



2024 Annual Groundwater Monitoring and Corrective Action Report

WEC Temporary Ash Disposal Area

Whelan Energy Center
Public Power Generation Agency/
City of Hastings Utilities



Hastings, Nebraska
January 31, 2025



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Professional Engineer Certification

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am duly licensed Professional Engineer under the laws of the State of Nebraska.

Print Name: Lori J. Calub

Signature: 

Date: January 31, 2025

License #: E-9881

My license renewal date is December 31, 2025.

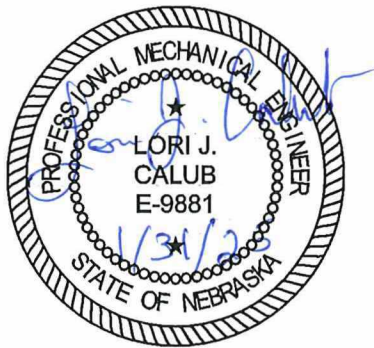




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§ 257.90(e)(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:		WEC Temporary Ash Disposal Area
§257.90(e)(6)(i)	At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95.	Assessment Monitoring Program
§257.90(e)(6)(ii)	At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95.	Assessment Monitoring Program
§257.90(e)(6)(iii)	If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):	Yes
§257.90(e)(6)(iii)(A)	Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase.	• MW-2B – Calcium • MW-4B – Sulfate
§257.90(e)(6)(iii)(B)	Provide the date when the assessment monitoring program was initiated for the CCR unit.	July 2018
§257.90(e)(6)(iv)	If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:	No SSLs
§257.90(e)(6)(iv) (A)	Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase.	N/A
§257.90(e)(6)(iv) (B)	Provide the date when the assessment of corrective measures was initiated for the CCR unit.	N/A
§257.90(e)(6)(iv)(C)	Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit.	N/A
§257.90(e)(6)(iv)(D)	Provide the date when the assessment of corrective measures was completed for the CCR unit.	N/A
§257.90(e)(6)(v)	Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection.	N/A
§257.90(e)(6)(vi)	(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	N/A

Executive Summary

Hastings Utilities, City of Hastings (Hastings) operates an existing fossil fuel combustion ash disposal area that is used exclusively by the Whelan Energy Center (WEC), designated as the WEC Temporary Ash Disposal Area. The WEC is located at 4520 East South Street, Hastings, Adams County, Nebraska, approximately two miles east of the City of Hastings, Nebraska. The WEC site is a parcel of the historical Hastings Naval Ammunition Depot and is included in the Superfund activities for this subsite. WEC is also downgradient of additional Superfund subsites located in the City of Hastings.

On April 17, 2015, the United States Environmental Protection Agency (U.S. EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The CCR rule is formally promulgated in the Title 40 United States Code of Federal Regulations (CFR) Part 257. This regulation applies to the existing WEC Temporary Ash Disposal Area operated by Hastings. This annual report covers the WEC Temporary Ash Disposal Area and provides a summary of CCR groundwater monitoring system activities for calendar year 2024 for the assessment monitoring program under 40 CFR §257.95.

The WEC Temporary Ash Disposal Area transitioned from detection to assessment monitoring following the fall 2017 sampling event due to the following statistically significant increases (SSIs) in downgradient monitoring wells: calcium, chloride, sulfate, and total dissolved solids. An alternate source demonstration (ASD), dated May 1, 2018, was prepared to evaluate the published SSIs. The ASD established that the potential for an offsite source of contamination or natural variation in regional groundwater chemistry was supported for several of the SSIs, including calcium, chloride and total dissolved solids; however, this was not supported for sulfate based on the groundwater data available at the time. As a result, Hastings initiated an assessment monitoring program in 2018, as required in the CCR rule, for the WEC Temporary Ash Disposal Area within the 90-day period specified in 40 CFR §257.95. To continue collecting information on groundwater characteristics near the site, several investigative monitoring wells were installed, sampling was conducted, and a conceptual site model was completed in 2019. Assessment monitoring continued for sampling events in spring and fall 2024. No transition of monitoring programs occurred in 2024.

For the April 2024 sampling event, results of the analysis indicated two (2) SSIs above background for Appendix III constituents and six (6) SSIs above background for Appendix IV constituents.

- Calcium at MW-2B
- Sulfate at MW-4B
- Barium at MW-1
- Barium at MW-2B
- Lithium at MW-3R
- Lithium at MW-4B
- Radium at MW-2B
- Selenium in MW-8



For the November 2024 sampling event, results of the analysis indicated two (2) SSLs above background for Appendix III constituents and four (4) SSLs above background for Appendix IV constituents.

- Calcium at MW-2B
- Sulfate at MW-4B
- Barium at MW-1
- Barium at MW-2B
- Lithium at MW-4B
- Molybdenum at MW-1

There were no statistically significant levels (SSLs) of the monitored constituents above the groundwater protection standards (GWPS) for either the April 2024 or November 2024 sampling events. Assessment monitoring will continue with the next event tentatively scheduled for spring 2025.

1 Introduction

On April 17, 2015, the United States Environmental Protection Agency (U.S. EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The CCR rule is formally promulgated in the Title 40 United States Code of Federal Regulations (CFR) Parts 257 and 261. This regulation applies to the existing Whelan Energy Center (WEC) Temporary Ash Disposal Area operated by Hastings Utilities, City of Hastings, Nebraska (Hastings).

1.1 Purpose

The CCR rule established requirements for annual reporting of groundwater monitoring and corrective action in 40 CFR §257.90. The information included in this report complies with the requirements established in 40 CFR §257.90(e). This report provides a summary of CCR-related groundwater activities for calendar year 2024.

1.2 Facility Information

Hastings operates an existing fossil fuel combustion ash disposal area that is used exclusively by the WEC (designated as the WEC Temporary Ash Disposal Area). The WEC is located at 4520 East South Street, Hastings, Adams County, Nebraska, approximately two miles east of the City of Hastings, Nebraska. The WEC site is a parcel located within the historical Hastings Naval Ammunition Depot (NAD) and as such is included in the Superfund activities for this subsite of the Hastings Groundwater Contamination Superfund Site. The Superfund actions include groundwater and soil restoration. Buried byproducts of NAD have historically been found on the site. NAD extends south, east, and west of the site. The WEC is also downgradient of the various Superfund sites and subsites of the Hastings Groundwater Contamination Superfund Site located in the City of Hastings. These sites include, but are not limited to, the Colorado Avenue Subsite, Second Street Subsite, North Landfill Subsite, and the Far-Mar-Co Subsite.

WEC consists of two fossil fuel combustion units. WEC Unit No. 1 (WEC1) is owned and operated by Hastings. WEC Unit No. 2 (WEC2) is owned by Public Power Generation Agency (PPGA), of which Hastings is a member and acts as operating agent for PPGA. The WEC Temporary Ash Disposal Area is an existing CCR surface impoundment of approximately 23.2 acres and serves the two fossil fuel combustion units. Approximately 17.1-acres of the disposal area remains unlined, while approximately 6.1-acres of composite liner disposal area and leachate pond was constructed within the WEC Temporary Ash Disposal Area in fall 2023.

CCR disposal at this site began in 1981, the same year that commercial operation of WEC1 began. Fossil fuel bottom ash and fly ash mixture (pond ash) from WEC1 is currently sluiced to the WEC Temporary Ash Disposal Area. Commercial operation of WEC2 began on May 1, 2011. Fly ash from the WEC2 silo is typically loaded directly into trucks for off-site beneficial use. WEC2 bottom ash is hauled in dump trucks and stockpiled within the limits of the disposal area. Scrubber ash from WEC2 is moisture conditioned and hauled to the disposal area. The sluiced pond ash and scrubber ash are kept apart in the WEC Temporary Ash Disposal Area by a separation berm. Hastings has marketed and utilized the CCR for beneficial reuse. The intent

is to manage the CCR within the WEC Temporary Ash Disposal Area permitted limits and balance production with excavation for beneficial reuse.

1.3 Transition of Monitoring Programs

The following statistically significant increases (SSIs) were detected and reported in the 2017 WEC CCR Annual Groundwater Report in downgradient monitoring wells at the WEC Temporary Ash Disposal Area: calcium, chloride, sulfate, and total dissolved solids. An alternate source demonstration (ASD) was conducted for the published SSIs (dated May 1, 2018). The ASD established that the potential for an offsite source of contamination or natural variation in regional groundwater chemistry was supported for several of the SSIs, including calcium, chloride, and total dissolved solids; however, this was not supported for sulfate based on the groundwater data available at the time. As a result, Hastings initiated an assessment monitoring program in 2018, as required in the CCR rule, for the WEC Temporary Ash Disposal Area within the 90-day period specified in 40 CFR §257.95. To continue collecting information on groundwater characteristics near the site, several investigative monitoring wells were installed, sampling was conducted, and a conceptual site model was completed in 2019. Assessment monitoring continued for sampling events in spring and fall 2024. No transition of monitoring programs occurred in 2024.

2 Monitoring Program Summary

The groundwater monitoring system currently consists of nine monitoring wells. Monitoring well details for the monitoring network, including the date of installation, are provided in **Table 1**. The locations of the monitoring wells in the groundwater monitoring program with respect to the WEC Temporary Ash Disposal Area are shown in **Figure 1**. Based on historical data collected at the site during Nebraska Department of Environment and Energy (NDEE) Title 132 semiannual monitoring, monitoring wells upgradient of the CCR unit (current background wells) include MW-5B, MW-6, and MW-9, and downgradient monitoring wells include MW-1, MW-2B, MW-3R, MW-4B, MW-7, and MW-8.

2.1 Groundwater Monitoring Network Condition Assessment

Hastings Utilities personnel evaluated the condition of each monitoring well in the groundwater monitoring system during the semiannual sampling events in April 2024 and November 2024. The wells were noted in good working condition, concrete pads were intact, and no damage was observed to the protective well casings. The pump at MW-3R was not working during the April 2024 sampling event, and a spare pump was obtained and used to collect the sample. A spare pump was also used to obtain samples from MW-5B and MW-7 during the November 2024 sampling event because the water was below the dedicated pumps. No wells were added or abandoned from the certified monitoring well network in 2024.

2.2 Groundwater Purging and Sampling

Groundwater sampling events were conducted by Hastings Utilities personnel in April 2024 and November 2024 at the site's CCR monitoring well network. Samples were collected in

compliance with 40 CFR §257.90(c), which requires groundwater monitoring be conducted throughout the active life and post-closure care period of the CCR unit for wells in the monitoring network. The number of samples collected for each background and downgradient well during each groundwater sample event, whether the sample was required by detection or assessment monitoring programs, and the date of each event is summarized in **Table 2**.

Groundwater sampling was conducted by Hastings Utilities personnel in accordance with the WEC Temporary Ash Disposal Area's Groundwater Sampling and Analysis Plan (SAP) dated October 2016, revised on February 21, 2020, and further revised with the NDEE Title 132 permit renewal on August 6, 2021. The monitoring wells were purged and sampled with dedicated Geotech SS Geosub pumps and controllers in the monitoring wells under low-flow sampling conditions except for MW-3R, which was sampled with a spare pump during the April 2024 sampling event, and MW-5B and MW-7, which were both sampled with spare pumps during the November 2024 sampling event as discussed in **Section 2.1**. A calibrated water quality meter was used to monitor field parameters, including pH, temperature, turbidity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and conductivity. Field sampling forms for the April 2024 and November 2024 sampling events are provided in **Appendix A**. After the water quality parameters stabilized, groundwater samples were collected and placed into iced coolers under chain-of-custody control pending delivery to the laboratories. Groundwater samples were analyzed by Eurofins Environment Testing (Eurofins). The laboratory analytical reports are provided in **Appendix B**.

2.3 Groundwater Elevations & Flow Direction

Static groundwater level measurements were recorded at the network monitoring wells listed in **Table 1**, with the exception of MW-1 and MW-8 during the fall sampling event. Static groundwater level measurements were recorded prior to purging and sampling activities conducted during the groundwater sampling events. Groundwater measurements were used to determine groundwater elevations for monitoring wells (**Table 3**). Groundwater flow observed during the two assessment monitoring sampling events was to the northeast with an average flow velocity of 1.89 ft/day to 2.89 ft/day during the spring sampling event and 1.74 ft/day to 2.66 ft/day during the fall sampling event, which is consistent with historical data observed from 2007 to 2023 (see **Figures 2 and 3**).

2.4 Detection Monitoring Program Results

The results of background sampling events in November 2016 through June 2017 and the detection and assessment monitoring activities in October 2017 through November 2024 for Appendix III and Appendix IV constituents are presented in **Table 4** and **Table 5**.

2.5 Assessment Monitoring Program Results

The WEC Temporary Ash Disposal Area transitioned from the detection monitoring program to the assessment monitoring program following the ASD dated May 1, 2018. Groundwater sampling was completed as part of an assessment monitoring program for the WEC CCR unit in July 2018, as specified in 40 CFR §257.95(b), and October 2018, as specified in 40 CFR

§257.95(d). The July and October 2018 sampling events were analyzed for the full Appendix III and Appendix IV constituent lists in accordance with 40 CFR §257.95(b) and 40 CFR §257.95(d). Semiannual sampling for the assessment monitoring program has continued through 2024. Samples were collected in accordance with 40 CFR §257.90(e). The samples were analyzed for all constituents from the Appendix III and IV lists during the April 2024 and November 2024 sampling events. The results of the assessment monitoring events for April 2024 and November 2024 are presented in **Table 4** and **Table 5**.

2.6 Statistical Analysis Results

Statistically derived background threshold values (BTVs) for Appendix III and Appendix IV constituents for assessment monitoring are provided in **Table 6**. Sampling results used to calculate BTVs were obtained during monitoring events conducted between November 2016 and November 2022. Background data sets will be evaluated for updates every two years or during monitoring program transition, as recommended by the U.S. EPA's Unified Guidance, "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities" (2009) and in accordance with the facility's SAP. The next background update was scheduled in fall 2024. However, one upgradient monitoring well (MW-6) and two downgradient monitoring wells (MW-3R and MW-8) were unable to be sampled during the fall 2024 sampling event. Therefore, four measurements have not been collected from every network well since the last BTV update. BTVs will instead be updated in spring 2025, or as soon as four measurements have been collected from each network monitoring well.

As a result of entering the assessment monitoring program, groundwater protection standards (GWPS) were established for all detected Appendix IV constituents. The GWPS were established in accordance with 40 CFR §257.95(h) and are presented in **Table 7**.

Spring and fall 2024 statistical analysis memos are included in **Appendix C**. The memos include a summary of the BTVs for the Appendix III and IV constituents in assessment monitoring. The memos also contain the results of statistical evaluation for SSIs above background and statistically significant levels (SSLs) above the GWPS at downgradient monitoring wells. No SSLs were identified.

2.7 Other Information Required under 40 CFR §257.90-98

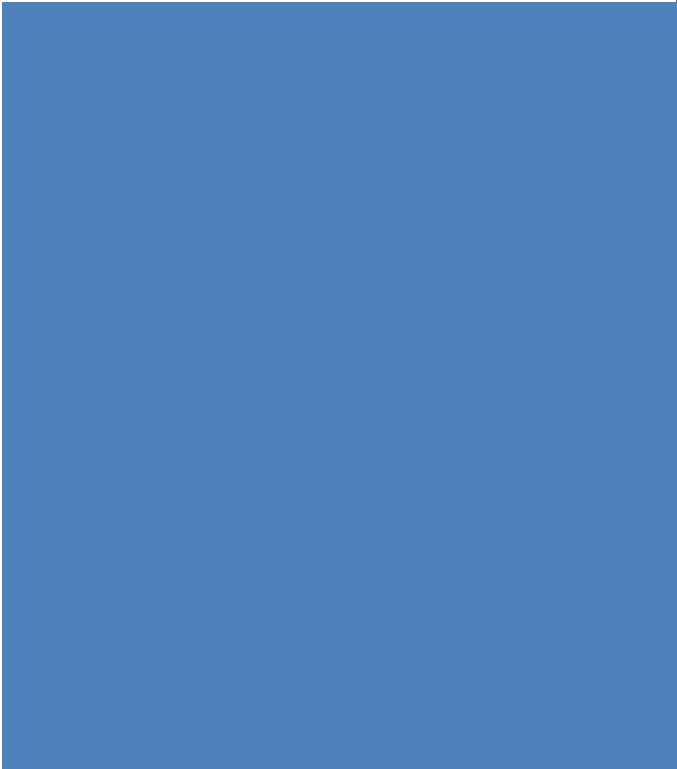
No other information is required under 40 CFR §257.90 through 40 CFR §257.98 at this time.

3 Key Activities for Upcoming Year

In 2025, all wells in the CCR groundwater monitoring network will be sampled at least semiannually, in accordance with the assessment monitoring program requirements (40 CFR §257.95). Analytical results will be evaluated for SSIs above background and for SSLs above the GWPS in spring and fall 2025.



