | | < .01 | 0.0189 | < .01 | 0.0277 | 0.0279 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 | | | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | < .002 | | | < .002 | 0.00383 | < .002 | < .002 | < .002 |
| Selenium | mg/L | 0.0165 | 0.0103 | 0.0137 | 0.0119 | 0.0074 | 0.00674 | 0.0106 | 0.0109 | | | < .005 | 0.00939 | < .005 | 0.102 | 0.0108 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | < .001 | | | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.299 | 0.148 | 0.427 | 0.128 | 0.0502 | -0.00511 | 0.0379 | 0.209 | | | 0.0141 | | | | 0.117 |
| Radium-228 | mg/L | -0.0462 | 0.0116 | 0.391 | 0.178 | -0.0507 | 0.1 | 0.507 | 0.605 | | | 0.344 | | | | <.17 |
| Combined Radium 226 + 228 | mg/L | 0.253 | 0.159 | 0.817 | 0.306 | -0.000573 | 0.0953 | 0.545 | 0.814 | | | 0.358 | | | | <.287 |

| | | | | | |
|--|----------|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 MW-22 Downgradient | March-18 | June-18 | August-18 | March-19 | August-19 |
| | | | | | |

Appendix III Parameters:

| | | | | | | |
|------------------------|------|------|------|------|-------|-------|
| Boron | mg/L | < .2 | < .2 | < .2 | 0.299 | <.2 |
| Calcium | mg/L | 69.8 | 91.5 | 80.7 | 91.6 | 83.8 |
| Chloride | mg/L | 30 | 27.2 | 29.8 | 27.6 | 26.9 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 | 0.507 |
| pH | SU | 7.36 | 7.9 | 7.42 | 7.21 | 7.12 |
| Sulfate | mg/L | 123 | 134 | 125 | 134 | 139 |
| Total Dissolved Solids | mg/L | 424 | 434 | 420 | 456 | 428 |

Appendix IV Parameters:

| | | | | | | |
|---------------------------|------|---------|---------|---------|---------|---------|
| Anitmony | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .002 | 0.00245 | 0.00261 | < .002 | < .002 |
| Barium | mg/L | 0.15 | 0.184 | 0.181 | 0.209 | 0.215 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | 0.00142 | 0.00129 | 0.00149 | <.0005 | <.0005 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 | 0.507 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .01 | < .01 | < .01 | < .01 | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | 0.00568 | 0.00423 | 0.00424 | 0.00263 | 0.00574 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.122 | 0.284 | | 0.116 | |
| Radium-228 | mg/L | 0.135 | 0.128 | | <.226 | |
| Combined Radium 226 + 228 | mg/L | 0.257 | 0.412 | | <.343 | |

| | | | | |
|--|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 MW-23 Downgradient | June-18 | August-18 | March-19 | August-19 |
| | | | | |

Appendix III Parameters:

| | | | | | |
|------------------------|------|------|------|------|------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 |
| Calcium | mg/L | 70.5 | 63.9 | 59.7 | 59.5 |
| Chloride | mg/L | 15.9 | 14.2 | 10.5 | 13.8 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 |
| pH | SU | 7.69 | 7.55 | 7.24 | 6.75 |
| Sulfate | mg/L | 38.4 | 31.7 | 26.2 | 29.7 |
| Total Dissolved Solids | mg/L | 384 | 340 | 296 | 336 |

Appendix IV Parameters:

| | | | | | |
|---------------------------|------|---------|----------|---------|----------|
| Anitmony | mg/L | < .001 | < .001 | < .001 | < .001 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 0.106 | 0.0779 | 0.0922 | 0.0635 |
| Beryllium | mg/L | < .001 | < .001 | <0.001 | <0.001 |
| Cadmium | mg/L | < .0005 | < .0005 | < .0005 | < .0005 |
| Chromium | mg/L | < .005 | < .005 | < .005 | < .005 |
| Cobalt | mg/L | 0.00161 | 0.00066 | 0.00176 | < .0005 |
| Fluoride | mg/L | < .5 | < .5 | < .5 | < .5 |
| Lead | mg/L | 0.00151 | 0.000626 | 0.00204 | 0.000663 |
| Lithium | mg/L | < .01 | < .01 | < .01 | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | < .0002 | < .0002 |
| Molybdenum | mg/L | 0.00822 | 0.00617 | < .002 | < .002 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | < .001 | < .001 |
| Radium-226 | mg/L | 0.161 | | 0.215 | |
| Radium-228 | mg/L | -0.419 | | 0.785 | |
| Combined Radium 226 + 228 | mg/L | 0.0129 | | 1.00 | |

| | | | | |
|---|-------------------------------------|---------|-----------|----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 | | | | |
| | MW-24 Downgradient | June-18 | August-18 | March-19 |

Appendix III Parameters:

| | | | | | |
|------------------------|------|-------|------|------|------|
| Boron | mg/L | < .2 | < .2 | < .2 | < .2 |
| Calcium | mg/L | 88 | 72.8 | 75 | 103 |
| Chloride | mg/L | 19.9 | 18.1 | 17.3 | 22.4 |
| Fluoride | mg/L | 0.653 | < .5 | < .5 | < .5 |
| pH | SU | 7.47 | 7.39 | 7.16 | 6.87 |
| Sulfate | mg/L | 101 | 70 | 90.8 | 169 |
| Total Dissolved Solids | mg/L | 474 | 368 | NC | 542 |

Appendix IV Parameters:

| | | | | | |
|---------------------------|------|---------|---------|---------|---------|
| Anitmony | mg/L | < .001 | < .001 | | < .001 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .002 |
| Barium | mg/L | 0.0695 | 0.0776 | 0.0889 | 0.128 |
| Beryllium | mg/L | < .001 | < .001 | < .001 | < .001 |
| Cadmium | mg/L | < .0005 | < .0005 | | < .0005 |
| Chromium | mg/L | < .005 | < .005 | | < .005 |
| Cobalt | mg/L | < .0005 | < .0005 | < .0005 | < .0005 |
| Fluoride | mg/L | 0.653 | < .5 | < .5 | < .5 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .0005 |
| Lithium | mg/L | < .01 | < .01 | | < .01 |
| Mercury | mg/L | < .0002 | < .0002 | | < .0002 |
| Molybdenum | mg/L | 0.00447 | < .002 | < .002 | < .002 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .005 |
| Thallium | mg/L | < .001 | < .001 | | < .001 |
| Radium-226 | mg/L | -0.0261 | | | |
| Radium-228 | mg/L | 0.19 | | | |
| Combined Radium 226 + 228 | mg/L | 0.164 | | | |

| | | | | |
|--|---------|-----------|----------|-----------|
| Muscatine Power & Water CCR Landfill Federal Parameters Job # 10100095 MW-25 Downgradient | June-18 | August-18 | March-19 | August-19 |
| | | | | |

Appendix III Parameters:

| | | | | | |
|------------------------|------|-------|------|------|------|
| Boron | mg/L | 14 | 14.4 | 14.5 | 11.5 |
| Calcium | mg/L | 171 | 141 | 157 | 160 |
| Chloride | mg/L | 11.4 | 11.4 | 11.4 | 11.6 |
| Fluoride | mg/L | 0.551 | < .5 | < .5 | < .5 |
| pH | SU | 7.96 | 7.31 | 7.15 | 6.91 |
| Sulfate | mg/L | 382 | 343 | 360 | 325 |
| Total Dissolved Solids | mg/L | 962 | NC | NC | 768 |

Appendix IV Parameters:

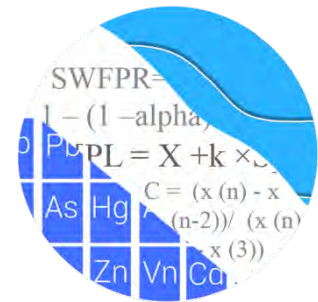
| | | | | | |
|---------------------------|------|---------|---------|---------|---------|
| Anitmony | mg/L | < .001 | < .001 | | < .004 |
| Arsenic | mg/L | < .002 | < .002 | < .002 | < .008 |
| Barium | mg/L | 0.0828 | 0.0487 | 0.0342 | 0.0448 |
| Beryllium | mg/L | < .001 | < .001 | <.004 | <.004 |
| Cadmium | mg/L | < .0005 | < .0005 | | < .002 |
| Chromium | mg/L | < .005 | < .005 | | < .02 |
| Cobalt | mg/L | < .0005 | < .0005 | <.002 | <.002 |
| Fluoride | mg/L | 0.551 | < .5 | < .5 | < .5 |
| Lead | mg/L | < .0005 | < .0005 | < .0005 | < .002 |
| Lithium | mg/L | < .01 | < .01 | | < .04 |
| Mercury | mg/L | < .0002 | < .0002 | | < .0002 |
| Molybdenum | mg/L | 0.00279 | < .002 | < .002 | < .008 |
| Selenium | mg/L | < .005 | < .005 | < .005 | < .02 |
| Thallium | mg/L | < .001 | < .001 | | < .004 |
| Radium-226 | mg/L | 0.0532 | | | |
| Radium-228 | mg/L | 0.635 | | | |
| Combined Radium 226 + 228 | mg/L | 0.688 | | | |

APPENDIX D

STATISTICAL RESULTS AND METHODOLOGIES

- Annual Statistical Results Report, November 4, 2019
- Flow Charts showing statistical procedure methodologies

GROUNDWATER STATS CONSULTING



November 4, 2019

HR Green, Inc.
Attn: Ms. Rose Amundson
8710 Earhart Ln, SW
Cedar Rapids, Iowa 52404

Dear Ms. Amundson,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis of groundwater data for the August 2019 sample event at the Muscatine Power & Water for the Coal Combustion Residuals (CCR) program. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Data were sent electronically to Groundwater Stats Consulting, and the statistical analysis was reviewed by Dr. Jim Loftis, professor emeritus of Civil and Environmental Engineering at Colorado State University and consultant to Groundwater Stats Consulting.

The monitoring well network at Muscatine Power & Water consists of the following: upgradient wells MW-08 and MW-10 as well as MW-22 which was installed this year; and downgradient wells MW-4A, MW-5B, MW-6A, MW-13, MW-14A, MW-15A, MW-18A, and MW-21. Sampling began for the CCR program in June 2016 for all wells except newly installed well MW-22. Well MW-13, however, was abandoned in April 2019; and well MW-18A was not sampled due to bentonite in the well and is, reportedly, pending state approval to be abandoned. Therefore, while historical data from these wells are included in the descriptive analysis, prediction limits were not included for these wells.

The following Appendix III constituents were evaluated using prediction limits: boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS). The following Appendix IV parameters were evaluated using confidence intervals: antimony, arsenic,

barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium and thallium.

Background Screening – Historical Summary

Background data were screened in October 2017 for all parameters at each well for the constituents listed above, and the results of the screening were submitted during that time. A summary of those findings is discussed below.

Outlier Screening and Trend Tests

Time series plots were used to initially screen for suspected outliers, trends, and seasonal patterns. Outliers and trends in background data result in increased variation and statistical limits that are not conservative from a regulatory perspective, if not addressed. Data from both upgradient and downgradient wells are screened for outliers, but only outliers in upgradient wells would affect interwell prediction limits.

Box plots provide visual representation of variation within individual wells and between all wells. Data were further evaluated through the Analysis of Variance test to determine whether observed variation is statistically significant, and guide the decision logic for determining an appropriate statistical limit as discussed below.

A number of possible outliers were identified and formally tested using Tukey's box plot method. When outliers were confirmed, these values were flagged in the computer database with "o" in order to deselect prior to construction of statistical limits. Flagged values appear as a disconnected, lighter symbol on the time series graphs. The outlier analysis was updated for this report, and additional outliers were flagged. A summary of all flagged values follows this letter.

No seasonal patterns were visually apparent in any of the detected data; therefore, no deseasonalizing adjustments were made to the data. When seasonal patterns are observed, data may be optionally deseasonalized so that the resulting limits will correctly account for the seasonality as a predictable pattern rather than random variation or a release.

The Sen's Slope/Mann Kendall trend test was used to evaluate all proposed background data through August 2017 to identify statistically significant increasing or decreasing trends. In the absence of suspected contamination, significant trending data are typically not included as part of the background data used for construction of prediction limits. This step serves to eliminate the trend and, thus, reduce variation in background. When

statistically significant decreasing trends are present, earlier data are evaluated to determine whether earlier concentration levels are significantly different than current reported concentrations and will be deselected as necessary. When the historical records of data are truncated for the reasons above, a summary report will be provided to show the date ranges used in construction of the statistical limits.

The results of the trend analyses were presented with the October 2017 screening and showed a statistically significant decreasing trend for chloride in upgradient well MW-08. This trend was relatively low in magnitude when compared to average concentrations; therefore, no adjustments were made to the data sets. No other statistically significant trends were identified for any of the Appendix III parameters.

Natural systems continuously evolve due to physical changes made to the environment and unrelated to the site. To accommodate these types of changes, data for all wells and constituents are re-evaluated for the purpose of updating statistical limits. Improved sample size results in statistical limits that provide better representation of the true background population. In the case of interwell prediction limits, all upgradient well data are screened through time series for any new outliers or trending data that would cause statistical limits to be artificially inflated. Any flagged data may be seen on the Outlier Summary table.

Determination of Statistical Method

The Analysis of Variance (ANOVA) was used to identify the most appropriate statistical approach for Muscatine Power & Water. Interwell tests, which compare downgradient well data to statistical limits constructed from pooled upgradient well data, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameters.

In cases where downgradient concentrations are elevated relative to upgradient concentrations, an independent study and hydrogeological investigation would be required to identify local geochemical conditions and expected groundwater quality for the region to justify an intrawell approach. Such an assessment is beyond the scope of services provided by Groundwater Stats Consulting.

The ANOVA noted no variation in groundwater among upgradient wells for fluoride and pH. Boron contained 100% nondetects in upgradient wells; therefore, the ANOVA test could not be performed. As a result, interwell tests are recommended for boron, fluoride and pH. The ANOVA identified spatial variation in groundwater upgradient of the site for calcium, chloride, sulfate and TDS, indicating intrawell methods should be considered for these parameters if no pre-existing contamination from the site is suspected in downgradient wells. Additional testing was conducted as described below to determine intrawell eligibility.

Intrawell limits constructed from carefully screened background data from within each well serve to provide statistical limits that are conservative (i.e. lower) from a regulatory perspective, and that will rapidly identify a change in more recent compliance data from within a given well. This statistical method removes the element of variation from across wells and eliminates the chance of mistaking natural spatial variation for a release from the facility. Prior to performing intrawell prediction limits, it is necessary to demonstrate that water at downgradient wells is not suspected to have existing impacts from the practices of the facility.

First, to establish baseline upgradient concentrations, tolerance limits (either parametric or nonparametric as appropriate) were constructed using pooled upgradient well data for each of the Appendix III parameters recommended for intrawell analyses. Parametric tolerance limits were constructed with a target of 99% confidence and 95% coverage. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. As more data are collected, the background population is better represented, and the confidence and coverage levels increase.

Next, to determine whether average downgradient concentrations are elevated relative to the upgradient well baseline concentrations established by the tolerance limits above, confidence intervals were constructed on downgradient wells for each of the Appendix III parameters exhibiting spatial variation. The results showed that at least one confidence interval exceeded its respective upgradient tolerance limit for each of the parameters tested.

When the entire confidence interval exceeds a background standard, it is an indication that downgradient concentrations are elevated above background levels. Therefore, interwell methods are recommended initially in lieu of intrawell methods until further research identifies whether the elevated downgradient concentrations are likely the result of natural geological conditions, an off-site source, or may be the result of the facility. After such a study, data would be re-evaluated to determine the most appropriate statistical Detection Monitoring method.

Prediction Limits – Appendix III Parameters March 2019

Interwell prediction limits were constructed as recommended in the CCR Rule (2015) and in the EPA Unified Guidance (2009), based on a 1-of-2 resample plan using pooled upgradient well data for all Appendix III parameters. In the event of an initial exceedance of compliance well data, a resample will be collected to determine whether the initial exceedance is confirmed, in which case a statistically significant increase (SSI) is identified. If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary.

Parametric prediction limits were constructed when background data followed a normal or transformed-normal distribution. Non-parametric prediction limits are provided for data sets with greater than 50% nondetects, and for data sets which do not follow a normal or transformed-normal distribution. Downgradient measurements were compared to these background limits. Prediction limits results and a summary table of well/constituent pairs found to exceed their respective limits follows this letter.

The Sen's Slope/Mann Kendall trend test was performed on the exceedances noted above to determine whether concentrations are increasing, decreasing or stabilizing over time. No statistically significant increasing trends were noted. Statistically significant decreasing trends were noted for boron in well MW-15A and total dissolved solids in well MW-21.

Confidence Intervals – Appendix IV Parameters

Confidence intervals were constructed at all downgradient wells, except for well MW-13 which has been abandoned, for detected Appendix IV parameters. A minimum of 4 samples is required to construct confidence intervals; however, 8 samples are generally recommended for better representation of the true average population. Established Maximum Contaminant Levels (MCLs) are used as the Ground Water Protection Standard (GWPS) against which confidence intervals are compared, unless background limits are higher as discussed below. For parameters without MCLs (cobalt, lithium, and molybdenum), the CCR-Rule specified level was used unless background was higher. Parametric confidence intervals are constructed with 99% confidence when data follow a normal or transformed-normal distribution. For all other cases, nonparametric confidence intervals are constructed, with the confidence level based on the number of samples available.

Background limits are established for the Appendix IV parameters using upper tolerance limits constructed with 95% confidence/95% coverage using pooled upgradient well data,

for comparison against established MCLs. When background limits, or Alternate Contaminant Levels (ACLs), are higher than established MCLs or CCR-Rule specified levels, the CCR Rule recommends using these as the GWPS for the confidence interval comparisons. The GWPS is exceeded only when the entire confidence interval exceeds its respective GWPS. None of the confidence intervals exceeded their respective standard.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for Muscatine Power & Water. If you have any questions or comments, please feel free to contact me.

For Groundwater Stats Consulting,

A handwritten signature in black ink that reads "Kristina Rayner". The script is cursive and fluid.

Kristina L. Rayner
Groundwater Statistician

A handwritten signature in black ink that reads "Easton Rayner". The script is cursive and fluid.

Easton T. Rayner
Groundwater Analyst

| MUSCATINE POWER & WATER GWPS | | | | |
|---|------------|---------------------------|-------------------------|-------------|
| Constituent Name | MCL | CCR-Rule Specified | Background Limit | GWPS |
| Antimony, Total (mg/L) | 0.006 | | 0.001 | 0.006 |
| Arsenic, Total (mg/L) | 0.01 | | 0.0078 | 0.01 |
| Barium, Total (mg/L) | 2 | | 0.22 | 2 |
| Beryllium, Total (mg/L) | 0.004 | | 0.001 | 0.004 |
| Cadmium, Total (mg/L) | 0.005 | | 0.0005 | 0.005 |
| Chromium, Total (mg/L) | 0.1 | | 0.005 | 0.1 |
| Cobalt, Total (mg/L) | n/a | 0.006 | 0.0056 | 0.006 |
| Combined Radium, Total (pCi/L) | 5 | | 0.88 | 5 |
| Fluoride, Total (mg/L) | 4 | | 0.83 | 4 |
| Lead, Total (mg/L) | 0.015 | | 0.0005 | 0.015 |
| Lithium, Total (mg/L) | n/a | 0.04 | 0.01 | 0.04 |
| Mercury, Total (mg/L) | 0.002 | | 0.0002 | 0.002 |
| Molybdenum, Total (mg/L) | n/a | 0.1 | 0.0057 | 0.1 |
| Selenium, Total (mg/L) | 0.05 | | 0.005 | 0.05 |
| Thallium, Total (mg/L) | 0.002 | | 0.001 | 0.002 |

**MCL = Maximum Contaminant Level*

**GWPS = Groundwater Protection Standard*

Upper Tolerance Limits - Appendix IV

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 2:55 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>%NDs</u> | <u>Transform</u> | <u>Alpha</u> | <u>Method</u> |
|-----------------------------------|-------------|-------------------|-------------|----------------|-------------|-------------|-------------|------------------|--------------|--------------------|
| Antimony (mg/L) | n/a | 0.001 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Arsenic (mg/L) | n/a | 0.00784 | n/a | n/a | n/a | 31 | 58.06 | n/a | 0.2039 | NP Inter(normal... |
| Barium (mg/L) | n/a | 0.216 | n/a | n/a | n/a | 31 | 0 | n/a | 0.2039 | NP Inter(normal... |
| Beryllium (mg/L) | n/a | 0.001 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Cadmium (mg/L) | n/a | 0.0005 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Chromium (mg/L) | n/a | 0.005 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Cobalt (mg/L) | n/a | 0.00558 | n/a | n/a | n/a | 32 | 37.5 | n/a | 0.1937 | NP Inter(normal... |
| Combined Radium 226 + 228 (pCi/L) | n/a | 0.8804 | n/a | n/a | n/a | 23 | 0 | No | 0.05 | Inter |
| Fluoride (mg/L) | n/a | 0.826 | n/a | n/a | n/a | 32 | 78.13 | n/a | 0.1937 | NP Inter(NDs) |
| Lead (mg/L) | n/a | 0.0005 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Lithium (mg/L) | n/a | 0.01 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Mercury (mg/L) | n/a | 0.0002 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Molybdenum (mg/L) | n/a | 0.00574 | n/a | n/a | n/a | 33 | 66.67 | n/a | 0.184 | NP Inter(normal... |
| Selenium (mg/L) | n/a | 0.005 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |
| Thallium (mg/L) | n/a | 0.001 | n/a | n/a | n/a | 31 | 100 | n/a | 0.2039 | NP Inter(NDs) |

Interwell Prediction Limit Summary Table - Significant Results

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 11:36 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Date | Observ. | Sig. | Bq N | %NDs | Transform | Alpha | Method |
|-------------------------------|--------|------------|------------|----------|---------|------|------|-------|-----------|----------|--------------------------|
| Boron (mg/L) | MW-14A | 0.299 | n/a | 8/7/2019 | 17.6 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-15A | 0.299 | n/a | 8/7/2019 | 7.56 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-21 | 0.299 | n/a | 8/7/2019 | 8.46 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Calcium (mg/L) | MW-14A | 152 | n/a | 8/7/2019 | 255 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-5B | 30 | n/a | 8/7/2019 | 64.1 | Yes | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| pH (SU) | MW-21 | 7.9 | 6.64 | 8/7/2019 | 6.33 | Yes | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-14A | 366 | n/a | 8/7/2019 | 837 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-21 | 366 | n/a | 8/7/2019 | 529 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Total Dissolved Solids (mg/L) | MW-14A | 750.6 | n/a | 8/7/2019 | 1510 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-15A | 750.6 | n/a | 8/7/2019 | 786 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-21 | 750.6 | n/a | 8/7/2019 | 960 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |

Trend Test Summary Table- Significant Results

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 11:55 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|-------------------------------|--------|--------|-------|----------|------|----|------|-----------|-------|-------|--------|
| Boron (mg/L) | MW-15A | -3.573 | -70 | -53 | Yes | 15 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-21 | -192.1 | -49 | -48 | Yes | 14 | 0 | n/a | n/a | 0.01 | NP |

Confidence Interval Summary Table - All Results (No Significant)

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 11/1/2019, 9:50 AM

| Constituent | Well | Upper Lim. | Lower Lim. | Compliance | Sig. | N | %NDs | Transform | Alpha | Method |
|-----------------------------------|--------|------------|------------|------------|------|----|-------|-----------|-------|----------------|
| Antimony (mg/L) | MW-14A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-15A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-21 | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-4A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-5B | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-6A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-14A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-15A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-21 | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-4A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-5B | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-6A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Barium (mg/L) | MW-14A | 0.03872 | 0.03178 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-15A | 0.04177 | 0.03437 | 2 | No | 12 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-21 | 0.0622 | 0.04075 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-4A | 0.1477 | 0.1271 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-5B | 0.3319 | 0.3031 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-6A | 0.2118 | 0.1897 | 2 | No | 13 | 0 | x^3 | 0.01 | Param. |
| Beryllium (mg/L) | MW-14A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-15A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-21 | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-4A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-5B | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-6A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-14A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-15A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-21 | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-4A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-5B | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-6A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-14A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-15A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-21 | 0.006369 | 0.004847 | 0.1 | No | 13 | 30.77 | No | 0.01 | Param. |
| Chromium (mg/L) | MW-4A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-5B | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-6A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-14A | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-15A | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-21 | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-4A | 0.000681 | 0.0005 | 0.006 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-5B | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-6A | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Combined Radium 226 + 228 (pCi/L) | MW-14A | 0.4256 | 0.1048 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-15A | 0.3128 | 0.1425 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-21 | 0.6138 | 0.1129 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-4A | 0.7245 | 0.3813 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-5B | 0.9905 | 0.5843 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-6A | 0.7108 | 0.3234 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Fluoride (mg/L) | MW-14A | 0.684 | 0.5 | 4 | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-15A | 0.549 | 0.5 | 4 | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-21 | 0.768 | 0.5 | 4 | No | 14 | 85.71 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-4A | 0.664 | 0.5 | 4 | No | 14 | 71.43 | No | 0.01 | NP (normality) |
| Fluoride (mg/L) | MW-5B | 0.627 | 0.5 | 4 | No | 14 | 78.57 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-6A | 0.814 | 0.5 | 4 | No | 14 | 71.43 | No | 0.01 | NP (normality) |
| Lead (mg/L) | MW-14A | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-15A | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-21 | 0.000633 | 0.0005 | 0.015 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-4A | 0.0005 | 0.0005 | 0.015 | No | 12 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-5B | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-6A | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-14A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-15A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-21 | 0.0277 | 0.01 | 0.04 | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-4A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-5B | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-6A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-14A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-15A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |

Confidence Interval Summary Table - All Results (No Significant) Page 2

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 11/1/2019, 9:50 AM

| <u>Constituent</u> | <u>Well</u> | <u>Upper Lim.</u> | <u>Lower Lim.</u> | <u>Compliance</u> | <u>Sig.</u> | <u>N</u> | <u>%NDs</u> | <u>Transform</u> | <u>Alpha</u> | <u>Method</u> |
|--------------------|-------------|-------------------|-------------------|-------------------|-------------|----------|-------------|------------------|--------------|----------------|
| Mercury (mg/L) | MW-21 | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-4A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-5B | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-6A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-14A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-15A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-21 | 0.00383 | 0.002 | 0.1 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-4A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-5B | 0.00212 | 0.002 | 0.1 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-6A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-14A | 0.00829 | 0.00569 | 0.05 | No | 13 | 15.38 | No | 0.01 | NP (normality) |
| Selenium (mg/L) | MW-15A | 0.00502 | 0.005 | 0.05 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-21 | 0.01238 | 0.006818 | 0.05 | No | 13 | 15.38 | No | 0.01 | Param. |
| Selenium (mg/L) | MW-4A | 0.005 | 0.005 | 0.05 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-5B | 0.005 | 0.005 | 0.05 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-6A | 0.005 | 0.005 | 0.05 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-14A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-15A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-21 | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-4A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-5B | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-6A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |

Prediction Limits

Interwell Prediction Limit Summary Table - Significant Results

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 11:36 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Date | Observ. | Sig. | Bq N | %NDs | Transform | Alpha | Method |
|-------------------------------|--------|------------|------------|----------|---------|------|------|-------|-----------|----------|--------------------------|
| Boron (mg/L) | MW-14A | 0.299 | n/a | 8/7/2019 | 17.6 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-15A | 0.299 | n/a | 8/7/2019 | 7.56 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-21 | 0.299 | n/a | 8/7/2019 | 8.46 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Calcium (mg/L) | MW-14A | 152 | n/a | 8/7/2019 | 255 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-5B | 30 | n/a | 8/7/2019 | 64.1 | Yes | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| pH (SU) | MW-21 | 7.9 | 6.64 | 8/7/2019 | 6.33 | Yes | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-14A | 366 | n/a | 8/7/2019 | 837 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-21 | 366 | n/a | 8/7/2019 | 529 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Total Dissolved Solids (mg/L) | MW-14A | 750.6 | n/a | 8/7/2019 | 1510 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-15A | 750.6 | n/a | 8/7/2019 | 786 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-21 | 750.6 | n/a | 8/7/2019 | 960 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |

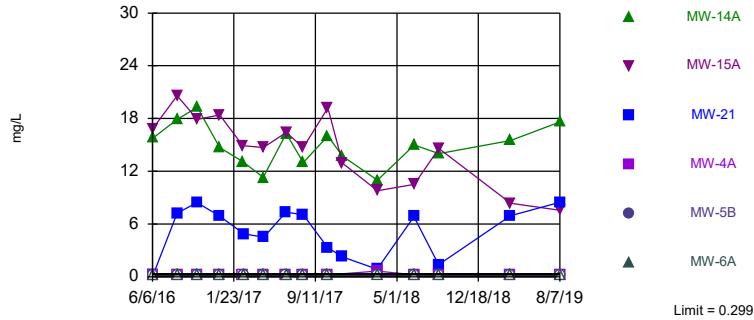
Interwell Prediction Limit Summary Table - All Results

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 11:36 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Date | Observ. | Sig. | Bq N | %NDs | Transform | Alpha | Method |
|--------------------------------------|---------------|--------------|-------------|-----------------|-------------|------------|-----------|--------------|------------|-----------------|---------------------------------|
| Boron (mg/L) | MW-14A | 0.299 | n/a | 8/7/2019 | 17.6 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-15A | 0.299 | n/a | 8/7/2019 | 7.56 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-21 | 0.299 | n/a | 8/7/2019 | 8.46 | Yes | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-4A | 0.299 | n/a | 8/7/2019 | 0.2ND | No | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-5B | 0.299 | n/a | 8/7/2019 | 0.2ND | No | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Boron (mg/L) | MW-6A | 0.299 | n/a | 8/7/2019 | 0.2ND | No | 33 | 93.94 | n/a | 0.001617 | NP Inter (NDs) 1 of 2 |
| Calcium (mg/L) | MW-14A | 152 | n/a | 8/7/2019 | 255 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Calcium (mg/L) | MW-15A | 152 | n/a | 8/7/2019 | 111 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Calcium (mg/L) | MW-21 | 152 | n/a | 8/7/2019 | 145 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Calcium (mg/L) | MW-4A | 152 | n/a | 8/7/2019 | 93.8 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Calcium (mg/L) | MW-5B | 152 | n/a | 8/7/2019 | 139 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Calcium (mg/L) | MW-6A | 152 | n/a | 8/7/2019 | 80.9 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-14A | 30 | n/a | 8/7/2019 | 22.1 | No | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-15A | 30 | n/a | 8/7/2019 | 9.91 | No | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-21 | 30 | n/a | 8/7/2019 | 14 | No | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-4A | 30 | n/a | 8/7/2019 | 15.6 | No | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-5B | 30 | n/a | 8/7/2019 | 64.1 | Yes | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| Chloride (mg/L) | MW-6A | 30 | n/a | 8/7/2019 | 5ND | No | 33 | 39.39 | n/a | 0.001617 | NP Inter (normality) ... |
| Fluoride (mg/L) | MW-14A | 0.826 | n/a | 8/7/2019 | 0.5ND | No | 32 | 78.13 | n/a | 0.001709 | NP Inter (NDs) 1 of 2 |
| Fluoride (mg/L) | MW-15A | 0.826 | n/a | 8/7/2019 | 0.625 | No | 32 | 78.13 | n/a | 0.001709 | NP Inter (NDs) 1 of 2 |
| Fluoride (mg/L) | MW-21 | 0.826 | n/a | 8/7/2019 | 0.5ND | No | 32 | 78.13 | n/a | 0.001709 | NP Inter (NDs) 1 of 2 |
| Fluoride (mg/L) | MW-4A | 0.826 | n/a | 8/7/2019 | 0.525 | No | 32 | 78.13 | n/a | 0.001709 | NP Inter (NDs) 1 of 2 |
| Fluoride (mg/L) | MW-5B | 0.826 | n/a | 8/7/2019 | 0.5ND | No | 32 | 78.13 | n/a | 0.001709 | NP Inter (NDs) 1 of 2 |
| Fluoride (mg/L) | MW-6A | 0.826 | n/a | 8/7/2019 | 0.535 | No | 32 | 78.13 | n/a | 0.001709 | NP Inter (NDs) 1 of 2 |
| pH (SU) | MW-14A | 7.9 | 6.64 | 8/7/2019 | 7.09 | No | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| pH (SU) | MW-15A | 7.9 | 6.64 | 8/7/2019 | 7.11 | No | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| pH (SU) | MW-21 | 7.9 | 6.64 | 8/7/2019 | 6.33 | Yes | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| pH (SU) | MW-4A | 7.9 | 6.64 | 8/7/2019 | 7.22 | No | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| pH (SU) | MW-5B | 7.9 | 6.64 | 8/7/2019 | 7.02 | No | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| pH (SU) | MW-6A | 7.9 | 6.64 | 8/7/2019 | 7.12 | No | 33 | 0 | n/a | 0.003233 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-14A | 366 | n/a | 8/7/2019 | 837 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-15A | 366 | n/a | 8/7/2019 | 327 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-21 | 366 | n/a | 8/7/2019 | 529 | Yes | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-4A | 366 | n/a | 8/7/2019 | 47 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-5B | 366 | n/a | 8/7/2019 | 112 | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Sulfate (mg/L) | MW-6A | 366 | n/a | 8/7/2019 | 2.5ND | No | 33 | 0 | n/a | 0.001617 | NP Inter (normality) ... |
| Total Dissolved Solids (mg/L) | MW-14A | 750.6 | n/a | 8/7/2019 | 1510 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-15A | 750.6 | n/a | 8/7/2019 | 786 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-21 | 750.6 | n/a | 8/7/2019 | 960 | Yes | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-4A | 750.6 | n/a | 8/7/2019 | 422 | No | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-5B | 750.6 | n/a | 8/7/2019 | 596 | No | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |
| Total Dissolved Solids (mg/L) | MW-6A | 750.6 | n/a | 8/7/2019 | 308 | No | 33 | 0 | No | 0.000... | Param Inter 1 of 2 |

Exceeds Limit: MW-14A, MW-15A, MW-21

Prediction Limit
Interwell Non-parametric

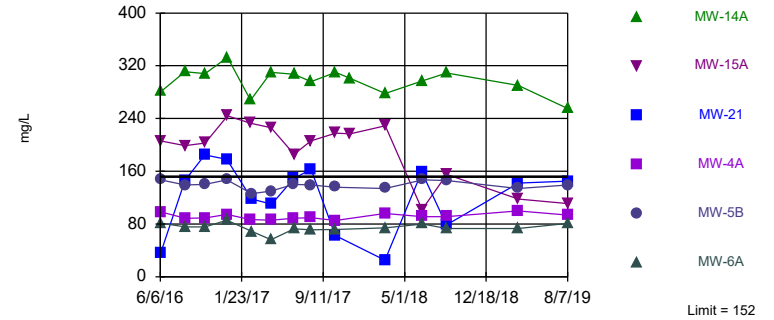


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 33 background values. 93.94% NDs. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 6 points to limit. Assumes 2 future values.

Constituent: Boron Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Exceeds Limit: MW-14A

Prediction Limit
Interwell Non-parametric

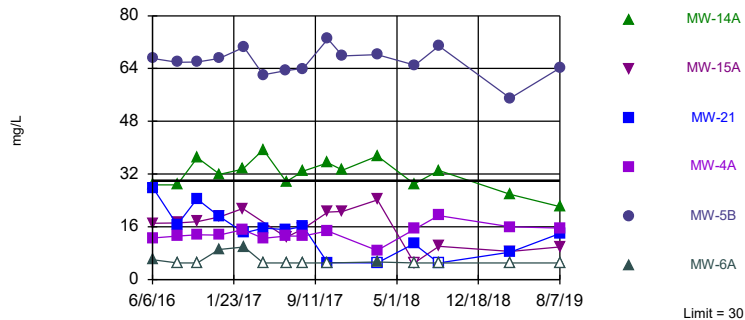


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 33 background values. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 6 points to limit. Assumes 2 future values.