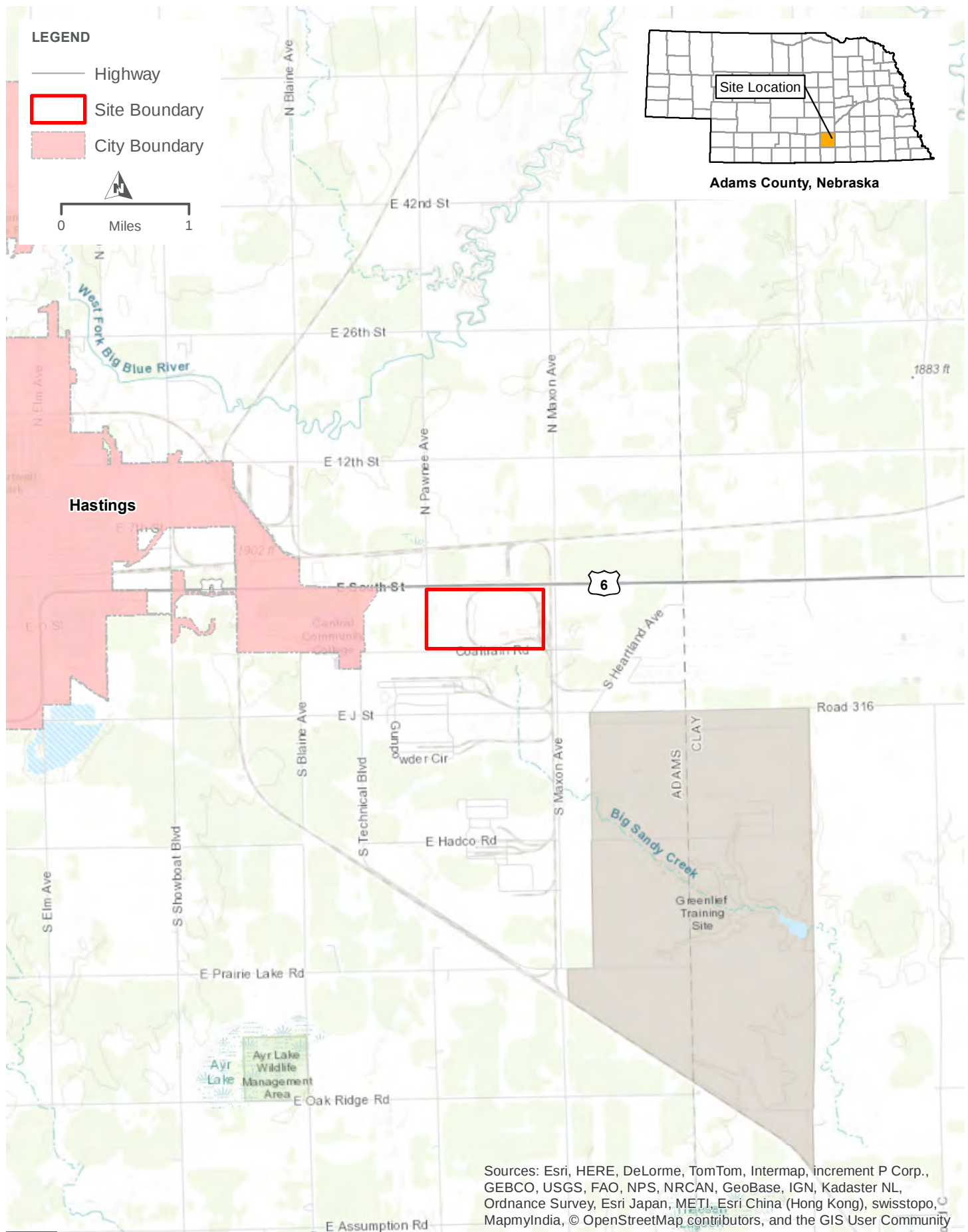
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Figures



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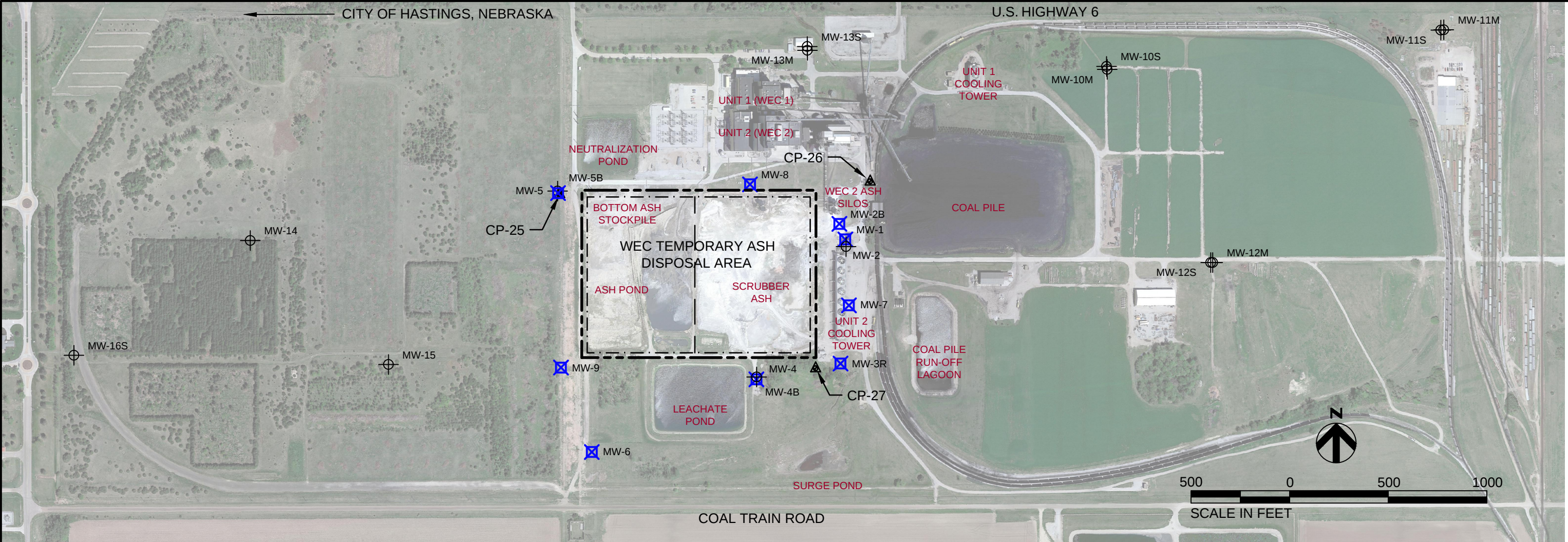


WHELAN ENERGY CENTER - PUBLIC POWER GENERATION AGENCY/HASTINGS UTILITIES

SITE LOCATION

FIGURE 1

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GROUNDWATER MONITORING WELLS					
WELL DESIGNATION	NORTHING	EASTING	TOP OF CASING ELEVATION*	GROUND ELEVATION*	COMMENT
MW-1	334585.29	2330340.91	1903.16	1900.68	DETECTION MONITORING WELL
MW-2	334549.00	2330345.01	1903.18	1900.93	DRY
MW-2B	334663.85	2330310.77	1903.43	1900.60**	DETECTION MONITORING WELL
MW-3R	333955.95	2330316.80	1900.76	1897.98	DETECTION MONITORING WELL
MW-4	333888.31	2329891.68	1899.21	1895.19	DRY
MW-4B	333876.00	2329890.22	1897.55	1894.69**	DETECTION MONITORING WELL
MW-5	334830.77	2328882.44	1898.90	1897.60	DRY
MW-5B	334819.84	2328884.33	1899.84	1897.21**	DETECTION MONITORING WELL
MW-6	333507.64	2329055.42	1896.88	1893.54	DETECTION MONITORING WELL
MW-7	334250.89	2330359.26	1901.79	1899.14**	DETECTION MONITORING WELL
MW-8	334864.54	2329857.95	1903.93	1901.05**	DETECTION MONITORING WELL
MW-9	333935.57	2328898.85	1897.11	1894.31**	DETECTION MONITORING WELL
MW-10S	334585.29	2330340.91	1904.84	1904.16	DELINEATION WELL
MW-10M	334549.00	2330345.01	1905.18	1902.16	DELINEATION WELL
MW-11S	334663.85	2330310.77	1899.69	1897.13	DELINEATION WELL
MW-11M	333955.95	2330316.80	1899.66	1897.13	DELINEATION WELL
MW-12S	333888.31	2329891.68	1910.39	1907.3	DELINEATION WELL
MW-12M	333876.00	2329890.22	1910.15	1907.56	DELINEATION WELL
MW-13S	334830.77	2328882.44	1904.89	1902.34	DELINEATION WELL
MW-13M	334819.84	2328884.33	1905.04	1902.40	DELINEATION WELL
MW-14	333507.64	2329055.42	1897.46	1894.74	DELINEATION WELL
MW-15****	334250.89	2330359.26	1897.64	1895.32	DELINEATION WELL
MW-16S****	333931.96	2326197.40	1897.50	1894.88	DELINEATION WELL

* TOP OF CASING AND GROUND ELEVATIONS PROVIDED BY HASTINGS UTILITIES JULY 23, 2019.
** DESIGNATED GROUND ELEVATIONS DEPICT THE ELEVATION OF THE TOP OF THE CONCRETE SLAB NEAREST TO THE CASING ON THE NORTH SIDE.
***NORTHING AND EASTING COORDINATES ARE APPROXIMATIONS AND WILL BE UPDATED ALONG WITH TOC AND GROUND SURFACE ELEVATIONS DURING THE NEXT SITE SURVEY.
****MW-15 WAS ABANDONED ON JULY 26, 2022, AND WAS REPLACED WITH MW-16S ON JULY 27, 2022.

NOTES:
1. AERIAL DATED 8/27/2017 OBTAINED FROM GOOGLE EARTH.

CONTROLS	NORTHING	EASTING	ELEVATION	LONG DESCRIPTION
25	334815.14	2328892.86	1896.51	BRASS CAP
26	334879.51	2330467.21	1900.86	BRASS CAP
27	333932.07	2330190.86	1894.46	BRASS CAP

*NOTE: STATE PLANE CONTROL IS BASED ON NEBRASKA SOUTH ZONE NAD 27. VERTICAL CONTROL IS BASED ON NGVD29.

LEGEND

MONITORING WELL

CCR MONITORING WELL

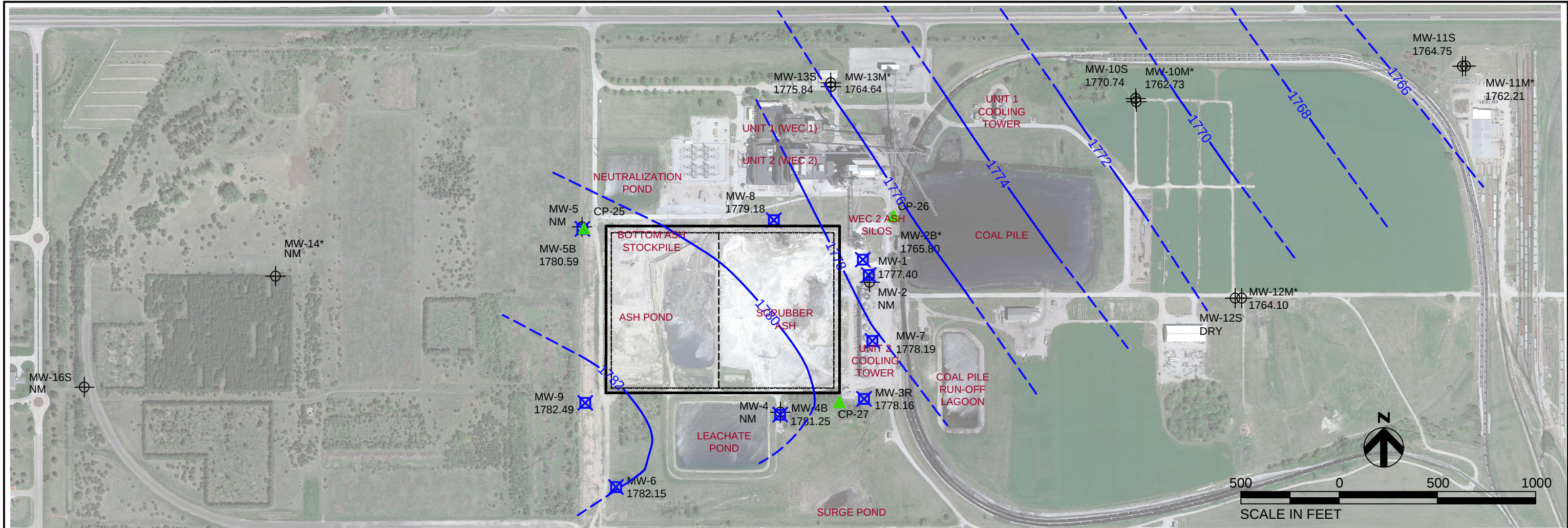
CONTROL POINT

ASH DISPOSAL AREA BOUNDARY

ORIGINAL TOE OF SLOPE

SEPARATION BERM

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GROUNDWATER MONITORING WELLS					
WELL DESIGNATION	NORTHING	EASTING	TOP OF CASING ELEVATION*	GROUND ELEVATION*	COMMENT
MW-1	334585.29	2330340.91	1903.16	1900.68	ASSESSMENT MONITORING WELL
MW-2	334549.00	2330345.01	1903.18	1900.93	DRY
MW-2B	334663.85	2330310.77	1903.43	1900.60**	ASSESSMENT MONITORING WELL
MW-3R	333955.95	2330316.80	1900.76	1897.98	ASSESSMENT MONITORING WELL
MW-4	333888.31	2329891.68	1899.21	1895.19	DRY
MW-4B	333876.00	2329890.22	1897.55	1894.69**	ASSESSMENT MONITORING WELL
MW-5	334830.77	2328882.44	1898.90	1897.60	DRY
MW-5B	334819.84	2328884.33	1899.84	1897.21**	UPGRADIENT/BACKGROUND WELL
MW-6	333507.64	2329055.42	1896.88	1893.54	UPGRADIENT/BACKGROUND WELL
MW-7	334250.89	2330359.26	1901.79	1899.14**	ASSESSMENT MONITORING WELL
MW-8	334864.54	2329857.95	1903.93	1901.05**	ASSESSMENT MONITORING WELL
MW-9	333935.57	2328898.85	1897.11	1894.31**	UPGRADIENT/BACKGROUND WELL
MW-10S	334585.29	2330340.91	1904.84	1904.16	DELINEATION WELL
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MW-14	333507.64	2329055.42	1897.46	1894.74	DELINEATION WELL
MW-16S****	333931.96	2326197.40	1897.50	1894.88	DELINEATION WELL

* TOP OF CASING AND GROUND ELEVATIONS PROVIDED BY HASTINGS UTILITIES JULY 23, 2019.
** DESIGNATED GROUND ELEVATIONS DEPICT THE ELEVATION OF THE TOP OF THE CONCRETE SLAB NEAREST TO THE CASING ON THE NORTH SIDE.
***NORTHING AND EASTING COORDINATES ARE APPROXIMATIONS AND WILL BE UPDATED ALONG WITH TOC AND GROUND SURFACE ELEVATIONS DURING THE NEXT SITE SURVEY.
****MW-15 WAS ABANDONED ON JULY 26, 2022, AND WAS REPLACED WITH MW-16S ON JULY 27, 2022.

- NOTES:
- AERIAL DATED APRIL 2022 OBTAINED FROM GOOGLE EARTH.
 - RISER ELEVATIONS PROVIDED BY HASTINGS UTILITIES.
 - TOP OF CASING ELEVATIONS UTILIZED TO DETERMINE GROUNDWATER ELEVATIONS SURVEYED ON JULY 23, 2019.
 - * DENOTES WELLS WERE NOT UTILIZED IN PRODUCTION OF GROUNDWATER CONTOUR DUE TO SCREEN INTERVALS DEEPER THAN THE UPPERMOST AQUIFER OR ANOMALOUS READING.
 - NM - MONITORING WELL WAS STATIC WATER LEVEL WAS NOT MEASURED.

CONTROLS	NORTHING	EASTING	ELEVATION	LONG DESCRIPTION
25	334815.14	2328892.86	1896.51	BRASS CAP
26	334879.51	2330467.21	1900.86	BRASS CAP
27	333932.07	2330190.86	1894.46	BRASS CAP

*NOTE: STATE PLANE CONTROL IS BASED ON NEBRASKA SOUTH ZONE NAD 27. VERTICAL CONTROL IS BASED ON NGVD29.

VELOCITY COMPUTATIONS

TRACER VELOCITY = $V_T = \frac{K_i}{n}$

K = HYDRAULIC CONDUCTIVITY (SEE TABLE)

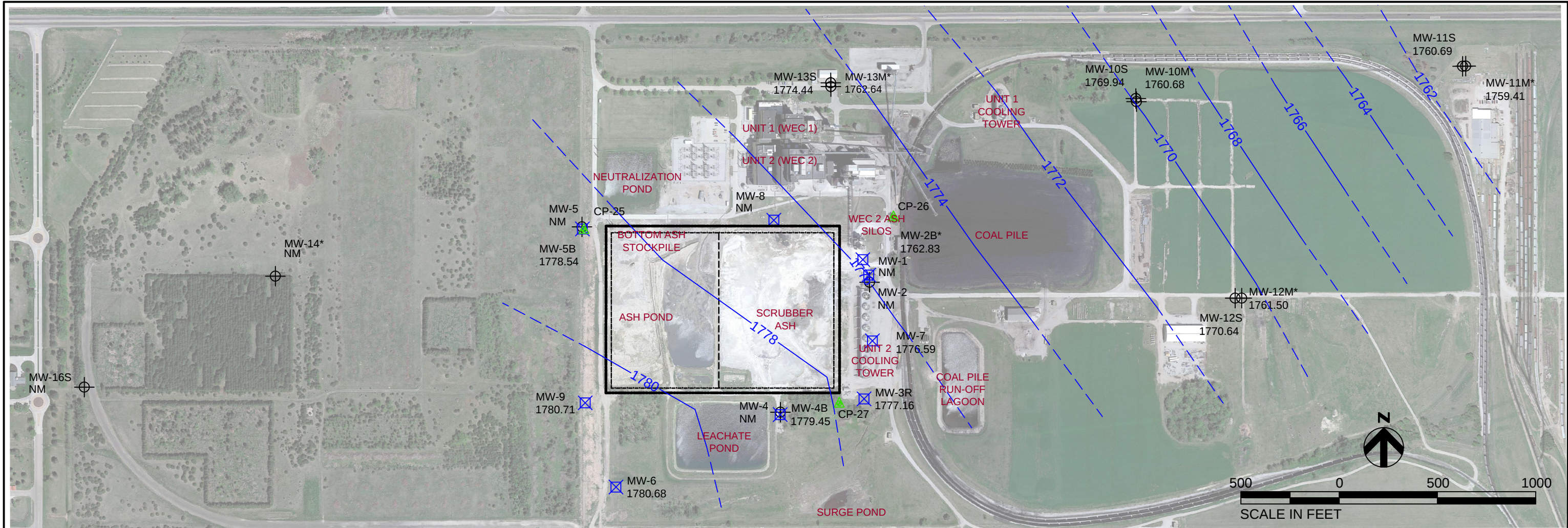
i = GRADIENT = $\frac{1.0 \text{ FT}}{264 \text{ FT}} = 0.003787 \text{ FT/FT}$

n = POROSITY = 0.3

K**	V _T
150 FT/DAY	1.89 FT/DAY
229 FT/DAY	2.89 FT/DAY

- LEGEND
- MONITORING WELL
 - CCR MONITORING WELL
 - CONTROL POINT
 - ASH DISPOSAL AREA BOUNDARY
 - ORIGINAL TOE OF SLOPE
 - GROUNDWATER CONTOUR
 - INFERRED GROUNDWATER CONTOUR

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GROUNDWATER MONITORING WELLS					
WELL DESIGNATION	NORTHING	EASTING	TOP OF CASING ELEVATION*	GROUND ELEVATION*	COMMENT
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MW-2B	334663.85	2330310.77	1903.43	1900.60**	ASSESSMENT MONITORING WELL
MW-3R	333955.95	2330316.80	1900.76	1897.98	ASSESSMENT MONITORING WELL
MW-4	333888.31	2329891.68	1899.21	1895.19	DRY
MW-4B	333876.00	2329890.22	1897.55	1894.69**	ASSESSMENT MONITORING WELL
MW-5	334830.77	2328882.44	1898.90	1897.60	DRY
MW-5B	334819.84	2328884.33	1899.84	1897.21**	UPGRADIENT/BACKGROUND WELL
MW-6	333507.64	2329055.42	1896.88	1893.54	UPGRADIENT/BACKGROUND WELL
MW-7	334250.89	2330359.26	1901.79	1899.14**	ASSESSMENT MONITORING WELL
MW-8	334864.54	2329857.95	1903.93	1901.05**	ASSESSMENT MONITORING WELL
MW-9	333935.57	2328898.85	1897.11	1894.31**	UPGRADIENT/BACKGROUND WELL
MW-10S	334585.29	2330340.91	1904.84	1904.16	DELINEATION WELL
MW-10M	334549.00	2330345.01	1905.18	1902.16	DELINEATION WELL
MW-11S	334663.85	2330310.77	1899.69	1897.13	DELINEATION WELL
MW-11M	333955.95	2330316.80	1899.66	1897.13	DELINEATION WELL
MW-12S	333888.31	2329891.68	1910.39	1907.3	DELINEATION WELL
MW-12M	333876.00	2329890.22	1910.15	1907.56	DELINEATION WELL
MW-13S	334830.77	2328882.44	1904.89	1902.34	DELINEATION WELL
MW-13M	334819.84	2328884.33	1905.04	1902.40	DELINEATION WELL
MW-14	333507.64	2329055.42	1897.46	1894.74	DELINEATION WELL
MW-16S****	333931.96	2326197.40	1897.50	1894.88	DELINEATION WELL

* TOP OF CASING AND GROUND ELEVATIONS PROVIDED BY HASTINGS UTILITIES JULY 23, 2019.
** DESIGNATED GROUND ELEVATIONS DEPICT THE ELEVATION OF THE TOP OF THE CONCRETE SLAB NEAREST TO THE CASING ON THE NORTH SIDE.
***NORTHING AND EASTING COORDINATES ARE APPROXIMATIONS AND WILL BE UPDATED ALONG WITH TOC AND GROUND SURFACE ELEVATIONS DURING THE NEXT SITE SURVEY.
****MW-15 WAS ABANDONED ON JULY 26, 2022, AND WAS REPLACED WITH MW-16S ON JULY 27, 2022.

- NOTES:
- AERIAL DATED APRIL 2022 OBTAINED FROM GOOGLE EARTH.
 - RISER ELEVATIONS PROVIDED BY HASTINGS UTILITIES.
 - TOP OF CASING ELEVATIONS UTILIZED TO DETERMINE GROUNDWATER ELEVATIONS SURVEYED ON JULY 23, 2019.
 - * DENOTES WELLS WERE NOT UTILIZED IN PRODUCTION OF GROUNDWATER CONTOUR DUE TO SCREEN INTERVALS DEEPER THAN THE UPPERMOST AQUIFER OR ANOMALOUS READING.
 - NM - MONITORING WELL WAS STATIC WATER LEVEL WAS NOT MEASURED.

CONTROLS	NORTHING	EASTING	ELEVATION	LONG DESCRIPTION
25	334815.14	2328892.86	1896.51	BRASS CAP
26	334879.51	2330467.21	1900.86	BRASS CAP
27	333932.07	2330190.86	1894.46	BRASS CAP

*NOTE: STATE PLANE CONTROL IS BASED ON NEBRASKA SOUTH ZONE NAD 27. VERTICAL CONTROL IS BASED ON NGVD29.

VELOCITY COMPUTATIONS

TRACER VELOCITY = $V_T = \frac{K_i}{n}$

K = HYDRAULIC CONDUCTIVITY (SEE TABLE)

i = GRADIENT = $\frac{1.0 \text{ FT}}{287 \text{ FT}} = 0.003484 \text{ FT/FT}$

n = POROSITY = 0.3

K**	V _T
150 FT/DAY	1.74 FT/DAY
229 FT/DAY	2.66 FT/DAY

- LEGEND
- MONITORING WELL
 - CCR MONITORING WELL
 - CONTROL POINT
 - ASH DISPOSAL AREA BOUNDARY
 - ORIGINAL TOE OF SLOPE
 - GROUNDWATER CONTOUR
 - INFERRED GROUNDWATER CONTOUR

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Tables



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Table 1 - Groundwater Monitoring System

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Monitoring Well ID	Date Installed	Boring Depth ^[1] (feet bgs)	Well Depth (feet bgs)	Screened Interval (feet bgs)	Location w/ respect to Temporary Ash Disposal Area	Top of Well Casing Elevation ^[4] (ft AMSL)
CCR Monitoring System Network						
MW-5B ^[2]	10/11/2016	122	121	111.0 – 121.0	Upgradient	1899.84
MW-6	10/5/2004	110.5	110	100.0 – 110.0	Upgradient	1896.88
MW-9	10/10/2016	118.5	117	107.0 – 117.0	Upgradient	1897.11
MW-1	7/28/1999	135	134	104.0 – 134.0	Downgradient	1903.16
MW-2B	10/18/2016	162	160	150.0 – 160.0	Downgradient	1903.43
MW-3R	1/29/2011	126.7	111.9	101.9 – 111.9	Downgradient	1900.76
MW-4B ^[3]	10/26/2016	121	119	109.0 – 119.0	Downgradient/Cross-gradient	1897.55
MW-7	10/7/2016	127.2	127	117.0 – 127.0	Downgradient	1901.79
MW-8	10/20/2016	131	127	117.0 – 127.0	Downgradient/Cross-gradient	1903.93
Investigative - Water Level Only Wells						
MW-10S	12/14/2018	144	140	130 - 140	Downgradient/Cross-gradient	1904.84
MW-10M	12/15/2018	190	187	177 - 187	Downgradient/Cross-gradient	1905.18
MW-11S	12/18/2018	154	150	140 - 150	Downgradient	1899.69
MW-11M	12/19/2018	184	184	174-184	Downgradient	1899.66
MW-12S	12/17/2018	144	144	130 - 140	Downgradient/Cross-gradient	1910.39
MW-12M	12/16/2018	177	170	160 - 170	Downgradient/Cross-gradient	1910.15
MW-13S	12/12/2018	154	140	130 - 140	Downgradient/Cross-gradient	1904.89
MW-13M	12/13/2018	191	187	177 - 187	Downgradient/Cross-gradient	1905.04
MW-14	12/11/2018	140	140	130 - 140	Upgradient	1897.46
MW-16S ^[5]	7/27/2022	119	119	109 - 119	Upgradient	1897.50

Notes:

^[1] - Gravel pack (16-30 Silica Sand) was utilized to fill annulus between the bottom of the bore hole to approximately 2 feet above the top of screen.

^[2] - MW-5B is a replacement well for MW-5 which has not had sufficient water to sample since 2014. MW-5 has not been abandoned; however it is not included in the monitoring well system.

^[3] - MW-4B is a replacement well for MW-4 which has not had sufficient water to sample since 2014. MW-4 has not been abandoned; however it is not included in the monitoring well system.

^[4] - Top of Well Casing Elevations (TOCs) were updated based on survey as of July 23, 2019.

^[5] MW-15 was abandoned on July 26, 2022 and replaced with MW-16S on July 27, 2022.

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Table 2 - Groundwater Sampling Event Summary

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Monitoring Well ID	# of Initial Background Samples	Initial Background Sample Dates	# of Detection Monitoring Samples	Detection Monitoring Sample Dates ^[1]	# of Assessment Monitoring Samples	Assessment Monitoring Sample Dates
Current Background Monitoring Wells^[2]						
MW-5B	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	10/11/2017, 3/07/2018	15	7/25/2018, 10/16/2018, 5/13/2019, 11/18/2019, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/25/22, 11/14/22, 4/20/23, 12/4/2023, 4/8/2024, 11/22/2024
MW-6	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	10/11/2017, 3/07/2018	14	7/25/2018, 10/16/2018, 5/13/2019, 11/18/2019, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/18/22, 11/14/22, 4/20/23, 12/4/2023, 4/8/2024
MW-9	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	10/11/2017, 3/07/2018	15	7/25/2018, 10/16/2018, 5/13/2019, 11/18/19, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/25/22, 11/14/22, 4/20/23, 12/4/2023, 4/8/2024, 11/22/2024
Downgradient Monitoring Wells						
MW-1	8	11/17/2016, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 7/6/2017, 8/8/2017, 9/12/2017	2	10/11/2017, 3/07/2018	15	7/25/2018, 10/16/2018, 5/13/2019, 11/19/2019, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/25/22 ^[3] , 11/16/22, 4/20/23, 12/5/2023, 4/8/2024, 11/19/2024
MW-2B	9	12/21/2016, 1/23/2017, 2/21/2017, 3/23/2017, 4/26/2017, 5/26/2017, 6/27/2017, 8/8/2017, 9/12/2017	2	10/11/2017, 3/07/2018	15	7/25/2018, 10/16/2018, 5/13/2019, 11/19/2019, 2/17/2020, 5/6/2020, 11/18/2020, 4/20/21, 12/7/21, 4/25/22, 11/14/22, 4/20/23, 12/5/2023, 4/8/2024, 11/19/24
MW-3R	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	10/11/2017, 3/07/2018	14	7/25/2018, 10/16/2018, 5/13/2019, 11/18/2019, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/25/22, 11/16/22, 4/21/23, 12/7/2023, 4/10/2024
MW-4B	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	11/01/2017, 3/07/2018	15	7/25/2018, 10/16/2018, 5/15/2019, 11/18/2019, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/25/22, 11/14/22, 4/20/23, 12/5/2023, 4/8/2024, 11/19/2024
MW-7	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	10/11/2017, 3/07/2018	15	7/25/2018, 10/16/2018, 5/13/2019, 11/18/2019, 2/17/2020, 5/6/2020, 11/16/2020, 4/20/21, 12/7/21, 4/25/22 ^[3] , 11/14/22, 4/20/23, 12/5/2023, 4/8/2024, 11/21/2024
MW-8	8	11/16/2016, 12/20/2016, 1/23/2017, 2/21/2017, 3/22/2017, 4/26/2017, 5/26/2017, 6/27/2017	2	10/11/2017, 3/07/2018	14	7/25/2018, 10/16/2018, 5/13/2019, 11/18/19, 2/17/2020, 5/6/2020, 11/16/2020, 4/19/21, 12/7/21, 4/25/22, 11/14/22, 4/20/23, 12/5/2023, 4/8/2024

Notes:^[1] The March 5th - 7th, 2018 sampling event was conducted as part of the Alternate Source Demonstration.^[2] Background monitoring wells are generally upgradient of CCR Unit; however, groundwater direction may fluctuate due to seasonal variation in irrigation and/or production wells use.^[3] Radium was not sampled at MW-1 and MW-7 during the spring 2022 sampling event due to a preservative error made by the lab. Radium at these wells was sampled during the fall 2022 sampling event.^[4] Samples were not collected at upgradient monitoring well MW-6 and downgradient monitoring wells MW-3R and MW-8 during the Fall 2024 sampling event. MW-3R and MW-6 were dry during the sampling event, and MW-8 was inaccessible due to active construction in the vicinity of the monitoring well.

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Table 3 - Groundwater Elevations
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities
January 2025

CCR Monitoring System Network																		
Historical TOC July 2019 TOC	MW-1		MW-2B		MW-3R		MW-4B		MW-5B		MW-6		MW-7		MW-8		MW-9	
	TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation	
	1902.93 1903.16		1902.96 1903.43		1900.45 1900.76		1897.02 1897.55		1899.16 1899.84		1896.72 1896.88		1901.23 1901.79		1903.37 1903.93		1896.54 1897.11	
Date	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)
11/16/2016	123.65	1779.28	135.65	1767.31	120.10	1780.35	113.28	1783.74	117.31	1781.85	112.40	1784.32	121.50	1779.73	122.08	1781.29	112.33	1784.21
12/20/2016	123.90	1779.03	137.60	1765.36	120.33	1780.12	113.50	1783.52	117.40	1781.76	N.M.	N.M.	121.50	1779.73	122.80	1780.57	112.48	1784.06
1/23/2017	123.70	1779.23	137.80	1765.16	120.06	1780.39	113.41	1783.61	117.52	1781.64	N.M.	N.M.	121.40	1779.83	122.85	1780.52	112.98	1783.56
2/21/2017	123.78	1779.15	138.00	1764.96	120.10	1780.35	113.59	1783.43	117.68	1781.48	112.75	1783.97	121.42	1779.81	122.90	1780.47	112.96	1783.58
3/23/2017	123.85	1779.08	137.25	1765.71	120.13	1780.32	113.70	1783.32	117.79	1781.37	112.95	1783.77	121.60	1779.63	122.96	1780.41	113.12	1783.42
4/26/2017	124.08	1778.85	135.78	1767.18	120.30	1780.15	114.15	1782.87	118.10	1781.06	113.30	1783.42	121.72	1779.51	123.30	1780.07	113.52	1783.02
5/26/2017	124.53	1778.40	135.50	1767.46	121.08	1779.37	114.69	1782.33	118.41	1780.75	113.59	1783.13	122.27	1778.96	123.65	1779.72	113.80	1782.74
6/27/2017	N.M.	N.M.	139.13	1763.83	120.82	1779.63	114.32	1782.70	117.97	1781.19	113.20	1783.52	122.05	1779.18	123.45	1779.92	112.53	1784.01
8/8/2017	124.48	1778.45	141.19	1761.77	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
9/12/2017	124.53	1778.40	140.92	1762.04	121.18	1779.27	114.89	1782.13	117.10	1782.06	112.43	1784.29	122.32	1778.91	123.24	1780.13	110.75	1785.79
10/11/2017	124.68	1778.25	137.92	1765.04	121.34	1779.11	115.50	1781.52	117.72	1781.44	113.46	1783.26	122.53	1778.70	123.60	1779.77	112.83	1783.71
2/20/2018	125.50	1777.43	139.77	1763.19	121.85	1778.60	115.52	1781.50	117.80	1781.36	113.00	1783.72	123.25	1777.98	124.22	1779.15	111.40	1785.14
7/25/2018	126.29	1776.64	141.02	1761.94	122.95	1777.50	116.75	1780.27	119.42	1779.74	114.40	1782.32	124.14	1777.09	125.30	1778.07	113.52	1783.02
10/16/2018	125.78	1777.15	139.30	1763.66	121.71	1778.74	115.37	1781.65	118.70	1780.46	114.23	1782.49	123.32	1777.91	124.64	1778.73	113.77	1782.77
3/5/2019	122.40	1780.53	138.50	1764.46	120.85	1779.60	113.85	1783.17	117.28	1781.88	112.90	1783.82	122.00	1779.23	122.72	1780.65	112.33	1784.21
3/28/2019	124.16	1778.77	138.34	1764.62	120.46	1779.99	N.M.	N.M.	117.32	1781.84	112.35	1784.37	121.86	1779.37	122.80	1780.57	112.05	1784.49
4/30/2019	124.20	1778.73	137.13	1765.83	120.47	1779.98	N.M.	N.M.	117.85	1781.31	113.38	1783.34	121.90	1779.33	123.30	1780.07	113.33	1783.21
5/13/2019	124.56	1778.37	136.92	1766.04	120.98	1779.47	115.17	1781.85	118.37	1780.79	114.10	1782.62	122.35	1778.88	123.67	1779.70	114.03	1782.51
5/31/2019	125.10	1777.83	134.61	1768.35	121.77	1778.68	116.27	1780.75	118.88	1780.28	114.90	1781.82	122.98	1778.25	124.28	1779.09	114.84	1781.70
6/25/2019	125.59	1777.34	137.55	1765.41	121.55	1778.90	116.40	1780.62	119.00	1780.16	115.25	1781.47	121.20	1780.03	124.93	1778.44	115.25	1781.29
8/26/2019	125.47	1777.69	138.26	1765.17	121.39	1779.37	114.76	1782.79	119.36	1780.48	114.00	1782.88	123.00	1778.79	124.80	1779.13	114.10	1783.01
10/28/2019	124.62	1778.54	135.51	1767.92	120.95	1779.81	114.27	1783.28	117.70	1782.14	112.80	1784.08	122.22	1779.57	123.66	1780.27	111.20	1785.91
11/19/2019	124.32	1778.84	136.65	1766.78	121.08	1779.68	114.30	1783.25	116.87	1782.97	112.28	1784.60	122.10	1779.69	123.16	1780.77	110.10	1787.01
5/7/2020	124.23	1778.93	133.40	1770.03	121.44	1779.32	115.92	1781.63	117.00	1782.84	113.45	1783.43	122.37	1779.42	123.05	1780.88	112.85	1784.26
8/31/2020	124.50	1778.66	144.43	1759.00	121.17	1779.59	115.10	1782.45	116.63	1783.21	112.58	1784.30	122.40	1779.39	123.10	1780.83	109.80	1787.31
11/16/2020	125.24	1777.92	136.10	1767.33	122.20	1778.56	116.23	1781.32	117.60	1782.24	112.90	1783.98	123.20	1778.59	123.95	1779.98	110.95	1786.16
3/30/2021	124.08	1779.08	134.87	1768.56	121.25	1779.51	115.06	1782.49	116.70	1783.14	113.83	1783.05	122.20	1779.59	122.00	1781.93	112.82	1784.29
4/19/2021	123.80	1779.36	133.78	1769.65	120.88	1779.88	114.96	1782.59	116.80	1783.04	113.62	1783.26	121.92	1779.87	122.10	1781.83	113.00	1784.11
12/7/2021	124.35	1778.81	138.35	1765.08	120.60	1780.16	113.44	1784.11	118.22	1781.62	112.50	1784.38	121.90	1779.89	123.60	1780.33	112.96	1784.15
4/25/2022	124.20	1778.96	134.48	1768.95	120.47	1780.29	113.79	1783.76	118.25	1781.59	112.45	1784.43	121.78	1780.01	123.52	1780.41	113.12	1783.99
11/14/2022	124.95	1778.21	139.35	1764.08	121.55	1779.21	114.90	1782.65	118.05	1781.79	112.52	1784.36	122.62	1779.17	124.00	1779.93	111.70	1785.41
4/20/2023	125.05	1778.11	134.90	1768.53	121.50	1779.26	115.34	1782.21	118.12	1781.72	113.35	1783.53	122.92	1778.87	124.00	1779.93	113.18	1783.93
12/4/2023	126.55	1776.61	139.35	1764.08	123.15	1777.61	117.70	1779.85	119.70	1780.14	115.20	1781.68	124.47	1777.32	125.68	1778.25	115.10	1782.01
4/8/2024	125.76	1777.40	137.63	1765.80	122.60	1778.16	116.30	1781.25	119.25	1780.59	114.73	1782.15	123.60	1778.19	124.75	1779.18	114.62	1782.49
11/19/2024	N.M.	N.M.	140.60	1762.83	123.60	1777.16	118.10	1779.45	121.30	1778.54	116.20	1780.68	125.20	1776.59	N.M.	N.M.	116.40	1780.71

Notes:
TOC: Top of PVC well casing
N.M. = not measured
AMSL = above mean sea level
MW-15 was abandoned and replaced by MW-16S in 2022.