Constituent: Calcium Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Exceeds Limit: MW-5B

Prediction Limit
Interwell Non-parametric

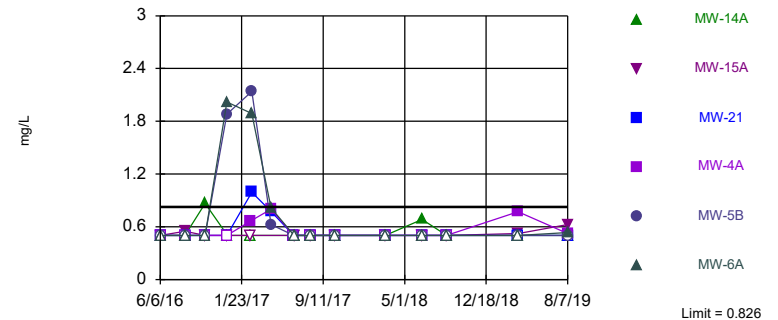


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 33 background values. 39.39% NDs. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 6 points to limit. Assumes 2 future values.

Constituent: Chloride Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. 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 32 background values. 78.13% NDs. Annual per-constituent alpha = 0.027. Individual comparison alpha = 0.001709 (1 of 2). Comparing 6 points to limit. Assumes 2 future values.

Constituent: Fluoride Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-15A | MW-10 (bg) | MW-08 (bg) | MW-6A | MW-5B | MW-4A | MW-21 | MW-14A | MW-22 (bg) |
|------------|----------|------------|------------|-------|-------|-------|----------|----------|------------|
| 6/6/2016 | 16.8 | <0.2 | | | | | | | |
| 6/7/2016 | | | <0.2 | <0.2 | <0.2 | <0.2 | | | |
| 6/8/2016 | | | | | | | <0.2 | 15.8 | |
| 8/15/2016 | 20.6 | <0.2 | | | | | 7.23 | 17.9 | |
| 8/16/2016 | | | <0.2 | <0.2 | <0.2 | <0.2 | | | |
| 10/10/2016 | | <0.2 | <0.2 | | | | 8.45 | | |
| 10/11/2016 | 17.9 | | | <0.2 | <0.2 | <0.2 | | 19.3 | |
| 12/12/2016 | | | | <0.2 | <0.2 | <0.2 | 6.93 | | |
| 12/14/2016 | 18.4 | <0.2 | <0.2 | | | | | 14.7 | |
| 2/17/2017 | 14.9 | <0.2 | | | | <0.2 | | 13.1 | |
| 2/21/2017 | | | <0.2 | <0.2 | <0.2 | | 4.87 | | |
| 4/17/2017 | 14.7 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | | 11.3 | |
| 4/18/2017 | | | | | | | 4.49 | | |
| 6/19/2017 | | <0.2 | <0.2 | | | | | | |
| 6/20/2017 | | | | | <0.2 | <0.2 | 7.36 | | |
| 6/21/2017 | 16.4 | | | <0.2 | | | | 16.3 | |
| 8/7/2017 | | <0.2 | <0.2 | | | <0.2 | | | |
| 8/8/2017 | 14.7 | | | <0.2 | <0.2 | | 7.05 | 13 | |
| 10/16/2017 | | <0.2 | <0.2 | | | <0.2 | 3.33 | | |
| 10/17/2017 | 19.2 | | | <0.2 | <0.2 | | | 16 | |
| 11/28/2017 | 12.9 (R) | | | | | | 2.24 (R) | 13.7 (R) | |
| 3/5/2018 | | <0.2 | | | | | | | |
| 3/6/2018 | | | <0.2 | <0.2 | <0.2 | 0.66 | 0.885 | | <0.2 |
| 3/7/2018 | 9.8 | | | | | | | 11 | |
| 6/19/2018 | | <0.2 | <0.2 | | | | 6.84 | | <0.2 |
| 6/20/2018 | 10.5 | | | | | | | 15 | |
| 6/21/2018 | | | | <0.2 | <0.2 | <0.2 | | | |
| 8/27/2018 | | <0.2 | <0.2 | | | | | | <0.2 |
| 8/28/2018 | | | | | | <0.2 | 1.36 | | |
| 8/29/2018 | 14.6 | | | <0.2 | <0.2 | | | 14 | |
| 3/18/2019 | | | <0.2 | | | | | | |
| 3/19/2019 | | <0.2 | | <0.2 | <0.2 | <0.2 | | | 0.299 |
| 3/20/2019 | 8.35 | | | | | | 6.95 | 15.5 | |
| 8/6/2019 | | | 0.205 | | | | | | <0.2 |
| 8/7/2019 | 7.56 | <0.2 | | <0.2 | <0.2 | <0.2 | 8.46 | 17.6 | |

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-15A | MW-10 (bg) | MW-08 (bg) | MW-6A | MW-5B | MW-4A | MW-21 | MW-14A | MW-22 (bg) |
|------------|---------|------------|------------|-------|-------|-------|-------|---------|------------|
| 6/6/2016 | 206 | 89.3 | | | | | | | |
| 6/7/2016 | | | 152 | 81.4 | 147 | 98.2 | | | |
| 6/8/2016 | | | | | | | 37.2 | 281 | |
| 8/15/2016 | 199 | 80.7 | | | | | 146 | 311 | |
| 8/16/2016 | | | 117 | 75.4 | 139 | 88.8 | | | |
| 10/10/2016 | | 83.3 | 118 | | | | 185 | | |
| 10/11/2016 | 203 | | | 75.7 | 140 | 89.3 | | 308 | |
| 12/12/2016 | | | | 85.6 | 147 | 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 | 68.8 | 126 | | 118 | | |
| 4/17/2017 | 226 | 79.2 | 96.5 | 56.3 | 130 | 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 | | | 71.2 | 139 | | 163 | 296 | |
| 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 | 134 | 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 | | | | 80.1 | 147 | 91.4 | | | |
| 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 | 134 | 99.7 | | | 91.6 |
| 3/20/2019 | 118 | | | | | | 142 | 290 | |
| 8/6/2019 | | | 132 | | | | | | 83.8 |
| 8/7/2019 | 111 | 78.9 | | 80.9 | 139 | 93.8 | 145 | 255 | |

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-15A | MW-10 (bg) | MW-08 (bg) | MW-6A | MW-5B | MW-4A | MW-21 | MW-14A | MW-22 (bg) |
|------------|----------|------------|------------|-------|----------|-------|-------|----------|------------|
| 6/6/2016 | 17.1 | 6.22 | | | | | | | |
| 6/7/2016 | | | 19.8 | 5.97 | 67 | 12.6 | | | |
| 6/8/2016 | | | | | | | 27.7 | 28.7 | |
| 8/15/2016 | 17.2 | <5 | | | | | 16.6 | 28.7 | |
| 8/16/2016 | | | 17.8 | <5 | 65.9 | 13.2 | | | |
| 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 | 19 | <5 | 17.2 | | | | | 31.9 | |
| 2/17/2017 | 21.5 | <5 | | | | 15.1 | | 33.5 | |
| 2/21/2017 | | | 15.4 | 9.93 | 70.4 | | 14.2 | | |
| 4/17/2017 | 47.4 (o) | <5 | 17.1 | <5 | 62.1 | 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 | | | <5 | 64 | | 16.1 | 32.9 | |
| 10/16/2017 | | <5 | 14.4 | | | 14.7 | 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 | | | 14.5 | 5.33 | 68.2 | 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 | | | | <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 | | | | | | 8.3 | 25.8 | |
| 8/6/2019 | | | 17.1 | | | | | | 26.9 |
| 8/7/2019 | 9.91 | <5 | | <5 | 64.1 | 15.6 | 14 | 22.1 | |

Prediction Limit

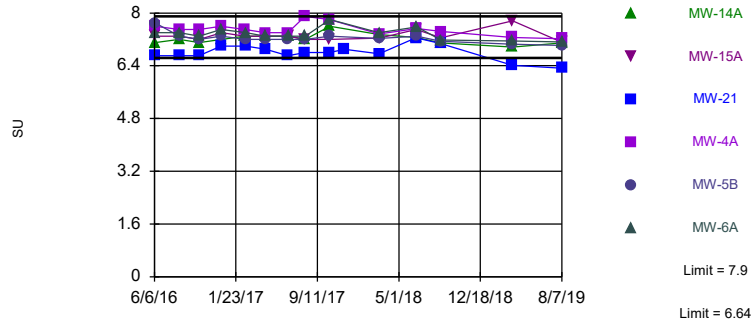
Constituent: Fluoride (mg/L) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-10 (bg) | MW-15A | MW-4A | MW-5B | MW-6A | MW-08 (bg) | MW-14A | MW-21 | MW-22 (bg) |
|------------|------------|---------|-------|-------|-------|------------|----------|-------|------------|
| 6/6/2016 | 0.731 | <0.5 | | | | | | | |
| 6/7/2016 | | | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| 6/8/2016 | | | | | | | <0.5 | <0.5 | |
| 8/15/2016 | <0.5 | 0.549 | | | | | <0.5 | <0.5 | |
| 8/16/2016 | | | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| 10/10/2016 | <0.5 | | | | | <0.5 | | <0.5 | |
| 10/11/2016 | | <0.5 | <0.5 | <0.5 | <0.5 | | 0.867 | | |
| 12/12/2016 | | | <0.5 | 1.88 | 2.02 | | | <0.5 | |
| 12/14/2016 | <0.5 | <0.5 | | | | 0.72 | <0.5 | | |
| 2/17/2017 | <0.5 | <0.5 | 0.664 | | | | <0.5 | | |
| 2/21/2017 | | | | 2.14 | 1.89 | <0.5 | | 0.993 | |
| 4/17/2017 | 0.774 | 6.7 (o) | 0.801 | 0.627 | 0.814 | 1.69 (Fo) | 1.93 (o) | | |
| 4/18/2017 | | | | | | | | 0.768 | |
| 6/19/2017 | <0.5 | | | | | <0.5 | | | |
| 6/20/2017 | | | <0.5 | <0.5 | | | | <0.5 | |
| 6/21/2017 | | <0.5 | | | <0.5 | | <0.5 | | |
| 8/7/2017 | <0.5 | | <0.5 | | | <0.5 | | | |
| 8/8/2017 | | <0.5 | | <0.5 | <0.5 | | <0.5 | <0.5 | |
| 10/16/2017 | <0.5 | | <0.5 | | | <0.5 | | <0.5 | |
| 10/17/2017 | | <0.5 | | <0.5 | <0.5 | | <0.5 | | |
| 3/5/2018 | <0.5 | | | | | | | | |
| 3/6/2018 | | | <0.5 | <0.5 | <0.5 | <0.5 | | <0.5 | <0.5 |
| 3/7/2018 | | <0.5 | | | | | <0.5 | | |
| 6/19/2018 | <0.5 | | | | | 0.826 | | <0.5 | <0.5 |
| 6/20/2018 | | <0.5 | | | | | 0.684 | | |
| 6/21/2018 | | | <0.5 | <0.5 | <0.5 | | | | |
| 8/27/2018 | <0.5 | | | | | <0.5 | | | <0.5 |
| 8/28/2018 | | | <0.5 | | | | | <0.5 | |
| 8/29/2018 | | <0.5 | | <0.5 | <0.5 | | <0.5 | | |
| 3/18/2019 | | | | | | <0.5 | | | |
| 3/19/2019 | <0.5 | | 0.771 | <0.5 | <0.5 | | | | <0.5 |
| 3/20/2019 | | 0.523 | | | | | <0.5 | <0.5 | |
| 8/6/2019 | | | | | | 0.643 | | | 0.507 |
| 8/7/2019 | 0.596 | 0.625 | 0.525 | <0.5 | 0.535 | | <0.5 | <0.5 | |

Exceeds Limits: MW-21

Prediction Limit
Interwell Non-parametric

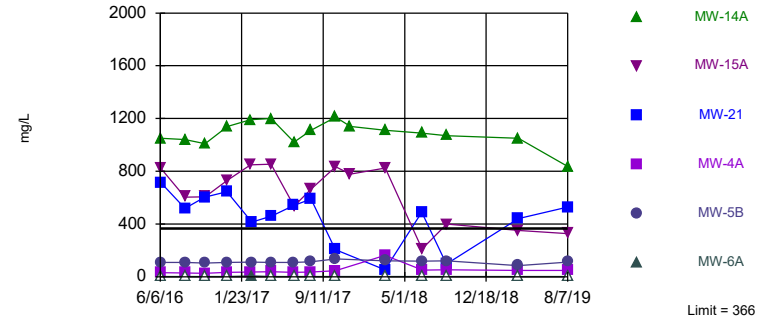


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 33 background values. Annual per-constituent alpha = 0.05111. Individual comparison alpha = 0.003233 (1 of 2). Comparing 6 points to limit. Assumes 2 future values.

Constituent: pH Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Hollow symbols indicate censored values.
Exceeds Limit: MW-14A, MW-21

Prediction Limit
Interwell Non-parametric

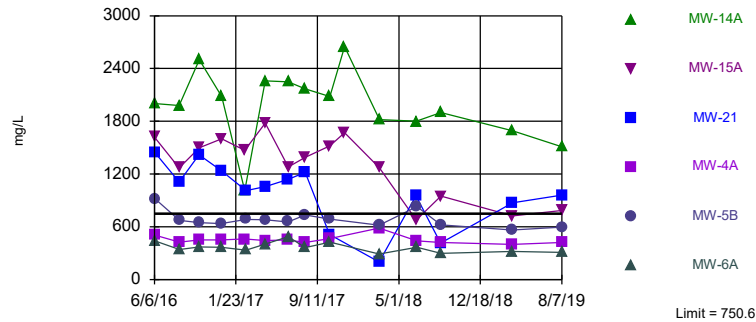


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 33 background values. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 6 points to limit. Assumes 2 future values.

Constituent: Sulfate Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Exceeds Limit: MW-14A, MW-15A, MW-21

Prediction Limit
Interwell Parametric



Background Data Summary: Mean=495.7, Std. Dev.=124.4, n=33. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9264, critical = 0.906. Kappa = 2.05 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0009403. Comparing 6 points to limit. Assumes 2 future values.

Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:35 PM View: Prediction Limit Test
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Prediction Limit

Constituent: pH (SU) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-15A | MW-10 (bg) | MW-08 (bg) | MW-6A | MW-5B | MW-4A | MW-21 | MW-14A | MW-22 (bg) |
|------------|--------|------------|------------|-------|-------|-------|---------|--------|------------|
| 6/6/2016 | 7.3 | 7.4 | | | | | | | |
| 6/7/2016 | | | 7.2 | 7.4 | 7.7 | 7.6 | | | |
| 6/8/2016 | | | | | | | 6.7 | 7.1 | |
| 8/15/2016 | 7.3 | 7.3 | | | | | 6.7 | 7.2 | |
| 8/16/2016 | | | 7.3 | 7.4 | 7.3 | 7.5 | | | |
| 10/10/2016 | | 7.2 | 7.1 | | | | 6.7 | | |
| 10/11/2016 | 7.2 | | | 7.3 | 7.2 | 7.5 | | 7.1 | |
| 12/12/2016 | | | | 7.5 | 7.3 | 7.6 | 7 | | |
| 12/14/2016 | 7.4 | 7.3 | 7.3 | | | | | 7.2 | |
| 2/17/2017 | 7.3 | 7.2 | | | | 7.5 | | 7.3 | |
| 2/21/2017 | | | 7.3 | 7.4 | 7.2 | | 7 | | |
| 4/17/2017 | 7.3 | 7.3 | 7.1 | 7.3 | 7.2 | 7.4 | | 7.3 | |
| 4/18/2017 | | | | | | | 6.9 | | |
| 6/19/2017 | | 7.2 | 7.1 | | | | | | |
| 6/20/2017 | | | | | 7.2 | 7.4 | 6.7 | | |
| 6/21/2017 | 7.3 | | | 7.3 | | | | 7.3 | |
| 8/7/2017 | | 7.9 | 7.3 | | | 7.9 | | | |
| 8/8/2017 | 7.2 | | | 7.3 | 7.2 | | 6.8 | 7.2 | |
| 10/16/2017 | | 7.3 | 7.4 | | | 7.8 | 6.8 | | |
| 10/17/2017 | 7.2 | | | 7.8 | 7.3 | | | 7.6 | |
| 11/28/2017 | | | | | | | 6.9 (R) | | |
| 3/5/2018 | | 7.04 | | | | | | | |
| 3/6/2018 | | | 7.3 | 7.4 | 7.23 | 7.36 | 6.76 | | 7.36 |
| 3/7/2018 | 7.24 | | | | | | | 7.35 | |
| 6/19/2018 | | 7.72 | 7.56 | | | | 7.25 | | 7.9 |
| 6/20/2018 | 7.5 | | | | | | | 7.26 | |
| 6/21/2018 | | | | 7.58 | 7.3 | 7.53 | | | |
| 8/27/2018 | | 7.23 | 7.2 | | | | | | 7.42 |
| 8/28/2018 | | | | | | 7.44 | 7.07 | | |
| 8/29/2018 | 7.25 | | | 7.18 | 7.14 | | | 7.09 | |
| 3/19/2019 | | 7.1 | 7.08 | 7.15 | 7.05 | 7.26 | | | 7.21 |
| 3/20/2019 | 7.76 | | | | | | 6.41 | 6.97 | |
| 8/6/2019 | | | 6.64 | | | | | | 7.12 |
| 8/7/2019 | 7.11 | 7.07 | | 7.12 | 7.02 | 7.22 | 6.33 | 7.09 | |

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-15A | MW-10 (bg) | MW-08 (bg) | MW-6A | MW-5B | MW-4A | MW-21 | MW-14A | MW-22 (bg) |
|------------|---------|------------|------------|-------|-------|-------|-------|----------|------------|
| 6/6/2016 | 827 | 42.1 | | | | | | | |
| 6/7/2016 | | | 366 | <5 | 109 | 32.2 | | | |
| 6/8/2016 | | | | | | | 713 | 1050 | |
| 8/15/2016 | 605 | 33.8 | | | | | 520 | 1040 | |
| 8/16/2016 | | | 187 | <5 | 109 | 28.4 | | | |
| 10/10/2016 | | 36.4 | 187 | | | | 603 | | |
| 10/11/2016 | 607 | | | <5 | 105 | 27.2 | | 1010 | |
| 12/12/2016 | | | | <5 | 109 | 32.7 | 645 | | |
| 12/14/2016 | 732 | 38.4 | 149 | | | | | 1140 | |
| 2/17/2017 | 849 | 47.3 | | | | 36 | | 1190 | |
| 2/21/2017 | | | 145 | 5.94 | 111 | | 415 | | |
| 4/17/2017 | 853 | 38.3 | 145 | <5 | 108 | 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 | | | <5 | 114 | | 590 | 1110 | |
| 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 | 122 | 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 | | | | <5 | 119 | 51.3 | | | |
| 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 | 85 | 48 | | | 134 |
| 3/20/2019 | 351 | | | | | | 442 | 1050 | |
| 8/6/2019 | | | 276 | | | | | | 139 |
| 8/7/2019 | 327 | 28.8 | | <5 | 112 | 47 | 529 | 837 | |

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/31/2019 11:36 PM View: Prediction Limit Test

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-15A | MW-10 (bg) | MW-08 (bg) | MW-6A | MW-5B | MW-4A | MW-21 | MW-14A | MW-22 (bg) |
|------------|----------|------------|------------|-------|-------|-------|-------|----------|------------|
| 6/6/2016 | 1620 | 468 | | | | | | | |
| 6/7/2016 | | | 836 | 440 | 920 | 507 | | | |
| 6/8/2016 | | | | | | | 1440 | 2000 | |
| 8/15/2016 | 1270 | 412 | | | | | 1110 | 1980 | |
| 8/16/2016 | | | 664 | 340 | 672 | 426 | | | |
| 10/10/2016 | | 444 | 708 | | | | 1420 | | |
| 10/11/2016 | 1500 | | | 370 | 646 | 450 | | 2500 | |
| 12/12/2016 | | | | 368 | 636 | 450 | 1240 | | |
| 12/14/2016 | 1600 | 428 | 634 | | | | | 2080 | |
| 2/17/2017 | 1470 | 498 | | | | 460 | | 1010 | |
| 2/21/2017 | | | 578 | 336 | 684 | | 1010 | | |
| 4/17/2017 | 1780 | 538 | 624 | 402 | 680 | 442 | | 2260 | |
| 4/18/2017 | | | | | | | 1060 | | |
| 6/19/2017 | | 524 | 656 | | | | | | |
| 6/20/2017 | | | | | 656 | 452 | 1140 | | |
| 6/21/2017 | 1280 | | | 486 | | | | 2250 | |
| 8/7/2017 | | 458 | 488 | | | 420 | | | |
| 8/8/2017 | 1390 | | | 364 | 734 | | 1220 | 2170 | |
| 10/16/2017 | | 414 | 470 | | | 466 | 514 | | |
| 10/17/2017 | 1520 | | | 424 | 688 | | | 2080 | |
| 11/28/2017 | 1670 (R) | | | | | | | 2650 (R) | |
| 3/5/2018 | | 314 | | | | | | | |
| 3/6/2018 | | | 376 | 292 | 620 | 586 | 200 | | 424 |
| 3/7/2018 | 1270 | | | | | | | 1820 | |
| 6/19/2018 | | 396 | 502 | | | | 952 | | 434 |
| 6/20/2018 | 676 | | | | | | | 1800 | |
| 6/21/2018 | | | | 368 | 828 | 440 | | | |
| 8/27/2018 | | 392 | 414 | | | | | | 420 |
| 8/28/2018 | | | | | | 420 | 416 | | |
| 8/29/2018 | 948 | | | 298 | 622 | | | 1900 | |
| 3/18/2019 | | | 612 | | | | | | |
| 3/19/2019 | | 326 | | 320 | 562 | 398 | | | 456 |
| 3/20/2019 | 724 | | | | | | 872 | 1690 | |
| 8/6/2019 | | | 702 | | | | | | 428 |
| 8/7/2019 | 786 | 320 | | 308 | 596 | 422 | 960 | 1510 | |

Trend Tests

Trend Test Summary Table- Significant Results

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 11:55 PM

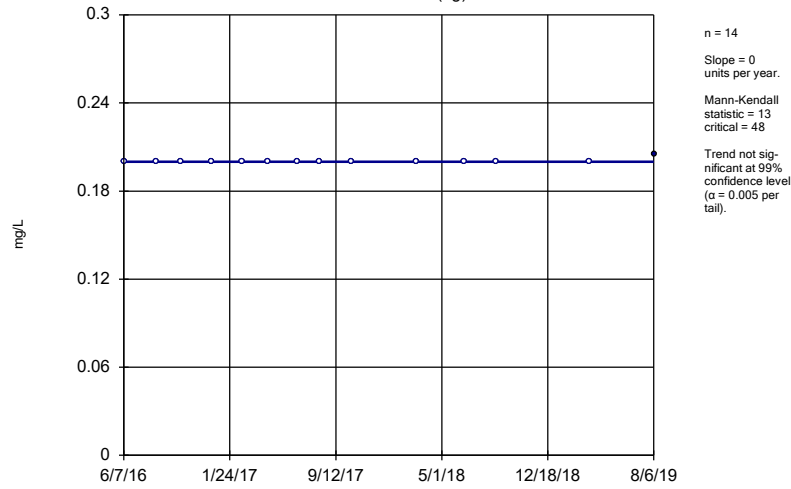
| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|-------------------------------|--------|--------|-------|----------|------|----|------|-----------|-------|-------|--------|
| Boron (mg/L) | MW-15A | -3.573 | -70 | -53 | Yes | 15 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-21 | -192.1 | -49 | -48 | Yes | 14 | 0 | n/a | n/a | 0.01 | NP |

Trend Test Summary Table- All Results

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 10/31/2019, 11:55 PM

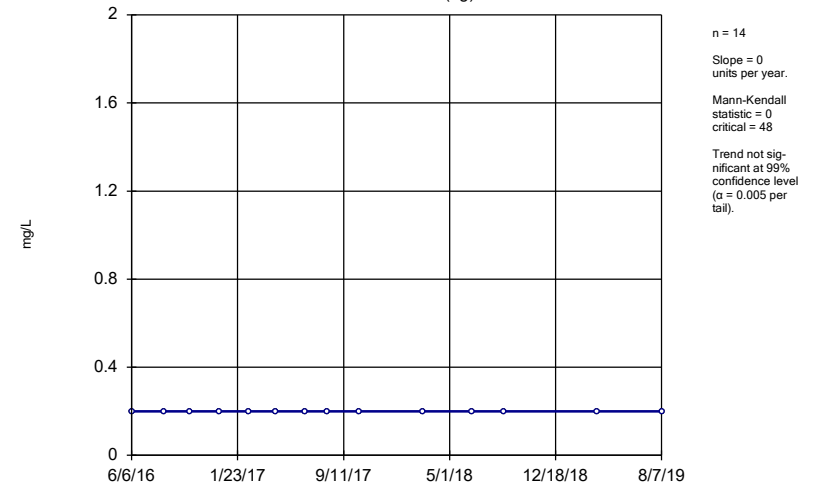
| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|--------------------------------------|---------------|---------------|------------|------------|------------|-----------|----------|------------|------------|-------------|-----------|
| Boron (mg/L) | MW-08 (bg) | 0 | 13 | 48 | No | 14 | 92.86 | n/a | n/a | 0.01 | NP |
| Boron (mg/L) | MW-10 (bg) | 0 | 0 | 48 | No | 14 | 100 | n/a | n/a | 0.01 | NP |
| Boron (mg/L) | MW-14A | -0.3935 | -11 | -53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| Boron (mg/L) | MW-15A | -3.573 | -70 | -53 | Yes | 15 | 0 | n/a | n/a | 0.01 | NP |
| Boron (mg/L) | MW-21 | -0.2346 | -11 | -53 | No | 15 | 6.667 | n/a | n/a | 0.01 | NP |
| Boron (mg/L) | MW-22 (bg) | 0 | 2 | 12 | No | 5 | 80 | n/a | n/a | 0.01 | NP |
| Calcium (mg/L) | MW-08 (bg) | -9.474 | -25 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Calcium (mg/L) | MW-10 (bg) | -1.558 | -22 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Calcium (mg/L) | MW-14A | -7.766 | -32 | -53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| Calcium (mg/L) | MW-22 (bg) | 6.577 | 4 | 12 | No | 5 | 0 | n/a | n/a | 0.01 | NP |
| Chloride (mg/L) | MW-08 (bg) | -0.769 | -22 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Chloride (mg/L) | MW-10 (bg) | 0 | -13 | -48 | No | 14 | 92.86 | n/a | n/a | 0.01 | NP |
| Chloride (mg/L) | MW-22 (bg) | -2.005 | -6 | -12 | No | 5 | 0 | n/a | n/a | 0.01 | NP |
| Chloride (mg/L) | MW-5B | -0.4874 | -2 | -53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| pH (SU) | MW-08 (bg) | 0 | -9 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| pH (SU) | MW-10 (bg) | -0.06091 | -26 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| pH (SU) | MW-21 | 0 | 2 | 53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| pH (SU) | MW-22 (bg) | -0.2765 | -6 | -12 | No | 5 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate (mg/L) | MW-08 (bg) | -33.26 | -25 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate (mg/L) | MW-10 (bg) | -0.6058 | -3 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate (mg/L) | MW-14A | -33 | -12 | -53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate (mg/L) | MW-21 | -89.49 | -35 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate (mg/L) | MW-22 (bg) | 10.95 | 7 | 12 | No | 5 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-08 (bg) | -104 | -39 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-10 (bg) | -46.69 | -43 | -48 | No | 14 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-14A | -172.3 | -34 | -53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-15A | -277.1 | -46 | -53 | No | 15 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-21 | -192.1 | -49 | -48 | Yes | 14 | 0 | n/a | n/a | 0.01 | NP |
| Total Dissolved Solids (mg/L) | MW-22 (bg) | 5.653 | 2 | 12 | No | 5 | 0 | n/a | n/a | 0.01 | NP |

Sen's Slope Estimator MW-08 (bg)



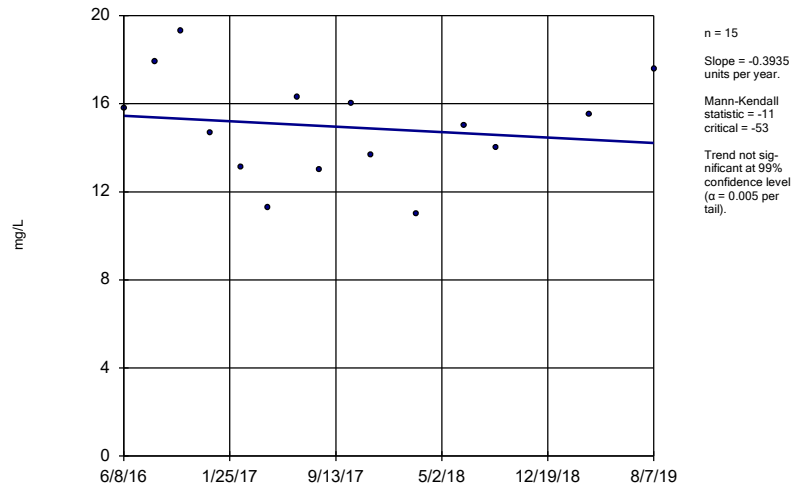
Constituent: Boron Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator MW-10 (bg)



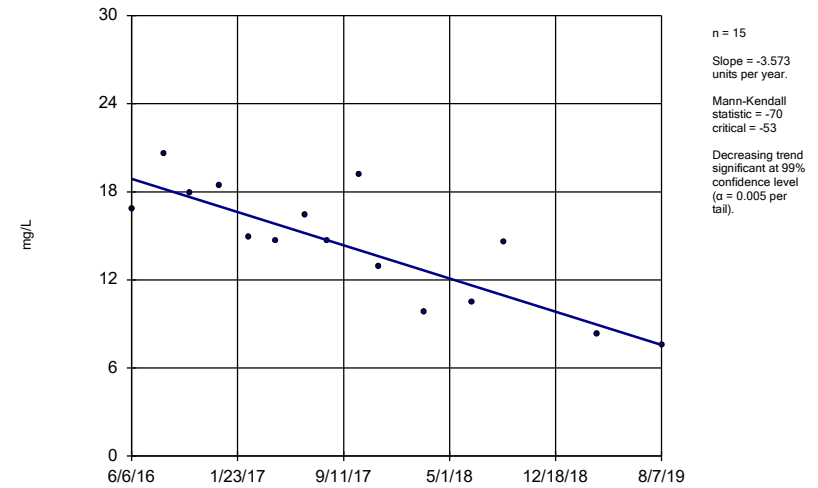
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator MW-14A



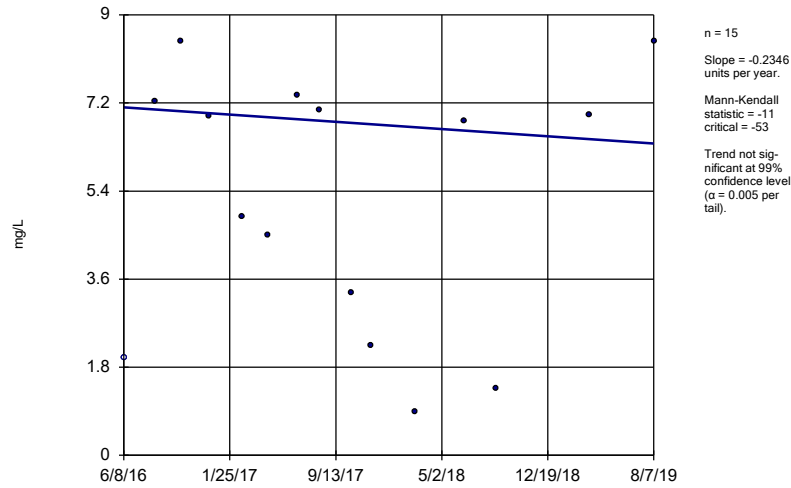
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator MW-15A



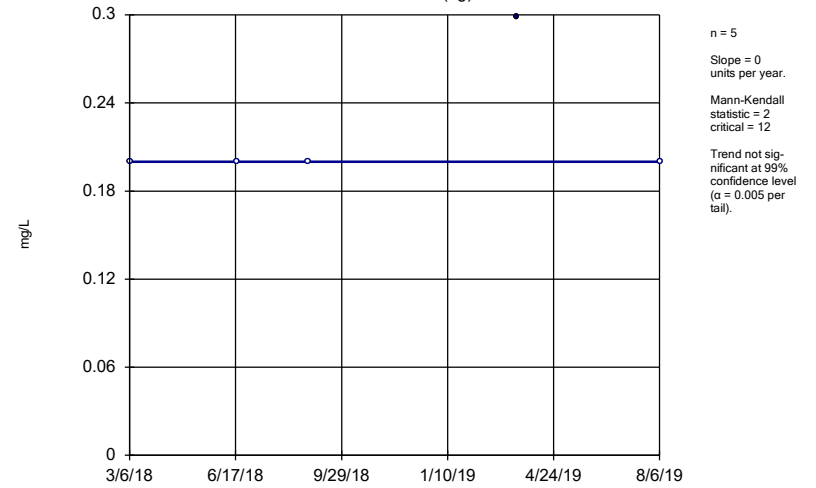
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-21



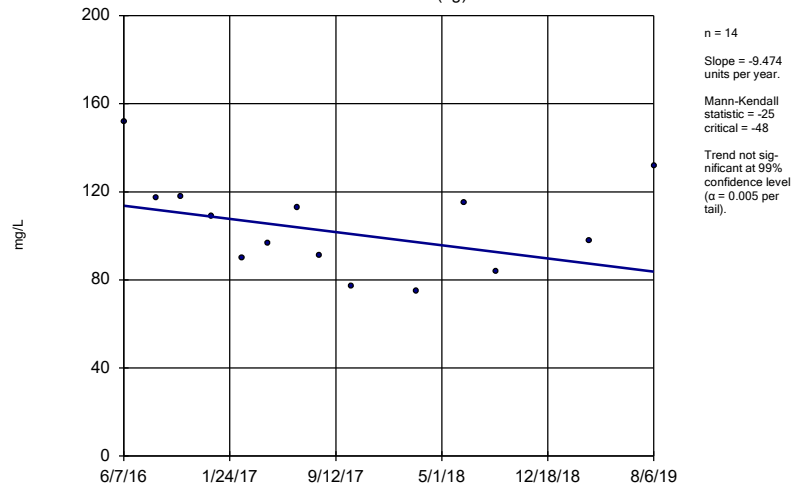
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-22 (bg)



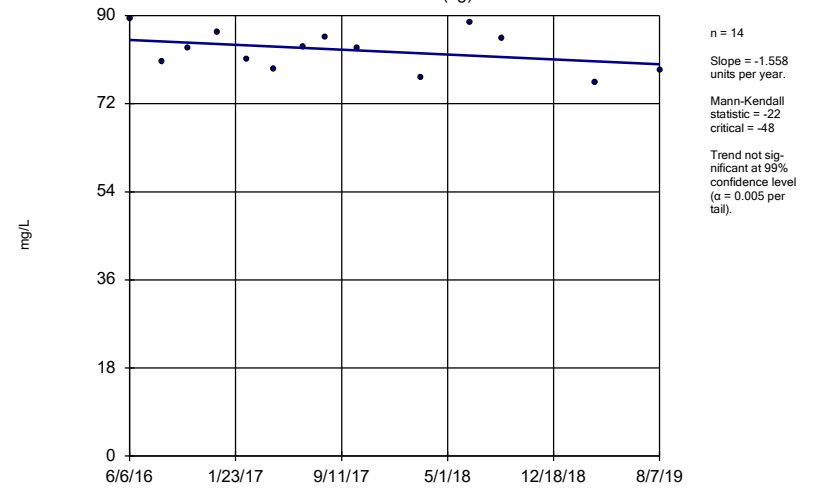
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-08 (bg)



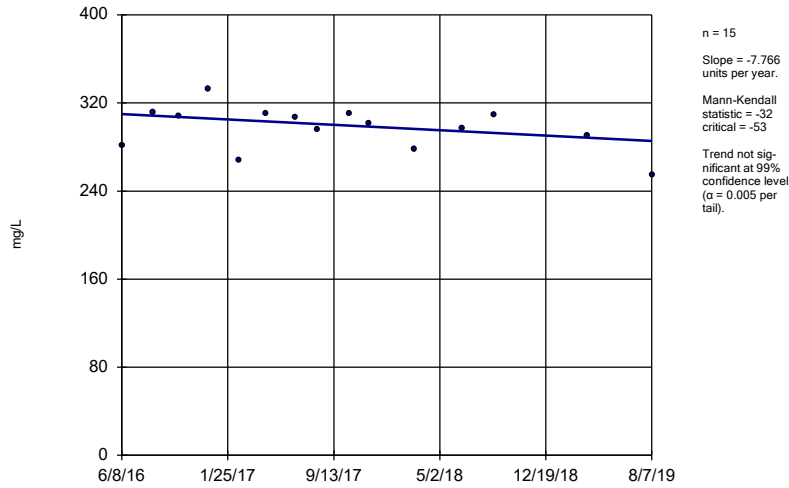
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-10 (bg)



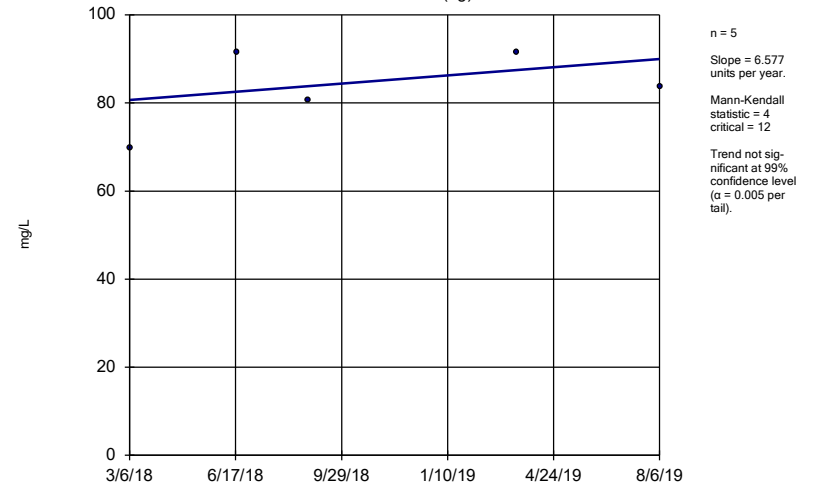
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator MW-14A



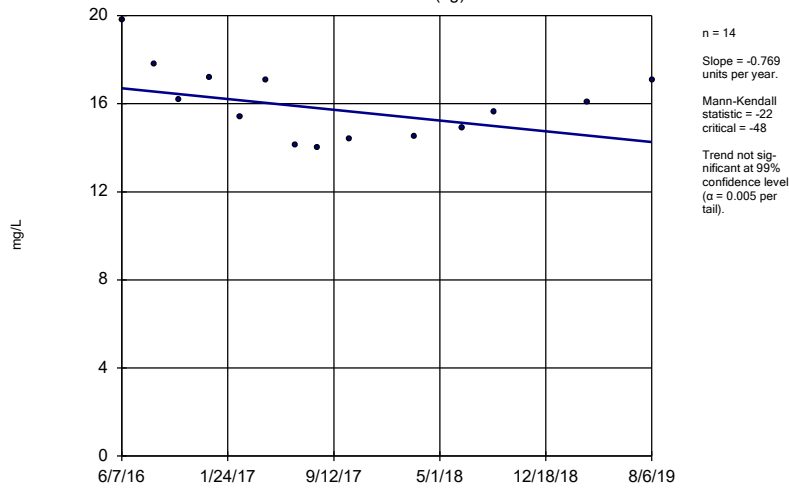
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator MW-22 (bg)



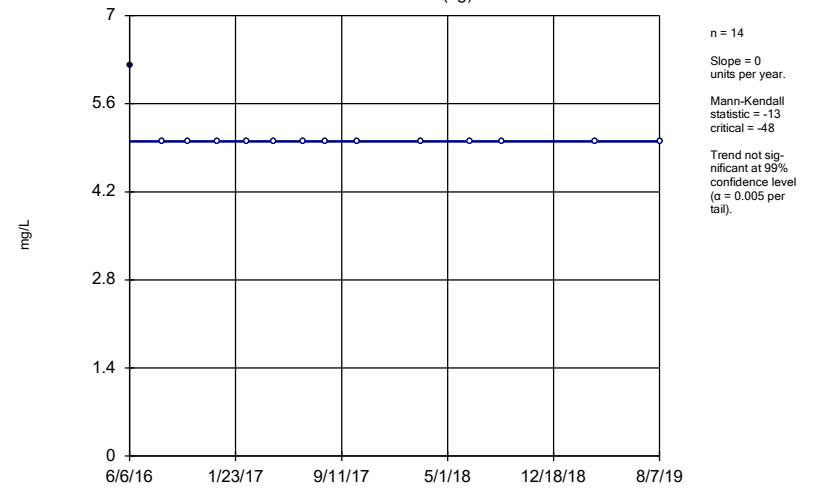
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Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator MW-08 (bg)



Constituent: Chloride Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

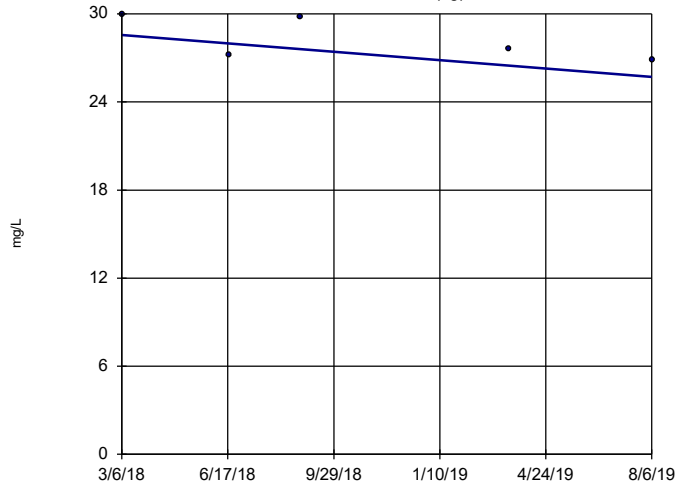
Sen's Slope Estimator MW-10 (bg)



Constituent: Chloride Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-22 (bg)

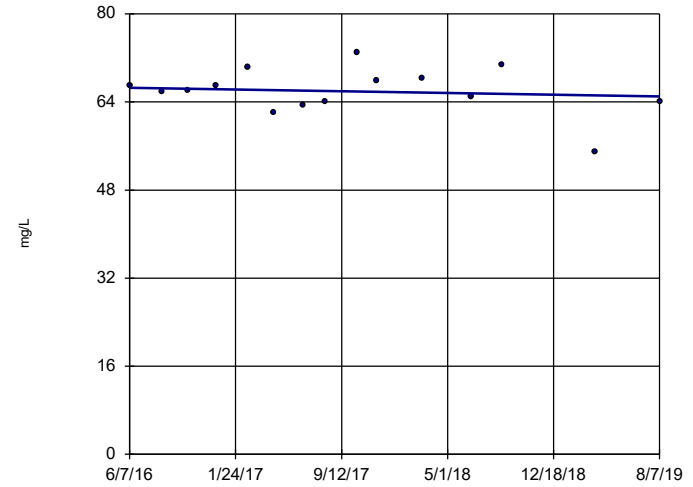


n = 5
 Slope = -2.005 units per year.
 Mann-Kendall statistic = -6
 critical = -12
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-5B

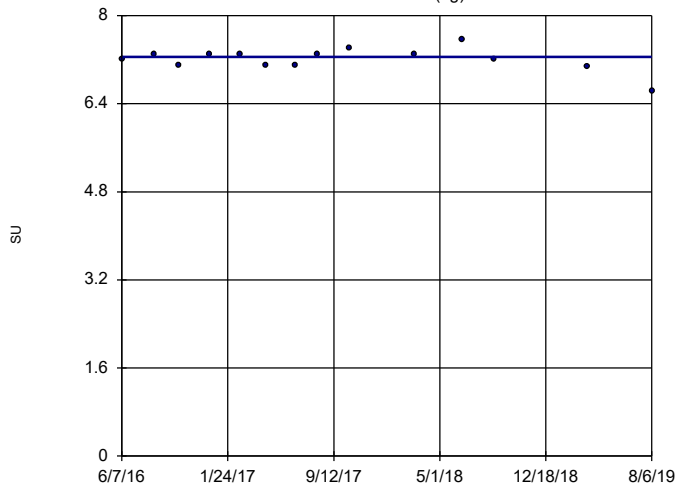


n = 15
 Slope = -0.4874 units per year.
 Mann-Kendall statistic = -2
 critical = -53
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-08 (bg)

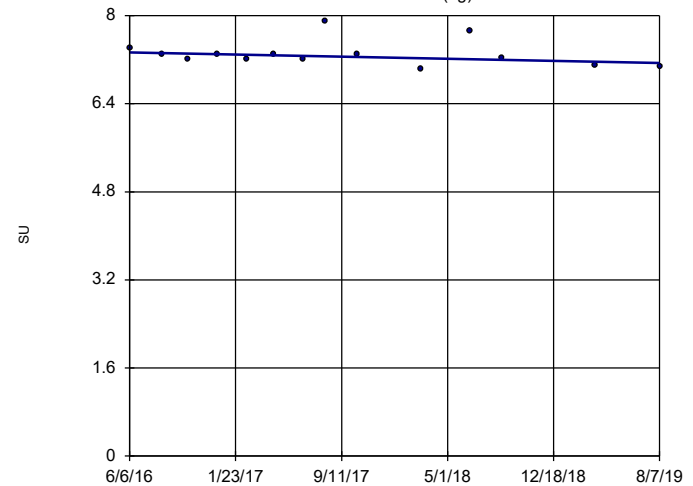


n = 14
 Slope = 0 units per year.
 Mann-Kendall statistic = -9
 critical = -48
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-10 (bg)

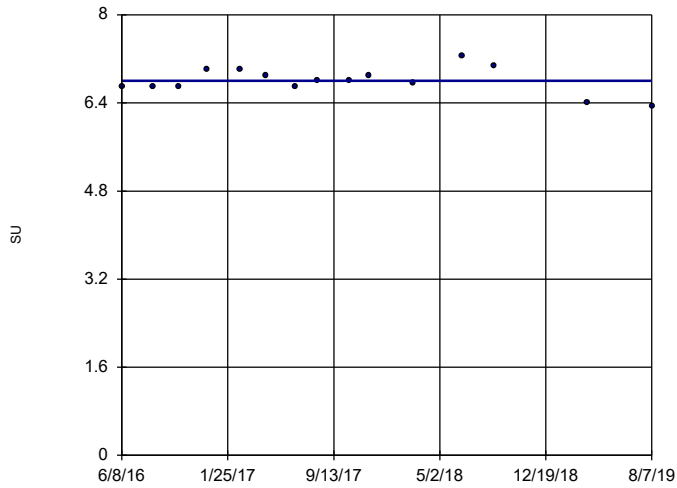


n = 14
 Slope = -0.06091 units per year.
 Mann-Kendall statistic = -26
 critical = -48
 Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-21

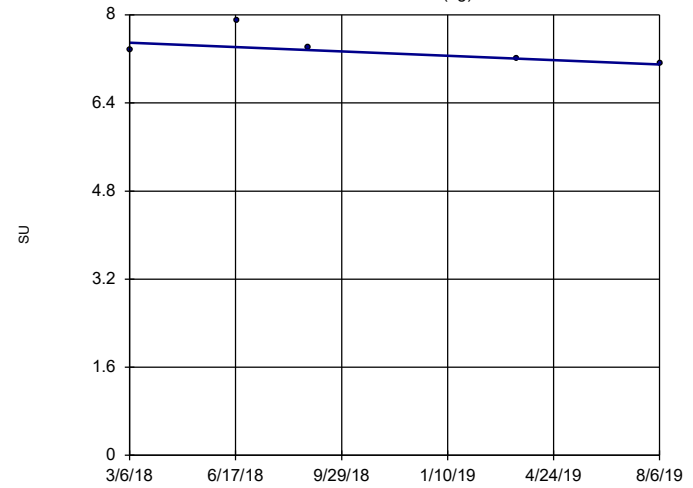


n = 15
 Slope = 0
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 53
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: pH Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-22 (bg)

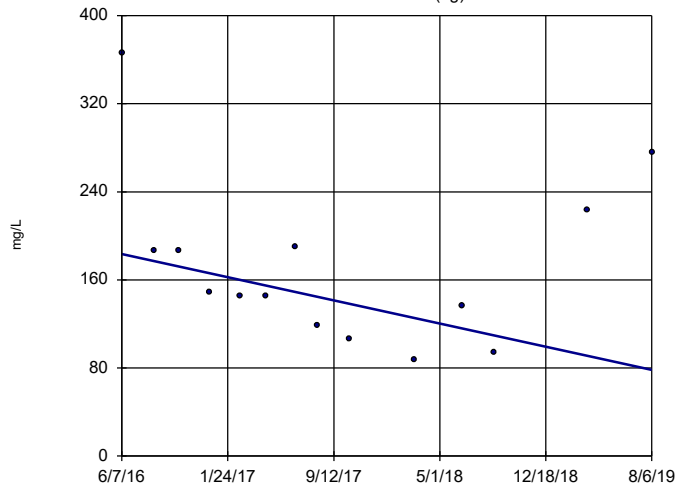


n = 5
 Slope = -0.2765
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -12
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: pH Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-08 (bg)

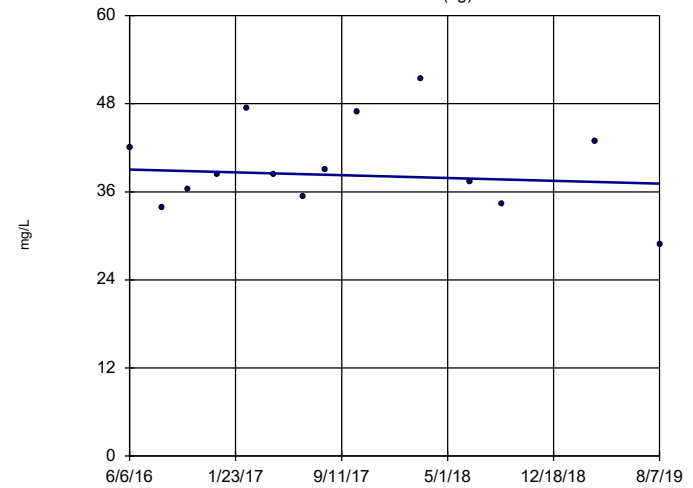


n = 14
 Slope = -33.26
 units per year.
 Mann-Kendall
 statistic = -25
 critical = -48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Sulfate Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

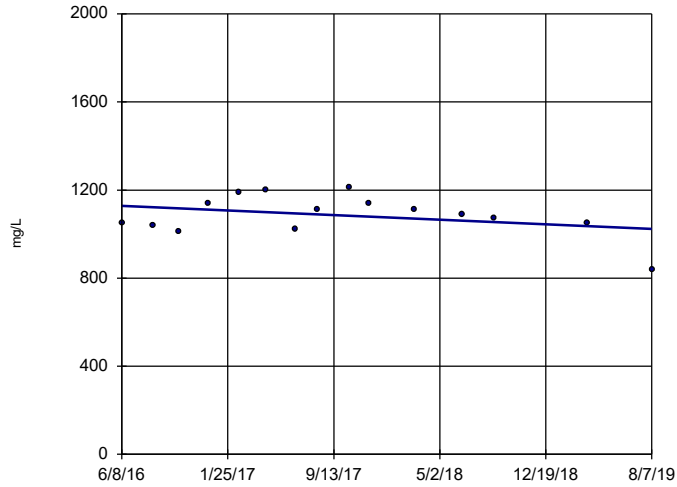
MW-10 (bg)



n = 14
 Slope = -0.6058
 units per year.
 Mann-Kendall
 statistic = -3
 critical = -48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Sulfate Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

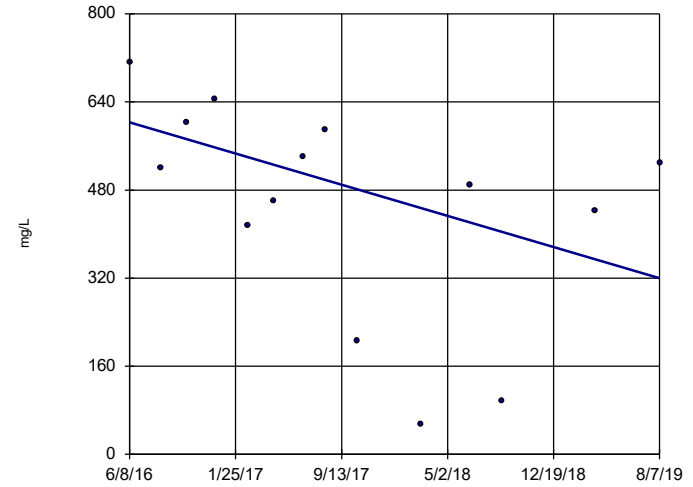
Sen's Slope Estimator
MW-14A



n = 15
 Slope = -33
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -53
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Sulfate Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

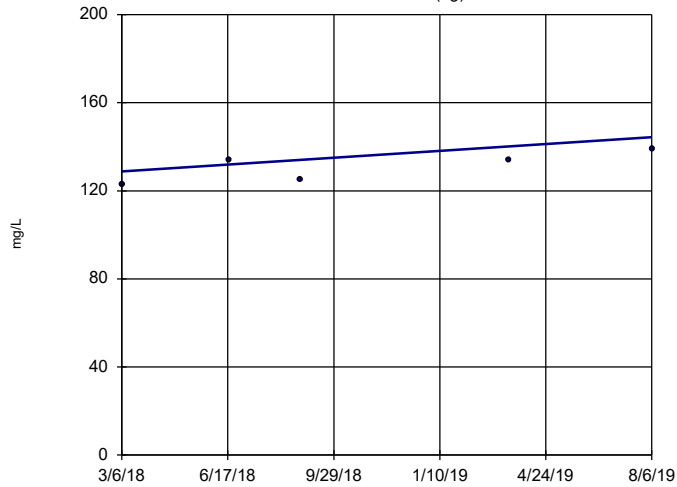
Sen's Slope Estimator
MW-21



n = 14
 Slope = -89.49
 units per year.
 Mann-Kendall
 statistic = -35
 critical = -48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Sulfate Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

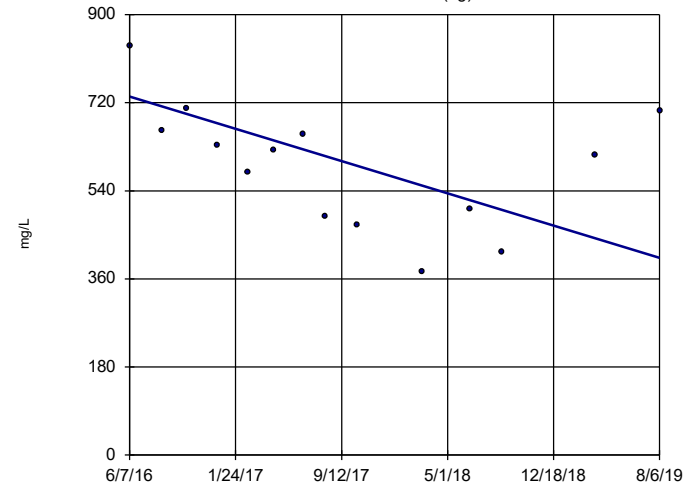
Sen's Slope Estimator
MW-22 (bg)



n = 5
 Slope = 10.95
 units per year.
 Mann-Kendall
 statistic = 7
 critical = 12
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Sulfate Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

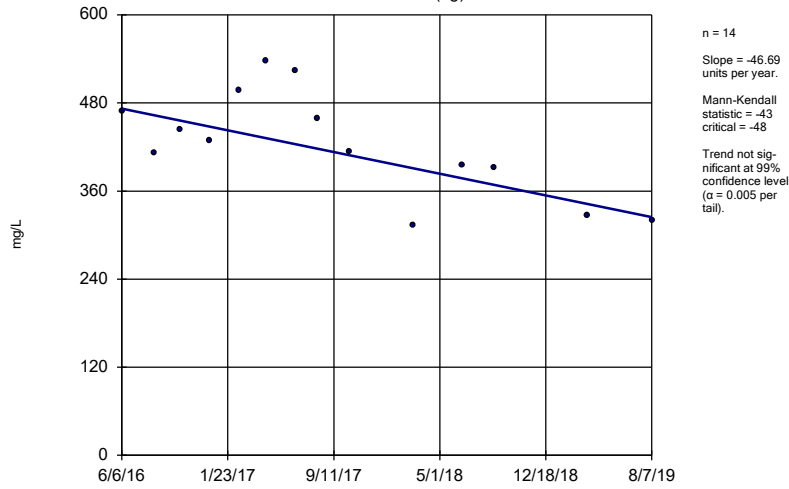
Sen's Slope Estimator
MW-08 (bg)



n = 14
 Slope = -104
 units per year.
 Mann-Kendall
 statistic = -39
 critical = -48
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

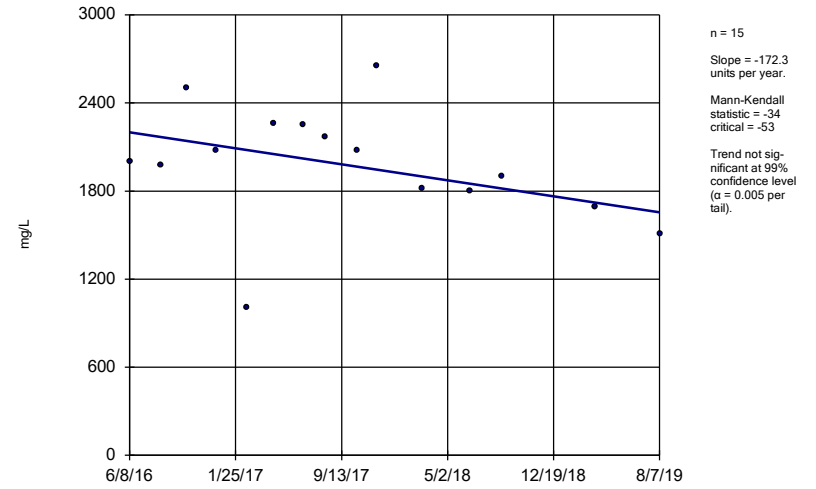
Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:53 PM View: Trend Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-10 (bg)



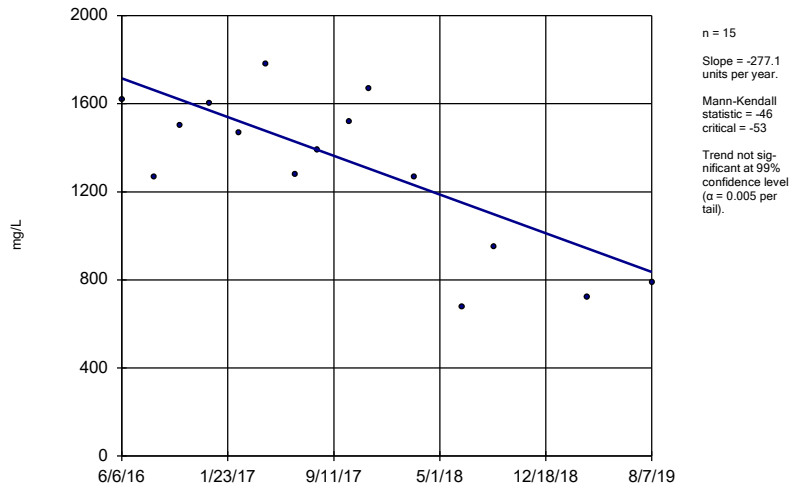
Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-14A



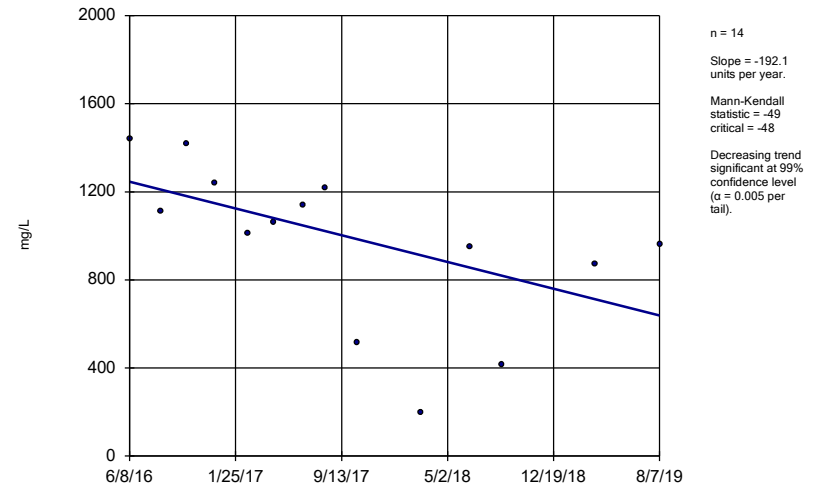
Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator
MW-15A



Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

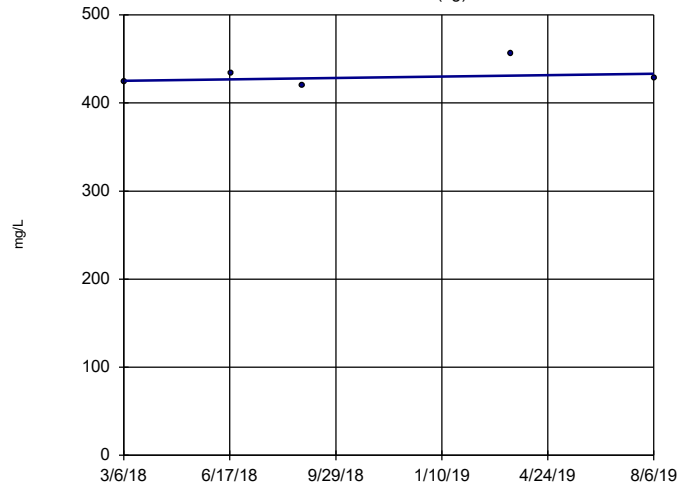
Sen's Slope Estimator
MW-21



Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Sen's Slope Estimator

MW-22 (bg)



n = 5

Slope = 5.653
units per year.

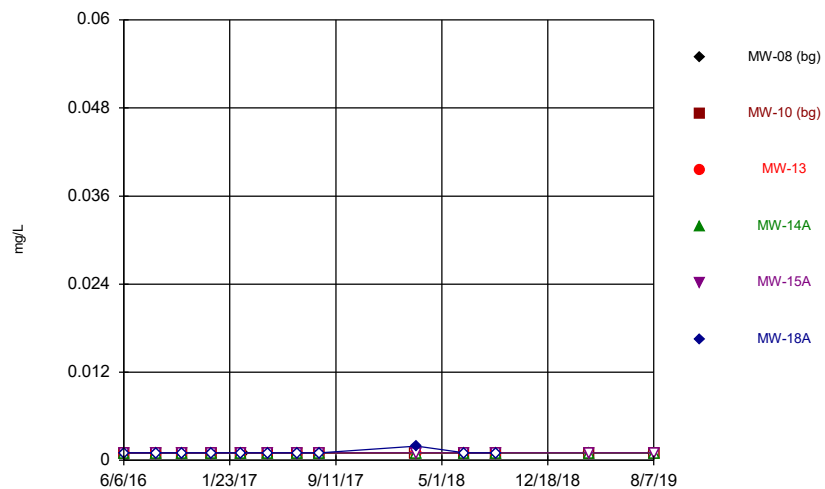
Mann-Kendall
statistic = 2
critical = 12

Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 10/31/2019 11:53 PM View: Trend Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

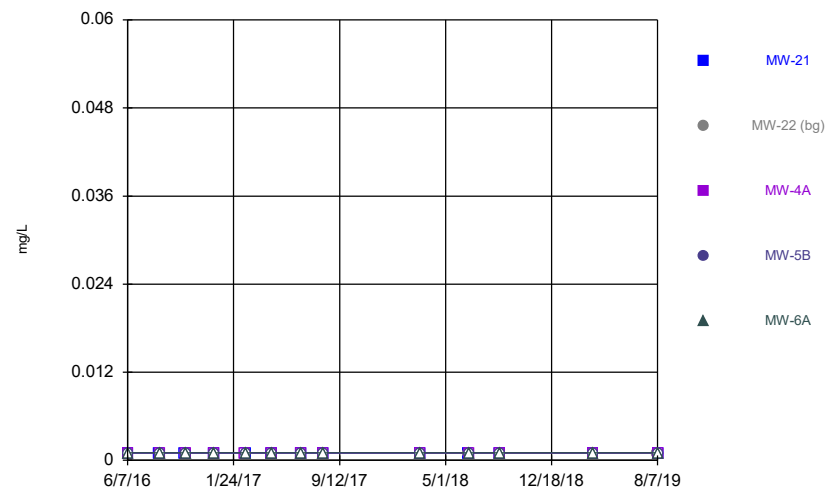
Time Series

Time Series



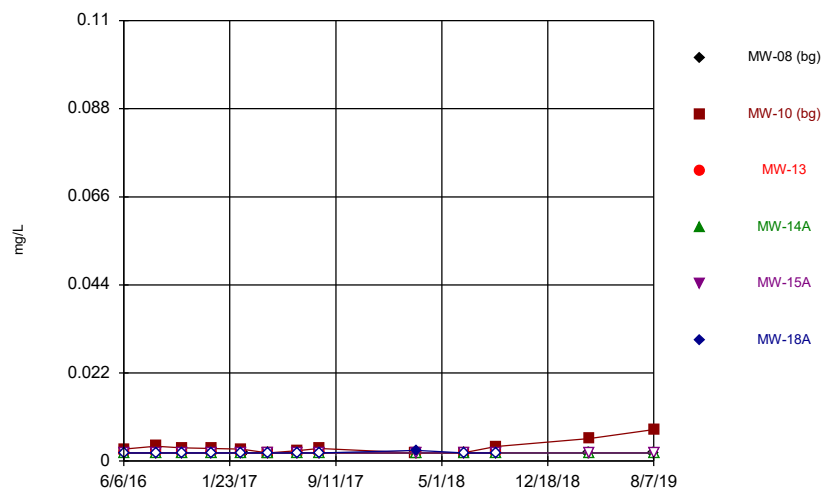
Constituent: Antimony Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



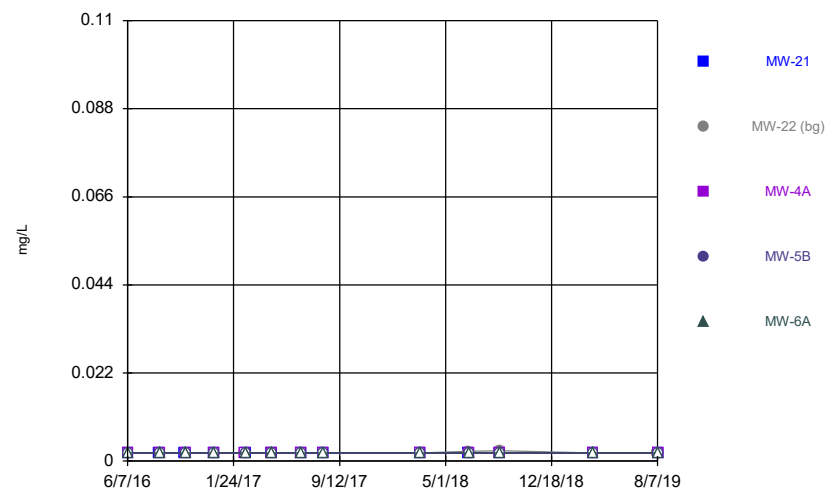
Constituent: Antimony Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Arsenic Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Arsenic Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Antimony (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|--------|--------|--------|---------|
| 6/6/2016 | | <0.001 | | | <0.001 | <0.001 |
| 6/7/2016 | <0.001 | | | | | |
| 6/8/2016 | | | <0.001 | <0.001 | | |
| 8/15/2016 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 8/16/2016 | <0.001 | | | | | |
| 10/10/2016 | <0.001 | <0.001 | <0.001 | | | |
| 10/11/2016 | | | | <0.001 | <0.001 | <0.001 |
| 12/14/2016 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 2/17/2017 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 2/21/2017 | <0.001 | | | | | |
| 4/17/2017 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | |
| 4/18/2017 | | | | | | <0.001 |
| 6/19/2017 | <0.001 | <0.001 | | | | |
| 6/20/2017 | | | <0.001 | | | |
| 6/21/2017 | | | | <0.001 | <0.001 | <0.001 |
| 8/7/2017 | <0.001 | <0.001 | | | | |
| 8/8/2017 | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 3/5/2018 | | <0.001 | | | | |
| 3/6/2018 | <0.001 | | <0.001 | | | |
| 3/7/2018 | | | | <0.001 | <0.001 | 0.00195 |
| 6/19/2018 | <0.001 | <0.001 | | | | |
| 6/20/2018 | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 8/27/2018 | <0.001 | <0.001 | | | | |
| 8/28/2018 | | | <0.001 | | | |
| 8/29/2018 | | | | <0.001 | <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 | |

Time Series

Constituent: Antimony (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|--------|------------|--------|--------|--------|
| 6/7/2016 | | | <0.001 | <0.001 | <0.001 |
| 6/8/2016 | <0.001 | | | | |
| 8/15/2016 | <0.001 | | | | |
| 8/16/2016 | | | <0.001 | <0.001 | <0.001 |
| 10/10/2016 | <0.001 | | | | |
| 10/11/2016 | | | <0.001 | <0.001 | <0.001 |
| 12/12/2016 | <0.001 | | <0.001 | <0.001 | <0.001 |
| 2/17/2017 | | | <0.001 | | |
| 2/21/2017 | <0.001 | | | <0.001 | <0.001 |
| 4/17/2017 | | | <0.001 | <0.001 | <0.001 |
| 4/18/2017 | <0.001 | | | | |
| 6/20/2017 | <0.001 | | <0.001 | <0.001 | |
| 6/21/2017 | | | | | <0.001 |
| 8/7/2017 | | | <0.001 | | |
| 8/8/2017 | <0.001 | | | <0.001 | <0.001 |
| 3/6/2018 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 6/19/2018 | <0.001 | <0.001 | | | |
| 6/21/2018 | | | <0.001 | <0.001 | <0.001 |
| 8/27/2018 | | <0.001 | | | |
| 8/28/2018 | <0.001 | | <0.001 | | |
| 8/29/2018 | | | | <0.001 | <0.001 |
| 3/19/2019 | | <0.001 | <0.001 | <0.001 | <0.001 |
| 3/20/2019 | <0.001 | | | | |
| 8/6/2019 | | <0.001 | | | |
| 8/7/2019 | <0.001 | | <0.001 | <0.001 | <0.001 |

Time Series

Constituent: Arsenic (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

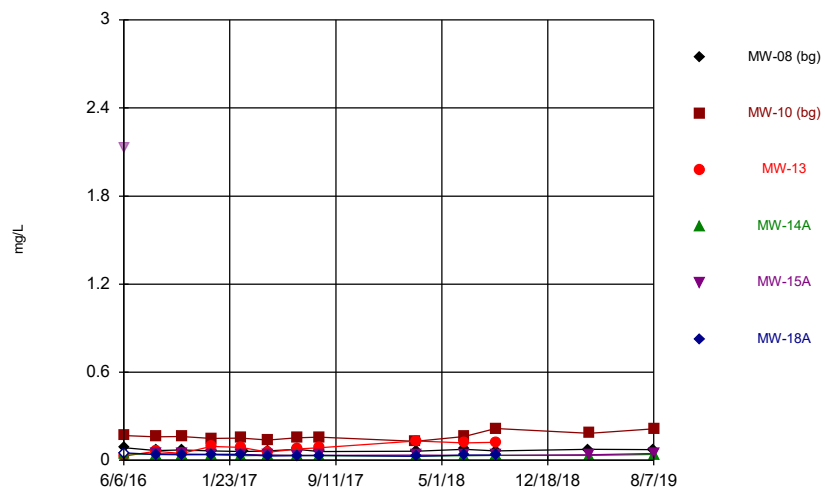
| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|--------|--------|--------|---------|
| 6/6/2016 | | 0.00298 | | | <0.002 | <0.002 |
| 6/7/2016 | <0.002 | | | | | |
| 6/8/2016 | | | <0.002 | <0.002 | | |
| 8/15/2016 | | 0.00369 | <0.002 | <0.002 | <0.002 | <0.002 |
| 8/16/2016 | <0.002 | | | | | |
| 10/10/2016 | <0.002 | 0.00328 | <0.002 | | | |
| 10/11/2016 | | | | <0.002 | <0.002 | <0.002 |
| 12/14/2016 | <0.002 | 0.00312 | <0.002 | <0.002 | <0.002 | <0.002 |
| 2/17/2017 | | 0.00298 | <0.002 | <0.002 | <0.002 | <0.002 |
| 2/21/2017 | <0.002 | | | | | |
| 4/17/2017 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | |
| 4/18/2017 | | | | | | <0.002 |
| 6/19/2017 | <0.002 | 0.00262 | | | | |
| 6/20/2017 | | | <0.002 | | | |
| 6/21/2017 | | | | <0.002 | <0.002 | <0.002 |
| 8/7/2017 | <0.002 | 0.00317 | | | | |
| 8/8/2017 | | | <0.002 | <0.002 | <0.002 | <0.002 |
| 3/5/2018 | | <0.002 | | | | |
| 3/6/2018 | <0.002 | | <0.002 | | | |
| 3/7/2018 | | | | <0.002 | <0.002 | 0.00265 |
| 6/19/2018 | <0.002 | 0.00211 | | | | |
| 6/20/2018 | | | <0.002 | <0.002 | <0.002 | <0.002 |
| 8/27/2018 | <0.002 | 0.0036 | | | | |
| 8/28/2018 | | | <0.002 | | | |
| 8/29/2018 | | | | <0.002 | <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 | |