Table 3 - Groundwater Elevations
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities
January 2025

Investigative - Water Level Only Wells																				
Historical TOC July 2019 TOC	MW-10S		MW- 10M		MW-11S		MW-11M		MW-12S		MW-12M		MW-13S		MW-13M		MW-14		MW-15/16S	
	TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation	
	1904.83		1905.08		1899.63		1899.63		1910.30		1910.06		1905.01		1905.07		1897.41		1897.65	
	1904.84		1905.18		1899.69		1899.66		1910.39		1910.15		1904.89		1905.04		1897.46		1897.50	
Date	Measured Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation	Measure d Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation	Measure d Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation	Measured Depth to Water (ft)	GW Elevation
1/3/2019	134.05	1770.78	142.90	1762.18	135.60	1764.03	133.70	1765.93	138.80	1771.50	145.85	1764.21	128.30	1776.71	140.85	1764.22	125.20	1772.21	126.40	1771.25
1/23/2019	133.90	1770.93	144.23	1760.85	135.50	1764.13	134.22	1765.41	138.74	1771.56	145.95	1764.11	128.14	1776.87	140.50	1764.57	125.34	1772.07	126.65	1771.00
3/6/2019	133.70	1771.13	144.43	1760.65	135.25	1764.38	137.58	1762.05	N.M	N.M	145.82	1764.24	128.15	1776.86	140.87	1764.20	125.07	1772.34	127.03	1770.62
3/28/2019	133.83	1771.00	143.00	1762.08	135.26	1764.37	136.98	1762.65	138.65	1771.65	145.68	1764.38	128.25	1776.76	144.70	1760.37	125.30	1772.11	127.40	1770.25
4/30/2019	133.50	1771.33	140.68	1764.40	134.50	1765.13	136.20	1763.43	138.38	1771.92	144.97	1765.09	128.09	1776.92	139.68	1765.39	124.45	1772.96	126.48	1771.17
5/13/2019	133.60	1771.23	140.38	1764.70	134.55	1765.08	136.30	1763.33	138.40	1771.90	144.88	1765.18	128.40	1776.61	139.25	1765.82	124.45	1772.96	126.30	1771.35
5/31/2019	133.49	1771.34	137.87	1767.21	133.92	1765.71	134.15	1765.48	138.40	1771.90	143.07	1766.99	128.44	1776.57	136.35	1768.72	N.M.	N.M.	N.M.	N.M.
6/25/2019	133.46	1771.37	141.48	1763.60	134.15	1765.48	136.22	1763.41	138.37	1771.93	145.00	1765.06	128.72	1776.29	139.80	1765.27	125.54	1771.87	127.75	1769.90
8/26/2019	142.64	1762.20	142.64	1762.54	135.95	1763.74	137.28	1762.38	138.63	1771.76	145.97	1764.18	129.25	1775.64	140.68	1764.36	125.57	1771.89	127.95	1769.69
10/28/2019	133.60	1771.24	140.15	1765.03	134.34	1765.35	135.15	1764.51	138.37	1772.02	143.78	1766.37	128.69	1776.20	138.08	1766.96	123.65	1773.81	125.62	1772.02
11/19/2019	133.50	1771.34	141.45	1763.73	134.24	1765.45	135.75	1763.91	138.25	1772.14	144.42	1765.73	128.45	1776.44	139.05	1765.99	124.16	1773.30	126.57	1771.07
2/18/2020	133.15	1771.69	140.70	1764.48	133.86	1765.83	135.22	1764.44	138.10	1772.29	144.15	1766.00	127.72	1777.17	138.68	1766.36	123.17	1774.29	125.55	1772.09
5/7/2020	132.46	1772.38	140.10	1765.08	132.35	1767.34	133.72	1765.94	137.75	1772.64	141.95	1768.20	127.28	1777.61	135.30	1769.74	121.62	1775.84	123.82	1773.82
9/1/2020	133.68	1771.16	152.02	1753.16	140.45	1759.24	144.55	1755.11	138.27	1772.12	152.35	1757.80	127.98	1776.91	147.60	1757.44	128.80	1768.66	132.02	1765.62
11/17/2020	133.55	1771.29	143.10	1762.08	135.16	1764.53	136.62	1763.04	138.33	1772.06	145.20	1764.95	128.30	1776.59	139.40	1765.64	124.10	1773.36	126.95	1770.69
3/30/2021	133.30	1771.54	138.60	1766.58	133.70	1765.99	134.60	1765.06	138.20	1772.19	143.20	1766.95	127.75	1777.14	136.70	1768.34	122.60	1774.86	125.20	1772.44
4/19/2021	133.05	1771.79	137.42	1767.76	133.00	1766.69	133.49	1766.17	138.00	1772.39	142.60	1767.55	127.50	1777.39	135.75	1769.29	121.70	1775.76	124.35	1773.29
12/7/2021	133.40	1771.44	143.80	1761.38	135.30	1764.39	137.55	1762.11	138.10	1772.29	145.95	1764.20	128.15	1776.74	143.80	1761.24	124.20	1773.26	127.90	1769.74
4/18/2022	133.20	1771.64	137.55	1767.63	134.20	1765.49	134.55	1765.11	142.70	1767.69	142.45	1767.70	128.12	1776.77	135.90	1769.14	122.20	1775.26	124.75	1772.89
11/15/2022	133.90	1770.94	145.10	1760.08	136.96	1762.73	139.00	1760.66	N.M - DRY	N.M - DRY	147.12	1763.03	128.72	1776.17	141.43	1763.61	125.05	1772.41	114.62	1782.88
4/20/2023	133.40	1771.44	138.15	1767.03	133.90	1765.79	134.40	1765.26	N.M - DRY	N.M - DRY	143.12	1767.03	128.40	1776.49	136.64	1768.40	123.52	1773.94	N.M	N.M.
12/4/2023	134.25	1770.59	142.65	1762.53	137.53	1762.16	138.85	1760.81	139.15	1771.24	147.12	1763.03	129.42	1775.47	141.80	1763.24	125.20	1772.26	115.55	1781.95
4/10/2024	134.10	1770.74	142.45	1762.73	134.94	1764.75	137.45	1762.21	N.M	N.M	146.05	1764.10	129.05	1775.84	140.40	1764.64	N.M.	N.M.	N.M.	N.M.
11/21/2024	134.90	1769.94	144.50	1760.68	139.00	1760.69	140.25	1759.41	139.75	1770.64	148.65	1761.50	130.45	1774.44	142.40	1762.64	N.M.	N.M.	N.M.	N.M.

Notes:
TOC: Top of PVC well casing
N.M. = not measured
AMSL = above mean sea level
MW-15 was abandoned and replaced by MW-16S in 2022.

Table 4 - Appendix III Constituents in Groundwater

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Appendix III Constituents								
Constituent	Boron	Calcium	Chloride	Fluoride*	pH ^[1]	Sulfate	TDS	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	
MW-1	11/17/2016	1.0	41	31	0.28	6.15	165	510
	2/21/2017	1.2	39	31	0.28	6.68	166	506
	3/22/2017	1.2	38	31	0.29	6.8	175	436
	4/26/2017	1.4	42	31	0.29	6.69	175	412
	5/26/2017	1.3	38	32	0.28	6.7	184	412
	7/6/2017	1.4	37	32	0.29	6.49	170	510
	8/8/2017	1.3	36	34	0.29	6.51	191	504
	9/12/2017	1.5	40	34	0.30	6.76	179	480
	10/12/2017	1.4	38	32	0.28	6.50	158	492
	3/7/2018	1.18	33.8	32.1	<.500	6.79	165	322
	7/25/2018	1.14	38.1	28.9	<.500	6.14	182	432
	10/16/2018	1.39	37.1	27.9	<.500	6.51	155	400
	3/5/2019	1.16	43	27.8	0.382	6.75	160	404
	5/13/2019	1.06	44.6	33.6	0.549	6.31	203	476
	8/26/2019	1.35	38.7	29.5	<.500	6.11	182	634
	11/19/2019	1.14	32.2	26.7	0.445	6.94	152	354
	2/17/2020	1.13	30.4	24.8	0.259	5.74	143	364
	5/6/2020	1.35	36.2	26.7	0.587	5.34	158	390
	8/31/2020	1.32	30.0	27.6	0.724	6.86	140	342
	11/16/2020	0.969	28.2	24.8	0.374J	6.83	139	294
	4/19/2021	1.06	27.3	24.2	0.316J	6.94	149	344
	12/7/2021	1.19	35.7	29.2	0.663	6.72	169	342
	4/25/2022	1.23	34.9	28.3	<1.00	6.77	175	370
	11/16/2022	<1.00	38.5	26.5	0.488J	6.96	166	354
	4/20/2023	1.05	35.8	31.2	0.465J	6.70	161	364
	12/5/2023	0.936	31.0	29.0	0.447J	6.85	150	322
	4/8/2024	0.966	33.7	30.3	<1.00	6.70	155	382
	11/19/2024	1.12	29.7	26.5	0.549J	6.87	113	210
MW-2B ^[2]	12/21/2016	0.43	80	31	0.31	7.24	174	566
	1/23/2017	0.52	84	30	0.26	7.08	192	518
	2/21/2017	0.50	82	30	0.29	6.84	169	572
	3/23/2017	0.47	77	30	0.30	6.84	176	502
	4/26/2017	0.52	86	30	0.30	6.85	168	536
	5/26/2017	0.46	83	30	0.29	6.81	184	494
	6/27/2017	0.55	90	30	0.31	6.94	169	584
	8/8/2017	0.48	69	30	0.31	6.68	176	730
	9/12/2017	0.57	83	30	0.31	6.66	177	548
	10/11/2017	0.51	82	30	0.28	6.73	159	644
	3/7/2018	0.547	83.4	28.7	<.500	6.79	167	458
	7/25/2018	0.632	77.1	27.9	<.500	6.28	164	460
	10/16/2018	0.538	86.4	26.6	<.500	6.53	149	456
	3/5/2019	0.606	96.3	27.8	0.401	6.63	158	488
	5/13/2019	0.489	79.1	30.8	0.552	6.32	168	480
	8/26/2019	0.548	82.0	28.2	<.500	6.06	163	486
	11/19/2019	0.572	78.3	26.6	0.274	6.69	151	444
	2/17/2020	0.548	79.5	27.5	<.500	5.47	157	458
	5/6/2020	0.600	86.8	27.1	0.534	5.15	149	472
	11/18/2020	0.562	79.2	26.1	<0.500	6.95	153	474
	4/20/2021	0.542	69.2	25.2	<0.500	6.93	144	410
	12/7/2021	0.537	71.7	28.4	0.667	6.83	150	394
	4/25/2022	0.573	79.2	28.2	<.500	6.85	150	402
	11/14/2022	0.614	83.4	23.6	<.500	7.03	127	390
	4/21/2023	0.530	81.1	28.4	<1.00	6.86	136	424
	12/5/2023	0.585	79.1	29.7	<1.00	6.94	146	422
	4/8/2024	0.588	75.5	30.3	<1.00	6.89	140	452
	11/19/2024	0.510	81.4	28.9	<1.00	6.92	135	454

Table 4 - Appendix III Constituents in Groundwater

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Appendix III Constituents								
Constituent	Boron	Calcium	Chloride	Fluoride*	pH ^[1]	Sulfate	TDS	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	
MW-3R ^[3]	11/16/2016	0.77	65	33	0.29	6.38	207	574
	12/20/2016	0.61	65	35	0.29	6.76	221	548
	1/23/2017	0.47	73	39	0.25	6.79	283	642
	2/21/2017	0.49	77	39	0.29	6.65	238	626
	3/22/2017	0.46	73	37	0.30	6.70	233	590
	4/26/2017	0.50	69	36	0.30	6.68	227	588
	5/26/2017	0.41	59	36	0.28	6.58	264	652
	6/27/2017	0.45	67	36	0.29	6.68	214	634
	10/11/2017	0.42	64	34	0.28	6.55	198	724
	3/7/2018	0.471	67.1	36.2	<.500	6.62	218	484
	7/25/2018	0.594	48.5	29	<.500	6.51	174	430
	10/16/2018	0.601	60	30.9	<.500	6.53	186	454
	3/7/2019	0.702	74.1	32.6	0.299	6.55	233	532
	5/13/2019	0.616	71.1	37.0	0.519	6.46	232	540
	8/26/2019	0.667	75.4	35.1	<.500	5.88	213	550
	11/18/2019	0.704	63.3	31.7	0.481	6.58	191	484
	2/17/2020	0.811	81.2	33.4	<.500	5.69	240	566
	5/6/2020	0.971	90.8	34.8	0.401	5.53	278	622
	8/31/2020	0.951	79.3	22.8	0.374J	6.68	265	568
	11/16/2020	0.925	64.4	33.1	<0.500	6.58	237	522
	4/19/2021	0.847	60.3	34.2	<0.500	6.95	240	514
	12/7/2021	0.616	67.2	31.9	0.498J	6.62	201	418
	4/25/2022	0.685	64.9	29.9	<.500	6.67	221	470
	11/16/2022	<1.00	74	29.7	<.500	6.73	208	478
	4/21/2023	0.674	70.0	31.7	<1.00	6.62	201	460
	12/7/2023	0.687	62.1	31.8	<1.00	6.57	214	484
	4/10/2024	0.807	57.6	30.5	<1.00	6.51	190	<50.0
	11/15/2024	NS	NS	NS	NS	NS	NS	NS
MW-4B	11/16/2016	0.48	47	31	0.28	6.58	162	424
	12/20/2016	0.51	43	31	0.25	6.52	170	432
	1/23/2017	0.62	46	31	0.20	6.58	180	620
	2/21/2017	0.59	41	31	0.24	6.38	166	480
	3/22/2017	0.72	40	30	0.24	6.49	162	470
	4/26/2017	0.69	35	30	0.26	6.40	155	456
	5/26/2017	0.66	40	30	0.25	6.44	167	456
	6/27/2017	0.64	41	29	0.26	6.49	147	492
	11/1/2017	0.52	51	29	0.22	6.37	170	490
	3/7/2018	0.518	41.5	29.4	<.500	6.4	169	286
	7/25/2018	0.58	41.4	28.1	<.500	6.52	176	386
	10/16/2018	0.532	48.8	28.36	<.500	6.55	192	424
	3/7/2019	0.929	51.4	27.6	0.367	6.65	167	406
	5/15/2019	0.809	40.9	30.1	0.579	6.54	166	376
	8/27/2019	0.66	42.7	28.2	<.500	6.15	186	444
	11/18/2019	0.693	52.1	25.8	<.500	6.59	160	424
	2/17/2020	0.947	49.9	27.6	<.500	5.77	179	430
	5/6/2020	0.990	45.3	26.7	0.665	5.24	156	396
	8/31/2020	0.709	39.9	25.8	0.677	6.78	143	386
	11/16/2020	1.05	37.6	24.7	0.609	6.79	155	368
	4/19/2021	0.706	27.1	24.1	0.892	6.78	138	312
	12/7/2021	0.687	54.7	26.2	0.732	6.54	227	384
	4/25/2022	0.796	76.1	28.3	<.500	6.27	343	606
	11/14/2022	0.896	47.6	23.1	<.500	6.69	142	340
	4/20/2023	0.764	51.3	27.8	<1.00	6.55	192	388
	12/5/2023	0.657	48.4	28.2	<1.00	6.67	177	352
	4/8/2024	0.840	57.6	29.4	<1.00	6.58	230	460
	11/19/2024	0.739	54.2	27.5	<1.00	6.52	210	524

Table 4 - Appendix III Constituents in Groundwater

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Appendix III Constituents								
Constituent	Boron	Calcium	Chloride	Fluoride*	pH ^[1]	Sulfate	TDS	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	
MW-5B	11/16/2016	1.2	39	30	1.1	6.35	157	428
	12/20/2016	1.2	37	30	1.2	7.11	33.5	492
	1/23/2017	1.3	33	30	1.2	7.26	174	412
	2/21/2017	1.3	36	30	1.3	6.91	159	480
	3/22/2017	1.2	35	30	1.3	7.03	167	482
	4/26/2017	1.3	35	30	1.3	7.07	164	438
	5/26/2017	1.1	35	30	1.3	6.44	173	460
	6/27/2017	1.1	43	29	1.2	6.95	164	492
	10/11/2017	1.1	72	30	0.86	6.58	132	662
	3/7/2018	1.15	63.1	29.5	1.34	6.65	182	512
	7/25/2018	1.89	55.3	26.7	0.896	6.55	172	436
	10/16/2018	1.23	78.3	26.1	0.714	6.56	178	542
	3/5/2019	0.333	24.4	29.3	0.672	6.84	164	382
	5/13/2019	0.759	39.3	29.1	1.50	6.49	167	412
	8/28/2019	0.674	38.2	26.8	1.4	6.94	151	448
	11/18/2019	0.783	49	25.5	0.984	6.18	174	458
	2/17/2020	1.91	52.7	24.7	0.597	5.30	209	456
	5/6/2020	1.54	48.2	20.0	1.41	5.86	172	440
	8/31/2020	1.17	39.6	22.0	1.26	7.25	136	340
	11/16/2020	1.33	34.6	23.4	1.10	7.30	135	372
	4/19/2021	1.03	32.7	21.1	1.11	7.17	139	346
	12/7/2021	1.07	47.5	25.2	1.52	7.16	184	326
	4/25/2022	1.12	43.5	26.5	0.825J	7.07	182	358
	11/14/2022	1.54	42.0	18.4	0.451J	7.19	89.5	286
	4/20/2023	1.62	37.3	24.7	1.16	7.19	114	322
	12/4/2023	1.22	25.5	24.4	1.28	7.29	78.7	254
	4/8/2024	1.25	52.7	25.0	1.1	7.14	175	446
	11/22/2024	1.18	38.7	24.2	1.44	7.31	122	364
MW-6 ^[3]	11/16/2016	0.55	60	31	0.36	6.24	157	470
	12/20/2016	0.6	59	32	0.35	6.88	172	452
	1/23/2017	0.75	64	33	0.3	7.04	175	472
	2/21/2017	0.72	58	32	0.34	6.86	158	478
	3/22/2017	0.61	57	32	0.34	6.91	169	566
	4/26/2017	0.6	65	32	0.35	6.84	163	618
	5/26/2017	0.5	58	31	0.35	6.87	180	444
	6/27/2017	0.47	67	31	0.36	6.91	148	500
	10/11/2017	0.55	79	32	0.30	6.71	169	602
	3/7/2018	1.12	61.3	32.8	<.500	7.02	167	442
	7/25/2018	0.738	61.7	31.1	<.500	6.74	180	474
	10/16/2018	0.501	68.8	30.9	<.500	6.81	152	466
	3/5/2019	0.333	24.4	29.3	0.672	6.84	164	452
	5/13/2019	0.459	73.1	36.1	0.622	6.54	182	496
	8/26/2019	0.562	73.9	30.5	0.33	6.22	166	500
	11/18/2019	0.629	68.9	29.5	0.547	6.39	157	420
	2/17/2020	0.901	53.0	25.8	<.500	6.14	149	388
	5/6/2020	1.10	55.7	27.5	0.635	6.14	146	404
	8/31/2020	0.618	45.7	25.6	0.639	6.94	174	376
	11/16/2020	0.761	51.2	26.5	0.416J	6.82	148	416
	4/19/2021	0.855	46.3	27.4	0.433J	6.86	145	370
	12/7/2021	1.05	52.9	28.0	0.779	6.74	164	312
	4/18/2022	0.634	54.3	27.2	<1.00	6.61	134	348
	11/14/2022	0.577	59.0	23.0	<0.500	6.99	123	330
	4/20/2023	0.711	54.0	27.2	0.403J	6.84	137	352
	12/4/2023	0.705	55.0	30.3	0.400J	7.15	151	366
	4/8/2024	0.787	53.9	32.3	0.485J	7.15	143	376
	11/19/2024	NS	NS	NS	NS	NS	NS	NS