Time Series

Constituent: Arsenic (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

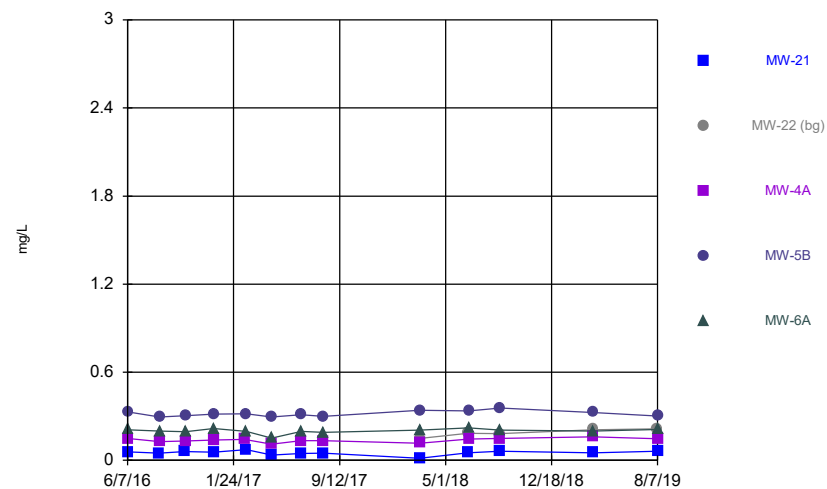
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|--------|------------|--------|--------|--------|
| 6/7/2016 | | | <0.002 | <0.002 | <0.002 |
| 6/8/2016 | <0.002 | | | | |
| 8/15/2016 | <0.002 | | | | |
| 8/16/2016 | | | <0.002 | <0.002 | <0.002 |
| 10/10/2016 | <0.002 | | | | |
| 10/11/2016 | | | <0.002 | <0.002 | <0.002 |
| 12/12/2016 | <0.002 | | <0.002 | <0.002 | <0.002 |
| 2/17/2017 | | | <0.002 | | |
| 2/21/2017 | <0.002 | | | <0.002 | <0.002 |
| 4/17/2017 | | | <0.002 | <0.002 | <0.002 |
| 4/18/2017 | <0.002 | | | | |
| 6/20/2017 | <0.002 | | <0.002 | <0.002 | |
| 6/21/2017 | | | | | <0.002 |
| 8/7/2017 | | | <0.002 | | |
| 8/8/2017 | <0.002 | | | <0.002 | <0.002 |
| 3/6/2018 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 6/19/2018 | <0.002 | 0.00245 | | | |
| 6/21/2018 | | | <0.002 | <0.002 | <0.002 |
| 8/27/2018 | | 0.00261 | | | |
| 8/28/2018 | <0.002 | | <0.002 | | |
| 8/29/2018 | | | | <0.002 | <0.002 |
| 3/19/2019 | | <0.002 | <0.002 | <0.002 | <0.002 |
| 3/20/2019 | <0.002 | | | | |
| 8/6/2019 | | <0.002 | | | |
| 8/7/2019 | <0.002 | | <0.002 | <0.002 | <0.002 |

Time Series



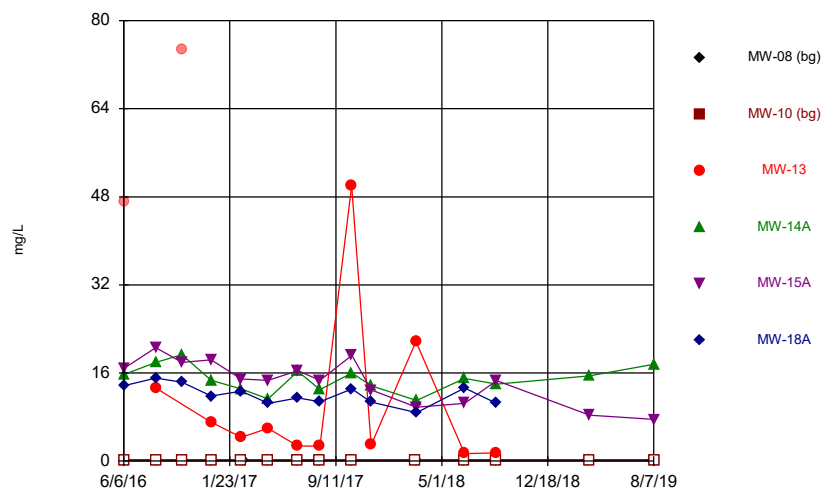
Constituent: Barium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



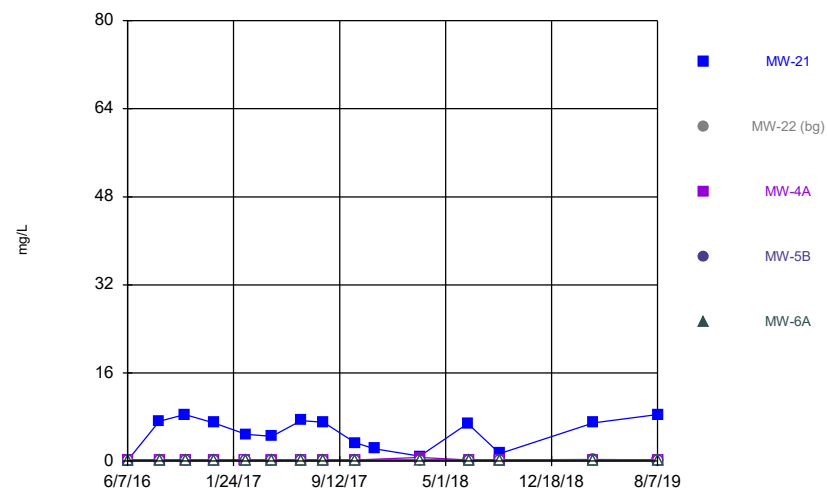
Constituent: Barium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Boron Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Boron Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Barium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|-------------|------------|--------|--------|----------|--------|
| 6/6/2016 | | 0.168 | | | 2.13 (o) | <0.1 |
| 6/7/2016 | 0.0861 | | | | | |
| 6/8/2016 | | | 0.0302 | 0.0443 | | |
| 8/15/2016 | | 0.161 | 0.0616 | 0.0402 | 0.044 | 0.0391 |
| 8/16/2016 | 0.0671 | | | | | |
| 10/10/2016 | 0.0706 | 0.163 | 0.0477 | | | |
| 10/11/2016 | | | | 0.0391 | 0.0426 | 0.0381 |
| 12/14/2016 | 0.0645 | 0.15 | 0.0945 | 0.0383 | 0.0406 | 0.0394 |
| 2/17/2017 | | 0.151 | 0.0872 | 0.0306 | 0.0402 | 0.0403 |
| 2/21/2017 | 0.0594 (F1) | | | | | |
| 4/17/2017 | 0.0636 | 0.138 | 0.0559 | 0.0341 | 0.0364 | |
| 4/18/2017 | | | | | | 0.0297 |
| 6/19/2017 | 0.076 | 0.154 | | | | |
| 6/20/2017 | | | 0.0783 | | | |
| 6/21/2017 | | | | 0.0338 | 0.0327 | 0.0313 |
| 8/7/2017 | 0.0596 | 0.157 | | | | |
| 8/8/2017 | | | 0.0857 | 0.031 | 0.0338 | 0.0329 |
| 3/5/2018 | | 0.129 | | | | |
| 3/6/2018 | 0.0617 | | 0.132 | | | |
| 3/7/2018 | | | | 0.0285 | 0.0352 | 0.0281 |
| 6/19/2018 | 0.0761 | 0.162 | | | | |
| 6/20/2018 | | | 0.118 | 0.0314 | 0.0338 | 0.0352 |
| 8/27/2018 | 0.0649 | 0.216 | | | | |
| 8/28/2018 | | | 0.122 | | | |
| 8/29/2018 | | | | 0.0344 | 0.0335 | 0.036 |
| 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 | |

Time Series

Constituent: Barium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|--------|------------|-------|-------|-------|
| 6/7/2016 | | | 0.15 | 0.331 | 0.209 |
| 6/8/2016 | 0.0573 | | | | |
| 8/15/2016 | 0.0482 | | | | |
| 8/16/2016 | | | 0.128 | 0.295 | 0.199 |
| 10/10/2016 | 0.0606 | | | | |
| 10/11/2016 | | | 0.131 | 0.304 | 0.196 |
| 12/12/2016 | 0.056 | | 0.139 | 0.315 | 0.216 |
| 2/17/2017 | | | 0.143 | | |
| 2/21/2017 | 0.0735 | | | 0.316 | 0.197 |
| 4/17/2017 | | | 0.111 | 0.296 | 0.152 |
| 4/18/2017 | 0.0356 | | | | |
| 6/20/2017 | 0.0461 | | 0.133 | 0.31 | |
| 6/21/2017 | | | | | 0.197 |
| 8/7/2017 | | | 0.133 | | |
| 8/8/2017 | 0.0499 | | | 0.3 | 0.19 |
| 3/6/2018 | 0.0148 | 0.15 | 0.117 | 0.341 | 0.206 |
| 6/19/2018 | 0.0515 | 0.184 | | | |
| 6/21/2018 | | | 0.144 | 0.336 | 0.222 |
| 8/27/2018 | | 0.181 | | | |
| 8/28/2018 | 0.0622 | | 0.149 | | |
| 8/29/2018 | | | | 0.357 | 0.206 |
| 3/19/2019 | | 0.209 | 0.161 | 0.326 | 0.2 |
| 3/20/2019 | 0.0511 | | | | |
| 8/6/2019 | | 0.215 | | | |
| 8/7/2019 | 0.0624 | | 0.147 | 0.301 | 0.211 |

Time Series

Constituent: Boron (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|----------|----------|----------|----------|
| 6/6/2016 | | <0.2 | | | 16.8 | 13.7 |
| 6/7/2016 | <0.2 | | | | | |
| 6/8/2016 | | | 47.2 (o) | 15.8 | | |
| 8/15/2016 | | <0.2 | 13.3 | 17.9 | 20.6 | 15.1 |
| 8/16/2016 | <0.2 | | | | | |
| 10/10/2016 | <0.2 | <0.2 | 74.8 (o) | | | |
| 10/11/2016 | | | | 19.3 | 17.9 | 14.3 |
| 12/14/2016 | <0.2 | <0.2 | 7.03 | 14.7 | 18.4 | 11.8 |
| 2/17/2017 | | <0.2 | 4.35 | 13.1 | 14.9 | 12.7 |
| 2/21/2017 | <0.2 | | | | | |
| 4/17/2017 | <0.2 | <0.2 | 5.93 | 11.3 | 14.7 | |
| 4/18/2017 | | | | | | 10.5 |
| 6/19/2017 | <0.2 | <0.2 | | | | |
| 6/20/2017 | | | 2.77 | | | |
| 6/21/2017 | | | | 16.3 | 16.4 | 11.5 |
| 8/7/2017 | <0.2 | <0.2 | | | | |
| 8/8/2017 | | | 2.72 | 13 | 14.7 | 10.8 |
| 10/16/2017 | <0.2 | <0.2 | 50 | | | |
| 10/17/2017 | | | | 16 | 19.2 | 13.1 |
| 11/28/2017 | | | 2.92 (R) | 13.7 (R) | 12.9 (R) | 10.7 (R) |
| 3/5/2018 | | <0.2 | | | | |
| 3/6/2018 | <0.2 | | 21.7 | | | |
| 3/7/2018 | | | | 11 | 9.8 | 8.81 |
| 6/19/2018 | <0.2 | <0.2 | | | | |
| 6/20/2018 | | | 1.34 | 15 | 10.5 | 13.3 |
| 8/27/2018 | <0.2 | <0.2 | | | | |
| 8/28/2018 | | | 1.45 | | | |
| 8/29/2018 | | | | 14 | 14.6 | 10.5 |
| 3/18/2019 | <0.2 | | | | | |
| 3/19/2019 | | <0.2 | | | | |
| 3/20/2019 | | | | 15.5 | 8.35 | |
| 8/6/2019 | 0.205 | | | | | |
| 8/7/2019 | | <0.2 | | 17.6 | 7.56 | |

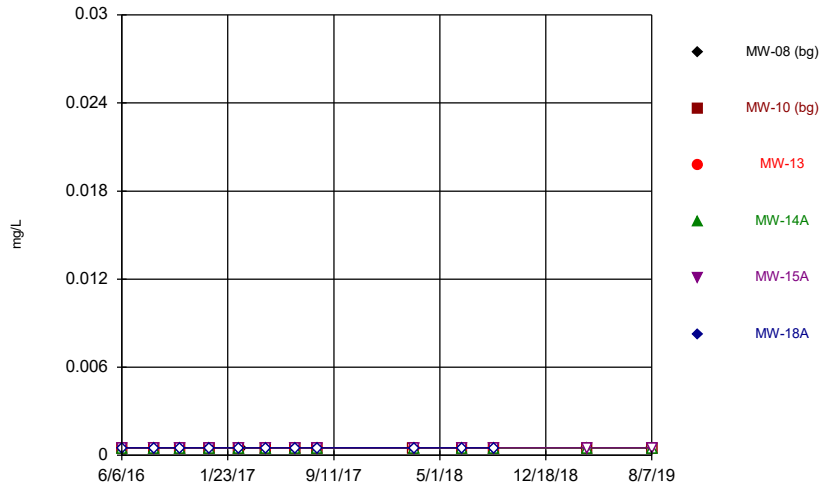
Time Series

Constituent: Boron (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

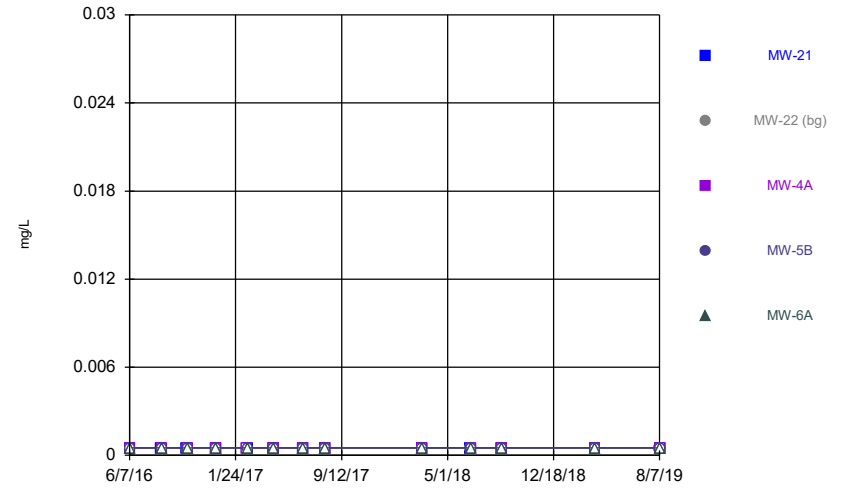
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|----------|------------|-------|-------|-------|
| 6/7/2016 | | | <0.2 | <0.2 | <0.2 |
| 6/8/2016 | <0.2 | | | | |
| 8/15/2016 | 7.23 | | | | |
| 8/16/2016 | | | <0.2 | <0.2 | <0.2 |
| 10/10/2016 | 8.45 | | | | |
| 10/11/2016 | | | <0.2 | <0.2 | <0.2 |
| 12/12/2016 | 6.93 | | <0.2 | <0.2 | <0.2 |
| 2/17/2017 | | | <0.2 | | |
| 2/21/2017 | 4.87 | | | <0.2 | <0.2 |
| 4/17/2017 | | | <0.2 | <0.2 | <0.2 |
| 4/18/2017 | 4.49 | | | | |
| 6/20/2017 | 7.36 | | <0.2 | <0.2 | |
| 6/21/2017 | | | | | <0.2 |
| 8/7/2017 | | | <0.2 | | |
| 8/8/2017 | 7.05 | | | <0.2 | <0.2 |
| 10/16/2017 | 3.33 | | <0.2 | | |
| 10/17/2017 | | | | <0.2 | <0.2 |
| 11/28/2017 | 2.24 (R) | | | | |
| 3/6/2018 | 0.885 | <0.2 | 0.66 | <0.2 | <0.2 |
| 6/19/2018 | 6.84 | <0.2 | | | |
| 6/21/2018 | | | <0.2 | <0.2 | <0.2 |
| 8/27/2018 | | <0.2 | | | |
| 8/28/2018 | 1.36 | | <0.2 | | |
| 8/29/2018 | | | | <0.2 | <0.2 |
| 3/19/2019 | | 0.299 | <0.2 | <0.2 | <0.2 |
| 3/20/2019 | 6.95 | | | | |
| 8/6/2019 | | <0.2 | | | |
| 8/7/2019 | 8.46 | | <0.2 | <0.2 | <0.2 |

Time Series



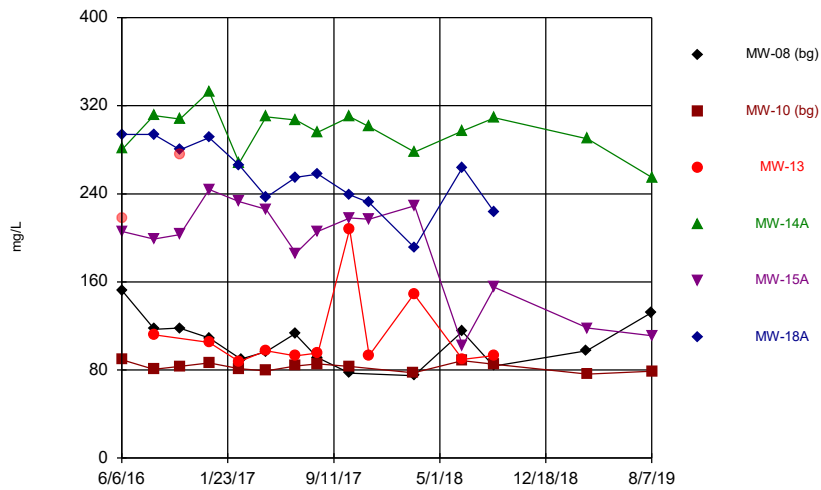
Constituent: Cadmium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



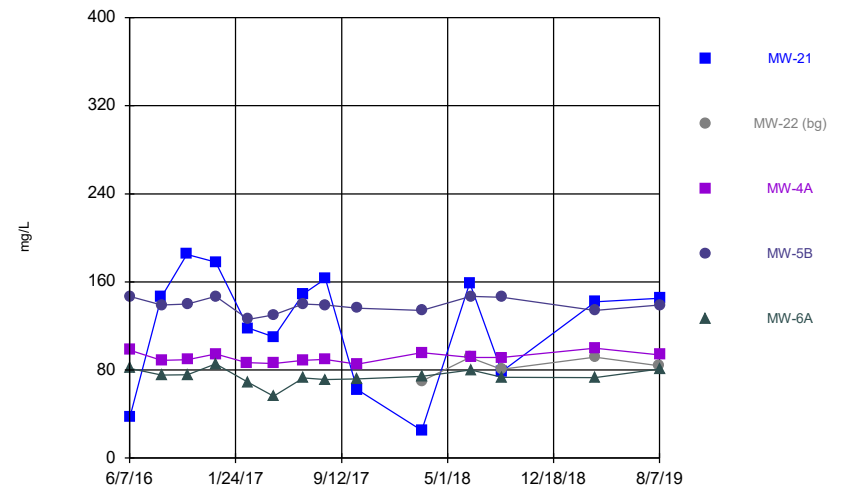
Constituent: Cadmium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Calcium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Calcium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Cadmium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|---------|---------|---------|---------|
| 6/6/2016 | | <0.0005 | | | <0.0005 | <0.0005 |
| 6/7/2016 | <0.0005 | | | | | |
| 6/8/2016 | | | <0.0005 | <0.0005 | | |
| 8/15/2016 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8/16/2016 | <0.0005 | | | | | |
| 10/10/2016 | <0.0005 | <0.0005 | <0.0005 | | | |
| 10/11/2016 | | | | <0.0005 | <0.0005 | <0.0005 |
| 12/14/2016 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 2/17/2017 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 2/21/2017 | <0.0005 | | | | | |
| 4/17/2017 | <0.0005 | <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 | | | |
| 6/21/2017 | | | | <0.0005 | <0.0005 | <0.0005 |
| 8/7/2017 | <0.0005 | <0.0005 | | | | |
| 8/8/2017 | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 3/5/2018 | | <0.0005 | | | | |
| 3/6/2018 | <0.0005 | | <0.0005 | | | |
| 3/7/2018 | | | | <0.0005 | <0.0005 | <0.0005 |
| 6/19/2018 | <0.0005 | <0.0005 | | | | |
| 6/20/2018 | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8/27/2018 | <0.0005 | <0.0005 | | | | |
| 8/28/2018 | | | <0.0005 | | | |
| 8/29/2018 | | | | <0.0005 | <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 | |

Time Series

Constituent: Cadmium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|---------|---------|---------|
| 6/7/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 6/8/2016 | <0.0005 | | | | |
| 8/15/2016 | <0.0005 | | | | |
| 8/16/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 10/10/2016 | <0.0005 | | | | |
| 10/11/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 12/12/2016 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 |
| 2/17/2017 | | | <0.0005 | | |
| 2/21/2017 | <0.0005 | | | <0.0005 | <0.0005 |
| 4/17/2017 | | | <0.0005 | <0.0005 | <0.0005 |
| 4/18/2017 | <0.0005 | | | | |
| 6/20/2017 | <0.0005 | | <0.0005 | <0.0005 | |
| 6/21/2017 | | | | | <0.0005 |
| 8/7/2017 | | | <0.0005 | | |
| 8/8/2017 | <0.0005 | | | <0.0005 | <0.0005 |
| 3/6/2018 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6/19/2018 | <0.0005 | <0.0005 | | | |
| 6/21/2018 | | | <0.0005 | <0.0005 | <0.0005 |
| 8/27/2018 | | <0.0005 | | | |
| 8/28/2018 | <0.0005 | | <0.0005 | | |
| 8/29/2018 | | | | <0.0005 | <0.0005 |
| 3/19/2019 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 3/20/2019 | <0.0005 | | | | |
| 8/6/2019 | | <0.0005 | | | |
| 8/7/2019 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 |

Time Series

Constituent: Calcium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|----------|---------|---------|---------|
| 6/6/2016 | | 89.3 | | | 206 | 294 |
| 6/7/2016 | 152 | | | | | |
| 6/8/2016 | | | 218 (o) | 281 | | |
| 8/15/2016 | | 80.7 | 112 | 311 | 199 | 294 |
| 8/16/2016 | 117 | | | | | |
| 10/10/2016 | 118 | 83.3 | 276 (o) | | | |
| 10/11/2016 | | | | 308 | 203 | 280 |
| 12/14/2016 | 109 | 86.5 | 105 | 333 | 244 | 291 |
| 2/17/2017 | | 81.2 | 87.6 | 268 | 233 | 266 |
| 2/21/2017 | 89.9 | | | | | |
| 4/17/2017 | 96.5 | 79.2 | 97.5 | 310 | 226 | |
| 4/18/2017 | | | | | | 237 |
| 6/19/2017 | 113 | 83.6 | | | | |
| 6/20/2017 | | | 92.8 | | | |
| 6/21/2017 | | | | 307 | 186 | 255 |
| 8/7/2017 | 91.3 | 85.5 | | | | |
| 8/8/2017 | | | 95.4 | 296 | 206 | 258 |
| 10/16/2017 | 77 | 83.3 | 208 | | | |
| 10/17/2017 | | | | 310 | 218 | 239 |
| 11/28/2017 | | | 93.2 (R) | 301 (R) | 217 (R) | 232 (R) |
| 3/5/2018 | | 77.3 | | | | |
| 3/6/2018 | 74.7 | | 149 | | | |
| 3/7/2018 | | | | 278 | 229 | 191 |
| 6/19/2018 | 115 | 88.5 | | | | |
| 6/20/2018 | | | 89.5 | 297 | 102 | 264 |
| 8/27/2018 | 83.6 | 85.4 | | | | |
| 8/28/2018 | | | 93.1 | | | |
| 8/29/2018 | | | | 309 | 155 | 223 |
| 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 | |

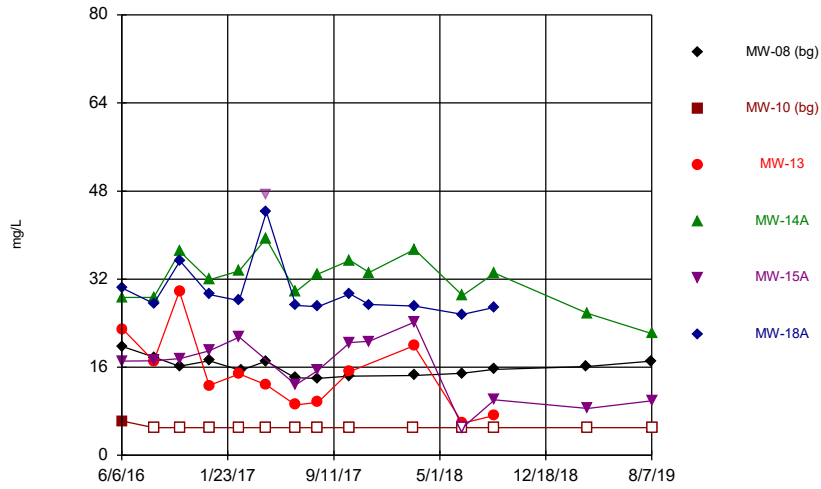
Time Series

Constituent: Calcium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

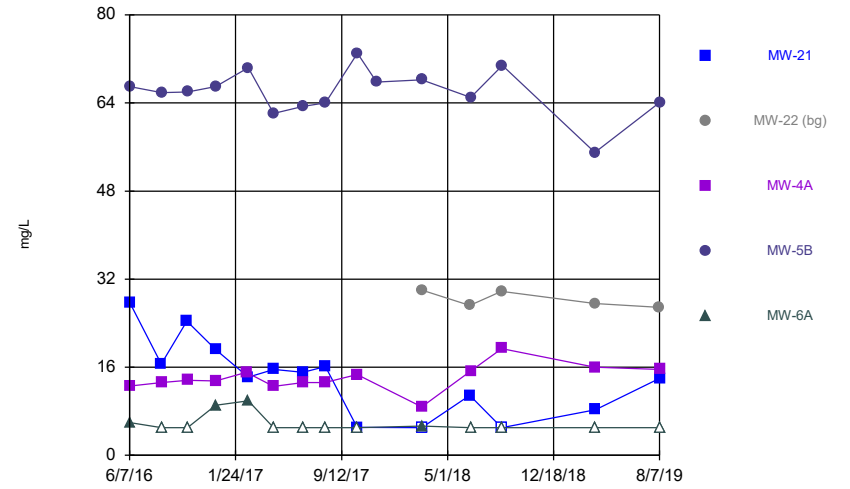
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|-------|------------|-------|-------|-------|
| 6/7/2016 | | | 98.2 | 147 | 81.4 |
| 6/8/2016 | 37.2 | | | | |
| 8/15/2016 | 146 | | | | |
| 8/16/2016 | | | 88.8 | 139 | 75.4 |
| 10/10/2016 | 185 | | | | |
| 10/11/2016 | | | 89.3 | 140 | 75.7 |
| 12/12/2016 | 178 | | 94.5 | 147 | 85.6 |
| 2/17/2017 | | | 86.8 | | |
| 2/21/2017 | 118 | | | 126 | 68.8 |
| 4/17/2017 | | | 85.9 | 130 | 56.3 |
| 4/18/2017 | 110 | | | | |
| 6/20/2017 | 149 | | 88.7 | 140 | |
| 6/21/2017 | | | | | 72.9 |
| 8/7/2017 | | | 89.7 | | |
| 8/8/2017 | 163 | | | 139 | 71.2 |
| 10/16/2017 | 62.3 | | 85.3 | | |
| 10/17/2017 | | | | 136 | 71.9 |
| 3/6/2018 | 25.1 | 69.8 | 95.8 | 134 | 74.1 |
| 6/19/2018 | 159 | 91.5 | | | |
| 6/21/2018 | | | 91.4 | 147 | 80.1 |
| 8/27/2018 | | 80.7 | | | |
| 8/28/2018 | 78.7 | | 91.3 | | |
| 8/29/2018 | | | | 146 | 73.3 |
| 3/19/2019 | | 91.6 | 99.7 | 134 | 73.2 |
| 3/20/2019 | 142 | | | | |
| 8/6/2019 | | 83.8 | | | |
| 8/7/2019 | 145 | | 93.8 | 139 | 80.9 |

Time Series



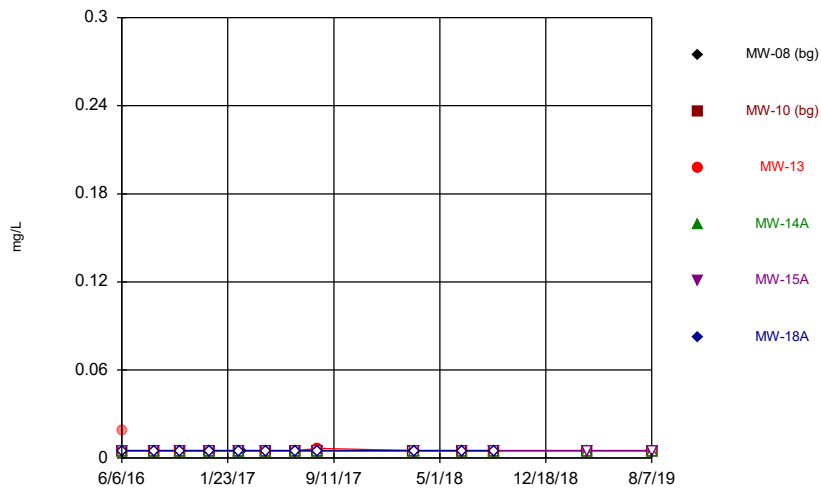
Constituent: Chloride Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



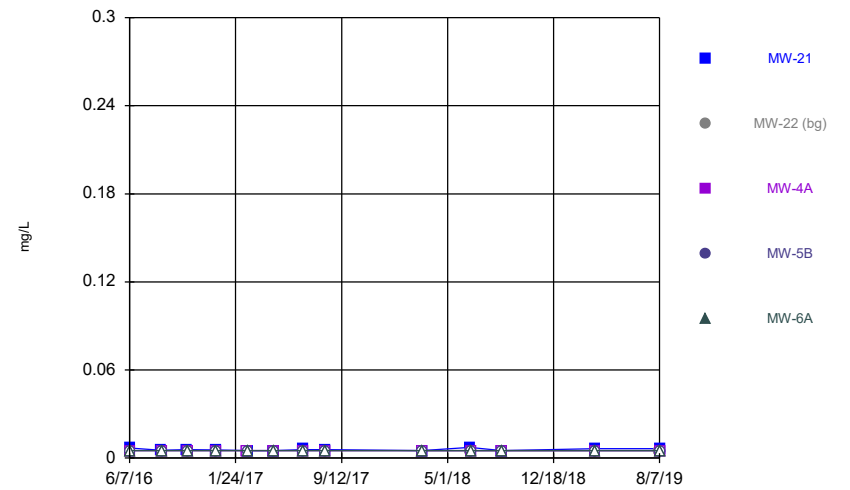
Constituent: Chloride Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Chromium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Chromium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Chloride (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|-------|----------|----------|----------|
| 6/6/2016 | | 6.22 | | | 17.1 | 30.4 |
| 6/7/2016 | 19.8 | | | | | |
| 6/8/2016 | | | 22.9 | 28.7 | | |
| 8/15/2016 | | <5 | 17.1 | 28.7 | 17.2 | 27.6 |
| 8/16/2016 | 17.8 | | | | | |
| 10/10/2016 | 16.2 | <5 | 29.8 | | | |
| 10/11/2016 | | | | 37 | 17.6 | 35.3 |
| 12/14/2016 | 17.2 | <5 | 12.7 | 31.9 | 19 | 29.2 |
| 2/17/2017 | | <5 | 14.8 | 33.5 | 21.5 | 28.1 |
| 2/21/2017 | 15.4 | | | | | |
| 4/17/2017 | 17.1 | <5 | 12.8 | 39.4 | 47.4 (o) | |
| 4/18/2017 | | | | | | 44.2 |
| 6/19/2017 | 14.1 | <5 | | | | |
| 6/20/2017 | | | 9.17 | | | |
| 6/21/2017 | | | | 29.7 | 12.8 | 27.2 |
| 8/7/2017 | 14 | <5 | | | | |
| 8/8/2017 | | | 9.62 | 32.9 | 15.4 | 27 |
| 10/16/2017 | 14.4 | <5 | 15.2 | | | |
| 10/17/2017 | | | | 35.4 | 20.5 | 29.3 |
| 11/28/2017 | | | | 33.2 (R) | 20.7 (R) | 27.4 (R) |
| 3/5/2018 | | <5 | | | | |
| 3/6/2018 | 14.5 | | 19.9 | | | |
| 3/7/2018 | | | | 37.4 | 24.2 | 27.1 |
| 6/19/2018 | 14.9 | <5 | | | | |
| 6/20/2018 | | | 5.84 | 29 | <5 | 25.6 |
| 8/27/2018 | 15.6 | <5 | | | | |
| 8/28/2018 | | | 7.24 | | | |
| 8/29/2018 | | | | 33.1 | 10.1 | 26.9 |
| 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 | |

Time Series

Constituent: Chloride (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|-------|------------|-------|----------|-------|
| 6/7/2016 | | | 12.6 | 67 | 5.97 |
| 6/8/2016 | 27.7 | | | | |
| 8/15/2016 | 16.6 | | | | |
| 8/16/2016 | | | 13.2 | 65.9 | <5 |
| 10/10/2016 | 24.4 | | | | |
| 10/11/2016 | | | 13.6 | 66 | <5 |
| 12/12/2016 | 19.2 | | 13.5 | 67 | 9.08 |
| 2/17/2017 | | | 15.1 | | |
| 2/21/2017 | 14.2 | | | 70.4 | 9.93 |
| 4/17/2017 | | | 12.5 | 62.1 | <5 |
| 4/18/2017 | 15.6 | | | | |
| 6/20/2017 | 15.1 | | 13.2 | 63.4 | |
| 6/21/2017 | | | | | <5 |
| 8/7/2017 | | | 13.2 | | |
| 8/8/2017 | 16.1 | | | 64 | <5 |
| 10/16/2017 | 5.09 | | 14.7 | | |
| 10/17/2017 | | | | 73 | <5 |
| 11/28/2017 | | | | 67.8 (R) | |
| 3/6/2018 | <5 | 30 | 8.81 | 68.2 | 5.33 |
| 6/19/2018 | 10.9 | 27.2 | | | |
| 6/21/2018 | | | 15.3 | 65 | <5 |
| 8/27/2018 | | 29.8 | | | |
| 8/28/2018 | <5 | | 19.4 | | |
| 8/29/2018 | | | | 70.8 | <5 |
| 3/19/2019 | | 27.6 | 16 | 55 | <5 |
| 3/20/2019 | 8.3 | | | | |
| 8/6/2019 | | 26.9 | | | |
| 8/7/2019 | 14 | | 15.6 | 64.1 | <5 |