Table 4 - Appendix III Constituents in Groundwater

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Appendix III Constituents								
Constituent	Boron	Calcium	Chloride	Fluoride*	pH ^[1]	Sulfate	TDS	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	
MW-7	11/16/2016	1.0	43	30	0.38	6.51	182	494
	12/20/2016	1.1	56	32	0.36	6.90	239	536
	1/23/2017	1.3	82	33	0.27	6.77	349	688
	2/21/2017	1.2	71	33	0.33	6.62	277	636
	3/22/2017	1.1	62	32	0.36	6.64	273	656
	4/26/2017	1.1	58	32	0.38	6.59	232	552
	5/26/2017	0.95	59	33	0.37	6.56	267	526
	6/27/2017	0.99	79	35	0.34	6.60	299	696
	10/11/2017	0.97	60	34	0.34	6.42	215	664
	3/7/2018	1.13	43	67.4	0.604	6.61	369	384
	7/25/2018	1.4	39.3	30.6	<.500	6.44	181	438
	10/16/2018	0.957	39	28.3	<.500	6.51	161	426
	3/5/2019	0.914	41	29.8	<.500	6.8	179	420
	5/13/2019	1.56	41.6	33.3	0.852	6.34	195	454
	8/26/2019	1.09	42.1	29.8	0.254	5.85	185	440
	11/18/2019	1.16	52.9	38.7	<.500	6.62	216	496
	2/17/2020	1.35	54.9	32.7	0.289	5.59	256	528
	5/6/2020	1.47	39.5	27.2	0.517	5.17	145	450
	8/31/2020	1.02	31.0	26.9	0.758	6.84	141	344
	11/16/2020	0.825	31.0	26.4	0.658	6.75	149	362
	4/20/2021	1.08	28.1	24.5	0.448J	6.83	145	320
	12/7/2021	1.31	79.7	47.5	0.67	6.52	348	608
	4/25/2022	1.33	109	38.7	0.371J	6.44	457	814
	11/14/2022	0.619	47.6	24.4	<.500	6.77	157	356
	4/20/2023	0.942	44.7	28.9	0.630J	6.64	153	364
	12/5/2023	0.813	48.1	30.3	0.649J	6.79	172	364
	4/8/2024	0.794	42.5	29.8	0.62J	6.67	148	362
	11/21/2024	1.1	42.8	27.4	0.691J	6.76	149	346
MW-8 ^[3]	11/16/2016	1.1	40	31	0.63	6.5	157	496
	12/20/2016	1.1	40	32	0.63	7.70	185	416
	1/23/2017	1.3	41	32	0.58	7.50	175	402
	2/21/2017	1.3	45	33	0.64	7.26	180	434
	3/22/2017	1.2	41	33	0.69	7.19	181	472
	4/26/2017	1.3	45	33	0.76	7.23	189	442
	5/26/2017	1.2	60	35	0.75	7.14	272	566
	6/27/2017	1.3	68	35	0.77	7.21	247	594
	10/11/2017	1	65	33	0.81	7.05	216	600
	3/7/2018	1.69	52.8	30.1	1.12	6.96	168	416
	7/26/2018	1.89	38.6	26.47	0.969	6.53	158	398
	10/16/2018	1.5	41.3	27.1	0.724	6.53	160	400
	3/5/2019	1.49	46.6	27.1	1.11	6.77	188	450
	5/13/2019	1.13	35.7	31.0	1.36	6.53	174	418
	8/26/2019	0.975	32	27.3	0.888	6.37	156	418
	11/18/2019	1.04	58.5	32.2	1.08	6.87	265	506
	2/17/2020	1.05	32.4	26.0	0.782	5.80	156	374
	5/7/2020	1.22	32.3	26.3	1.36	6.57	140	348
	8/31/2020	0.785	29.3	23.3	1.22	7.32	120	342
	11/16/2020	0.879	32.1	25.1	0.886	7.25	154	380
	4/19/2021	1.21	32.6	24.5	1.01	7.33	172	368
	12/7/2021	1.24	32.8	34.8	3.17	7.26	156	316
	4/25/2022	1.79	26.9	23.3	0.947	7.21	136	312
	11/14/2022	1.27	26	20.5	0.281J	7.37	109	280
	4/20/2023	1.19	35.2	26.2	0.949J	7.12	140	326
	12/5/2023	0.916	42.1	29.5	0.782J	7.20	165	344
	4/8/2024	1.01	41.5	25.5	0.775J	7.09	150	378
	11/21/2024	NS	NS	NS	NS	NS	NS	NS

Table 4 - Appendix III Constituents in Groundwater

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

Appendix III Constituents								
Constituent	Boron	Calcium	Chloride	Fluoride*	pH ^[1]	Sulfate	TDS	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	
MW-9	11/16/2016	0.83	39	28	1.0	6.67	154	376
	12/20/2016	0.74	42	29	0.97	6.89	177	414
	1/23/2017	0.87	48	29	0.87	7.19	166	412
	2/21/2017	0.73	43	30	0.91	7.02	154	444
	3/22/2017	0.83	45	30	0.91	7.08	171	480
	4/26/2017	1.0	43	30	0.9	7.04	163	400
	5/26/2017	0.98	44	30	0.87	6.93	175	396
	6/27/2017	0.89	46	30	0.85	7.03	155	496
	10/11/2017	1.7	45	29	0.59	6.85	139	496
	3/7/2018	0.365	42.6	36.4	0.639	6.95	215	418
	7/25/2018	0.816	35.4	26.5	0.472	6.47	152	344
	10/16/2018	1.19	33.1	26.9	0.618	6.59	126	330
	3/5/2019	1.07	37.7	26.7	1.33	6.94	138	352
	5/13/2019	0.862	32.9	29.4	1.56	6.58	144	378
	8/26/2019	0.957	30.4	25.5	0.956	6.21	133	364
	11/18/2019	1.55	33.4	23.6	1.08	6.16	119	276
	2/17/2020	0.968	33.9	25.9	0.798	6.01	132	338
	5/6/2020	0.750	33.4	25.4	0.992	5.35	126	328
	8/31/2020	1.54	36.0	24.7	0.813	7.13	125	312
	11/16/2020	1.37	27.2	23.5	1.14	7.14	121	332
	4/19/2021	0.748	28.0	23.7	0.717	7.19	124	280
	12/7/2021	1.36	40.5	26.0	1.02	7.09	138	294
	4/25/2022	0.622	38.2	28.5	<1.00	6.96	133	312
	11/14/2022	1.21	34.6	22.9	<0.500	7.17	125	270
	4/20/2023	0.468	35.7	26.9	0.753J	7.00	138	306
	12/4/2023	1.40	25.8	27.0	1.39	7.19	99.1	230
	4/8/2024	1.49	33.50	30	1.35	7.03	134	330
	11/22/2024	0.99	39.10	26	1.25	7.06	139	340

Notes:

^[1] During the spring 2020 semiannual sampling event, the pH meter did not calibrate within range, and therefore the pH values reported for the February 17th, 2020 and May 6th - 7th, 2020 sampling events were likely inaccurate. The values were marked as outliers for the fall 2020 sampling event and will not be used in future analysis. The meter was repaired after the spring 2020 sampling event.

^[2] During the August/September 2020 sampling event, the pump stopped working and therefore a sample was not collected.

^[3] NS = Not Sampled. Samples were not collected at upgradient monitoring well MW-6 and downgradient monitoring wells MW-3R and MW-8 during the Fall 2024 sampling event. MW-3R and MW-6 were dry during the sampling event, and MW-8 was inaccessible due to active construction in the vicinity of the monitoring well.

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

< For the period of November 2016 through October 2019, the symbol indicates analyte not detected above the reporting limit, which is the value shown following the "<" symbol. Starting in January 2020, the symbol indicates analyte not detected above the method detection limit, which is the value shown following the "<" symbol.

"J" data qualifier indicates the result is less than the laboratory reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

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Table 5 - Appendix IV Constituents in Groundwater
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / HastingsUtilities
January 2025

Constituent ReportingUnit		Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
MW-1	11/17/2016 ^[1]	< 0.001	0.00341	0.0868	< 0.001	< 0.0005	0.0344	< 0.0005	0.28	< 0.0005	< 0.05	< 0.0002	0.0395	1.19	0.0367	< 0.001
	2/21/2017	< 0.001	0.00349	0.0826	< 0.001	< 0.0005	0.0344	< 0.0005	0.28	< 0.0005	< 0.05	< 0.0002	0.0387	1.22	0.0445	< 0.001
	3/22/2017	< 0.001	0.00314	0.0789	< 0.001	< 0.0005	0.0315	< 0.0005	0.29	< 0.0005	0.0146	< 0.0002	0.038	2.49	0.0411	< 0.001
	4/26/2017	< 0.001	0.00361	0.0812	< 0.001	< 0.0005	0.0336	< 0.0005	0.29	< 0.0005	0.0122	< 0.0002	0.0362	2.15	0.038	< 0.001
	5/26/2017	< 0.001	0.00338	0.0739	< 0.001	< 0.0005	0.0329	< 0.0005	0.28	< 0.0005	0.0154	< 0.0002	0.034	0.604	0.0377	< 0.001
	7/6/2017	< 0.001	0.00311	0.0788	< 0.001	< 0.0005	0.029	< 0.0005	0.29	< 0.0005	0.0126	< 0.0002	0.0337	1.16	0.042	< 0.001
	8/8/2017	< 0.001	0.00289	0.0806	< 0.001	< 0.0005	0.0259	< 0.0005	0.29	< 0.0005	0.0117	< 0.0002	0.031	1.02	0.0395	< 0.001
	9/12/2017	< 0.001	0.00288	0.0713	< 0.001	< 0.0005	0.0248	< 0.0005	0.30	0.0077	0.0117	< 0.0002	0.0353	1.41	0.0437	< 0.001
	10/12/2017	< 0.001	0.00362	0.0754	< 0.001	< 0.0005	0.025	< 0.0005	0.28	< 0.0005	0.0119	< 0.0002	0.0369	2.12	0.0369	< 0.001
	3/7/2018	0.000207J	0.00398	0.0699	<0.00100	< 0.000500	0.0306	0.000101J	<0.500	< 0.000500	0.0111	< 0.000200	0.035	0.842	0.0439	< 0.00100
	7/25/2018	< 0.00100	0.00399	0.0821	<0.00100	< 0.000500	0.033	0.00018J	<0.500	< 0.000500	0.0109	< 0.000200	0.0284	0.842	0.13	< 0.00100
	10/16/2018	< 0.00100	0.00444	0.0754	<0.00100	< 0.000500	0.033	0.000129J	<0.500	< 0.000500	0.0116	< 0.000200	0.0299	0.477	0.0894	< 0.00100
	3/5/2019	< 0.00100	0.00522	0.0973	<0.00100	< 0.000500	0.0413	0.000149J	0.382J	< 0.000500	0.0142	< 0.000200	0.0402	0.949	0.102	< 0.00100
	5/13/2019	<0.00300	0.00413	0.102	<0.00100	< 0.000500	0.0365	<0.00100	0.549	< 0.000500	0.0123	< 0.000200	0.0337	0.838	0.0943	<0.00200
	8/26/2019	< 0.00100	0.00409	0.0843	<0.00100	<0.000100	0.0311	0.000105J	<0.500	< 0.000500	0.0125	< 0.000200	0.0422	N.S.	0.0587	< 0.00100
	11/19/2019	< 0.00100	0.00447	0.0673	<0.00100	<0.000100	0.0315	0.000102J	0.445J	< 0.000500	0.00881J	< 0.000200	0.0386	1.53	0.0394	< 0.00100
	2/17/2020	<0.00100	0.00473	0.0640	<0.00100	<0.000100	0.0303	0.000129J	0.259J	<0.000500	0.0111	< 0.000200	0.0420	1.32	0.0448	<0.00100
	5/6/2020	<0.00100	0.00459	0.0770	<0.00100	<0.000100	0.0327	0.000119J	0.587	<0.000500	0.0107	<0.000200	0.0441	N.S. ^[3]	0.0668	<0.00100
	8/31/2020	<0.00100	0.00414	0.0655	<0.00100	<0.000100	0.0296	0.0000990J	0.724	<0.000500	0.0104	<0.000200	0.0436	N.S.	0.0404	<0.00100
	11/16/2020	<0.00100	0.00409	0.0627	<0.00100	<0.000100	0.0329	<0.000500	0.374J	<0.000500	0.0101	<0.000200	0.0395	0.269U	0.0297	<0.00100
	4/19/2021	<0.00200	0.00367	0.0726	<0.00100	<0.000100	0.0323	0.0000930J	0.316J	<0.000500	0.00997J	<0.000200	0.0281	0.647	0.0385	<0.00100
	12/7/2021	<0.00200	0.00298	0.0797	<0.00100	<0.000100	0.0324	<0.000500	0.663	<0.000500	0.00981J	<0.000200	0.0432	1.1	0.072	<0.00100
	4/25/2022	<0.00200	0.00371	0.0832	<0.00100	<0.000100	0.0207	<0.000500	<1.00	<0.000500	0.0107	<0.000200	0.037	N.S. ^[4]	0.0636	<0.00100
	11/16/2022	<0.00200	0.00452	0.0886	<0.00100	<0.000100	0.0262	<0.000500	0.488J	<0.000500	0.00907J	<0.000200	0.0280	1.06	0.0454	<0.00100
	4/20/2023	<0.00200	0.00430	0.0833	<0.00100	<0.000200	0.0380	0.000206J	0.465J	<0.000500	0.0140	<0.000200	0.0350	0.830	0.0602	<0.00100
	12/5/2023	<0.00200	0.00449	0.0718	<0.00100	<0.000200	0.0331	<0.000500	0.447J	<0.000500	0.0102	<0.000200	0.0222	2.10	0.0413	<0.00100
	4/8/2024	<0.00200	0.00402	0.0809	<0.00100	<0.000200	0.0304	<0.000500	<1.00	<0.000500	0.0117	<0.000200	0.0196	1.55	0.0527	<0.00100
	11/19/2024	<0.00200	0.00432	0.0722	<0.00100	<0.000200	0.0268	<0.000500	0.549J	<0.000500	0.00951J	<0.000200	0.0483	1.14	0.0629	<0.00100
MW-2B ^[2,4]	12/21/2016	< 0.001	0.00213	0.162	< 0.001	< 0.0005	0.0178	< 0.0005	0.31	< 0.0005	< 0.05	< 0.0002	0.0043	3.74U	0.0325	< 0.001
	1/23/2017	< 0.001	0.00204	0.159	< 0.001	< 0.0005	0.0144	< 0.0005	0.26	< 0.0005	< 0.05	< 0.0002	0.00329	1.56	0.0316	< 0.001
	2/21/2017	< 0.001	0.00224	0.172	< 0.001	< 0.0005	0.0154	< 0.0005	0.29	< 0.0005	< 0.05	< 0.0002	0.00302	1.25	0.036	< 0.001
	3/23/2017	< 0.001	< 0.002	0.161	< 0.001	< 0.0005	0.0154	< 0.0005	0.30	< 0.0005	0.0142	< 0.0002	0.00325	2.26U	0.0335	< 0.001
	4/26/2017	< 0.001	0.00235	0.183	< 0.001	< 0.0005	0.018	< 0.0005	0.30	< 0.0005	0.014	< 0.0002	0.00312	0.848	0.0351	< 0.001
	5/26/2017	< 0.001	< 0.002	0.165	< 0.001	< 0.0005	0.015	< 0.0005	0.29	< 0.0005	0.0151	< 0.0002	0.00249	1.12	0.0308	< 0.001
	6/27/2017	< 0.001	< 0.002	0.167	< 0.001	< 0.0005	0.0173	< 0.0005	0.31	< 0.0005	0.0143	< 0.0002	0.00277	1.71	0.0347	< 0.001
	8/8/2017	< 0.001	< 0.002	0.159	< 0.001	< 0.0005	0.0175	< 0.0005	0.31	< 0.0005	0.0143	< 0.0002	0.00254	1.32	0.0358	< 0.001
	9/12/2017	< 0.001	< 0.002	0.142	< 0.001	< 0.0005	0.153	< 0.0005	0.31	< 0.0005	< 0.01	< 0.0002	0.00258	1.67	0.0373	< 0.001
	10/11/2017	< 0.001	0.00211	0.174	< 0.001	< 0.0005	0.0154	< 0.0005	0.28	< 0.0005	0.0142	< 0.0002	0.00248	2.06	0.0324	< 0.001
	3/7/2018	0.000202J	0.00224	0.176	<0.00100	< 0.000500	0.0175	0.000075J	<0.500	< 0.000500	0.0141	< 0.000200	0.0026	1.38	0.0358	< 0.00100
	7/25/2019	< 0.00100	0.00216	0.169	<0.00100	< 0.000500	0.018	0.000067J	<0.500	< 0.000500	0.0127	< 0.000200	0.00287	1.26	0.0366	< 0.00100
	10/16/2018	< 0.00100	0.00245	0.19	<0.00100	< 0.000500	0.0174	0.000374J	<0.500	0.000934	0.0156	< 0.000200	0.00245	1.24	0.0324	< 0.00100
	3/5/2019	< 0.00100	0.00265	0.22	<0.00100	< 0.000500	0.0205	< 0.000500	0.401J	< 0.000500	0.0173	< 0.000200	0.00313	1.59	0.0419	< 0.00100
	5/13/2019	<0.00300	0.00235	0.181	<0.00100	< 0.000500	0.0163	<0.00100	0.552	< 0.000500	0.013	< 0.000200	0.00264J	0.994	0.0382	<0.00200
	8/26/2019	< 0.00100	0.0023	0.174	<0.00100	< 0.000100	0.0165	< 0.000500	<0.500	< 0.000500	0.0146	< 0.000200	0.00251	N.S.	0.0362	< 0.00100
	11/19/2019	< 0.00100	0.00211	0.167	<0.00100	< 0.000100	0.0157	< 0.000500	0.274J	< 0.000500	0.0128	< 0.000200	0.00248	1.23	0.0339	< 0.00100

Table 5 - Appendix IV Constituents in Groundwater
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / HastingsUtilities
January 2025