Time Series

Constituent: Chromium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

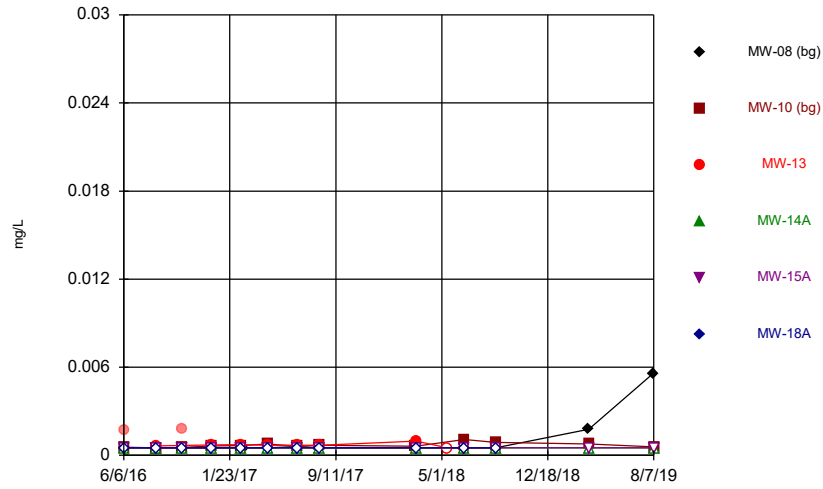
| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|------------|-------------|--------|--------|
| 6/6/2016 | | <0.005 | | | <0.005 | <0.005 |
| 6/7/2016 | <0.005 | | | | | |
| 6/8/2016 | | | 0.0191 (o) | <0.005 | | |
| 8/15/2016 | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| 8/16/2016 | <0.005 | | | | | |
| 10/10/2016 | <0.005 | <0.005 | <0.005 | | | |
| 10/11/2016 | | | | <0.005 | <0.005 | <0.005 |
| 12/14/2016 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| 2/17/2017 | | <0.005 | <0.005 | <0.005 (F2) | <0.005 | <0.005 |
| 2/21/2017 | <0.005 | | | | | |
| 4/17/2017 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | |
| 4/18/2017 | | | | | | <0.005 |
| 6/19/2017 | <0.005 | <0.005 | | | | |
| 6/20/2017 | | | <0.005 | | | |
| 6/21/2017 | | | | <0.005 | <0.005 | <0.005 |
| 8/7/2017 | <0.005 | <0.005 | | | | |
| 8/8/2017 | | | 0.00658 | <0.005 | <0.005 | <0.005 |
| 3/5/2018 | | <0.005 | | | | |
| 3/6/2018 | <0.005 | | <0.005 | | | |
| 3/7/2018 | | | | <0.005 | <0.005 | <0.005 |
| 6/19/2018 | <0.005 | <0.005 | | | | |
| 6/20/2018 | | | <0.005 | <0.005 | <0.005 | <0.005 |
| 8/27/2018 | <0.005 | <0.005 | | | | |
| 8/28/2018 | | | <0.005 | | | |
| 8/29/2018 | | | | <0.005 | <0.005 | <0.005 |
| 3/18/2019 | <0.005 | | | | | |
| 3/19/2019 | | <0.005 | | | | |
| 3/20/2019 | | | | <0.005 | <0.005 | |
| 8/6/2019 | <0.005 | | | | | |
| 8/7/2019 | | <0.005 | | <0.005 | <0.005 | |

Time Series

Constituent: Chromium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

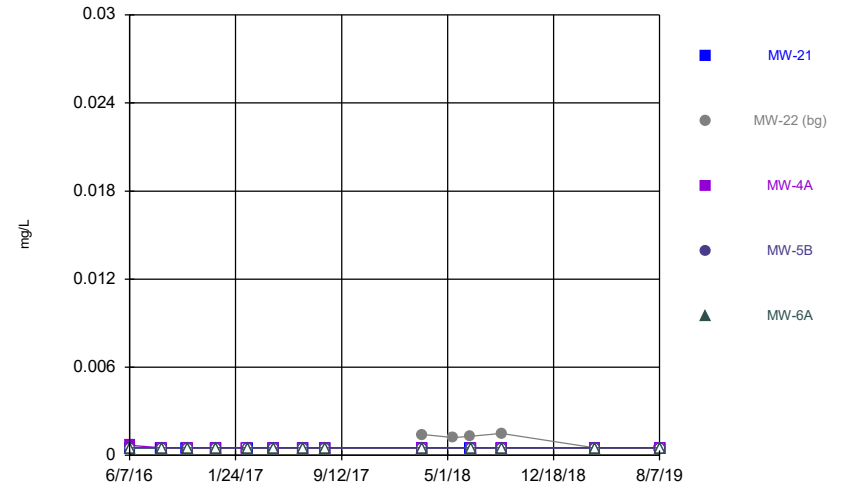
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|--------|--------|--------|
| 6/7/2016 | | | <0.005 | <0.005 | <0.005 |
| 6/8/2016 | 0.00694 | | | | |
| 8/15/2016 | 0.00538 | | | | |
| 8/16/2016 | | | <0.005 | <0.005 | <0.005 |
| 10/10/2016 | 0.00582 | | | | |
| 10/11/2016 | | | <0.005 | <0.005 | <0.005 |
| 12/12/2016 | 0.00561 | | <0.005 | <0.005 | <0.005 |
| 2/17/2017 | | | <0.005 | | |
| 2/21/2017 | <0.005 | | | <0.005 | <0.005 |
| 4/17/2017 | | | <0.005 | <0.005 | <0.005 |
| 4/18/2017 | <0.005 | | | | |
| 6/20/2017 | 0.00586 | | <0.005 | <0.005 | |
| 6/21/2017 | | | | | <0.005 |
| 8/7/2017 | | | <0.005 | | |
| 8/8/2017 | 0.00572 | | | <0.005 | <0.005 |
| 3/6/2018 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| 6/19/2018 | 0.00726 | <0.005 | | | |
| 6/21/2018 | | | <0.005 | <0.005 | <0.005 |
| 8/27/2018 | | <0.005 | | | |
| 8/28/2018 | <0.005 | | <0.005 | | |
| 8/29/2018 | | | | <0.005 | <0.005 |
| 3/19/2019 | | <0.005 | <0.005 | <0.005 | <0.005 |
| 3/20/2019 | 0.00647 | | | | |
| 8/6/2019 | | <0.005 | | | |
| 8/7/2019 | 0.00637 | | <0.005 | <0.005 | <0.005 |

Time Series



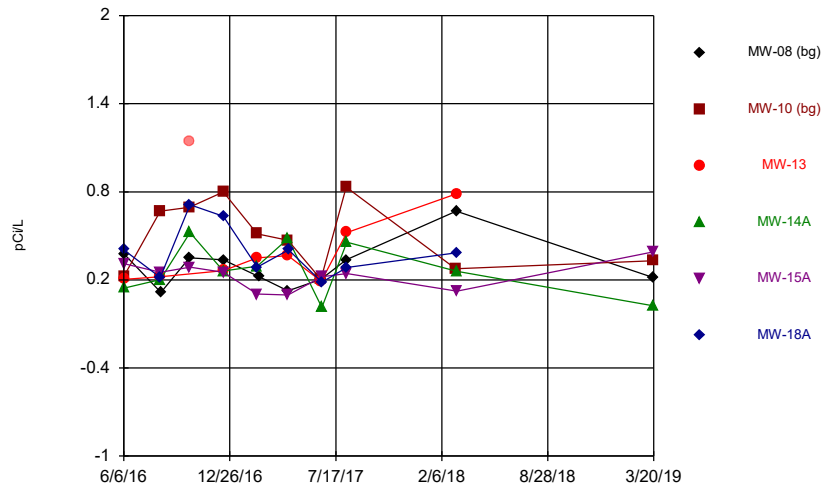
Constituent: Cobalt Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



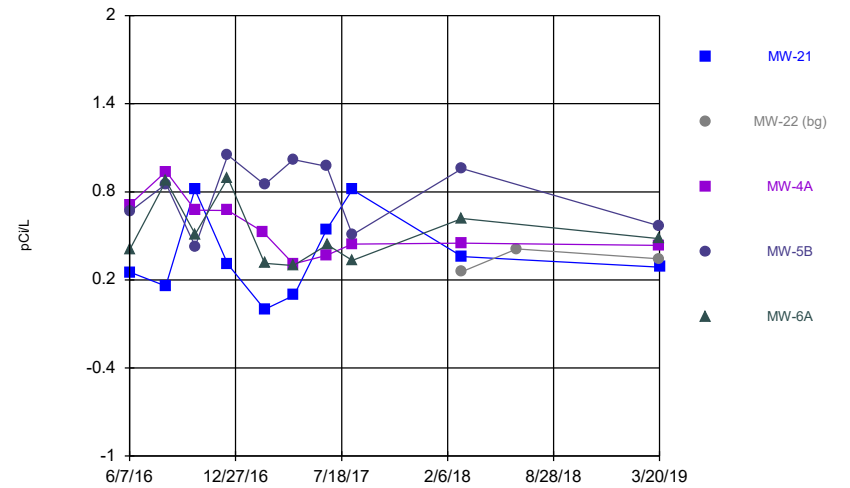
Constituent: Cobalt Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Cobalt (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|-------------|---------|---------|---------|
| 6/6/2016 | | 0.000555 | | | <0.0005 | <0.0005 |
| 6/7/2016 | <0.0005 | | | | | |
| 6/8/2016 | | | 0.00172 (o) | <0.0005 | | |
| 8/15/2016 | | <0.0005 | 0.000637 | <0.0005 | <0.0005 | <0.0005 |
| 8/16/2016 | <0.0005 | | | | | |
| 10/10/2016 | <0.0005 | 0.000523 | 0.00179 (o) | | | |
| 10/11/2016 | | | | <0.0005 | <0.0005 | <0.0005 |
| 12/14/2016 | <0.0005 | 0.000638 | 0.000717 | <0.0005 | <0.0005 | <0.0005 |
| 2/17/2017 | | 0.000663 | 0.000727 | <0.0005 | <0.0005 | <0.0005 |
| 2/21/2017 | <0.0005 | | | | | |
| 4/17/2017 | <0.0005 | 0.000779 | 0.000695 | <0.0005 | <0.0005 | |
| 4/18/2017 | | | | | | <0.0005 |
| 6/19/2017 | 0.000601 | 0.000621 | | | | |
| 6/20/2017 | | | 0.000682 | | | |
| 6/21/2017 | | | | <0.0005 | <0.0005 | <0.0005 |
| 8/7/2017 | 0.00051 | 0.000695 | | | | |
| 8/8/2017 | | | 0.000686 | <0.0005 | <0.0005 | <0.0005 |
| 3/5/2018 | | 0.000627 | | | | |
| 3/6/2018 | <0.0005 | | 0.000964 | | | |
| 3/7/2018 | | | | <0.0005 | <0.0005 | <0.0005 |
| 5/14/2018 | | | <0.0005 | | | |
| 6/19/2018 | <0.0005 | 0.00107 | | | | |
| 6/20/2018 | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8/27/2018 | <0.0005 | 0.00088 | | | | |
| 8/28/2018 | | | <0.0005 | | | |
| 8/29/2018 | | | | <0.0005 | <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 | |

Time Series

Constituent: Cobalt (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|----------|---------|---------|
| 6/7/2016 | | | 0.000681 | <0.0005 | <0.0005 |
| 6/8/2016 | <0.0005 | | | | |
| 8/15/2016 | <0.0005 | | | | |
| 8/16/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 10/10/2016 | <0.0005 | | | | |
| 10/11/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 12/12/2016 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 |
| 2/17/2017 | | | <0.0005 | | |
| 2/21/2017 | <0.0005 | | | <0.0005 | <0.0005 |
| 4/17/2017 | | | <0.0005 | <0.0005 | <0.0005 |
| 4/18/2017 | <0.0005 | | | | |
| 6/20/2017 | <0.0005 | | <0.0005 | <0.0005 | |
| 6/21/2017 | | | | | <0.0005 |
| 8/7/2017 | | | <0.0005 | | |
| 8/8/2017 | <0.0005 | | | <0.0005 | <0.0005 |
| 3/6/2018 | <0.0005 | 0.00142 | <0.0005 | <0.0005 | <0.0005 |
| 5/14/2018 | | 0.0012 | | | |
| 6/19/2018 | <0.0005 | 0.00129 | | | |
| 6/21/2018 | | | <0.0005 | <0.0005 | <0.0005 |
| 8/27/2018 | | 0.00149 | | | |
| 8/28/2018 | <0.0005 | | <0.0005 | | |
| 8/29/2018 | | | | <0.0005 | <0.0005 |
| 3/19/2019 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 3/20/2019 | <0.0005 | | | | |
| 8/6/2019 | | <0.0005 | | | |
| 8/7/2019 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 |

Time Series

Constituent: Combined Radium 226 + 228 (pCi/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|-----------|------------|------------|-----------|
| 6/6/2016 | | 0.223 (U) | | | 0.31 (U) | 0.405 (U) |
| 6/7/2016 | 0.375 (U) | | | | | |
| 6/8/2016 | | | 0.205 (U) | 0.145 (U) | | |
| 8/15/2016 | | 0.668 | 0.222 (U) | 0.202 (U) | 0.251 (U) | 0.218 (U) |
| 8/16/2016 | 0.115 (U) | | | | | |
| 10/10/2016 | 0.35 (U) | 0.694 | 1.14 (o) | | | |
| 10/11/2016 | | | | 0.523 | 0.286 (U) | 0.711 |
| 12/14/2016 | 0.336 (U) | 0.799 | 0.262 (U) | 0.26 (U) | 0.251 (U) | 0.633 |
| 2/17/2017 | | 0.513 | 0.35 (U) | 0.293 (U) | 0.103 (U) | 0.286 (U) |
| 2/21/2017 | 0.221 (U) | | | | | |
| 4/17/2017 | 0.126 (U) | 0.47 | 0.365 | 0.48 | 0.0966 (U) | |
| 4/18/2017 | | | | | | 0.405 |
| 6/19/2017 | 0.204 (U) | 0.204 (U) | | | | |
| 6/20/2017 | | | 0.192 (U) | | | |
| 6/21/2017 | | | | 0.0131 (U) | 0.221 (U) | 0.184 (U) |
| 8/7/2017 | 0.336 (U) | 0.831 | | | | |
| 8/8/2017 | | | 0.523 | 0.456 | 0.244 (U) | 0.284 (U) |
| 3/5/2018 | | 0.276 (U) | | | | |
| 3/6/2018 | 0.668 | | 0.785 | | | |
| 3/7/2018 | | | | 0.258 (U) | 0.123 (U) | 0.384 (U) |
| 3/18/2019 | 0.217 (U) | | | | | |
| 3/19/2019 | | 0.331 (U) | | | | |
| 3/20/2019 | | | | 0.0223 (U) | 0.391 (U) | |

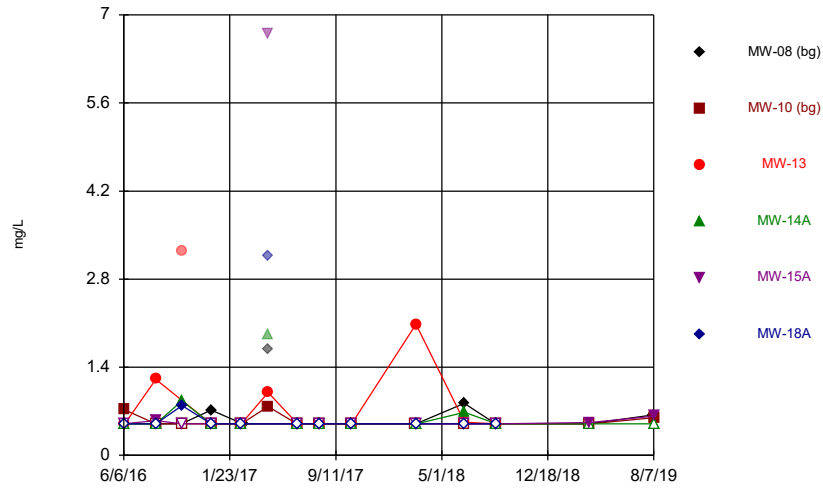
Time Series

Constituent: Combined Radium 226 + 228 (pCi/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

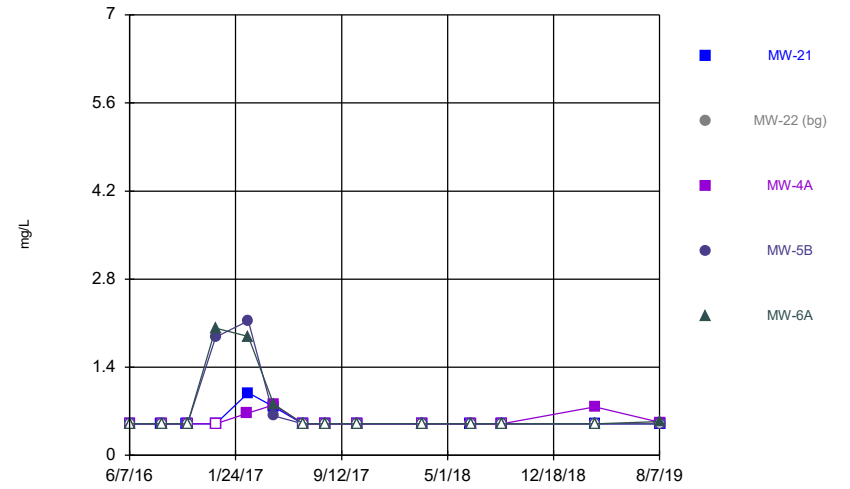
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------------|------------|-----------|-----------|-----------|
| 6/7/2016 | | | 0.711 (U) | 0.665 | 0.405 |
| 6/8/2016 | 0.253 (U) | | | | |
| 8/15/2016 | 0.159 (U) | | | | |
| 8/16/2016 | | | 0.938 (U) | 0.854 | 0.876 |
| 10/10/2016 | 0.817 | | | | |
| 10/11/2016 | | | 0.674 | 0.428 (U) | 0.512 |
| 12/12/2016 | 0.306 (U) | | 0.672 | 1.05 | 0.894 |
| 2/17/2017 | | | 0.528 | | |
| 2/21/2017 | -0.000573 (U) | | | 0.85 | 0.314 (U) |
| 4/17/2017 | | | 0.309 (U) | 1.02 | 0.298 (U) |
| 4/18/2017 | 0.0953 (U) | | | | |
| 6/20/2017 | 0.545 | | 0.368 | 0.973 | |
| 6/21/2017 | | | | | 0.44 |
| 8/7/2017 | | | 0.443 | | |
| 8/8/2017 | 0.814 | | | 0.507 | 0.333 (U) |
| 3/6/2018 | 0.358 | 0.257 (U) | 0.45 | 0.959 | 0.618 |
| 6/19/2018 | | 0.412 (U) | | | |
| 3/19/2019 | | 0.343 (U) | 0.436 | 0.568 | 0.481 |
| 3/20/2019 | 0.287 (U) | | | | |

Time Series



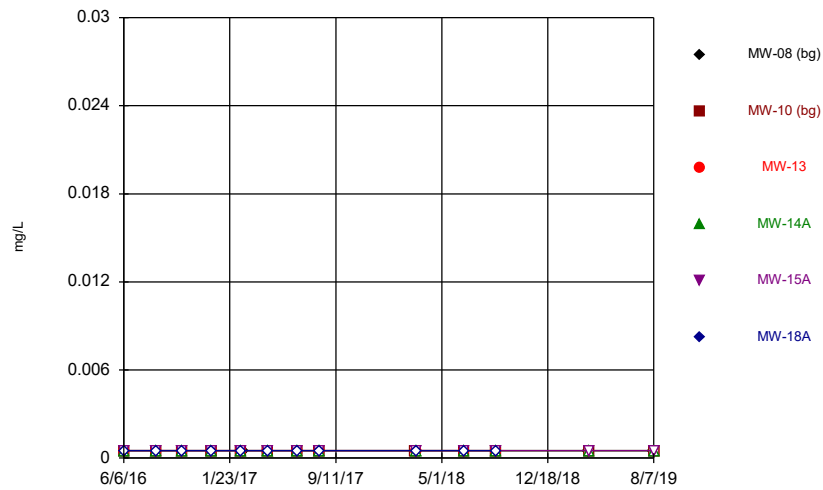
Constituent: Fluoride Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



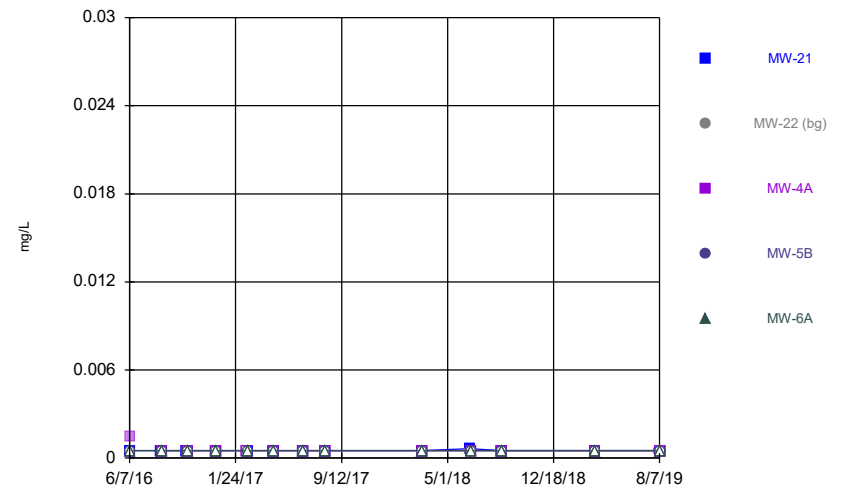
Constituent: Fluoride Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Lead Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Lead Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Fluoride (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|----------|----------|---------|-----------|
| 6/6/2016 | | 0.731 | | | <0.5 | <0.5 |
| 6/7/2016 | <0.5 | | | | | |
| 6/8/2016 | | | <0.5 | <0.5 | | |
| 8/15/2016 | | <0.5 | 1.21 | <0.5 | 0.549 | <0.5 |
| 8/16/2016 | <0.5 | | | | | |
| 10/10/2016 | <0.5 | <0.5 | 3.25 (o) | | | |
| 10/11/2016 | | | | 0.867 | <0.5 | 0.791 |
| 12/14/2016 | 0.72 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 (F2) |
| 2/17/2017 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2/21/2017 | <0.5 | | | | | |
| 4/17/2017 | 1.69 (Fo) | 0.774 | 0.997 | 1.93 (o) | 6.7 (o) | |
| 4/18/2017 | | | | | | 3.16 (o) |
| 6/19/2017 | <0.5 | <0.5 | | | | |
| 6/20/2017 | | | <0.5 | | | |
| 6/21/2017 | | | | <0.5 | <0.5 | <0.5 |
| 8/7/2017 | <0.5 | <0.5 | | | | |
| 8/8/2017 | | | <0.5 | <0.5 | <0.5 | <0.5 |
| 10/16/2017 | <0.5 | <0.5 | <0.5 | | | |
| 10/17/2017 | | | | <0.5 | <0.5 | <0.5 |
| 3/5/2018 | | <0.5 | | | | |
| 3/6/2018 | <0.5 | | 2.08 | | | |
| 3/7/2018 | | | | <0.5 | <0.5 | <0.5 |
| 6/19/2018 | 0.826 | <0.5 | | | | |
| 6/20/2018 | | | 0.528 | 0.684 | <0.5 | <0.5 |
| 8/27/2018 | <0.5 | <0.5 | | | | |
| 8/28/2018 | | | <0.5 | | | |
| 8/29/2018 | | | | <0.5 | <0.5 | <0.5 |
| 3/18/2019 | <0.5 | | | | | |
| 3/19/2019 | | <0.5 | | | | |
| 3/20/2019 | | | | <0.5 | 0.523 | |
| 8/6/2019 | 0.643 | | | | | |
| 8/7/2019 | | 0.596 | | <0.5 | 0.625 | |

Time Series

Constituent: Fluoride (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|-------|------------|-------|-------|-------|
| 6/7/2016 | | | <0.5 | <0.5 | <0.5 |
| 6/8/2016 | <0.5 | | | | |
| 8/15/2016 | <0.5 | | | | |
| 8/16/2016 | | | <0.5 | <0.5 | <0.5 |
| 10/10/2016 | <0.5 | | | | |
| 10/11/2016 | | | <0.5 | <0.5 | <0.5 |
| 12/12/2016 | <0.5 | | <0.5 | 1.88 | 2.02 |
| 2/17/2017 | | | 0.664 | | |
| 2/21/2017 | 0.993 | | | 2.14 | 1.89 |
| 4/17/2017 | | | 0.801 | 0.627 | 0.814 |
| 4/18/2017 | 0.768 | | | | |
| 6/20/2017 | <0.5 | | <0.5 | <0.5 | |
| 6/21/2017 | | | | | <0.5 |
| 8/7/2017 | | | <0.5 | | |
| 8/8/2017 | <0.5 | | | <0.5 | <0.5 |
| 10/16/2017 | <0.5 | | <0.5 | | |
| 10/17/2017 | | | | <0.5 | <0.5 |
| 3/6/2018 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 6/19/2018 | <0.5 | <0.5 | | | |
| 6/21/2018 | | | <0.5 | <0.5 | <0.5 |
| 8/27/2018 | | <0.5 | | | |
| 8/28/2018 | <0.5 | | <0.5 | | |
| 8/29/2018 | | | | <0.5 | <0.5 |
| 3/19/2019 | | <0.5 | 0.771 | <0.5 | <0.5 |
| 3/20/2019 | <0.5 | | | | |
| 8/6/2019 | | 0.507 | | | |
| 8/7/2019 | <0.5 | | 0.525 | <0.5 | 0.535 |

Time Series

Constituent: Lead (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|---------|---------|---------|---------|
| 6/6/2016 | | <0.0005 | | | <0.0005 | <0.0005 |
| 6/7/2016 | <0.0005 | | | | | |
| 6/8/2016 | | | <0.0005 | <0.0005 | | |
| 8/15/2016 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8/16/2016 | <0.0005 | | | | | |
| 10/10/2016 | <0.0005 | <0.0005 | <0.0005 | | | |
| 10/11/2016 | | | | <0.0005 | <0.0005 | <0.0005 |
| 12/14/2016 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 2/17/2017 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 2/21/2017 | <0.0005 | | | | | |
| 4/17/2017 | <0.0005 | <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 | | | |
| 6/21/2017 | | | | <0.0005 | <0.0005 | <0.0005 |
| 8/7/2017 | <0.0005 | <0.0005 | | | | |
| 8/8/2017 | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 3/5/2018 | | <0.0005 | | | | |
| 3/6/2018 | <0.0005 | | <0.0005 | | | |
| 3/7/2018 | | | | <0.0005 | <0.0005 | <0.0005 |
| 6/19/2018 | <0.0005 | <0.0005 | | | | |
| 6/20/2018 | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8/27/2018 | <0.0005 | <0.0005 | | | | |
| 8/28/2018 | | | <0.0005 | | | |
| 8/29/2018 | | | | <0.0005 | <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 | |

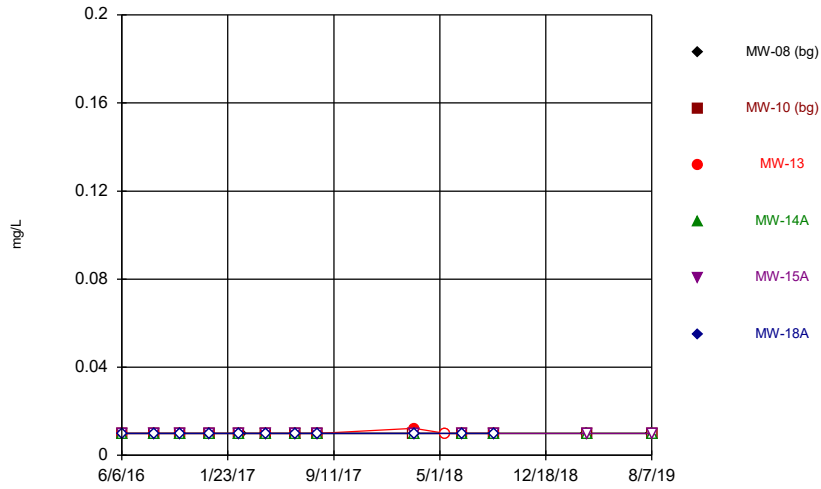
Time Series

Constituent: Lead (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

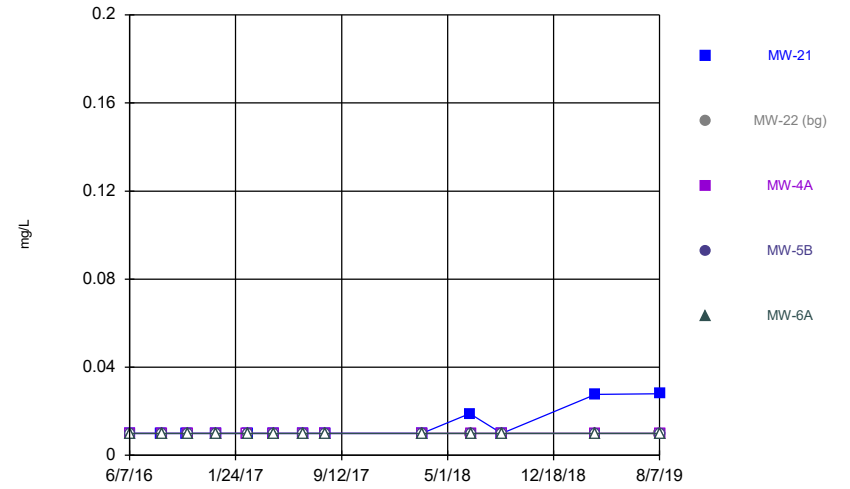
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|----------|------------|-------------|---------|---------|
| 6/7/2016 | | | 0.00147 (o) | <0.0005 | <0.0005 |
| 6/8/2016 | <0.0005 | | | | |
| 8/15/2016 | <0.0005 | | | | |
| 8/16/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 10/10/2016 | <0.0005 | | | | |
| 10/11/2016 | | | <0.0005 | <0.0005 | <0.0005 |
| 12/12/2016 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 |
| 2/17/2017 | | | <0.0005 | | |
| 2/21/2017 | <0.0005 | | | <0.0005 | <0.0005 |
| 4/17/2017 | | | <0.0005 | <0.0005 | <0.0005 |
| 4/18/2017 | <0.0005 | | | | |
| 6/20/2017 | <0.0005 | | <0.0005 | <0.0005 | |
| 6/21/2017 | | | | | <0.0005 |
| 8/7/2017 | | | <0.0005 | | |
| 8/8/2017 | <0.0005 | | | <0.0005 | <0.0005 |
| 3/6/2018 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6/19/2018 | 0.000633 | <0.0005 | | | |
| 6/21/2018 | | | <0.0005 | <0.0005 | <0.0005 |
| 8/27/2018 | | <0.0005 | | | |
| 8/28/2018 | <0.0005 | | <0.0005 | | |
| 8/29/2018 | | | | <0.0005 | <0.0005 |
| 3/19/2019 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 3/20/2019 | <0.0005 | | | | |
| 8/6/2019 | | <0.0005 | | | |
| 8/7/2019 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 |

Time Series



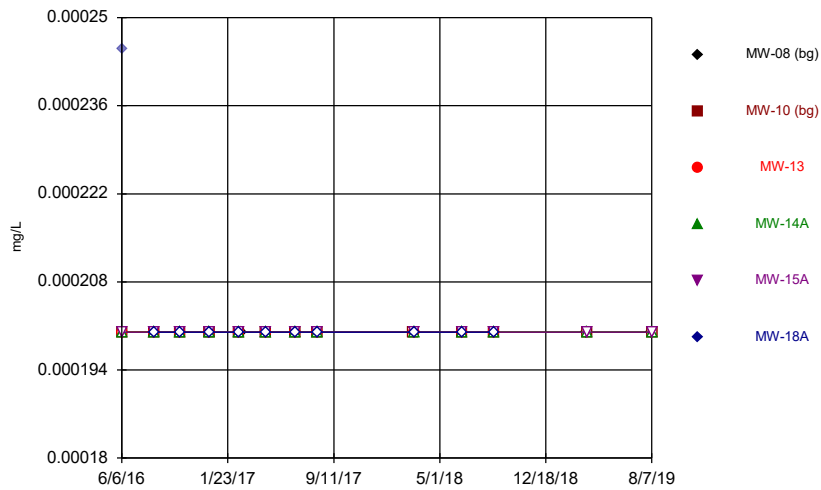
Constituent: Lithium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



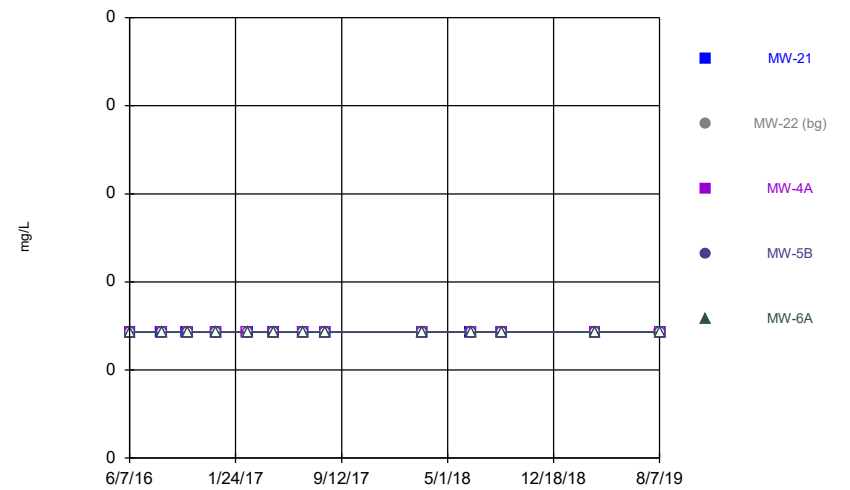
Constituent: Lithium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Mercury Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Mercury Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Lithium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|--------|--------|--------|--------|
| 6/6/2016 | | <0.01 | | | <0.01 | <0.01 |
| 6/7/2016 | <0.01 | | | | | |
| 6/8/2016 | | | <0.01 | <0.01 | | |
| 8/15/2016 | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 8/16/2016 | <0.01 | | | | | |
| 10/10/2016 | <0.01 | <0.01 | <0.01 | | | |
| 10/11/2016 | | | | <0.01 | <0.01 | <0.01 |
| 12/14/2016 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 2/17/2017 | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 2/21/2017 | <0.01 | | | | | |
| 4/17/2017 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | |
| 4/18/2017 | | | | | | <0.01 |
| 6/19/2017 | <0.01 | <0.01 | | | | |
| 6/20/2017 | | | <0.01 | | | |
| 6/21/2017 | | | | <0.01 | <0.01 | <0.01 |
| 8/7/2017 | <0.01 | <0.01 | | | | |
| 8/8/2017 | | | <0.01 | <0.01 | <0.01 | <0.01 |
| 3/5/2018 | | <0.01 | | | | |
| 3/6/2018 | <0.01 | | 0.0122 | | | |
| 3/7/2018 | | | | <0.01 | <0.01 | <0.01 |
| 5/14/2018 | | | <0.01 | | | |
| 6/19/2018 | <0.01 | <0.01 | | | | |
| 6/20/2018 | | | <0.01 | <0.01 | <0.01 | <0.01 |
| 8/27/2018 | <0.01 | <0.01 | | | | |
| 8/28/2018 | | | <0.01 | | | |
| 8/29/2018 | | | | <0.01 | <0.01 | <0.01 |
| 3/18/2019 | <0.01 | | | | | |
| 3/19/2019 | | <0.01 | | | | |
| 3/20/2019 | | | | <0.01 | <0.01 | |
| 8/6/2019 | <0.01 | | | | | |
| 8/7/2019 | | <0.01 | | <0.01 | <0.01 | |