Constituent ReportingUnit		Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
MW-2B ^[2,4]	2/17/2020	<0.00100	0.00217	0.184	<0.00100	<0.000100	0.0170	0.000100J	<0.500	<0.000500	0.0161	<0.000200	0.00249	2.12	0.0369	<0.00100
	5/6/2020	<0.00100	0.00237	0.193	<0.00100	<0.000100	0.0183	0.000347J	0.534	<0.000500	0.0145	<0.000200	0.00356	N.S. ^[3]	0.0363	<0.00100
	11/18/2020	<0.00100	0.00203	0.178	<0.00100	<0.0001000	0.0172	<0.000500	<0.500	<0.000500	0.0144	<0.000200	0.00267	0.982	0.0372	<0.00100
	4/20/2021	<0.00200	0.00204	0.193	<0.00100	<0.000100	0.0171	<0.000500	<0.500	<0.000500	0.0138	<0.000200	0.00265	0.768	0.0339	<0.00100
	12/7/2021	<0.00200	0.00174J	0.162	<0.00100	<0.000100	0.0178	<0.000500	0.667	<0.000500	0.0132	<0.000200	0.003	1.7	0.0359	<0.00100
	4/25/2022	<0.00200	0.00197J	0.182	<0.00100	<0.000100	0.0182	<0.000500	<0.500	<0.000500	0.0156	<0.000200	0.00216	1.1	0.0392	<0.00100
	11/14/2022	<0.00200	0.00208	0.192	<0.00100	<0.000100	0.0169	<0.000500	<0.500	<0.000500	0.0153	<0.000200	0.00210	N.S.	0.0388	<0.00100
	4/20/2023	<0.00200	0.00205	0.182	<0.00100	<0.000200	0.0179	<0.000500	<1.00	<0.000500	0.0162	<0.000200	0.00240	0.466	0.0369	<0.00100
	12/5/2023	<0.00200	0.00225	0.176	<0.00100	<0.000200	0.0178	<0.000500	<1.00	<0.000500	0.0156	<0.000200	0.00242	2.96	0.0372	<0.00100
	4/8/2024	<0.00200	0.00213	0.179	<0.00100	<0.000200	0.0161	<0.000500	<1.00	<0.000500	0.017	<0.000200	0.00209	2.28	0.0356	<0.00100
	11/19/2024	<0.00200	0.00206	0.198	<0.00100	<0.000200	0.0162	<0.000500	<1.00	<0.000500	0.0145	<0.000200	0.00209	1.76	0.0334	<0.00100
MW-3R ^[6]	11/16/2016 ^[1]	< 0.001	0.00246	0.0857	< 0.001	< 0.0005	0.00941	< 0.0005	0.29	< 0.0005	< 0.05	< 0.0002	0.00414	0.791	0.0421	< 0.001
	12/20/2016	< 0.001	0.00285	0.0927	< 0.001	< 0.0005	0.00785	< 0.0005	0.29	< 0.0005	< 0.05	< 0.0002	0.00412	1.35	0.0367	< 0.001
	1/23/2017	< 0.001	0.0024	0.102	< 0.001	< 0.0005	0.00553	< 0.0005	0.25	< 0.0005	< 0.05	< 0.0002	0.00294	1.35	0.0348	< 0.001
	2/21/2017	< 0.001	0.00261	0.0993	< 0.001	< 0.0005	0.00526	< 0.0005	0.29	< 0.0005	< 0.05	< 0.0002	0.0031	1.31U	0.0339	< 0.001
	3/22/2017	< 0.001	0.00226	0.0906	< 0.001	< 0.0005	< 0.005	< 0.0005	0.3	< 0.0005	0.0274	< 0.0002	0.00335	1.42	0.0319	< 0.001
	4/26/2017	< 0.001	0.00276	0.087	< 0.001	< 0.0005	< 0.005	< 0.0005	0.3	< 0.0005	0.0258	< 0.0002	0.00365	0.44	0.032	< 0.001
	5/26/2017	< 0.001	0.00238	0.0757	< 0.001	< 0.0005	< 0.005	< 0.0005	0.28	< 0.0005	0.0292	< 0.0002	0.00302	1.21	0.0299	< 0.001
	6/27/2017	< 0.001	0.00224	0.0814	< 0.001	< 0.0005	0.00578	< 0.0005	0.29	< 0.0005	0.03	< 0.0002	0.00361	1.28	0.0339	< 0.001
	10/11/2017	< 0.001	0.0026	0.756	< 0.001	< 0.0005	0.00876	< 0.0005	0.28	< 0.0005	< 0.01	< 0.0002	0.00271	2.15	0.0333	< 0.001
	3/7/2018	0.000192J	0.00231	0.0672	<0.00100	<0.000500	0.00877	0.000064J	<0.500	< 0.000500	0.0262	< 0.000200	0.00251	0.843	0.0384	< 0.00100
	7/25/2018	< 0.00100	0.00205	0.0611	<0.00100	<0.000500	0.00675	<0.000500	<0.500	< 0.000500	0.0258	< 0.000200	0.00322	0.637	0.0255	< 0.00100
	10/16/2018	< 0.00100	0.00225	0.0709	<0.00100	<0.000500	0.00463J	<0.000500	<0.500	< 0.000500	0.0299	< 0.000200	0.00327	0.519	0.0277	< 0.00100
	3/7/2019	< 0.00100	0.00204	0.0784	<0.00100	<0.000500	0.0126	0.000279	0.299J	< 0.000500	0.0302	< 0.000200	0.00476	1.55	0.0607	< 0.00100
	5/13/2019	<0.00300	0.00231	0.0802	<0.00100	<0.000500	0.0125	<0.00100	0.519	< 0.000500	0.0274	< 0.000200	0.00566	0.921	0.0590	<0.00200
	8/26/2019	< 0.00100	0.00246	0.079	<0.00100	< 0.000100	0.00392J	< 0.000500	<0.500	< 0.000500	0.0302	< 0.000200	0.00613	N.S.	0.035	< 0.00100
	11/18/2019	< 0.00100	0.00259	0.0651	<0.00100	< 0.000100	0.00385J	< 0.000500	0.481J	< 0.000500	0.0266	< 0.000200	0.00553	1.04	0.038	< 0.00100
	2/17/2020	<0.00100	0.00220	0.0874	<0.00100	<0.000100	0.00355J	0.000108J	<0.500	<0.000500	0.0327	<0.000200	0.00401	1.49	0.0595	<0.00100
	5/6/2020	<0.00100	0.00239	0.0905	<0.00100	<0.000100	0.01	0.000188J	0.401J	<0.000500	0.0306	<0.000200	0.00593	N.S. ^[3]	0.0606	<0.00100
	8/31/2020	<0.00100	0.00217	0.0755	<0.00100	<0.000100	0.0125	0.0003J	0.374J	<0.0005000	0.0322	<0.000200	0.00673	N.S.	0.0398	<0.001000
	11/16/2020	<0.00100	0.00198J	0.0611	<0.00100	<0.0001	0.0237	0.000668	<0.500	<0.000500	0.0314	<0.000200	0.0107	0.427U	0.0351	<0.00100
	4/19/2021	<0.00200	0.00234	0.0585	<0.00100	<0.000100	0.0233	0.000806	<0.500	<0.000500	0.0271	<0.000200	0.0122	0.184U	0.0382	<0.00100
	12/7/2021	<0.00200	0.00190J	0.0648	<0.00100	<0.000100	0.0353	0.000873	0.498J	<0.000500	0.0248	<0.000200	0.0114	1.27	0.0495	<0.00100
	4/25/2022	<0.00200	0.00237	0.0598	<0.00100	<0.000100	0.0341	0.00221	<0.500	<0.000500	0.0229	<0.000200	0.0194	0.727	0.0473	<0.00100
	11/16/2022	<0.00200	0.00293	0.0705	<0.00100	<0.000100	0.00515	< 0.000500	<0.500	<0.000500	0.0293	<0.000200	0.00687	N.S.	0.0548	<0.00100
	4/21/2023	<0.00200	0.00244	0.0639	<0.00100	<0.000200	0.00480J	<0.000500	<1.00	<0.000500	0.0302	<0.000200	0.00527	0.595U	0.0408	<0.00100
	12/7/2023	<0.00200	0.00252	0.0642	<0.00100	<0.000200	0.00334J	<0.000500	<1.00	<0.000500	0.0361	<0.000200	0.00820	2.09	0.0216	<0.00100
	4/10/2024	<0.00200	0.00254	0.0558	<0.00100	<0.000200	0.00653	<0.000500	<1.00	<0.000500	0.0322	<0.000200	0.00804	N.S. ^[5]	0.035	<0.00100
	11/15/2024	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
MW-4B	11/16/2016 ^[1]	< 0.001	0.00281	0.0364	< 0.001	< 0.0005	0.00648	< 0.0005	0.28	< 0.0005	< 0.05	< 0.0002	0.0123	0.424U	0.0288	< 0.001
	12/20/2016	< 0.001	0.00297	0.0327	< 0.001	< 0.0005	< 0.005	< 0.0005	0.25	< 0.0005	< 0.05	< 0.0002	0.00402	1.08	0.0253	< 0.001
	1/23/2017	< 0.001	0.00286	0.033	< 0.001	< 0.0005	< 0.005	< 0.0005	0.20	< 0.0005	< 0.05	< 0.0002	0.00314	0.737	0.0281	< 0.001
	2/21/2017	< 0.001	0.00316	0.0337	< 0.001	< 0.0005	< 0.005	< 0.0005	0.24	< 0.0005	< 0.05	< 0.0002	0.00287	0.555U	0.0263	< 0.001
	3/22/2017	< 0.001	0.00274	0.0296	< 0.001	< 0.0005	< 0.005	< 0.0005	0.24	< 0.0005	0.0321	< 0.0002	0.00266	0.775	0.0256	< 0.001

Table 5 - Appendix IV Constituents in Groundwater
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / HastingsUtilities
January 2025

		Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
MW-4B	4/26/2017	< 0.001	0.00376	0.0323	< 0.001	< 0.0005	0.00508	< 0.0005	0.26	< 0.0005	0.0313	< 0.0002	0.00324	0.917	0.0308	< 0.001
	5/26/2017	< 0.001	0.00315	0.0291	< 0.001	< 0.0005	0.00758	< 0.0005	0.25	< 0.0005	0.0373	< 0.0002	0.00327	0.625U	0.029	< 0.001
	6/27/2017	< 0.001	0.0032	0.0319	< 0.001	< 0.0005	0.0105	< 0.0005	0.26	< 0.0005	0.0296	< 0.0002	0.00411	0.0747U	0.0291	< 0.001
	11/1/2017	0.0011	< 0.002	0.0356	< 0.001	< 0.0005	0.0123	< 0.0005	0.22	< 0.0005	0.0325	< 0.0002	0.00515	2.33	0.0323	< 0.001
	3/7/2018	< 0.00100	0.00228	0.032	<0.00100	< 0.000500	0.00444J	< 0.000500	<0.500	< 0.000500	0.0271	< 0.000200	0.00557	0.468	0.0177	< 0.00100
	7/25/2018	< 0.00100	0.00202	0.0319	<0.00100	< 0.000500	0.00328J	< 0.000500	<0.500	< 0.000500	0.026	< 0.000200	0.00458	0.614	0.016	< 0.00100
	10/16/2018	< 0.00100	0.00245	0.0353	<0.00100	< 0.000500	0.00185	< 0.000500	<0.500	0.000606	0.031	< 0.000200	0.00604	0.26U	0.0103	< 0.00100
	3/7/2019	< 0.00100	0.00319	0.0443	<0.00100	< 0.000500	0.0131	< 0.000500	<1.00	< 0.000500	0.0311	< 0.000200	0.0139	0.899	0.0529	< 0.00100
	5/13/2019	<0.00300	0.00278	0.0337	<0.00100	< 0.000500	0.0639	0.00287	0.579	0.000195J	0.0245	< 0.000200	0.0259	1.19	0.0232	<0.00200
	8/27/2019	< 0.00100	0.00261	0.0347	<0.00100	< 0.000100	< 0.00500	< 0.000500	<0.500	< 0.000500	0.0265	< 0.000200	0.00578	N.S.	0.0156	< 0.00100
	11/18/2019	< 0.00100	0.00447	0.0403	<0.00100	< 0.000100	0.00933	< 0.000500	<0.500	< 0.000500	0.0334	< 0.000200	0.00683	0.975	0.0656	< 0.00100
	2/17/2020	<0.00100	0.00250	0.0392	<0.00100	<0.000100	0.0148	<0.000500	<0.500	<0.000500	0.0314	<0.000200	0.0145	1.85	0.0538	<0.00100
	5/6/2020	<0.00100	0.00286	0.0349	<0.00100	<0.000100	0.0216	<0.000500	0.665	<0.000500	0.0228	<0.000200	0.0188	N.S. ^[3]	0.0416	<0.00100
	8/31/2020	<0.00100	0.00270	0.0327	<0.00100	<0.000100	0.024	<0.000500	0.677	<0.000500	0.0213	<0.000200	0.0151	N.S.	0.036	<0.00100
	11/16/2020	<0.00100	0.00238	0.031	<0.00100	<0.000100	0.0246	<0.000500	0.609	<0.000500	0.0174	<0.000200	0.0185	0.707	0.0372	<0.00100
	4/19/2021	<0.00200	0.00345	0.0276	<0.00100	<0.000100	0.0267	<0.000500	0.892	<0.000500	0.0150	<0.000200	0.0172	0.375	0.0250	<0.00100
	12/7/2021	<0.00200	0.00227	0.0623	<0.00100	0.0000520J	<0.00500	<0.000500	0.732	<0.000500	0.0214	<0.000200	0.0108	1.26	0.0445	<0.00100
	4/25/2022	<0.00200	0.00222	0.0675	<0.00100	<0.000100	0.00271J	<0.000500	<0.500	<0.000500	0.0467	<0.000200	0.00446	1.1	0.032	<0.00100
	11/14/2022	<0.00200	0.00288	0.0398	<0.00100	<0.000100	0.0118	<0.000500	<0.500	<0.000500	0.0268	<0.000200	0.00863	N.S.	0.0425	<0.00100
	4/20/2023	<0.00200	0.00258	0.0441	<0.00100	<0.000200	0.00731	0.000236J	<1.00	<0.000500	0.0322	<0.000200	0.0104	0.696	0.0273	<0.00100
	12/5/2023	<0.00200	0.00258	0.0444	<0.00100	<0.000200	0.0122	<0.000500	<1.00	<0.000500	0.0264	<0.000200	0.0110	2.01	0.0638	<0.00100
	4/8/2024	<0.00200	0.00228	0.0516	<0.00100	<0.000200	0.00878	0.000353J	<1.00	<0.000500	0.0262	<0.000200	0.01010	1.51	0.0363	<0.00100
	11/19/2024	<0.00200	0.00267	0.0507	<0.00100	<0.000200	0.0141	0.000763	<1.00	<0.000500	0.0323	<0.000200	0.01350	0.218U	0.0424	<0.00100
MW-5B	11/16/2016 ^[1]	< 0.001	0.00562	0.0379	< 0.001	< 0.0005	0.0342	< 0.0005	1.1	< 0.0005	< 0.05	< 0.0002	0.029	1.42	0.0662	< 0.001
	12/20/2016	< 0.001	0.00601	0.035	< 0.001	< 0.0005	0.0312	< 0.0005	1.2	< 0.0005	< 0.05	< 0.0002	0.028	0.672U	0.0683	< 0.001
	1/23/2017	< 0.001	0.00568	0.0347	< 0.001	< 0.0005	0.0314	< 0.0005	1.2	< 0.0005	< 0.05	< 0.0002	0.0283	0.344	0.0672	< 0.001
	2/21/2017	< 0.001	0.00609	0.0352	< 0.001	< 0.0005	0.0327	< 0.0005	1.3	< 0.0005	< 0.05	< 0.0002	0.0282	0.659	0.0655	< 0.001
	3/22/2017	< 0.001	0.00553	0.0354	< 0.001	< 0.0005	0.0308	< 0.0005	1.3	< 0.0005	0.0123	< 0.0002	0.0273	1.07	0.0594	< 0.001
	4/26/2017	< 0.001	0.00632	0.0344	< 0.001	< 0.0005	0.0329	< 0.0005	1.3	< 0.0005	0.0103	< 0.0002	0.0276	0.607	0.054	< 0.001
	5/26/2017	< 0.001	0.0055	0.0311	< 0.001	< 0.0005	0.0325	< 0.0005	1.3	< 0.0005	0.0125	< 0.0002	0.0229	0.228U	0.0474	< 0.001
	6/27/2017	< 0.001	0.00529	0.0378	< 0.001	< 0.0005	0.0392	< 0.0005	1.2	< 0.0005	0.013	< 0.0002	0.0234	-0.00269U	0.0634	< 0.001
	10/11/2017	< 0.001	0.0036	0.0632	< 0.001	< 0.0005	0.0404	< 0.0005	0.86	< 0.0005	0.0151	< 0.0002	0.0195	1.99	0.104	< 0.001
	3/7/2018	0.000202J	0.00393	0.0531	<0.00100	< 0.000500	0.0302	0.000405J	1.34	< 0.000500	0.0134	< 0.000200	0.026	0.694	0.17	< 0.00100
	7/25/2018	<0.00100	0.00399	0.0473	<0.00100	< 0.000500	0.0368	0.000188J	0.896	< 0.000500	0.0117	< 0.000200	0.0404	0.527	0.1	< 0.00100
	10/16/2018	<0.00100	0.00409	0.0623	<0.00100	< 0.000500	0.0306	0.00012J	0.714	< 0.000500	0.0144	< 0.000200	0.026	0.878	0.108	< 0.00100
	3/5/2019	<0.00100	0.00645	0.0469	<0.00100	< 0.000500	0.0484	0.000125J	1.28	0.000703	0.0176	< 0.000200	0.047	0.313U	0.0588	< 0.00100
	5/15/2019	<0.00300	0.00485	0.0415	<0.00100	< 0.000500	0.0378	<0.00100	1.5	< 0.000500	0.0125	< 0.000200	0.0259	0.352U	0.0771	<0.00200
	8/28/2019	<0.00100	0.00505	0.0387	<0.00100	< 0.000100	0.0369	0.000149J	1.4	0.000279J	0.0136	< 0.000200	0.0209	N.S.	0.0685	< 0.00100
	11/18/2019	0.000709J	0.00499	0.0492	<0.00100	< 0.000100^	0.0389	0.000141J	0.984	< 0.000500	0.0143	< 0.000200	0.0163	0.945	0.106	< 0.00100
	2/17/2020	<0.00100	0.00266	0.0574	<0.00100	<0.000100	0.0485	0.000298J	0.597	<0.000500	0.0172	<0.000200	0.0401	1.30	0.131	<0.00100
	5/6/2020	<0.00100	0.00381	0.0496	<0.00100	<0.000100	0.05	0.000420J	1.41	<0.000500	0.0115	<0.000200	0.0635	N.S. ^[3]	0.182	<0.00100
	8/31/2020	<0.00100	0.00507	0.0412	<0.00100	<0.000100	0.0439	0.000217J	1.26	0.000190J	0.0109	<0.000200	0.0462	N.S.	0.116	<0.00100
11/16/2020	<0.00100	0.00498	0.0349	<0.00100	<0.000100	0.0383	0.000166J	1.1	<0.000500	0.0105	<0.000200	0.0396	0.203U	0.0938	<0.00100	

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January 2025

Constituent ReportingUnit		Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
MW-5B	4/19/2021	<0.00200	0.00589	0.0423	<0.00100	<0.000100	0.0445	0.000140J	1.11	<0.000500	0.0108	<0.000200	0.0444	1.17	0.122	<0.00100
	12/7/2021	<0.00200	0.00400	0.0481	<0.00100	<0.000100	0.0435	<0.000500	1.52	<0.000500	0.0120	<0.000200	0.0242	0.94	0.0843	<0.00100
	4/25/2022	<0.00200	0.00318	0.0478	<0.00100	<0.000100	0.0396	<0.000500	0.825J	<0.000500	0.0127	<0.000200	0.0225	0.68	0.107	<0.00100
	11/14/2022	<0.00200	0.00431	0.0465	<0.00100	<0.000100	0.0300	0.000400J	0.451J	<0.000500	0.0109	<0.000200	0.0605	N.S.	0.119	<0.00100
	5/20/2023	<0.00200	0.00446	0.0412	<0.00100	<0.000200	0.0408	0.000322J	1.16	<0.000500	0.0123	<0.000200	0.0640	-0.0911U	0.0597	<0.00100
	12/4/2023	<0.00200	0.00513	0.0422	<0.00100	<0.000200	0.0227	<0.000500	1.28	<0.000500	0.0110	<0.000200	0.0560	1.86	0.0505	<0.00100
	4/8/2024	<0.00200	0.00371	0.0901	<0.00100	<0.000200	0.0416	0.000275J	1.10	<0.000500	0.0161	<0.000200	0.0398	0.93	0.0824	<0.00100
	11/22/2024	<0.00200	0.00486	0.0707	<0.00100	<0.000200	0.0306	0.000234J	1.44	<0.000500	0.0124	<0.000200	0.0378	0.91	0.0619	0.000627J
MW-6 ^[6]	11/16/2016 ^[1]	< 0.001	0.0025	0.0496	< 0.001	< 0.0005	0.00601	< 0.0005	0.36	< 0.0005	< 0.05	< 0.0002	0.00761	2.03	0.0397	< 0.001
	12/20/2016	< 0.001	0.0022	0.0423	< 0.001	< 0.0005	< 0.005	< 0.0005	0.35	< 0.0005	< 0.05	< 0.0002	0.00685	0.453	0.0427	< 0.001
	1/23/2017	< 0.001	0.00234	0.0456	< 0.001	< 0.0005	< 0.005	< 0.0005	0.3	0.0207	< 0.05	< 0.0002	0.00746	1.38U	0.059	< 0.001
	2/21/2017	< 0.001	0.00336	0.058	< 0.001	< 0.0005	0.00998	< 0.0005	0.34	< 0.0005	< 0.05	< 0.0002	0.0105	0.487	0.0913	< 0.001
	3/22/2017	< 0.001	0.00226	0.0454	< 0.001	< 0.0005	0.00896	< 0.0005	0.34	< 0.0005	0.015	< 0.0002	0.00795	0.988	0.0606	< 0.001
	4/26/2017	< 0.001	0.0027	0.051	< 0.001	< 0.0005	0.011	< 0.0005	0.35	< 0.0005	0.0146	< 0.0002	0.00795	1.52	0.0612	< 0.001
	5/26/2017	< 0.001	0.00237	0.0406	< 0.001	< 0.0005	0.0126	< 0.0005	0.35	< 0.0005	0.0164	< 0.0002	0.00771	0.528U	0.042	< 0.001
	6/27/2017	< 0.001	0.00259	0.0454	< 0.001	< 0.0005	0.0133	< 0.0005	0.36	< 0.0005	0.0163	< 0.0002	0.00831	0.427	0.0415	< 0.001
	10/11/2017	< 0.001	0.00244	0.0535	< 0.001	< 0.0005	0.016	< 0.0005	0.30	< 0.0005	0.015	< 0.0002	0.00713	1.95	0.0528	< 0.001
	3/7/2018	0.000187J	0.00262	0.0443	<0.00100	< 0.000500	0.0241	0.000052J	<0.500	< 0.000500	0.0137	< 0.000200	0.0119	0.575	0.0407	< 0.00100
	7/25/2018	<0.00100	0.00262	0.0483	<0.00100	< 0.000500	0.0202	<0.000500	<0.500	< 0.000500	0.0134	< 0.000200	0.0121	0.376U	0.0354	< 0.00100
	10/16/2018	<0.00100	0.00283	0.0547	<0.00100	< 0.000500	0.0167	<0.000500	<0.500	< 0.000500	0.014	< 0.000200	0.0115	0.716	0.0343	< 0.00100
	3/5/2019	<0.00100	0.00101	0.0202	<0.00100	< 0.000500	0.0108	<0.000500	0.672	< 0.000500	0.00714	< 0.000200	0.00471	0.705	0.0245	< 0.00100
	5/13/2019	<0.00300	0.00301	0.0858	<0.00100	< 0.000500	0.00961	<0.00100	0.622	0.000558	0.0134	< 0.000200	0.00776	1.03	0.0685	<0.00200
	8/26/2019	<0.00100	0.00243	0.0546	<0.00100	< 0.000100	0.00877	<0.000500	0.330J	< 0.000500	0.0153	< 0.000200	0.00934	N.S.	0.0803	< 0.00100
	11/18/2019	<0.00100	0.00317	0.0476	<0.00100	< 0.000100^	0.0141	<0.000500	0.547	< 0.000500	0.015	< 0.000200	0.00965	0.45	0.108	< 0.00100
	2/17/2020	<0.00100	0.00231	0.0421	<0.00100	<0.000100	0.0252	<0.000500	<0.500	< 0.000500	0.0147	< 0.000200	0.00998	1.70	0.178	<0.00100
	5/6/2020	<0.00100	0.00259	0.0512	<0.00100	<0.000100	0.0229	<0.000500	0.635	< 0.000500	0.0114	< 0.000200	0.00831	N.S. ^[3]	0.135	<0.00100
	8/31/2020	<0.00100	0.00226	0.0401	<0.00100	<0.000100	0.0261	<0.000500	0.639	< 0.000500	0.0122	< 0.000200	0.00998	N.S.	0.049	<0.00100
	11/16/2020	<0.00100	0.00203	0.0433	<0.00100	<0.000100	0.0244	<0.000500	0.416J	< 0.000500	0.0134	< 0.000200	0.00793	0.485	0.0601	<0.00100
	4/19/2021	<0.00200	0.00229	0.0481	<0.00100	<0.000100	0.0225	<0.000500	0.433J	< 0.000500	0.0136	< 0.000200	0.0100	1.22	0.0406	<0.00100
	12/7/2021	<0.00200	0.00233	0.0449	<0.00100	<0.000100	0.00631	<0.000500	0.779	< 0.000500	0.0136	< 0.000200	0.0138	0.738	0.0337	<0.00100
	4/18/2022	0.00103J	0.00275	0.0543	<0.00100	<0.000100	0.0113	<0.000500	<1.00	< 0.000500	0.0132	< 0.000200	0.0142	1.13	0.0812	<0.00100
	11/14/2022	<0.00200	0.00243	0.0519	<0.00100	<0.000100	0.0172	<0.000500	<0.500	< 0.000500	0.0141	< 0.000200	0.00984	N.S.	0.0790	<0.00100
	4/20/2023	<0.00200	0.00226	0.0540	<0.00100	<0.000200	0.0230	<0.000500	0.403J	< 0.000500	0.0140	< 0.000200	0.0106	0.972	0.108	<0.00100
	12/4/2023	<0.00200	0.00281	0.0491	<0.00100	<0.000200	0.0169	<0.000500	0.400J	< 0.000500	0.0131	< 0.000200	0.0108	1.25	0.0663	<0.00100
	4/8/2024	<0.00200	0.00288	0.0547	<0.00100	<0.000200	0.0157	<0.000500	0.485J	< 0.000500	0.0133	< 0.000200	0.0122	0.19	0.0575	<0.00100
	11/19/2024	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
MW-7	11/16/2016 ^[1]	< 0.001	0.00338	0.0518	< 0.001	< 0.0005	0.0241	< 0.0005	0.38	< 0.0005	< 0.05	< 0.0002	0.0262	1.27	0.045	< 0.001
	12/20/2016	< 0.001	0.00327	0.0688	< 0.001	< 0.0005	0.0129	< 0.0005	0.36	< 0.0005	< 0.05	< 0.0002	0.0229	0.622	0.0576	< 0.001
	1/23/2017	< 0.001	0.00293	0.09	< 0.001	< 0.0005	0.00689	< 0.0005	0.27	< 0.0005	< 0.05	< 0.0002	0.0193	2.42	0.0649	< 0.001
	2/21/2017	< 0.001	0.00351	0.088	< 0.001	< 0.0005	0.00959	< 0.0005	0.33	< 0.0005	< 0.05	< 0.0002	0.0219	1.01	0.0714	< 0.001
	3/22/2017	< 0.001	0.00321	0.073	< 0.001	< 0.0005	0.00827	< 0.0005	0.36	< 0.0005	0.0172	< 0.0002	0.0222	2.11	0.0568	< 0.001
	4/26/2017	< 0.001	0.0038	0.0649	< 0.001	< 0.0005	0.00562	< 0.0005	0.38	< 0.0005	0.014	< 0.0002	0.0201	1.06	0.0477	< 0.001
	5/26/2017	< 0.001	0.00333	0.0625	< 0.001	< 0.0005	< 0.005	< 0.0005	0.37	< 0.0005	0.017	< 0.0002	0.017	1.19U	0.0469	< 0.001
	6/27/2017	< 0.001	0.00308	0.086	< 0.001	< 0.0005	0.00613	< 0.0005	0.34	< 0.0005	0.0184	< 0.0002	0.0145	0.948	0.0475	< 0.001

Table 5 - Appendix IV Constituents in Groundwater
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / HastingsUtilities
January 2025

Constituent ReportingUnit		Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
MW-7	10/11/2017	< 0.001	0.00368	0.0647	< 0.001	< 0.0005	0.00956	< 0.0005	0.34	< 0.0005	0.0157	< 0.0002	0.0147	1.57	0.0459	< 0.001
	3/7/2018	<0.00100	0.00411	0.051	<0.00100	< 0.000500	0.0264	0.000104J	0.604	< 0.000500	0.0146	< 0.000200	0.0194	0.439	0.0998	< 0.00100
	7/25/2018	<0.00100	0.00421	0.0518	<0.00100	< 0.000500	0.029	0.00008J	<0.500	< 0.000500	0.0128	< 0.000200	0.0203	0.73	0.0677	< 0.00100
	10/16/2018	<0.00100	0.00378	0.0489	<0.00100	< 0.000500	0.0282	<0.000500	<0.500	< 0.000500	0.0151	< 0.000200	0.0248	0.721	0.0414	< 0.00100
	3/5/2019	<0.00100	0.0032	0.052	<0.00100	< 0.000500	0.0295	<0.000500	<0.500	< 0.000500	0.0143	< 0.000200	0.0227	0.925	0.0678	< 0.00100
	5/13/2019	<0.00300	0.00361	0.0534	<0.00100	< 0.000500	0.0318	0.00045J	0.852	< 0.000500	0.0126	< 0.000200	0.0258	0.917	0.0644	<0.00200
	8/26/2019	<0.00100	0.00386	0.0528	<0.00100	< 0.000100	0.0232	<0.000500	0.254J	< 0.000500	0.0146	< 0.000200	0.0284	N.S.	0.0516	< 0.00100
	11/18/2019	<0.00100	0.0042	0.0644	<0.00100	< 0.000100^	0.0167	<0.000500	<0.500	< 0.000500	0.0141	< 0.000200	0.0222	1.66	0.0719	< 0.00100
	2/17/2020	<0.00100	0.00347	0.0603	<0.00100	<0.000100	0.0287	0.000103J	0.289J	<0.000500	0.0159	<0.000200	0.0213	1.56	0.0457	<0.00100
	5/6/2020	<0.00100	0.00415	0.0407	<0.00100	<0.000100	0.0264	0.0000910J	0.517	<0.000500	0.00936J	<0.000200	0.0255	N.S. ^[3]	0.0421	<0.00100
	8/31/2020	<0.00100	0.00442	0.0402	<0.00100	<0.000100	0.0302	<0.000500	0.758	<0.000500	0.011	<0.000200	0.0286	N.S.	0.0255	<0.00100
	11/16/2020	0.00103	0.00417	0.0388	<0.00100	<0.000100	0.0267	<0.000500	0.658	<0.000500	0.0117	<0.000200	0.0245	0.423	0.0381	<0.00100
	4/20/2021	<0.00200	0.00360	0.0456	<0.00100	0.0000610J	0.0235	0.000164J	0.448J	0.000497J	0.0118	<0.000200	0.0231	0.893	0.0543	<0.00100
	12/7/2021	<0.00200	0.00279	0.0639	<0.00100	<0.000100	0.0148	<0.000500	0.67	<0.000500	0.0168	<0.000200	0.0221	1.33	0.0545	<0.00100
	4/25/2022	<0.00200	0.00285	0.0417	<0.00100	<0.000100	0.0062	<0.000500	0.371J	<0.000500	0.0226	<0.000200	0.0128	N.S. ^[4]	0.0481	<0.00100
	11/14/2022	<0.00200	0.00349	0.0311	<0.00100	<0.000100	0.00925	<0.000500	<0.500	<0.000500	0.0138	<0.000200	0.0113	1.14	0.0539	<0.00100
	4/20/2023	<0.00200	0.00351	0.0312	<0.00100	<0.000200	0.0166	<0.000500	0.630J	<0.000500	0.0164	<0.000200	0.0138	0.787	0.0502	<0.00100
	12/5/2023	<0.00200	0.00295	0.0347	<0.00100	<0.000200	0.0164	<0.000500	0.649J	<0.000500	0.0149	<0.000200	0.0146	1.39	0.0540	<0.00100
	4/8/2024	<0.00200	0.00298	0.0329	<0.00100	<0.000200	0.0169	<0.000500	0.620J	<0.000500	0.0152	<0.000200	0.0137	1.05	0.0633	<0.00100
	11/21/2024	<0.00200	0.00308	0.0537	<0.00100	<0.000200	0.0221	<0.000500	0.691J	0.000281J	0.0129	<0.000200	0.0164	1.58	0.0626	<0.00100
MW-8 ^[6]	11/16/2016 ^[1]	<0.00100	0.00429	0.0498	< 0.001	< 0.0005	0.0332	< 0.0005	0.63	< 0.0005	< 0.05	< 0.0002	0.0499	0.56U	0.035	< 0.001
	12/20/2016	<0.00100	0.00347	0.0456	< 0.001	< 0.0005	0.0347	< 0.0005	0.63	< 0.0005	< 0.05	< 0.0002	0.0479	0.397U	0.0396	< 0.001
	1/23/2017	<0.00100	0.00333	0.0433	< 0.001	< 0.0005	0.0347	< 0.0005	0.58	0.0613	< 0.05	< 0.0002	0.0455	0.860U	0.0374	< 0.001
	2/21/2017	<0.00100	0.00374	0.0516	< 0.001	< 0.0005	0.037	< 0.0005	0.64	< 0.0005	< 0.05	< 0.0002	0.0481	0.964	0.0415	< 0.001
	3/22/2017	<0.00100	0.00316	0.0448	< 0.001	< 0.0005	0.0326	< 0.0005	0.69	< 0.0005	0.0118	< 0.0002	0.0425	1.18	0.04	< 0.001
	4/26/2017	<0.00100	0.00414	0.0516	< 0.001	< 0.0005	0.0382	< 0.0005	0.76	< 0.0005	0.0122	< 0.0002	0.0458	0.678U	0.0441	< 0.001
	5/26/2017	<0.00100	0.00345	0.0545	< 0.001	< 0.0005	0.0303	< 0.0005	0.75	< 0.0005	0.0141	< 0.0002	0.0384	0.103U	0.0368	< 0.001
	6/27/2017	<0.00100	0.00338	0.0535	< 0.001	< 0.0005	0.031	< 0.0005	0.77	< 0.0005	0.013	< 0.0002	0.04	0.293U	0.04	< 0.001
	10/11/2017	<0.00100	0.00384	0.0385	< 0.001	< 0.0005	0.0292	< 0.0005	0.81	< 0.0005	0.0111	< 0.0002	0.0385	0.894	0.0484	< 0.001
	3/7/2018	<0.00100	0.00394	0.0423	<0.00100	< 0.000500	0.0456	0.000103J	1.12	< 0.000500	0.0112	< 0.000200	0.0407	0.517	0.0741	< 0.00100
	7/26/2018	<0.00100	0.0045	0.0402	<0.00100	< 0.000500	0.0433	0.000129J	0.969	< 0.000500	0.0101	< 0.000200	0.0601	0.21U	0.145	< 0.00100
	10/16/2018	<0.00100	0.00472	0.0403	<0.00100	< 0.000500	0.0393	0.000095J	0.724	< 0.000500	0.0111	< 0.000200	0.0552	0.466	0.0829	< 0.00100
	3/5/2019	<0.00100	0.00575	0.0545	<0.00100	< 0.000500	0.0494	0.000199J	1.11	< 0.000500	0.0139	< 0.000200	0.0661	0.516	0.0809	< 0.00100
	5/13/2019	<0.00300	0.0055	0.0449	<0.00100	< 0.000500	0.0335	<0.00100	1.36	< 0.000500	0.0111	< 0.000200	0.0705	0.506	0.0506	<0.00200
	8/26/2019	<0.00100	0.00509	0.0439	<0.00100	< 0.000100	0.034	0.000227J	0.888	0.000288J	0.0123	< 0.000200	0.0417	N.S.	0.0348	< 0.00100
	11/18/2019	<0.00100	0.00449	0.0646	<0.00100	< 0.000100^	0.0349	0.000131J	1.08	< 0.000500	0.0129	< 0.000200	0.0381	1.2	0.0697	< 0.00100
	2/17/2020	<0.00100	0.00414	0.0393	<0.00100	<0.000100	0.0380	<0.000500	0.782	<0.000500	0.0127	<0.000200	0.0387	0.708	0.0768	<0.00100
	5/7/2020	<0.00100	0.004	0.0358	<0.00100	0.0000880J	0.0380	0.000102J	1.36	0.000302J	0.00837J	<0.000200	0.0371	N.S. ^[3]	0.0293	<0.00100
	8/31/2020	<0.00100	0.0037	0.0346	<0.00100	<0.000100	0.0483	<0.000500	1.22	<0.000500	0.0101	<0.000200	0.0381	N.S.	0.0417	<0.00100
	11/16/2020	<0.00100	0.00329	0.0383	<0.00100	<0.000100	0.0445	<0.000500	0.886	<0.000500	0.0103	<0.000200	0.0318	0.313U	0.0408	<0.00100
	4/19/2021	<0.00200	0.00417	0.0415	<0.00100	<0.000100	0.0370	0.000122J	1.01	<0.000500	0.0102	<0.000200	0.0301	1.09	0.0596	<0.00100
	12/7/2021	<0.00200	0.00444	0.038	<0.00100	<0.000100	0.0486	<0.000500	3.17	<0.000500	0.0101	<0.000200	0.0435	1.24	0.0428	<0.00100
	4/25/2022	<0.00200	0.00452	0.0321	<0.00100	<0.000100	0.0431	0.000243J	0.947	<0.000500	0.00987J	<0.000200	0.0767	0.559	0.0572	<0.00100
	11/14/2022	<0.00200	0.00408	0.0370	<0.00100	<0.000100	0.0327	<0.000500	0.281J	<0.000500	0.00884J	<0.000200	0.0617	N.S.	0.0778	<0.00100
	4/20/2023	<0.00200	0.00448	0.0471	<0.00100	<0.000200	0.0384	<0.000500	0.949J	<0.000500	0.0120	<0.000200	0.0336	0.481U	0.107	<0.00100
	12/5/2023	<0.00200	0.00371	0.0484	<0.00100	<0.000200	0.0330	<0.000500	0.782J	<0.000500	0.0117	<0.000200	0.0252	0.725	0.0602	<0.00100
	4/8/2024	<0.00200	0.00368	0.0492	<0.00100	<0.000200	0.0325	<0.000500	0.775J	<0.000500	0.0127	<0.000200	0.0301	1.470	0.184	<0.00100
	11/19/2024	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

Table 5 - Appendix IV Constituents in Groundwater
Groundwater Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / HastingsUtilities
January 2025