Time Series

Constituent: Lithium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|--------|------------|-------|-------|-------|
| 6/7/2016 | | | <0.01 | <0.01 | <0.01 |
| 6/8/2016 | <0.01 | | | | |
| 8/15/2016 | <0.01 | | | | |
| 8/16/2016 | | | <0.01 | <0.01 | <0.01 |
| 10/10/2016 | <0.01 | | | | |
| 10/11/2016 | | | <0.01 | <0.01 | <0.01 |
| 12/12/2016 | <0.01 | | <0.01 | <0.01 | <0.01 |
| 2/17/2017 | | | <0.01 | | |
| 2/21/2017 | <0.01 | | | <0.01 | <0.01 |
| 4/17/2017 | | | <0.01 | <0.01 | <0.01 |
| 4/18/2017 | <0.01 | | | | |
| 6/20/2017 | <0.01 | | <0.01 | <0.01 | |
| 6/21/2017 | | | | | <0.01 |
| 8/7/2017 | | | <0.01 | | |
| 8/8/2017 | <0.01 | | | <0.01 | <0.01 |
| 3/6/2018 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 6/19/2018 | 0.0189 | <0.01 | | | |
| 6/21/2018 | | | <0.01 | <0.01 | <0.01 |
| 8/27/2018 | | <0.01 | | | |
| 8/28/2018 | <0.01 | | <0.01 | | |
| 8/29/2018 | | | | <0.01 | <0.01 |
| 3/19/2019 | | <0.01 | <0.01 | <0.01 | <0.01 |
| 3/20/2019 | 0.0277 | | | | |
| 8/6/2019 | | <0.01 | | | |
| 8/7/2019 | 0.0279 | | <0.01 | <0.01 | <0.01 |

Time Series

Constituent: Mercury (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

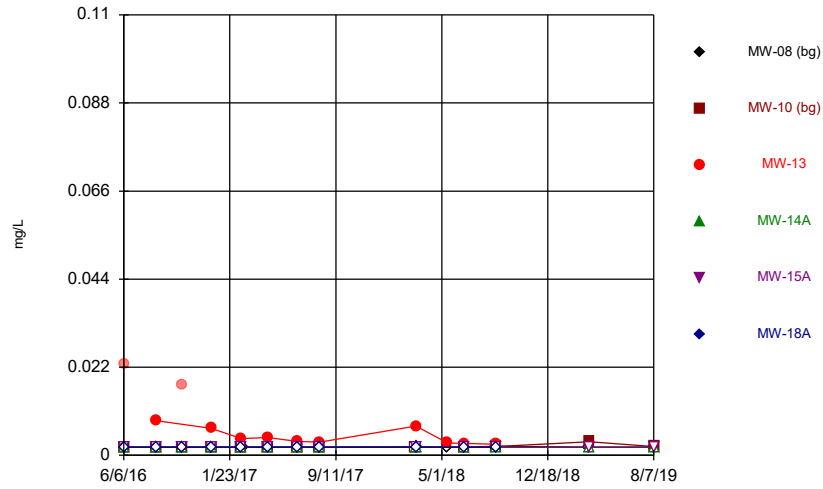
| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|--------------|---------|---------|---------|--------------|
| 6/6/2016 | | <0.0002 | | | <0.0002 | 0.000245 (o) |
| 6/7/2016 | <0.0002 | | | | | |
| 6/8/2016 | | | <0.0002 | <0.0002 | | |
| 8/15/2016 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 8/16/2016 | <0.0002 | | | | | |
| 10/10/2016 | <0.0002 | <0.0002 | <0.0002 | | | |
| 10/11/2016 | | | | <0.0002 | <0.0002 | <0.0002 |
| 12/14/2016 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 2/17/2017 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 2/21/2017 | <0.0002 | | | | | |
| 4/17/2017 | <0.0002 | <0.0002 (F1) | <0.0002 | <0.0002 | <0.0002 | |
| 4/18/2017 | | | | | | <0.0002 |
| 6/19/2017 | <0.0002 | <0.0002 | | | | |
| 6/20/2017 | | | <0.0002 | | | |
| 6/21/2017 | | | | <0.0002 | <0.0002 | <0.0002 |
| 8/7/2017 | <0.0002 | <0.0002 | | | | |
| 8/8/2017 | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 3/5/2018 | | <0.0002 | | | | |
| 3/6/2018 | <0.0002 | | <0.0002 | | | |
| 3/7/2018 | | | | <0.0002 | <0.0002 | <0.0002 |
| 6/19/2018 | <0.0002 | <0.0002 | | | | |
| 6/20/2018 | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 8/27/2018 | <0.0002 | <0.0002 | | | | |
| 8/28/2018 | | | <0.0002 | | | |
| 8/29/2018 | | | | <0.0002 | <0.0002 | <0.0002 |
| 3/18/2019 | <0.0002 | | | | | |
| 3/19/2019 | | <0.0002 | | | | |
| 3/20/2019 | | | | <0.0002 | <0.0002 | |
| 8/6/2019 | <0.0002 | | | | | |
| 8/7/2019 | | <0.0002 | | <0.0002 | <0.0002 | |

Time Series

Constituent: Mercury (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

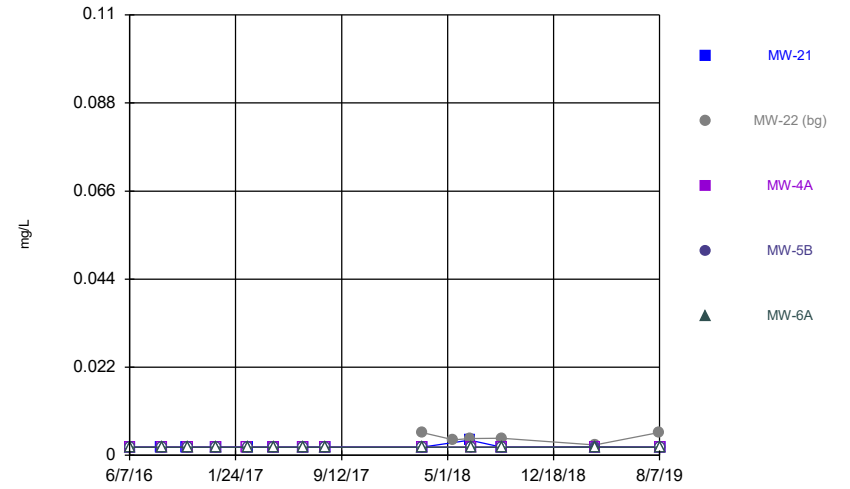
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|---------|---------|---------|
| 6/7/2016 | | | <0.0002 | <0.0002 | <0.0002 |
| 6/8/2016 | <0.0002 | | | | |
| 8/15/2016 | <0.0002 | | | | |
| 8/16/2016 | | | <0.0002 | <0.0002 | <0.0002 |
| 10/10/2016 | <0.0002 | | | | |
| 10/11/2016 | | | <0.0002 | <0.0002 | <0.0002 |
| 12/12/2016 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 |
| 2/17/2017 | | | <0.0002 | | |
| 2/21/2017 | <0.0002 | | | <0.0002 | <0.0002 |
| 4/17/2017 | | | <0.0002 | <0.0002 | <0.0002 |
| 4/18/2017 | <0.0002 | | | | |
| 6/20/2017 | <0.0002 | | <0.0002 | <0.0002 | |
| 6/21/2017 | | | | | <0.0002 |
| 8/7/2017 | | | <0.0002 | | |
| 8/8/2017 | <0.0002 | | | <0.0002 | <0.0002 |
| 3/6/2018 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 6/19/2018 | <0.0002 | <0.0002 | | | |
| 6/21/2018 | | | <0.0002 | <0.0002 | <0.0002 |
| 8/27/2018 | | <0.0002 | | | |
| 8/28/2018 | <0.0002 | | <0.0002 | | |
| 8/29/2018 | | | | <0.0002 | <0.0002 |
| 3/19/2019 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 3/20/2019 | <0.0002 | | | | |
| 8/6/2019 | | <0.0002 | | | |
| 8/7/2019 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 |

Time Series



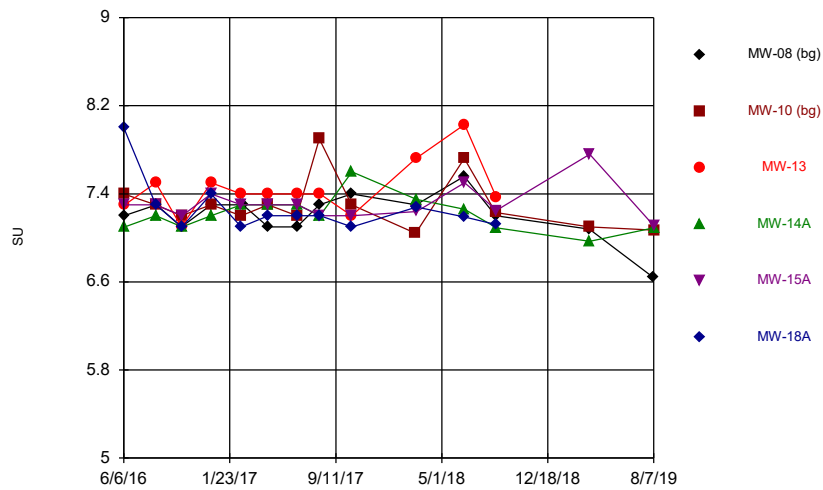
Constituent: Molybdenum Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



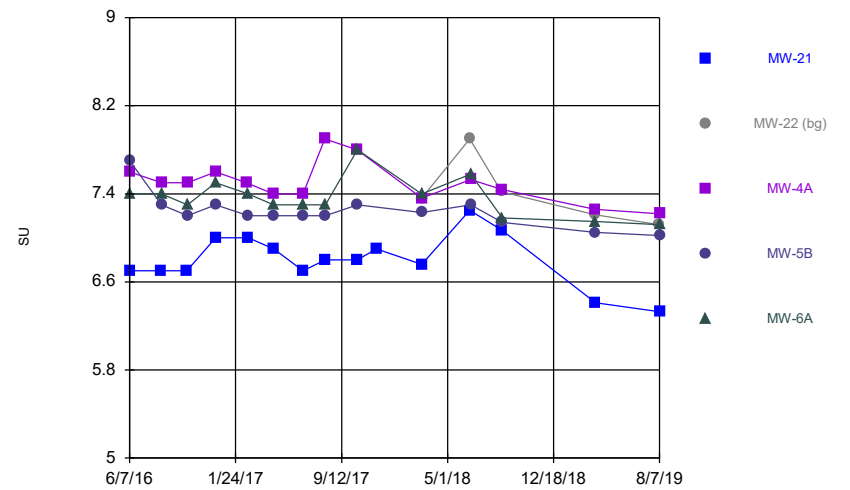
Constituent: Molybdenum Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: pH Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: pH Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|------------|--------|--------|--------|
| 6/6/2016 | | <0.002 | | | <0.002 | <0.002 |
| 6/7/2016 | <0.002 | | | | | |
| 6/8/2016 | | | 0.0227 (o) | <0.002 | | |
| 8/15/2016 | | <0.002 | 0.00867 | <0.002 | <0.002 | <0.002 |
| 8/16/2016 | <0.002 | | | | | |
| 10/10/2016 | <0.002 | <0.002 | 0.0176 (o) | | | |
| 10/11/2016 | | | | <0.002 | <0.002 | <0.002 |
| 12/14/2016 | <0.002 | <0.002 | 0.00676 | <0.002 | <0.002 | <0.002 |
| 2/17/2017 | | <0.002 | 0.00416 | <0.002 | <0.002 | <0.002 |
| 2/21/2017 | <0.002 | | | | | |
| 4/17/2017 | <0.002 | <0.002 | 0.00443 | <0.002 | <0.002 | |
| 4/18/2017 | | | | | | <0.002 |
| 6/19/2017 | <0.002 | <0.002 | | | | |
| 6/20/2017 | | | 0.00346 | | | |
| 6/21/2017 | | | | <0.002 | <0.002 | <0.002 |
| 8/7/2017 | <0.002 | <0.002 | | | | |
| 8/8/2017 | | | 0.00329 | <0.002 | <0.002 | <0.002 |
| 3/5/2018 | | <0.002 | | | | |
| 3/6/2018 | 0.0022 | | 0.00732 | | | |
| 3/7/2018 | | | | <0.002 | <0.002 | <0.002 |
| 5/14/2018 | <0.002 | | 0.00308 | | | |
| 6/19/2018 | <0.002 | <0.002 | | | | |
| 6/20/2018 | | | 0.00296 | <0.002 | <0.002 | <0.002 |
| 8/27/2018 | 0.00224 | 0.0022 | | | | |
| 8/28/2018 | | | 0.00278 | | | |
| 8/29/2018 | | | | <0.002 | <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 | |

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|--------|---------|--------|
| 6/7/2016 | | | <0.002 | <0.002 | <0.002 |
| 6/8/2016 | <0.002 | | | | |
| 8/15/2016 | <0.002 | | | | |
| 8/16/2016 | | | <0.002 | <0.002 | <0.002 |
| 10/10/2016 | <0.002 | | | | |
| 10/11/2016 | | | <0.002 | <0.002 | <0.002 |
| 12/12/2016 | <0.002 | | <0.002 | <0.002 | <0.002 |
| 2/17/2017 | | | <0.002 | | |
| 2/21/2017 | <0.002 | | | <0.002 | <0.002 |
| 4/17/2017 | | | <0.002 | <0.002 | <0.002 |
| 4/18/2017 | <0.002 | | | | |
| 6/20/2017 | <0.002 | | <0.002 | <0.002 | |
| 6/21/2017 | | | | | <0.002 |
| 8/7/2017 | | | <0.002 | | |
| 8/8/2017 | <0.002 | | | <0.002 | <0.002 |
| 3/6/2018 | <0.002 | 0.00568 | <0.002 | <0.002 | <0.002 |
| 5/14/2018 | | 0.00385 | | | |
| 6/19/2018 | 0.00383 | 0.00423 | | | |
| 6/21/2018 | | | <0.002 | <0.002 | <0.002 |
| 8/27/2018 | | 0.00424 | | | |
| 8/28/2018 | <0.002 | | <0.002 | | |
| 8/29/2018 | | | | <0.002 | <0.002 |
| 3/19/2019 | | 0.00263 | <0.002 | 0.00212 | <0.002 |
| 3/20/2019 | <0.002 | | | | |
| 8/6/2019 | | 0.00574 | | | |
| 8/7/2019 | <0.002 | | <0.002 | <0.002 | <0.002 |

Time Series

Constituent: pH (SU) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

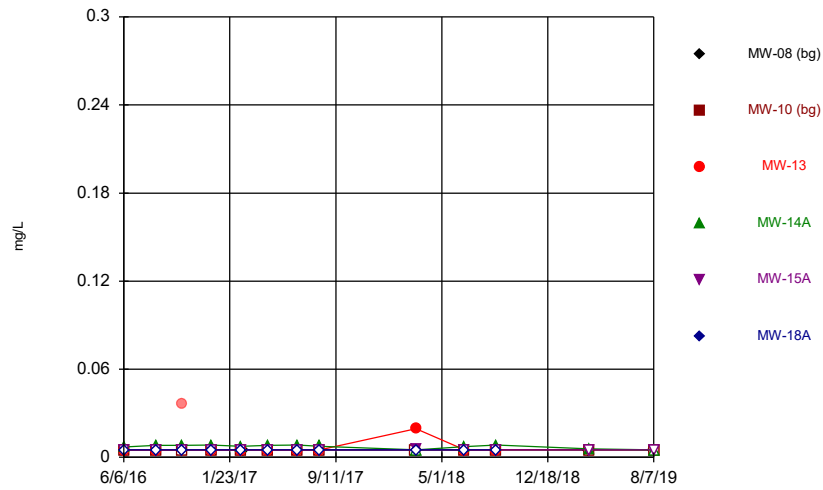
| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|-------|--------|--------|--------|
| 6/6/2016 | | 7.4 | | | 7.3 | 8 |
| 6/7/2016 | 7.2 | | | | | |
| 6/8/2016 | | | 7.3 | 7.1 | | |
| 8/15/2016 | | 7.3 | 7.5 | 7.2 | 7.3 | 7.3 |
| 8/16/2016 | 7.3 | | | | | |
| 10/10/2016 | 7.1 | 7.2 | 7.1 | | | |
| 10/11/2016 | | | | 7.1 | 7.2 | 7.1 |
| 12/14/2016 | 7.3 | 7.3 | 7.5 | 7.2 | 7.4 | 7.4 |
| 2/17/2017 | | 7.2 | 7.4 | 7.3 | 7.3 | 7.1 |
| 2/21/2017 | 7.3 | | | | | |
| 4/17/2017 | 7.1 | 7.3 | 7.4 | 7.3 | 7.3 | |
| 4/18/2017 | | | | | | 7.2 |
| 6/19/2017 | 7.1 | 7.2 | | | | |
| 6/20/2017 | | | 7.4 | | | |
| 6/21/2017 | | | | 7.3 | 7.3 | 7.2 |
| 8/7/2017 | 7.3 | 7.9 | | | | |
| 8/8/2017 | | | 7.4 | 7.2 | 7.2 | 7.2 |
| 10/16/2017 | 7.4 | 7.3 | 7.2 | | | |
| 10/17/2017 | | | | 7.6 | 7.2 | 7.1 |
| 3/5/2018 | | 7.04 | | | | |
| 3/6/2018 | 7.3 | | 7.72 | | | |
| 3/7/2018 | | | | 7.35 | 7.24 | 7.28 |
| 6/19/2018 | 7.56 | 7.72 | | | | |
| 6/20/2018 | | | 8.03 | 7.26 | 7.5 | 7.19 |
| 8/27/2018 | 7.2 | 7.23 | | | | |
| 8/28/2018 | | | 7.37 | | | |
| 8/29/2018 | | | | 7.09 | 7.25 | 7.12 |
| 3/19/2019 | 7.08 | 7.1 | | | | |
| 3/20/2019 | | | | 6.97 | 7.76 | |
| 8/6/2019 | 6.64 | | | | | |
| 8/7/2019 | | 7.07 | | 7.09 | 7.11 | |

Time Series

Constituent: pH (SU) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

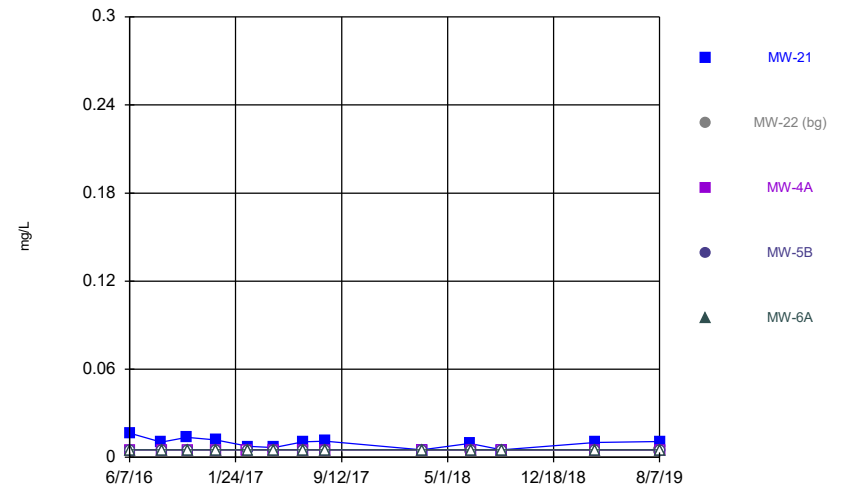
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|-------|-------|-------|
| 6/7/2016 | | | 7.6 | 7.7 | 7.4 |
| 6/8/2016 | 6.7 | | | | |
| 8/15/2016 | 6.7 | | | | |
| 8/16/2016 | | | 7.5 | 7.3 | 7.4 |
| 10/10/2016 | 6.7 | | | | |
| 10/11/2016 | | | 7.5 | 7.2 | 7.3 |
| 12/12/2016 | 7 | | 7.6 | 7.3 | 7.5 |
| 2/17/2017 | | | 7.5 | | |
| 2/21/2017 | 7 | | | 7.2 | 7.4 |
| 4/17/2017 | | | 7.4 | 7.2 | 7.3 |
| 4/18/2017 | 6.9 | | | | |
| 6/20/2017 | 6.7 | | 7.4 | 7.2 | |
| 6/21/2017 | | | | | 7.3 |
| 8/7/2017 | | | 7.9 | | |
| 8/8/2017 | 6.8 | | | 7.2 | 7.3 |
| 10/16/2017 | 6.8 | | 7.8 | | |
| 10/17/2017 | | | | 7.3 | 7.8 |
| 11/28/2017 | 6.9 (R) | | | | |
| 3/6/2018 | 6.76 | 7.36 | 7.36 | 7.23 | 7.4 |
| 6/19/2018 | 7.25 | 7.9 | | | |
| 6/21/2018 | | | 7.53 | 7.3 | 7.58 |
| 8/27/2018 | | 7.42 | | | |
| 8/28/2018 | 7.07 | | 7.44 | | |
| 8/29/2018 | | | | 7.14 | 7.18 |
| 3/19/2019 | | 7.21 | 7.26 | 7.05 | 7.15 |
| 3/20/2019 | 6.41 | | | | |
| 8/6/2019 | | 7.12 | | | |
| 8/7/2019 | 6.33 | | 7.22 | 7.02 | 7.12 |

Time Series



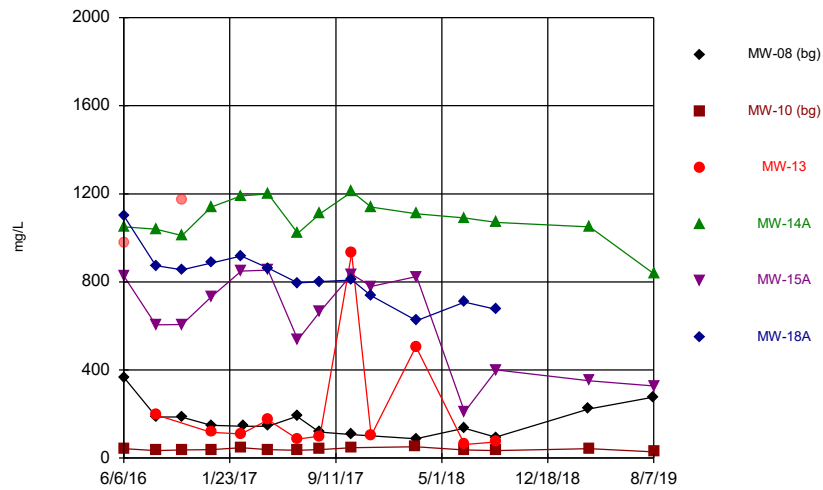
Constituent: Selenium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



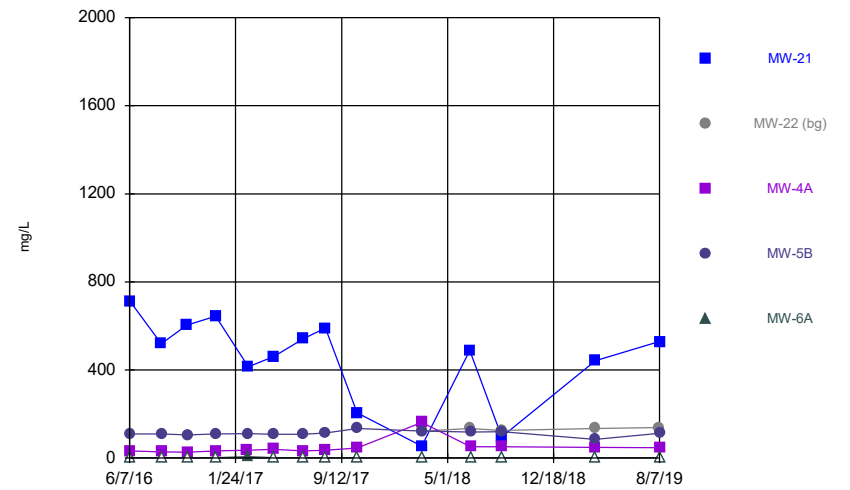
Constituent: Selenium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Sulfate Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Sulfate Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Selenium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|------------|---------|---------|--------|
| 6/6/2016 | | <0.005 | | | <0.005 | <0.005 |
| 6/7/2016 | <0.005 | | | | | |
| 6/8/2016 | | | <0.005 | 0.0071 | | |
| 8/15/2016 | | <0.005 | <0.005 | 0.00811 | <0.005 | <0.005 |
| 8/16/2016 | <0.005 | | | | | |
| 10/10/2016 | <0.005 | <0.005 | 0.0364 (o) | | | |
| 10/11/2016 | | | | 0.00821 | <0.005 | <0.005 |
| 12/14/2016 | <0.005 | <0.005 | <0.005 | 0.00834 | <0.005 | <0.005 |
| 2/17/2017 | | <0.005 | <0.005 | 0.00752 | <0.005 | <0.005 |
| 2/21/2017 | <0.005 | | | | | |
| 4/17/2017 | <0.005 | <0.005 | <0.005 | 0.00823 | <0.005 | |
| 4/18/2017 | | | | | | <0.005 |
| 6/19/2017 | <0.005 | <0.005 | | | | |
| 6/20/2017 | | | <0.005 | | | |
| 6/21/2017 | | | | 0.00829 | <0.005 | <0.005 |
| 8/7/2017 | <0.005 | <0.005 | | | | |
| 8/8/2017 | | | <0.005 | 0.00759 | <0.005 | <0.005 |
| 3/5/2018 | | <0.005 | | | | |
| 3/6/2018 | <0.005 | | 0.0195 | | | |
| 3/7/2018 | | | | <0.005 | 0.00502 | <0.005 |
| 6/19/2018 | <0.005 | <0.005 | | | | |
| 6/20/2018 | | | <0.005 | 0.00739 | <0.005 | <0.005 |
| 8/27/2018 | <0.005 | <0.005 | | | | |
| 8/28/2018 | | | <0.005 | | | |
| 8/29/2018 | | | | 0.00827 | <0.005 | <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 | |

Time Series

Constituent: Selenium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|---------|------------|--------|--------|--------|
| 6/7/2016 | | | <0.005 | <0.005 | <0.005 |
| 6/8/2016 | 0.0165 | | | | |
| 8/15/2016 | 0.0103 | | | | |
| 8/16/2016 | | | <0.005 | <0.005 | <0.005 |
| 10/10/2016 | 0.0137 | | | | |
| 10/11/2016 | | | <0.005 | <0.005 | <0.005 |
| 12/12/2016 | 0.0119 | | <0.005 | <0.005 | <0.005 |
| 2/17/2017 | | | <0.005 | | |
| 2/21/2017 | 0.0074 | | | <0.005 | <0.005 |
| 4/17/2017 | | | <0.005 | <0.005 | <0.005 |
| 4/18/2017 | 0.00674 | | | | |
| 6/20/2017 | 0.0106 | | <0.005 | <0.005 | |
| 6/21/2017 | | | | | <0.005 |
| 8/7/2017 | | | <0.005 | | |
| 8/8/2017 | 0.0109 | | | <0.005 | <0.005 |
| 3/6/2018 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| 6/19/2018 | 0.00939 | <0.005 | | | |
| 6/21/2018 | | | <0.005 | <0.005 | <0.005 |
| 8/27/2018 | | <0.005 | | | |
| 8/28/2018 | <0.005 | | <0.005 | | |
| 8/29/2018 | | | | <0.005 | <0.005 |
| 3/19/2019 | | <0.005 | <0.005 | <0.005 | <0.005 |
| 3/20/2019 | 0.0102 | | | | |
| 8/6/2019 | | <0.005 | | | |
| 8/7/2019 | 0.0108 | | <0.005 | <0.005 | <0.005 |

Time Series

Constituent: Sulfate (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|----------|----------|---------|---------|
| 6/6/2016 | | 42.1 | | | 827 | 1100 |
| 6/7/2016 | 366 | | | | | |
| 6/8/2016 | | | 975 (o) | 1050 | | |
| 8/15/2016 | | 33.8 | 197 | 1040 | 605 | 874 |
| 8/16/2016 | 187 | | | | | |
| 10/10/2016 | 187 | 36.4 | 1170 (o) | | | |
| 10/11/2016 | | | | 1010 | 607 | 855 |
| 12/14/2016 | 149 | 38.4 | 117 | 1140 | 732 | 886 |
| 2/17/2017 | | 47.3 | 110 | 1190 | 849 | 917 |
| 2/21/2017 | 145 | | | | | |
| 4/17/2017 | 145 | 38.3 | 174 | 1200 | 853 | |
| 4/18/2017 | | | | | | 863 |
| 6/19/2017 | 190 | 35.4 | | | | |
| 6/20/2017 | | | 86.7 | | | |
| 6/21/2017 | | | | 1020 | 537 | 796 |
| 8/7/2017 | 119 | 39 | | | | |
| 8/8/2017 | | | 99.4 | 1110 | 664 | 801 |
| 10/16/2017 | 106 | 46.9 | 931 | | | |
| 10/17/2017 | | | | 1210 | 835 | 808 |
| 11/28/2017 | | | 102 (R) | 1140 (R) | 779 (R) | 737 (R) |
| 3/5/2018 | | 51.4 | | | | |
| 3/6/2018 | 87.3 | | 506 | | | |
| 3/7/2018 | | | | 1110 | 824 | 624 |
| 6/19/2018 | 136 | 37.3 | | | | |
| 6/20/2018 | | | 62.1 | 1090 | 210 | 709 |
| 8/27/2018 | 94.7 | 34.3 | | | | |
| 8/28/2018 | | | 72.7 | | | |
| 8/29/2018 | | | | 1070 | 400 | 675 |
| 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 | |

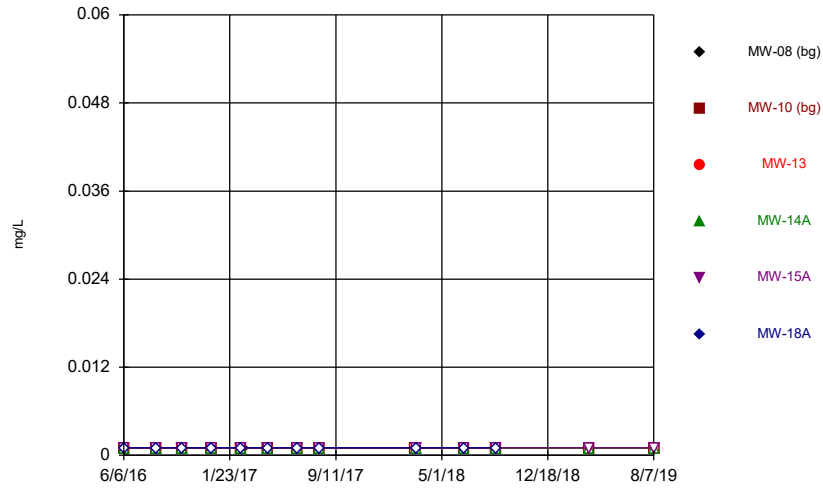
Time Series

Constituent: Sulfate (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

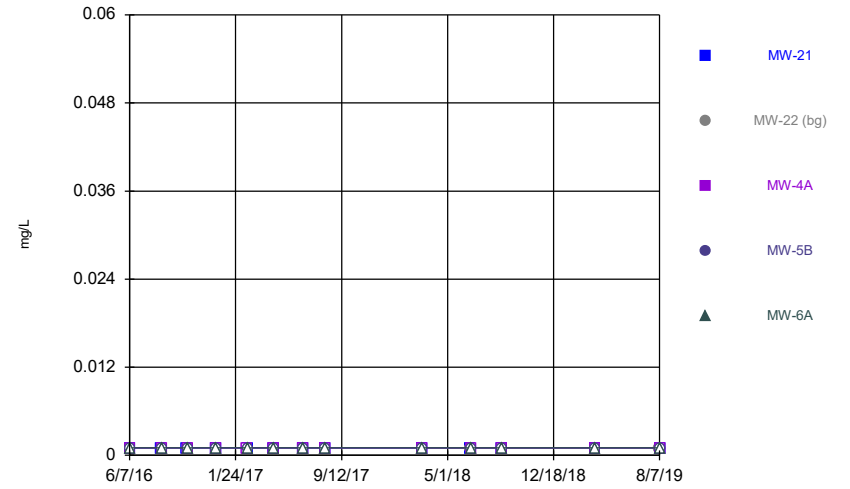
| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|-------|------------|-------|-------|-------|
| 6/7/2016 | | | 32.2 | 109 | <5 |
| 6/8/2016 | 713 | | | | |
| 8/15/2016 | 520 | | | | |
| 8/16/2016 | | | 28.4 | 109 | <5 |
| 10/10/2016 | 603 | | | | |
| 10/11/2016 | | | 27.2 | 105 | <5 |
| 12/12/2016 | 645 | | 32.7 | 109 | <5 |
| 2/17/2017 | | | 36 | | |
| 2/21/2017 | 415 | | | 111 | 5.94 |
| 4/17/2017 | | | 39.5 | 108 | <5 |
| 4/18/2017 | 461 | | | | |
| 6/20/2017 | 541 | | 33 | 108 | |
| 6/21/2017 | | | | | <5 |
| 8/7/2017 | | | 35.3 | | |
| 8/8/2017 | 590 | | | 114 | <5 |
| 10/16/2017 | 206 | | 45.4 | | |
| 10/17/2017 | | | | 135 | <5 |
| 3/6/2018 | 53.7 | 123 | 162 | 122 | <5 |
| 6/19/2018 | 489 | 134 | | | |
| 6/21/2018 | | | 51.3 | 119 | <5 |
| 8/27/2018 | | 125 | | | |
| 8/28/2018 | 96.6 | | 52.2 | | |
| 8/29/2018 | | | | 120 | <5 |
| 3/19/2019 | | 134 | 48 | 85 | <5 |
| 3/20/2019 | 442 | | | | |
| 8/6/2019 | | 139 | | | |
| 8/7/2019 | 529 | | 47 | 112 | <5 |

Time Series



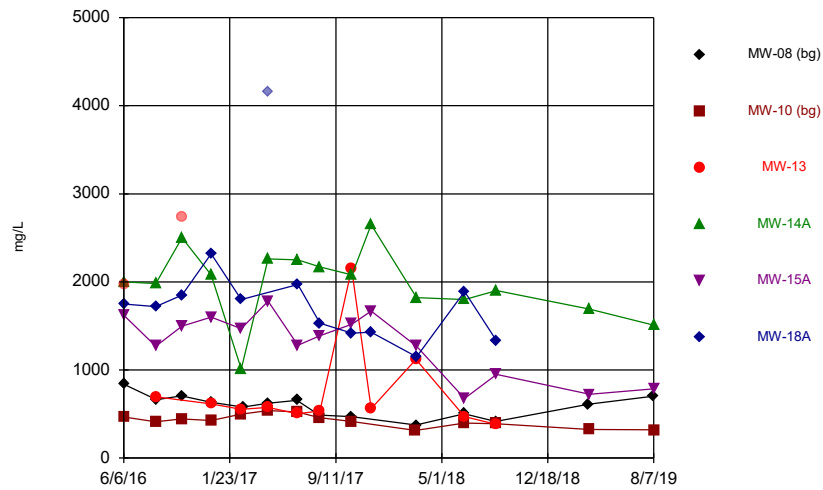
Constituent: Thallium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



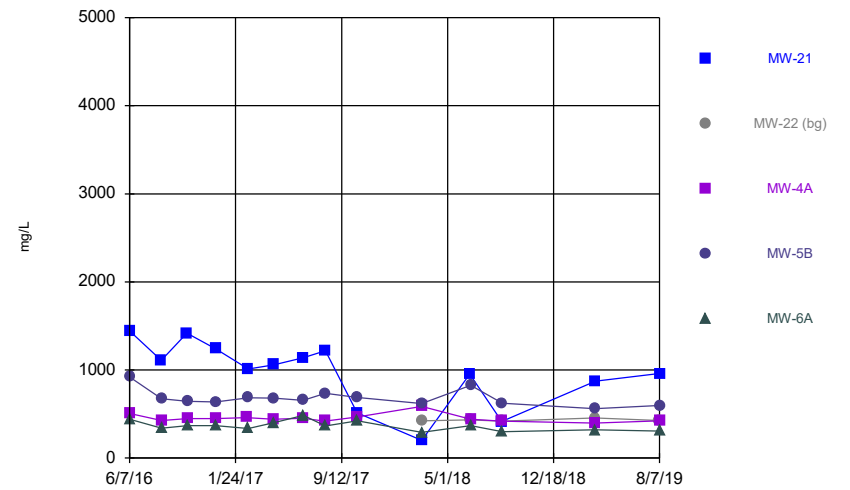
Constituent: Thallium Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Total Dissolved Solids Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series



Constituent: Total Dissolved Solids Analysis Run 10/31/2019 2:45 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Time Series

Constituent: Thallium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|--------|--------|--------|--------|
| 6/6/2016 | | <0.001 | | | <0.001 | <0.001 |
| 6/7/2016 | <0.001 | | | | | |
| 6/8/2016 | | | <0.001 | <0.001 | | |
| 8/15/2016 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 8/16/2016 | <0.001 | | | | | |
| 10/10/2016 | <0.001 | <0.001 | <0.001 | | | |
| 10/11/2016 | | | | <0.001 | <0.001 | <0.001 |
| 12/14/2016 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 2/17/2017 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 2/21/2017 | <0.001 | | | | | |
| 4/17/2017 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | |
| 4/18/2017 | | | | | | <0.001 |
| 6/19/2017 | <0.001 | <0.001 | | | | |
| 6/20/2017 | | | <0.001 | | | |
| 6/21/2017 | | | | <0.001 | <0.001 | <0.001 |
| 8/7/2017 | <0.001 | <0.001 | | | | |
| 8/8/2017 | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 3/5/2018 | | <0.001 | | | | |
| 3/6/2018 | <0.001 | | <0.001 | | | |
| 3/7/2018 | | | | <0.001 | <0.001 | <0.001 |
| 6/19/2018 | <0.001 | <0.001 | | | | |
| 6/20/2018 | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 8/27/2018 | <0.001 | <0.001 | | | | |
| 8/28/2018 | | | <0.001 | | | |
| 8/29/2018 | | | | <0.001 | <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 | |

Time Series

Constituent: Thallium (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|--------|------------|--------|--------|--------|
| 6/7/2016 | | | <0.001 | <0.001 | <0.001 |
| 6/8/2016 | <0.001 | | | | |
| 8/15/2016 | <0.001 | | | | |
| 8/16/2016 | | | <0.001 | <0.001 | <0.001 |
| 10/10/2016 | <0.001 | | | | |
| 10/11/2016 | | | <0.001 | <0.001 | <0.001 |
| 12/12/2016 | <0.001 | | <0.001 | <0.001 | <0.001 |
| 2/17/2017 | | | <0.001 | | |
| 2/21/2017 | <0.001 | | | <0.001 | <0.001 |
| 4/17/2017 | | | <0.001 | <0.001 | <0.001 |
| 4/18/2017 | <0.001 | | | | |
| 6/20/2017 | <0.001 | | <0.001 | <0.001 | |
| 6/21/2017 | | | | | <0.001 |
| 8/7/2017 | | | <0.001 | | |
| 8/8/2017 | <0.001 | | | <0.001 | <0.001 |
| 3/6/2018 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| 6/19/2018 | <0.001 | <0.001 | | | |
| 6/21/2018 | | | <0.001 | <0.001 | <0.001 |
| 8/27/2018 | | <0.001 | | | |
| 8/28/2018 | <0.001 | | <0.001 | | |
| 8/29/2018 | | | | <0.001 | <0.001 |
| 3/19/2019 | | <0.001 | <0.001 | <0.001 | <0.001 |
| 3/20/2019 | <0.001 | | | | |
| 8/6/2019 | | <0.001 | | | |
| 8/7/2019 | <0.001 | | <0.001 | <0.001 | <0.001 |

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-08 (bg) | MW-10 (bg) | MW-13 | MW-14A | MW-15A | MW-18A |
|------------|------------|------------|----------|----------|----------|----------|
| 6/6/2016 | | 468 | | | 1620 | 1750 |
| 6/7/2016 | 836 | | | | | |
| 6/8/2016 | | | 1970 (o) | 2000 | | |
| 8/15/2016 | | 412 | 694 | 1980 | 1270 | 1720 |
| 8/16/2016 | 664 | | | | | |
| 10/10/2016 | 708 | 444 | 2740 (o) | | | |
| 10/11/2016 | | | | 2500 | 1500 | 1850 |
| 12/14/2016 | 634 | 428 | 616 | 2080 | 1600 | 2320 |
| 2/17/2017 | | 498 | 554 | 1010 | 1470 | 1800 |
| 2/21/2017 | 578 | | | | | |
| 4/17/2017 | 624 | 538 | 574 | 2260 | 1780 | |
| 4/18/2017 | | | | | | 4160 (o) |
| 6/19/2017 | 656 | 524 | | | | |
| 6/20/2017 | | | 502 | | | |
| 6/21/2017 | | | | 2250 | 1280 | 1970 |
| 8/7/2017 | 488 | 458 | | | | |
| 8/8/2017 | | | 536 | 2170 | 1390 | 1530 |
| 10/16/2017 | 470 | 414 | 2150 | | | |
| 10/17/2017 | | | | 2080 | 1520 | 1420 |
| 11/28/2017 | | | 562 (R) | 2650 (R) | 1670 (R) | 1430 (R) |
| 3/5/2018 | | 314 | | | | |
| 3/6/2018 | 376 | | 1120 | | | |
| 3/7/2018 | | | | 1820 | 1270 | 1150 |
| 6/19/2018 | 502 | 396 | | | | |
| 6/20/2018 | | | 472 | 1800 | 676 | 1890 |
| 8/27/2018 | 414 | 392 | | | | |
| 8/28/2018 | | | 384 | | | |
| 8/29/2018 | | | | 1900 | 948 | 1330 |
| 3/18/2019 | 612 | | | | | |
| 3/19/2019 | | 326 | | | | |
| 3/20/2019 | | | | 1690 | 724 | |
| 8/6/2019 | 702 | | | | | |
| 8/7/2019 | | 320 | | 1510 | 786 | |

Time Series

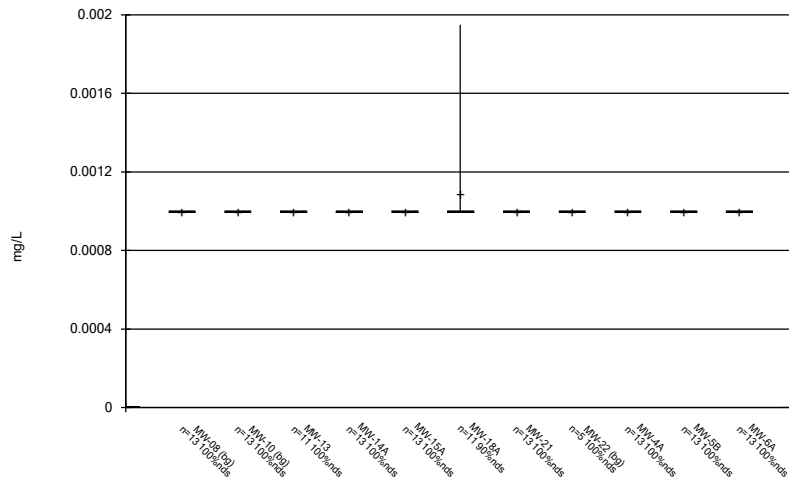
Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/31/2019 2:46 PM View: Distributional Tests

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

| | MW-21 | MW-22 (bg) | MW-4A | MW-5B | MW-6A |
|------------|-------|------------|-------|-------|-------|
| 6/7/2016 | | | 507 | 920 | 440 |
| 6/8/2016 | 1440 | | | | |
| 8/15/2016 | 1110 | | | | |
| 8/16/2016 | | | 426 | 672 | 340 |
| 10/10/2016 | 1420 | | | | |
| 10/11/2016 | | | 450 | 646 | 370 |
| 12/12/2016 | 1240 | | 450 | 636 | 368 |
| 2/17/2017 | | | 460 | | |
| 2/21/2017 | 1010 | | | 684 | 336 |
| 4/17/2017 | | | 442 | 680 | 402 |
| 4/18/2017 | 1060 | | | | |
| 6/20/2017 | 1140 | | 452 | 656 | |
| 6/21/2017 | | | | | 486 |
| 8/7/2017 | | | 420 | | |
| 8/8/2017 | 1220 | | | 734 | 364 |
| 10/16/2017 | 514 | | 466 | | |
| 10/17/2017 | | | | 688 | 424 |
| 3/6/2018 | 200 | 424 | 586 | 620 | 292 |
| 6/19/2018 | 952 | 434 | | | |
| 6/21/2018 | | | 440 | 828 | 368 |
| 8/27/2018 | | 420 | | | |
| 8/28/2018 | 416 | | 420 | | |
| 8/29/2018 | | | | 622 | 298 |
| 3/19/2019 | | 456 | 398 | 562 | 320 |
| 3/20/2019 | 872 | | | | |
| 8/6/2019 | | 428 | | | |
| 8/7/2019 | 960 | | 422 | 596 | 308 |

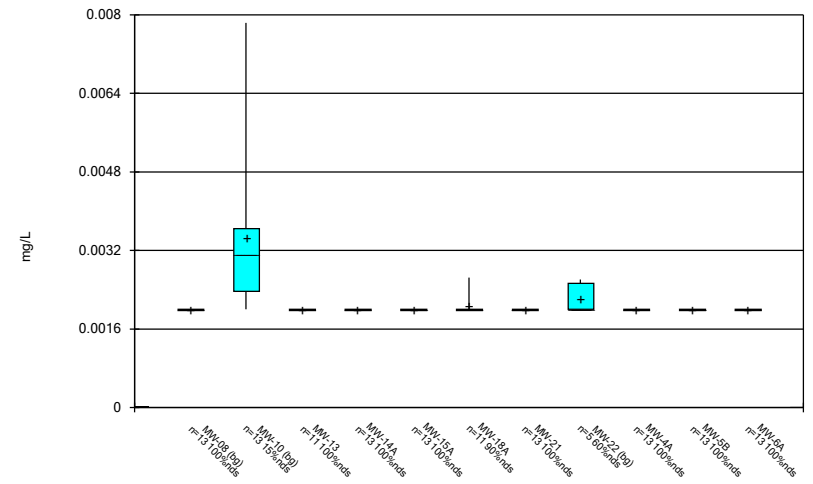
Box Plots

Box & Whiskers Plot



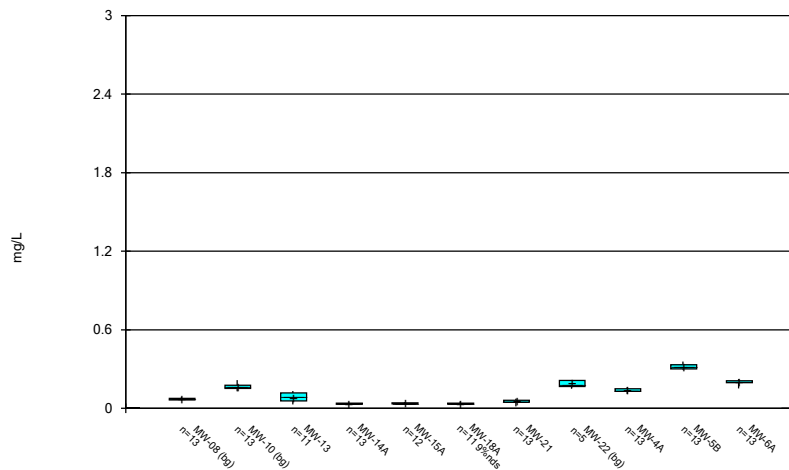
Constituent: Antimony Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



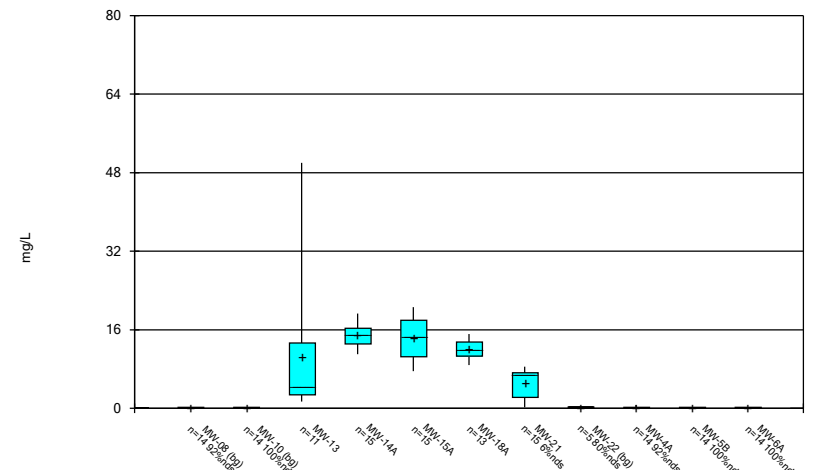
Constituent: Arsenic Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



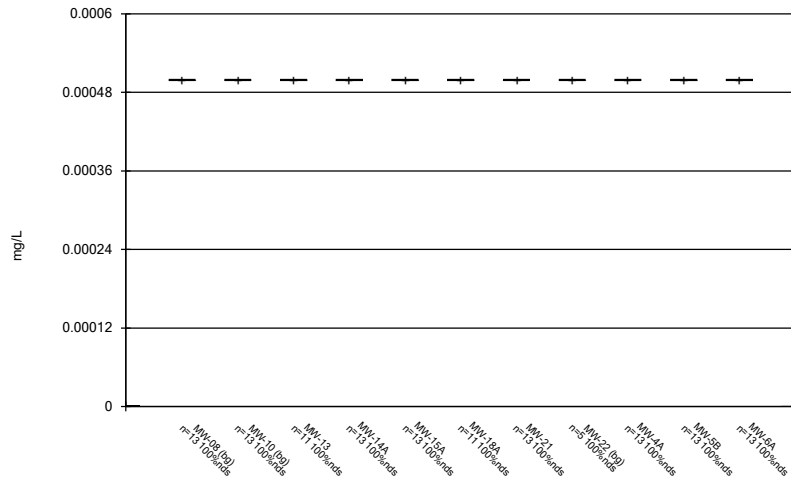
Constituent: Barium Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



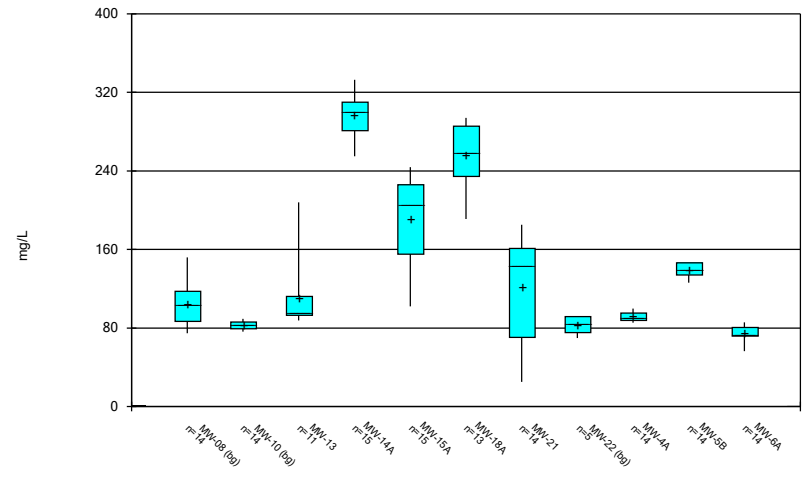
Constituent: Boron Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



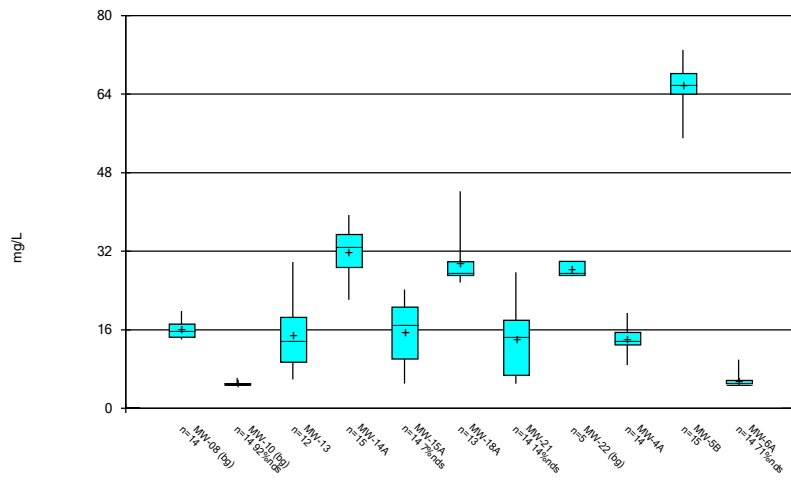
Constituent: Cadmium Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



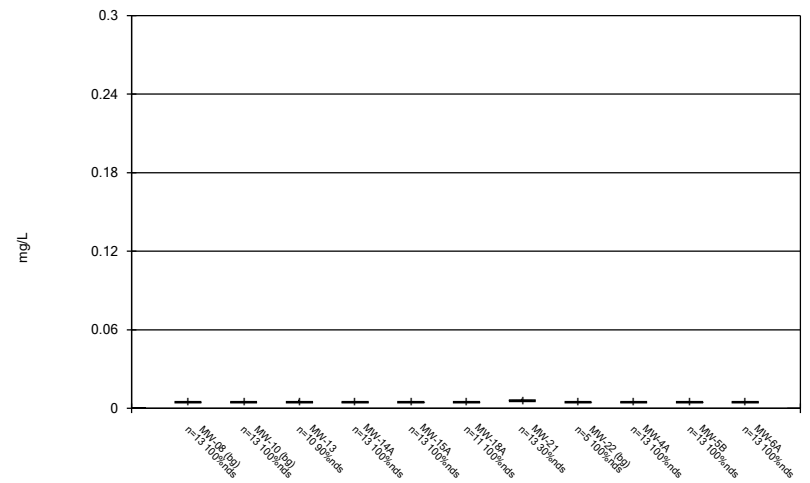
Constituent: Calcium Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



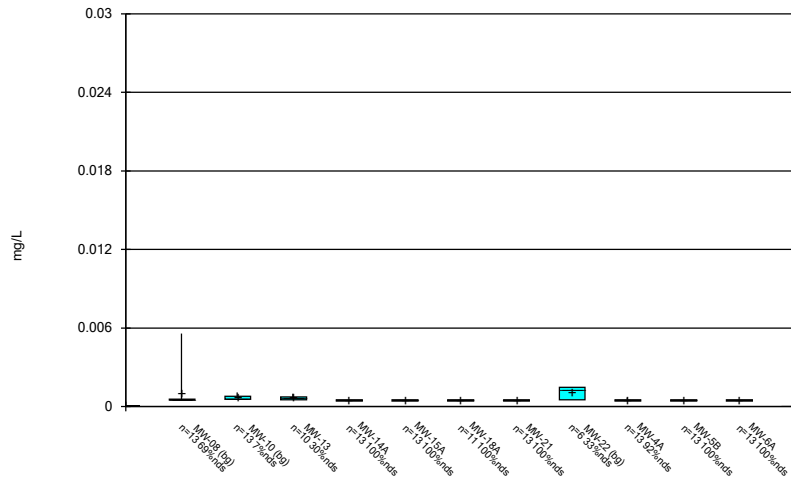
Constituent: Chloride Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



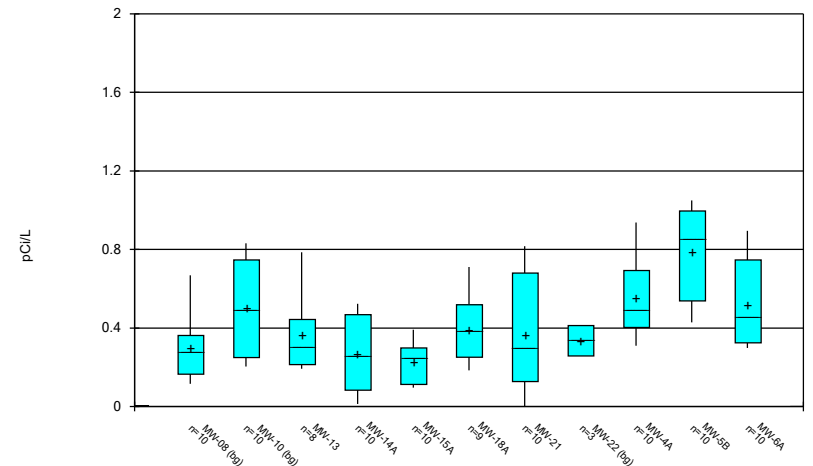
Constituent: Chromium Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



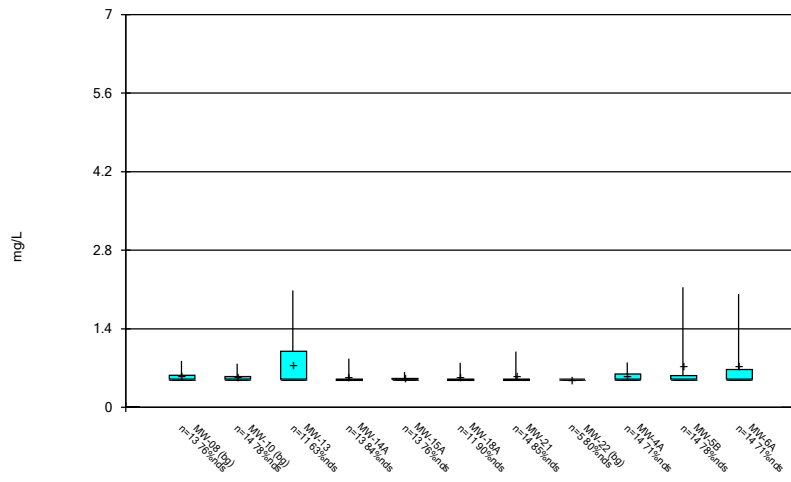
Constituent: Cobalt Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



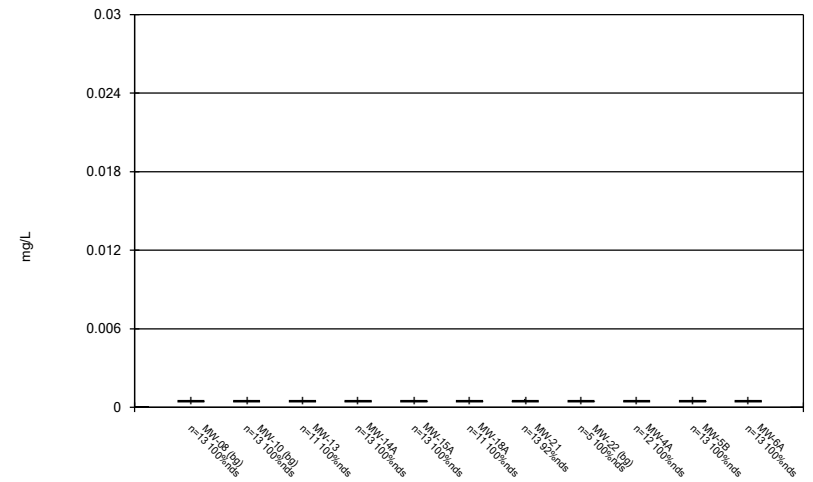
Constituent: Combined Radium 226 + 228 Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



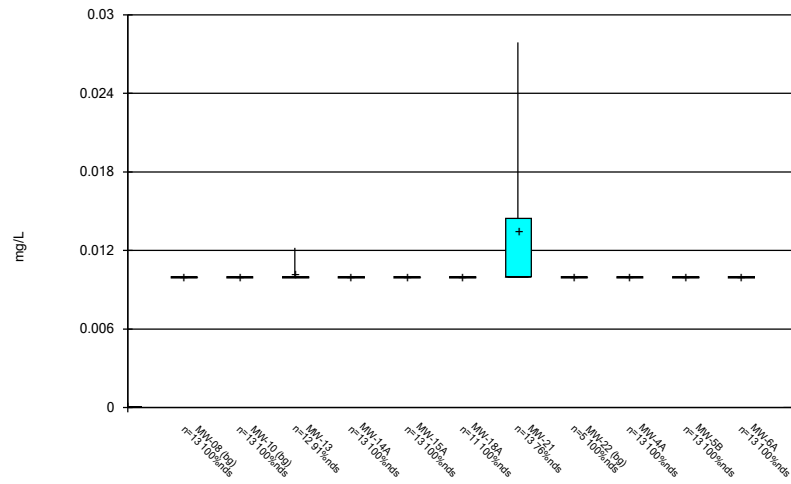
Constituent: Fluoride Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



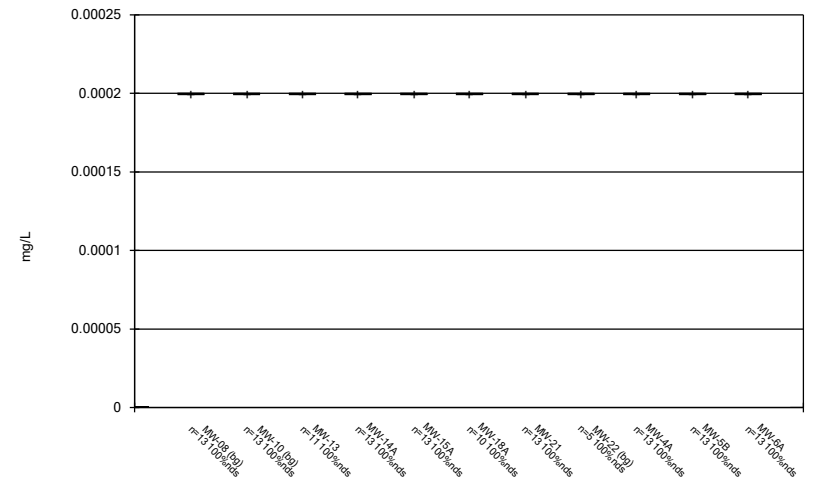
Constituent: Lead Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



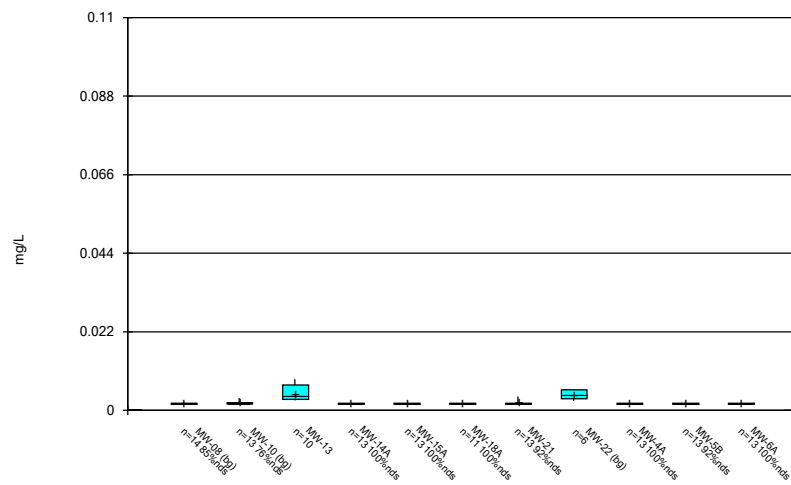
Constituent: Lithium Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



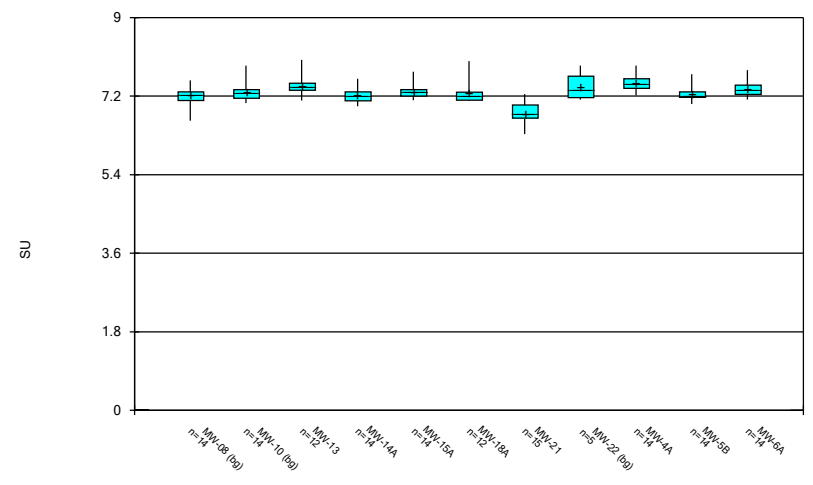
Constituent: Mercury Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



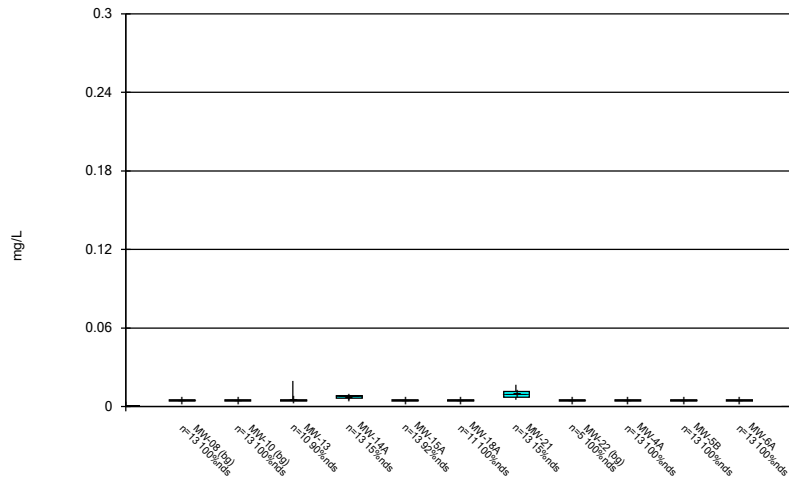
Constituent: Molybdenum Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



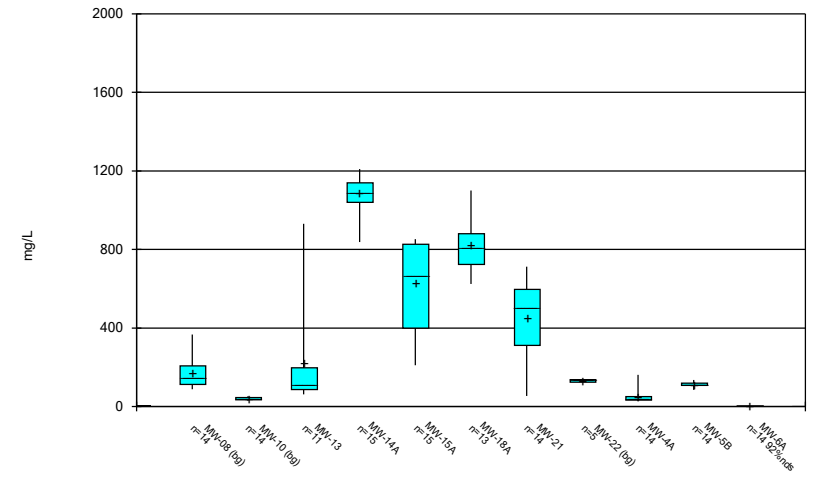
Constituent: pH Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



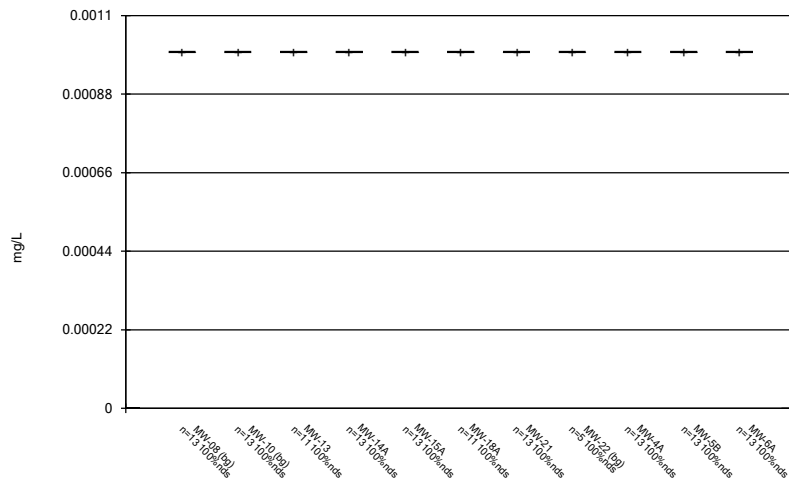
Constituent: Selenium Analysis Run 10/31/2019 3:04 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



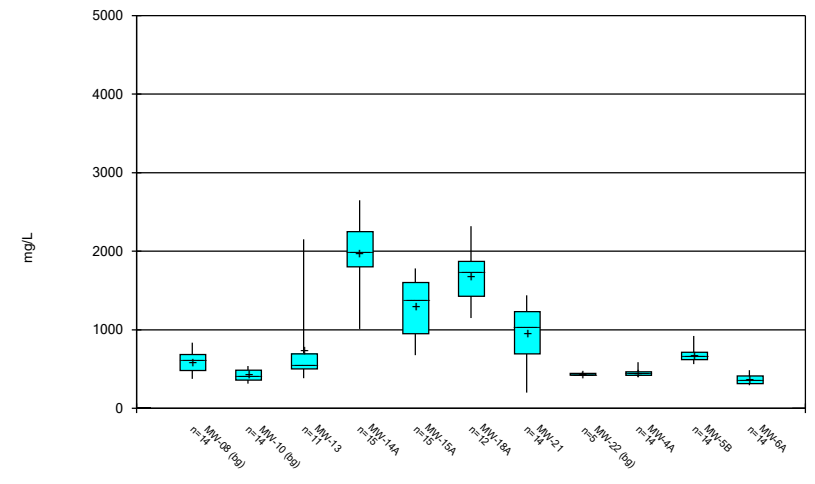
Constituent: Sulfate Analysis Run 10/31/2019 3:05 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Thallium Analysis Run 10/31/2019 3:05 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 10/31/2019 3:05 PM View: Distributional Tests
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Confidence Intervals

Confidence Interval Summary Table - All Results (No Significant)

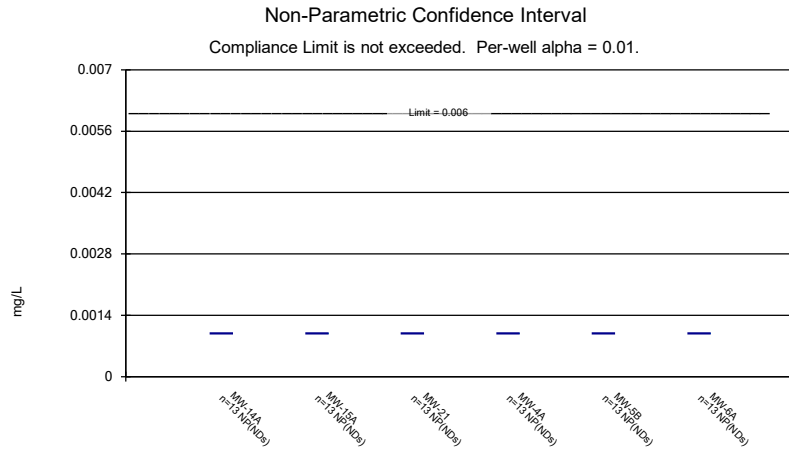
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 11/1/2019, 9:50 AM

| Constituent | Well | Upper Lim. | Lower Lim. | Compliance | Sig. | N | %NDs | Transform | Alpha | Method |
|-----------------------------------|--------|------------|------------|------------|------|----|-------|-----------|-------|----------------|
| Antimony (mg/L) | MW-14A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-15A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-21 | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-4A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-5B | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Antimony (mg/L) | MW-6A | 0.001 | 0.001 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-14A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-15A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-21 | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-4A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-5B | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Arsenic (mg/L) | MW-6A | 0.002 | 0.002 | 0.01 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Barium (mg/L) | MW-14A | 0.03872 | 0.03178 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-15A | 0.04177 | 0.03437 | 2 | No | 12 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-21 | 0.0622 | 0.04075 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-4A | 0.1477 | 0.1271 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-5B | 0.3319 | 0.3031 | 2 | No | 13 | 0 | No | 0.01 | Param. |
| Barium (mg/L) | MW-6A | 0.2118 | 0.1897 | 2 | No | 13 | 0 | x^3 | 0.01 | Param. |
| Beryllium (mg/L) | MW-14A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-15A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-21 | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-4A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-5B | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Beryllium (mg/L) | MW-6A | 0.001 | 0.001 | 0.004 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-14A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-15A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-21 | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-4A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-5B | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cadmium (mg/L) | MW-6A | 0.0005 | 0.0005 | 0.005 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-14A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-15A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-21 | 0.006369 | 0.004847 | 0.1 | No | 13 | 30.77 | No | 0.01 | Param. |
| Chromium (mg/L) | MW-4A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-5B | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Chromium (mg/L) | MW-6A | 0.005 | 0.005 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-14A | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-15A | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-21 | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-4A | 0.000681 | 0.0005 | 0.006 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-5B | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Cobalt (mg/L) | MW-6A | 0.0005 | 0.0005 | 0.006 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Combined Radium 226 + 228 (pCi/L) | MW-14A | 0.4256 | 0.1048 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-15A | 0.3128 | 0.1425 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-21 | 0.6138 | 0.1129 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-4A | 0.7245 | 0.3813 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-5B | 0.9905 | 0.5843 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | MW-6A | 0.7108 | 0.3234 | 5 | No | 10 | 0 | No | 0.01 | Param. |
| Fluoride (mg/L) | MW-14A | 0.684 | 0.5 | 4 | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-15A | 0.549 | 0.5 | 4 | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-21 | 0.768 | 0.5 | 4 | No | 14 | 85.71 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-4A | 0.664 | 0.5 | 4 | No | 14 | 71.43 | No | 0.01 | NP (normality) |
| Fluoride (mg/L) | MW-5B | 0.627 | 0.5 | 4 | No | 14 | 78.57 | No | 0.01 | NP (NDs) |
| Fluoride (mg/L) | MW-6A | 0.814 | 0.5 | 4 | No | 14 | 71.43 | No | 0.01 | NP (normality) |
| Lead (mg/L) | MW-14A | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-15A | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-21 | 0.000633 | 0.0005 | 0.015 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-4A | 0.0005 | 0.0005 | 0.015 | No | 12 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-5B | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lead (mg/L) | MW-6A | 0.0005 | 0.0005 | 0.015 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-14A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-15A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-21 | 0.0277 | 0.01 | 0.04 | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-4A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-5B | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Lithium (mg/L) | MW-6A | 0.01 | 0.01 | 0.04 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-14A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-15A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |

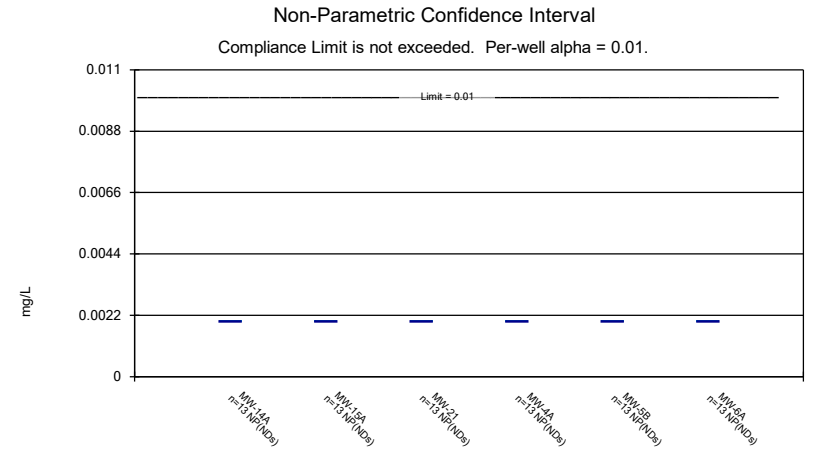
Confidence Interval Summary Table - All Results (No Significant) Page 2

Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water Printed 11/1/2019, 9:50 AM

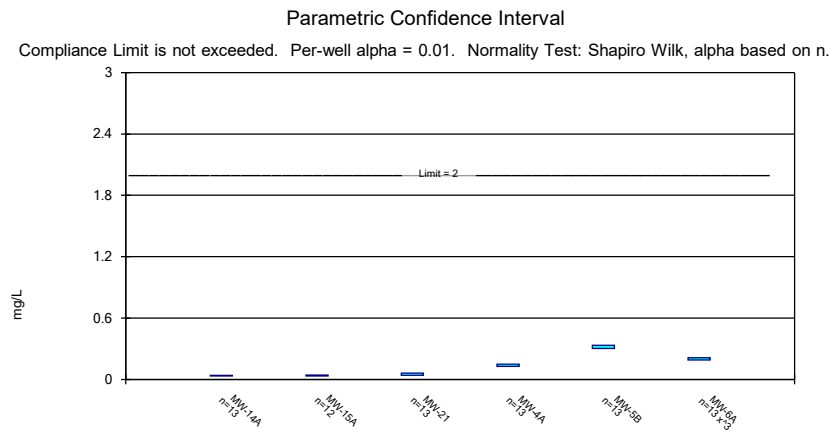
| <u>Constituent</u> | <u>Well</u> | <u>Upper Lim.</u> | <u>Lower Lim.</u> | <u>Compliance</u> | <u>Sig.</u> | <u>N</u> | <u>%NDs</u> | <u>Transform</u> | <u>Alpha</u> | <u>Method</u> |
|--------------------|-------------|-------------------|-------------------|-------------------|-------------|----------|-------------|------------------|--------------|----------------|
| Mercury (mg/L) | MW-21 | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-4A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-5B | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Mercury (mg/L) | MW-6A | 0.0002 | 0.0002 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-14A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-15A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-21 | 0.00383 | 0.002 | 0.1 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-4A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-5B | 0.00212 | 0.002 | 0.1 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Molybdenum (mg/L) | MW-6A | 0.002 | 0.002 | 0.1 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-14A | 0.00829 | 0.00569 | 0.05 | No | 13 | 15.38 | No | 0.01 | NP (normality) |
| Selenium (mg/L) | MW-15A | 0.00502 | 0.005 | 0.05 | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-21 | 0.01238 | 0.006818 | 0.05 | No | 13 | 15.38 | No | 0.01 | Param. |
| Selenium (mg/L) | MW-4A | 0.005 | 0.005 | 0.05 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-5B | 0.005 | 0.005 | 0.05 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Selenium (mg/L) | MW-6A | 0.005 | 0.005 | 0.05 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-14A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-15A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-21 | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-4A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-5B | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Thallium (mg/L) | MW-6A | 0.001 | 0.001 | 0.002 | No | 13 | 100 | No | 0.01 | NP (NDs) |



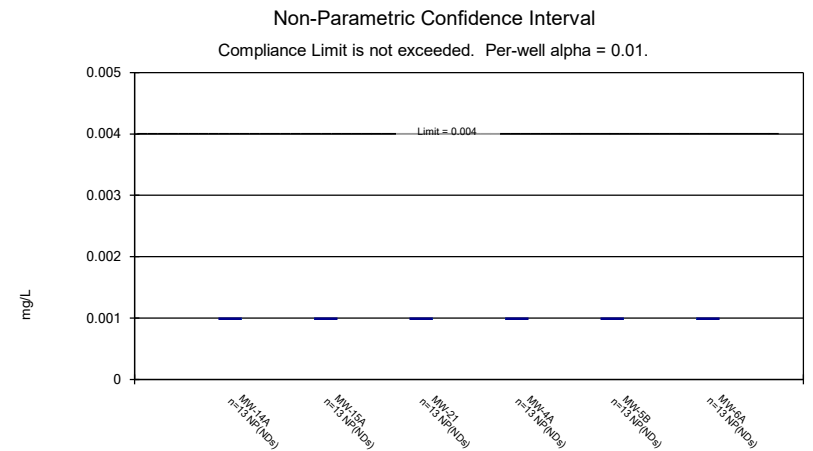
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 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



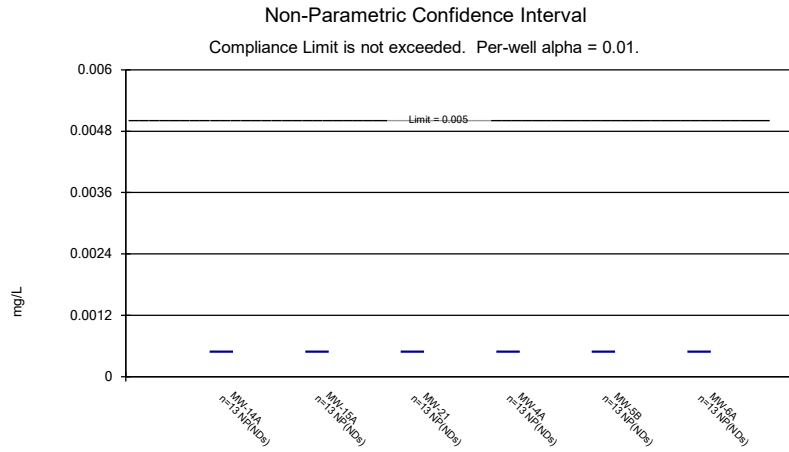
Constituent: Arsenic Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



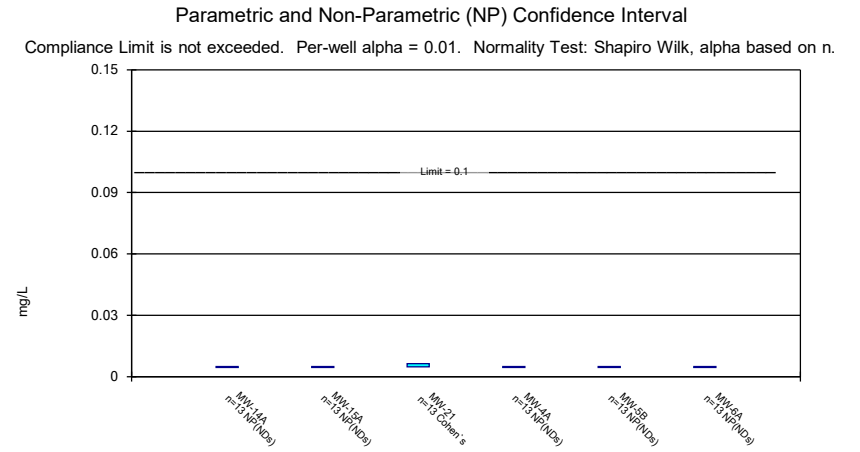
Constituent: Barium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



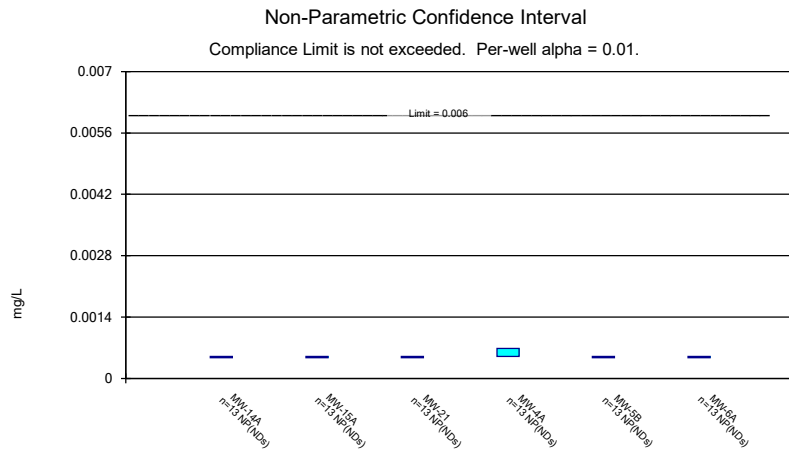
Constituent: Beryllium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



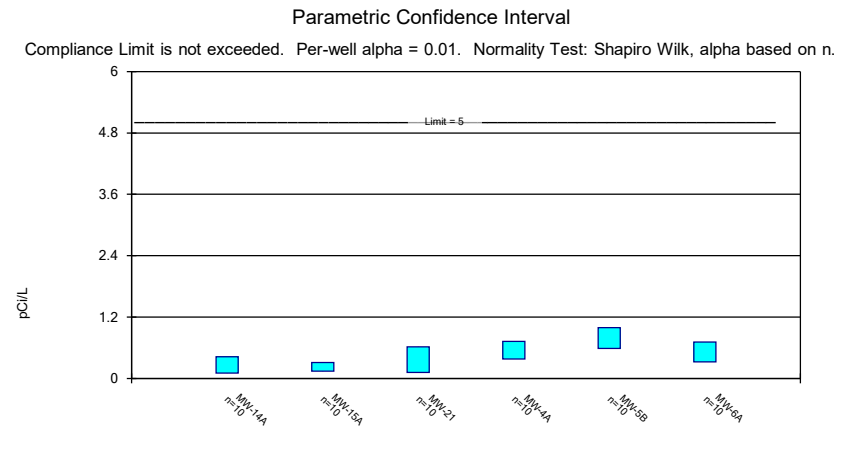
Constituent: Cadmium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



Constituent: Chromium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



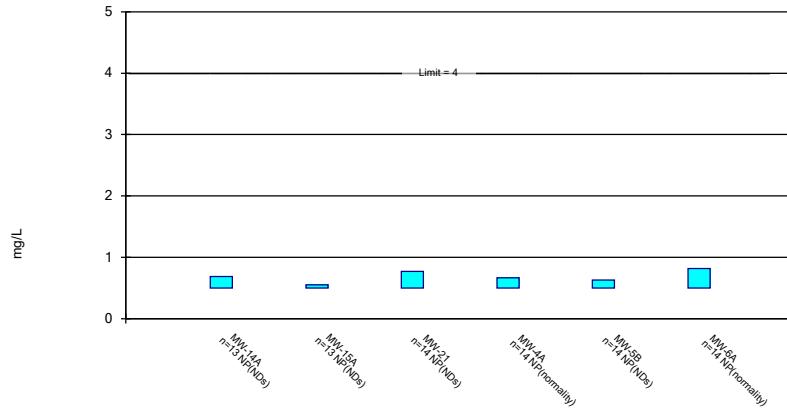
Constituent: Cobalt Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



Constituent: Combined Radium 226 + 228 Analysis Run 11/1/2019 9:49 AM View: Confidence Interval An
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Non-Parametric Confidence Interval

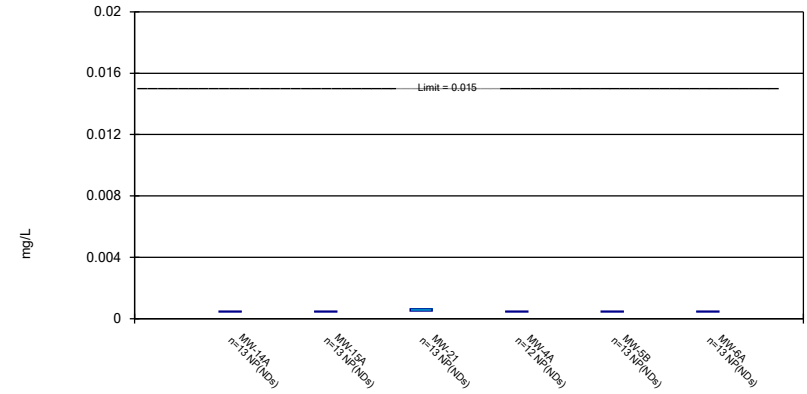
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Fluoride Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Non-Parametric Confidence Interval

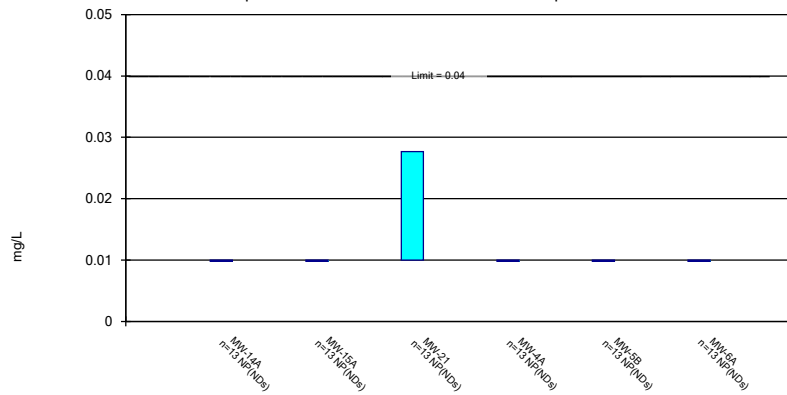
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Lead Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Non-Parametric Confidence Interval

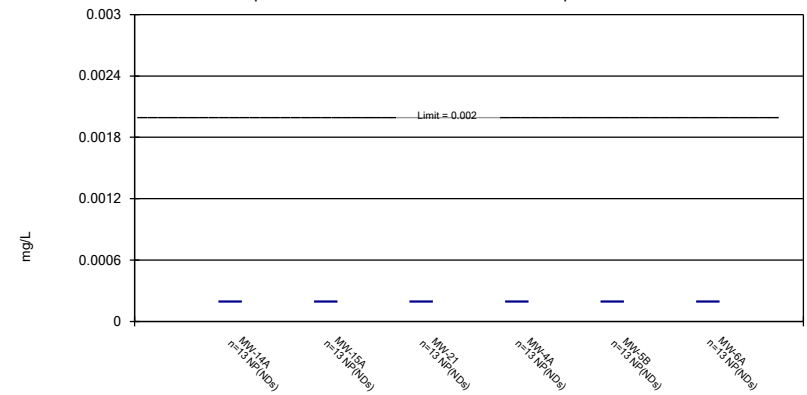
Compliance Limit is not exceeded. Per-well alpha = 0.01.



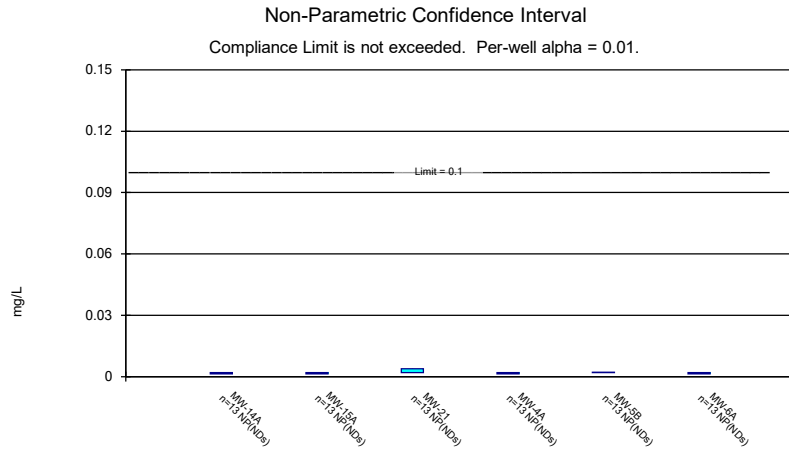
Constituent: Lithium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

Non-Parametric Confidence Interval

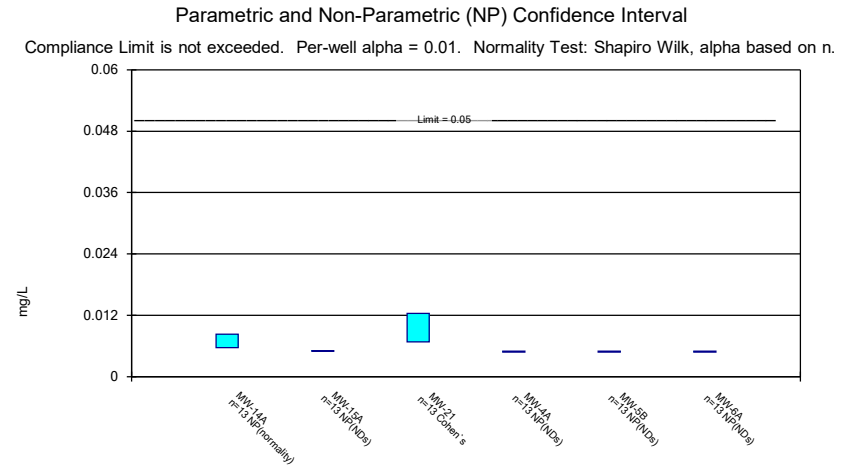
Compliance Limit is not exceeded. Per-well alpha = 0.01.



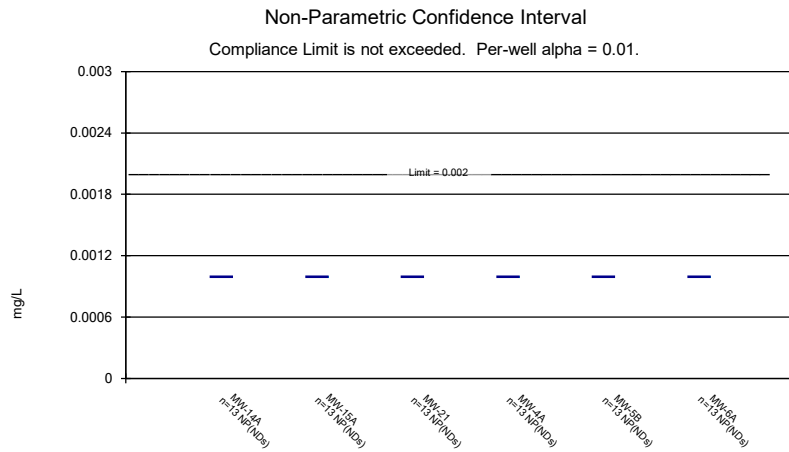
Constituent: Mercury Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



Constituent: Molybdenum Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



Constituent: Selenium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water



Constituent: Thallium Analysis Run 11/1/2019 9:49 AM View: Confidence Interval Analysis
 Muscatine Power & Water Client: HR Green, Inc. Data: Muscatine Power & Water

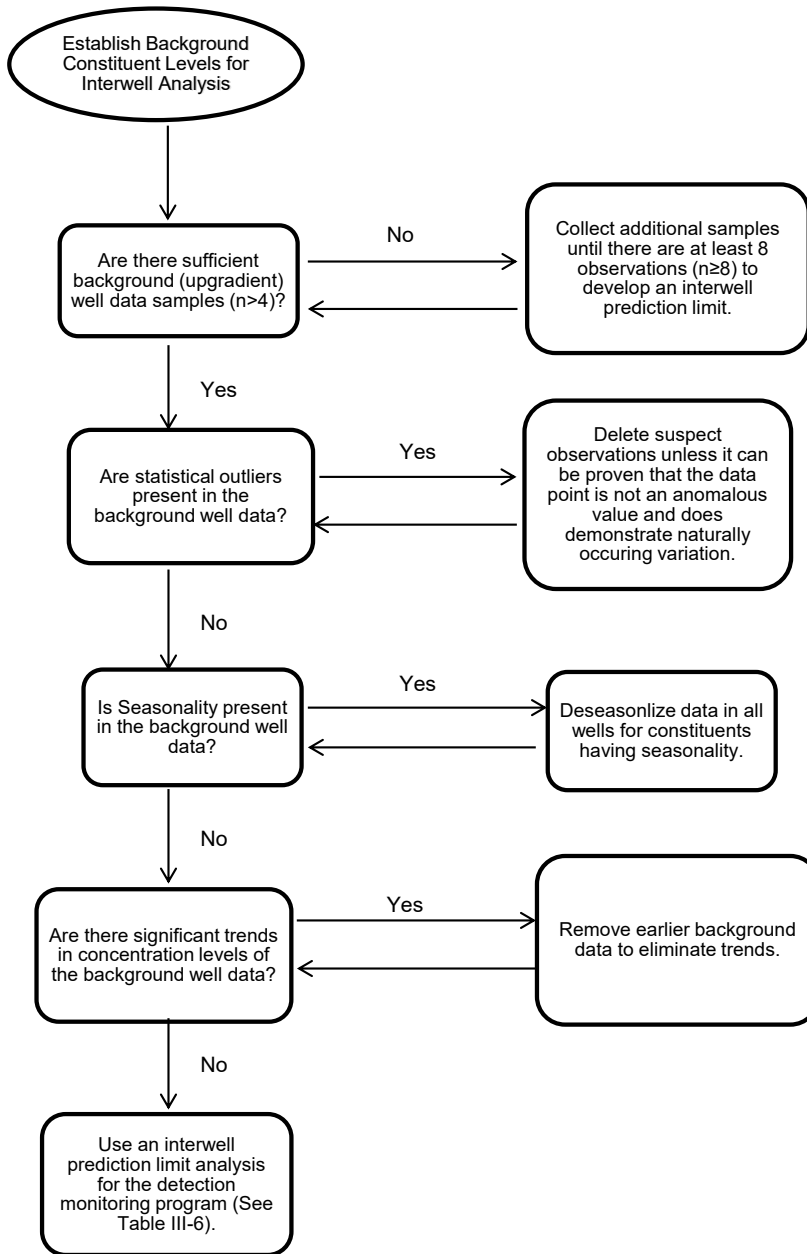


Table III-4: Methodology to Screen Background Data for Interwell Limits and Establish Background Constituent Levels

From: *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, May 2017).

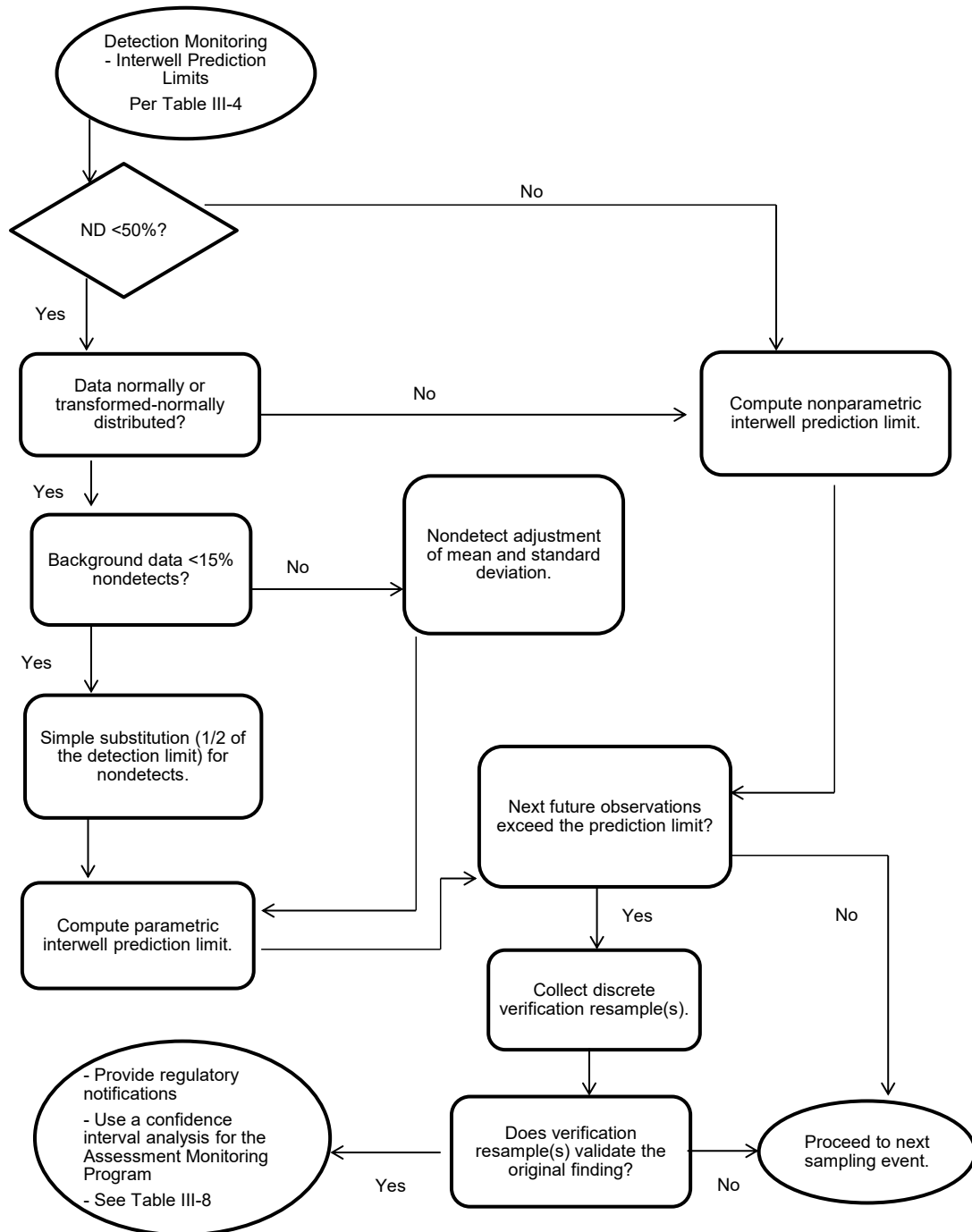


Table III-6: Methodology for Detection Monitoring - Computing Interwell Prediction Limits

From: *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, May 2017).

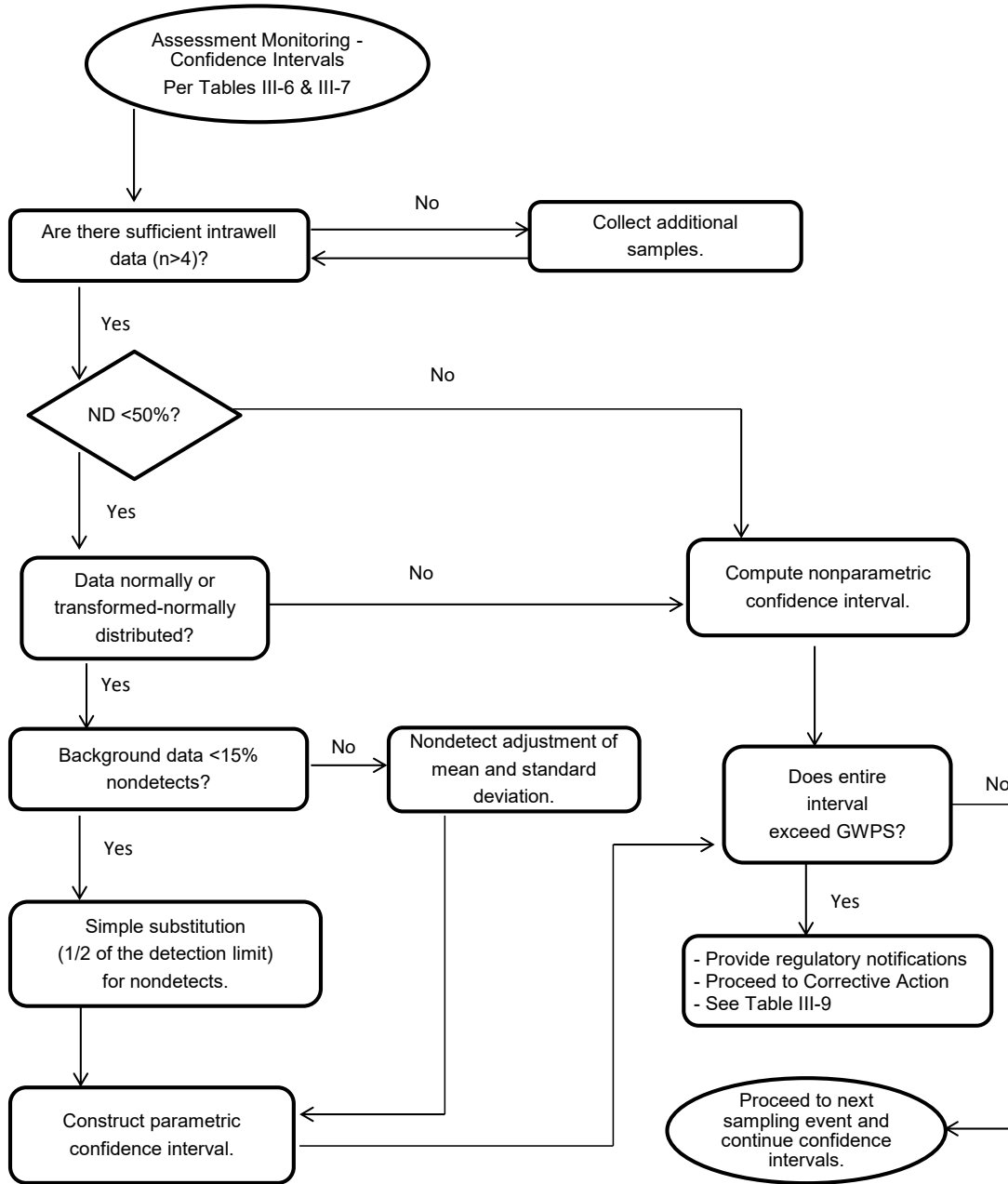


Table III-8: Methodology for Assessment Monitoring – Constructing Confidence Intervals

From: *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, May 2017).

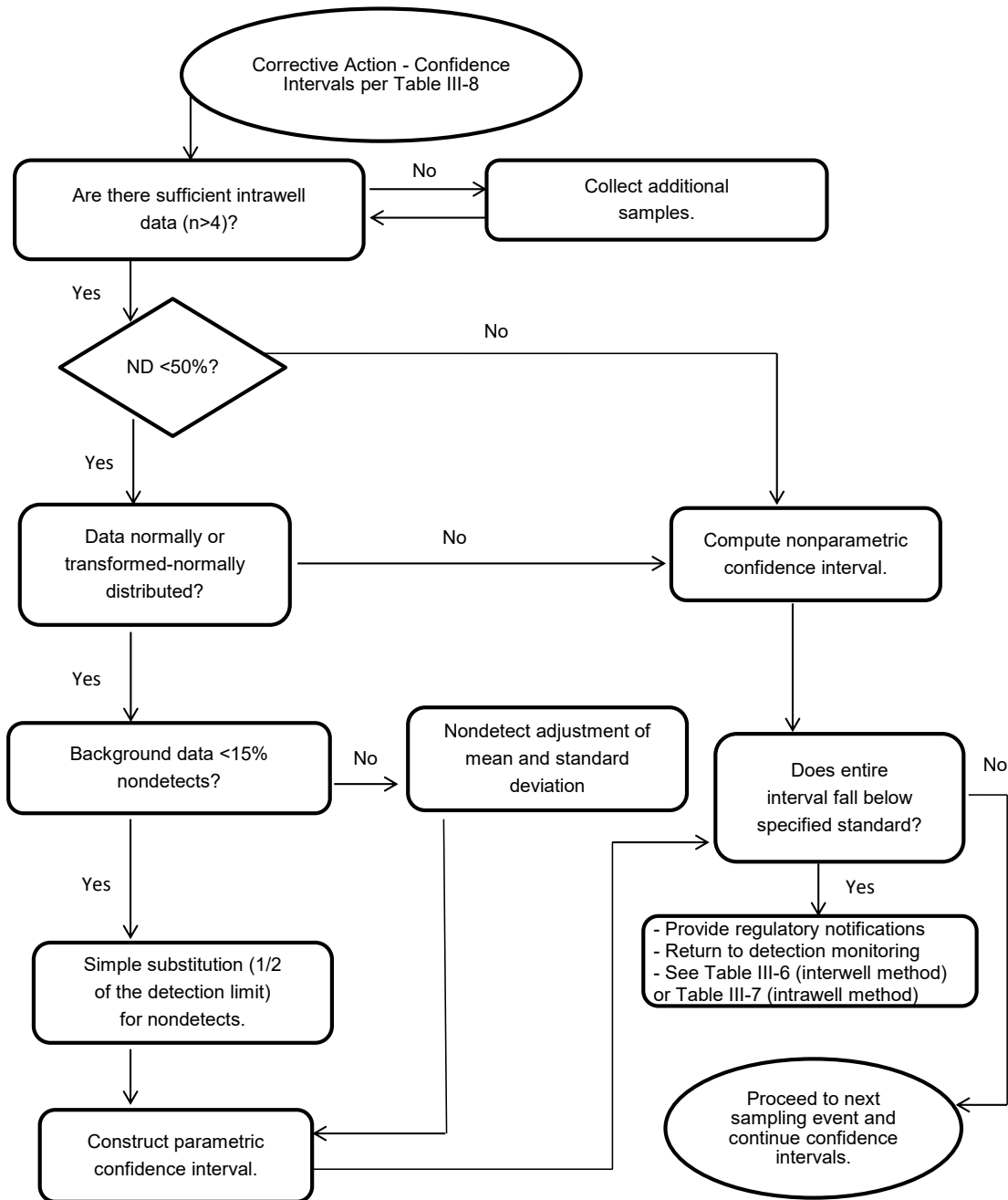


Table III-9: Methodology for Corrective Action

From: *Groundwater Monitoring System and Sampling and Analysis Program, CCR Landfill* (HR Green, May 2017).