Constituent ReportingUnit		Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
MW-9	11/16/2016 ^[1]	<0.00100	0.00284	0.0456	< 0.001	< 0.0005	0.027	< 0.0005	1.0	< 0.0005	< 0.05	< 0.0002	0.0248	0.636U	0.0586	< 0.001
	12/20/2016	<0.00100	0.00283	0.0462	< 0.001	< 0.0005	0.029	< 0.0005	0.97	< 0.0005	< 0.05	< 0.0002	0.0245	0.269U	0.0638	< 0.001
	1/23/2017	<0.00100	0.0029	0.0467	< 0.001	< 0.0005	0.0278	< 0.0005	0.87	< 0.0005	< 0.05	< 0.0002	0.0235	0.953U	0.0684	< 0.001
	2/21/2017	<0.00100	0.00317	0.0507	< 0.001	< 0.0005	0.0262	< 0.0005	0.91	< 0.0005	< 0.05	< 0.0002	0.0232	0.747	0.0686	< 0.001
	3/22/2017	<0.00100	0.00289	0.0531	< 0.001	< 0.0005	0.0166	< 0.0005	0.91	< 0.0005	0.0128	< 0.0002	0.0214	1.49	0.0591	< 0.001
	4/26/2017	<0.00100	0.00344	0.0477	< 0.001	< 0.0005	0.0095	< 0.0005	0.9	< 0.0005	0.0115	< 0.0002	0.0197	1.3	0.0458	< 0.001
	5/26/2017	<0.00100	0.00323	0.0437	< 0.001	< 0.0005	0.0109	< 0.0005	0.87	< 0.0005	0.0144	< 0.0002	0.0188	0.977	0.0461	< 0.001
	6/27/2017	<0.00100	0.00305	0.0529	< 0.001	< 0.0005	0.0157	< 0.0005	0.85	< 0.0005	0.0129	< 0.0002	0.0201	0.571	0.049	< 0.001
	10/11/2017	<0.00100	0.00252	0.0473	< 0.001	< 0.0005	0.0318	< 0.0005	0.59	< 0.0005	0.0102	< 0.0002	0.0222	1.49	0.0345	< 0.001
	3/7/2018	<0.00100	0.00199J	0.0551	<0.00100	< 0.000500	0.0274	0.000049J	0.639	< 0.000500	0.01	< 0.000200	0.015	0.71	0.0241	< 0.00100
	7/25/2018	<0.00100	0.00124J	0.0431	<0.00100	< 0.000500	0.0265	<0.000500	0.472J	< 0.000500	0.00699J	< 0.000200	0.0135	0.7	0.0373	< 0.00100
	10/16/2018	<0.00100	0.00193J	0.0425	<0.00100	< 0.000500	0.0294	<0.000500	0.618	< 0.000500	0.00889J	< 0.000200	0.0251	0.613	0.039	< 0.00100
	3/5/2019	<0.00100	0.00282	0.055	<0.00100	< 0.000500	0.0318	<0.000500	1.33	< 0.000500	0.0101	< 0.000200	0.0306	0.933	0.404	< 0.00100
	5/13/2019	<0.00300	0.00297	0.049	<0.00100	< 0.000500	0.0282	<0.001000	1.56	< 0.000500	0.00853	< 0.000200	0.029	0.658	0.0447	<0.00200
	8/26/2019	<0.00100	0.00339	0.0428	<0.00100	< 0.000100	0.0306	<0.000500	0.956	< 0.000500	0.0109	< 0.000200	0.029	N.S.	0.0598	< 0.00100
	11/18/2019	<0.00100	0.0051	0.0426	<0.00100	< 0.000100^	0.0265	<0.000500	1.08	< 0.000500	0.0101	< 0.000200	0.0313	0.769	0.387	< 0.00100
	2/17/2020	<0.00100	0.00291	0.0516	<0.00100	<0.000100	0.0271	<0.000500	0.798	<0.000500	0.0119	<0.000200	0.0204	0.982	0.0501	<0.00100
	5/6/2020	<0.00100	0.00209	0.0473	<0.00100	<0.000100	0.0298	<0.000500	0.992	<0.000500	0.00670J	<0.000200	0.0182	N.S. ^[3]	0.0363	<0.00100
	8/31/2020	<0.00100	0.00229	0.0563	<0.00100	<0.000100	0.0469	<0.000500	0.813	<0.000500	0.00953J	<0.000200	0.0175	N.S.	0.0637	<0.00100
	11/16/2020	<0.00100	0.0028	0.0431	<0.00100	<0.000100	0.0469	<0.000500	1.14	<0.000500	0.00990J	<0.000200	0.0241	0.531	0.0751	<0.00100
	4/19/2021	<0.00200	0.00184J	0.0604	<0.00100	<0.000100	0.0343	<0.000500	0.717	<0.000500	0.00869J	<0.000200	0.0163	2.68	0.0578	<0.00100
	12/7/2021	<0.00200	0.00246	0.0680	<0.00100	<0.000100	0.00426J	<0.000500	1.02	<0.000500	0.00954J	<0.000200	0.0137	2.17	0.0277	<0.00100
	4/25/2022	<0.00200	0.00296	0.0683	<0.00100	<0.000100	0.0114	<0.000500	<1.00	<0.000500	0.0121	<0.000200	0.0193	0.681	0.0394	<0.00100
	11/14/2022	<0.00200	0.00201	0.0573	<0.00100	<0.000100	0.0283	<0.000500	<0.000500	<0.000500	0.00945J	<0.000200	0.0176	N.S.	0.0340	<0.00100
	4/20/2023	<0.00200	0.00134J	0.0657	<0.00100	<0.000200	0.0600	<0.000500	0.753J	<0.000500	0.00918J	<0.000200	0.0143	0.301U	0.0266	<0.00100
	12/4/2023	<0.00200	0.00246	0.0532	<0.00100	<0.000200	0.0575	<0.000500	1.39	<0.000500	0.00982J	<0.000200	0.0301	2.27	0.0880	<0.00100
	4/8/2024	<0.00200	0.00246	0.076	<0.00100	<0.000200	0.0456	<0.000500	1.35	<0.000500	0.0122	<0.000200	0.0279	0.585	0.1580	<0.00100
	11/22/2024	<0.00200	0.00292	0.0947	<0.00100	<0.000200	0.0211	<0.000500	1.25	<0.000500	0.0103	<0.000200	0.0157	1.24	0.0835	<0.00100

Notes:

^[1] Radium was sampled at a later date in November (11/28/2016) than other constituents which were sampled on 11/16/2016 & 11/17/2016.

^[2] MW-2B not sampled in November 2016.

^[3] Radium was not sampled during the May 2020 event, so radium data from February 17, 2020 was used for the Spring 2020 Title 132 report and statistical analysis.

^[4] Radium was not sampled at MW-1 and MW-7 during the spring 2022 sampling event due to a preservative error made by the lab. Radium at these wells was sampled during the fall 2022 sampling event.

^[5] Radium was not sampled at MW-3R during the spring 2024 sampling event due to a sampling error. Radium was sampled at this well during the fall 2024 sampling event.

^[6] Samples were not collected at upgradient monitoring well MW-6 and downgradient monitoring wells MW-3R and MW-8 during the Fall 2024 sampling event. MW-3R and MW-6 were dry during the sampling event, and MW-8 was inaccessible due to active construction in the vicinity of the monitoring well.

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

< For the period of November 2016 through October 2019, the symbol indicates analyte not detected above the reporting limit, which is the value shown following the "<" symbol. Starting in January 2020, the symbol indicates analyte not detected above the method detection limit, which is the value shown following the "<" symbol.

"U" data qualifier (radium) indicates parameter was analyzed for but not detected above limiting criteria (minimum detectable concentration) as defined in the analytical laboratory data package.

"J" data qualifer indicates the result is less than the laboratory reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

"N.S" = not sampled

Table 6 - Background Threshold Values for Assessment Monitoring groundwater
Monitoring and Corrective Action Report
Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities
January 2025

Constituents	Units	Background Threshold Values (UPLs) - 2022 ^[1]
Appendix III		
Boron	mg/l	1.64
Calcium	mg/l	74.6
Chloride	mg/l	34.7
Fluoride*	mg/l	1.50
pH (LPL)**	SU	6.20
pH (UPL)***	SU	7.47
Sulfate	mg/l	198
TDS	mg/l	576
Appendix IV		
Antimony	mg/l	0.002
Arsenic	mg/l	0.00628
Barium	mg/l	0.0613
Beryllium	mg/l	0.00100
Cadmium	mg/l	0.000100
Chromium	mg/l	0.0484
Cobalt	mg/l	0.00100
Fluoride*	mg/l	1.50
Lead	mg/l	0.0207
Lithium	mg/l	0.0171
Mercury	mg/l	0.0002
Molybdenum	mg/l	0.0467
Radium 226 + 228	pCi/l	2.03
Selenium	mg/l	0.140
Thallium	mg/l	0.00100

Notes:

^[1] BTVs were updated in fall 2022. BTVs are updated every four to eight measurements (i.e., approximately every two years if samples are collected semi-annually). The next background update had been scheduled for fall 2024, but was postponed until 2025. Samples were not collected at upgradient monitoring well MW-6 and downgradient monitoring wells MW-3R and MW-8 during the Fall 2024 sampling event: MW-3R and MW-6 were dry during the sampling event and construction activities surrounding MW-8 made it inaccessible to City staff at the time of sampling. The background update will be conducted once four measurements have been collected since the previous BTV update from the network wells.

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

** Indicates the lower bound of the range is the lower prediction limit (LPL).

*** Indicates the upper bound is the upper prediction limit (UPL).

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Table 7 - Established Groundwater Protection Standards

Groundwater Monitoring and Corrective Action Report

Whelan Energy Center - Public Power Generation Agency (PPGA) / Hastings Utilities

January 2025

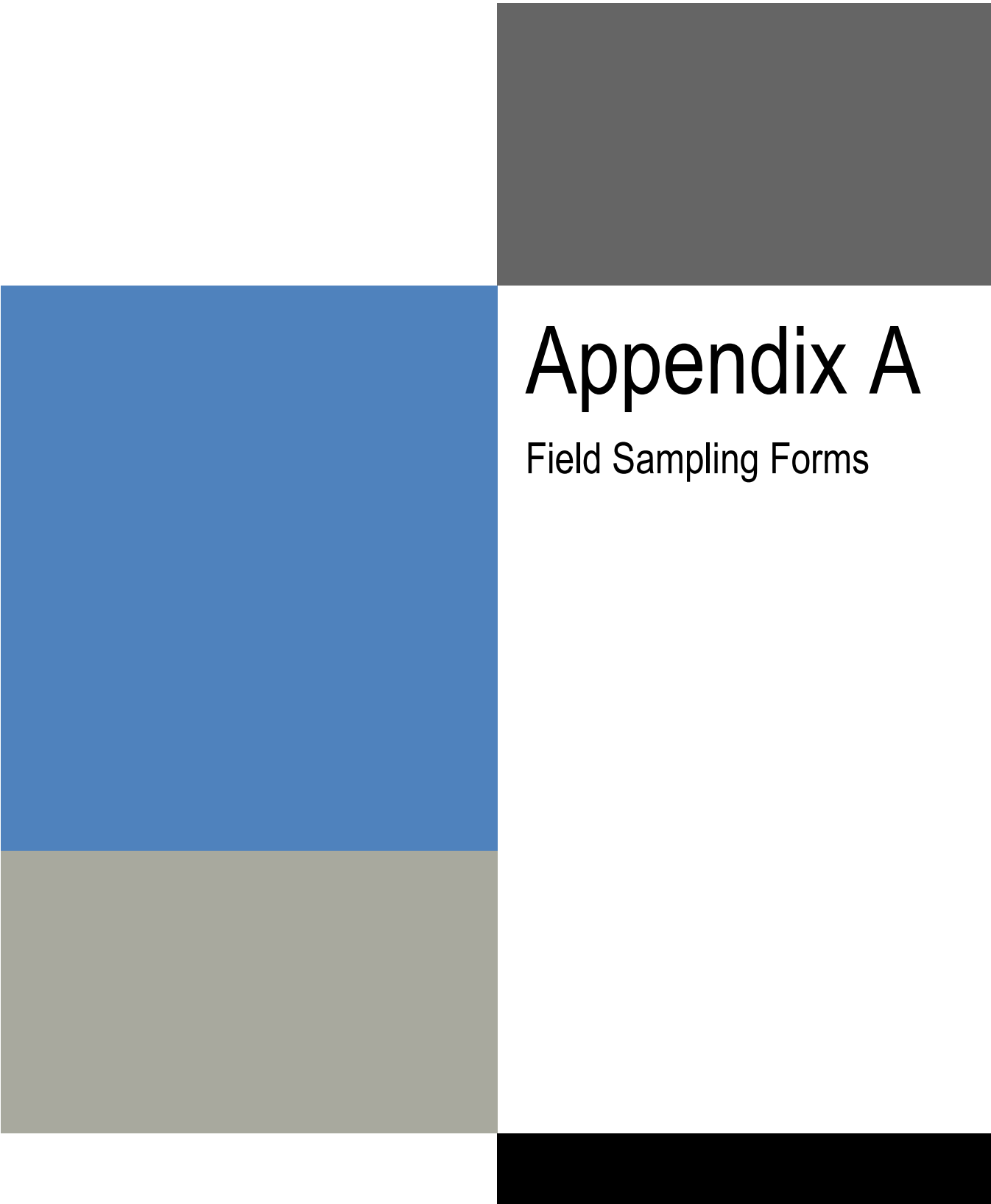
Constituents	Units	Established Groundwater Protection Standard (GWPS) ^[1]
Appendix IV		
Antimony	mg/l	0.006
Arsenic	mg/l	0.01
Barium	mg/l	2.00
Beryllium	mg/l	0.004
Cadmium	mg/l	0.005
Chromium	mg/l	0.10
Cobalt	mg/l	0.006
Fluoride	mg/l	4.00
Lead	mg/l	0.0207 ^[2]
Lithium	mg/l	0.04
Mercury	mg/l	0.002
Molybdenum	mg/l	0.1
Radium 226 + 228	pCi/l	5.00
Selenium	mg/l	0.140 ^[2]
Thallium	mg/l	0.002

Notes:

^[1] - GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2); unless otherwise specified.

^[2] - GWPS is established as the upper prediction limit (UPL) when the background level is higher than the U.S. EPA MCL or the GWPS specified in §257.95(h)(2).

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A decorative graphic consisting of several colored rectangles. A large blue rectangle is on the left. To its right, a dark gray rectangle is at the top, and a black rectangle is at the bottom. Below the blue rectangle is a light gray rectangle. The text 'Appendix A' and 'Field Sampling Forms' is positioned to the right of the blue rectangle.

Appendix A

Field Sampling Forms

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Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly		Duplicate Collected: YES / NO If yes, Sample ID _____	
Sample No: MW-01		Weather CLR P.CLDY CLDY FOG		Prepared By: J. Sidlo	
Sample Media: Groundwater		Temp 61 °F Wind Calmy (Mod) High		Personnel:	
Sample Date: 4/8/24		Precip Rain Lite Mod High Snow Lite Mod High		Sample Time: 13:55	

Purging Information

Date: ____/____/____	Time Started: 13:35	Time Completed: 14:00
Method: Electric 12V DC Sampling Pump		
Water Level: 125.760	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
13:50		6.71	0.488	1.26	6.02	15.6	245.7
13:52		6.70	0.487	1.49	6.03	15.6	244.0
13:54		6.70	0.487	1.59	6.02	15.6	242.0
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear Sl.Cloudy Cloudy	Odor (circle one) None Strong Weak
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Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: <u>YES</u> / NO If yes, Sample ID <u>MW-102B</u>
Sample No: <u>MW-2B</u>	Weather <u>CLR</u> P.CLDY CLDY FOG		Prepared By: <u>J. Sidlo</u> Personnel: Sample Time: <u>14:40</u>
Sample Media: Groundwater	Temp <u>59</u> °F Wind Calm <u>Mod</u> <u>High</u>		
Sample Date: <u>4/8/24</u>	Precip <u>Rain</u> <u>Lite</u> <u>Mod</u> <u>High</u> Snow <u>Lite</u> <u>Mod</u> <u>High</u>		

4-8-24
8:20

Purging Information

Date: <u> </u> / <u> </u> / <u> </u>	Time Started: <u>14:20</u>	Time Completed: <u>14:50</u>
Method: Electric 12V DC Sampling Pump		
Water Level: <u>137.63</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
14:35		6.85	0.56	0.75	6.78	14.0	285.6
14:37		6.90	0.55	0.90	6.73	14.0	284.7
14:39		6.89	0.54	0.88	6.72	14.0	285.0
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) <u>Clear</u> SI.Cloudy Cloudy	Odor (circle one) <u>None</u> Strong Weak
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Field Notes:

MW-3R

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES / <u>NO</u> If yes, Sample ID _____
Sample No: <u>MW-105</u>	Weather <u>CLR</u> P.CLDY CLDY FOG	Prepared By: <u>J. Sidlo</u>	
Sample Media: Groundwater	Temp <u>65</u> F Wind <u>Calm</u> Mod High	Personnel:	
Sample Date: <u>4/10/24</u>	Precip Rain <u>---</u> Lite <u>---</u> Mod <u>---</u> High <u>---</u> Snow <u>---</u> Lite <u>---</u> Mod <u>---</u> High <u>---</u>	Sample Time: <u>13:25</u>	

Purging Information

Date: <u> </u> / <u> </u> / <u> </u>	Time Started: <u>13:05</u>	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level: <u>122.60</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
13:20		10.52	0.54	0.72	4.92	16.0	330.7
13:22		10.53	0.54	0.91	4.93	16.1	330.4
13:24		10.51	0.54	0.73	4.89	16.1	329.5
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) <u>Clear</u> St. Cloudy Cloudy	Odor (circle one) <u>None</u> Strong Weak
--	---

Field Notes:

Pump set @ 125'

Soil has been disrupted along concrete base. Needs filled in. Request will be put in to maintenance

EQ-01 4-10-24 12:30

Equipment bank collected after decon of pump before setting in MW.

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE	(Circle One) Monthly Quarterly	Duplicate Collected: YES / (NO) If yes, Sample ID _____
Sample No: MW-4B	Weather: (CLR) P. CLDY CLDY FOG	Prepared By: J. Sidlo
Sample Media: Groundwater	Temp: 45 °F Wind: (Calm) Mod High	Personnel:
Sample Date: 4/8/24	Precip: Rain Lite Mod High Snow Lite Mod High	Sample Time: 11:05

Purging Information

Date: ____/____/____	Time Started: 10:45	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level: 116.30	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
11:00		6.58	0.57	3.45	3.50	14.9	193.4
11:02		6.59	0.58	3.49 1.64	3.51	14.8	192.4
11:04		6.58	0.58	1.74	3.54	14.8	193.7
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) (Clear) Sl. Cloudy Cloudy	Odor (circle one) (None) Strong Weak
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Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES / NO If yes, Sample ID _____
Sample No: MW-5B	Weather CLR P.CLDY CLDY FOG		Prepared By: J. Sidlo
Sample Media: Groundwater	Temp 41 °F Wind Calm Mod High		Personnel:
Sample Date: 4/8/24	Precip Rain Lite Mod High Snow Lite Mod High		Sample Time: 9:15

Purging Information

Date: ____/____/____	Time Started: 8:55	Time Completed: 9:20
Method: Electric 12V DC Sampling Pump		
Water Level: 119.25	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m) (S/cm) x 1000	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
9:10		7.16	0.51	0.80	8.00	13.0	184.3
9:12		7.14	0.53	0.79	7.97	13.0	188.2
9:14		7.14	0.53	0.60	7.91	13.0	191.0
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear Sl. Cloudy Cloudy	Odor (circle one) None Strong Weak
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Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE	(Circle One) Monthly Quarterly	Duplicate Collected: YES / NO If yes, Sample ID: _____
Sample No: MW-06	Weather CLR P.CLDY CLDY FOG	Prepared By: J.Siddo
Sample Media: Groundwater	Temp 45 °F Wind Calm Mod High	Personnel:
Sample Date: 4/8/24	Precip Rain Lite Mod High Snow Lite Mod High	Sample Time: 10:30

Purging Information

Date: ____/____/____	Time Started: 10:10	Time Completed: 10:35
Method: Electric 12V DC Sampling Pump		
Water Level: 114.73	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
10:25		7.16	0.469	2.79	8.76	14.6	182.1
10:27		7.17	0.473	3.57	8.80	14.7	184.3
10:29		7.15	0.471	3.22	8.75	14.7	187.7
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear Sl.Cloudy Cloudy	Odor (circle one) None Strong Weak
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Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly		Duplicate Collected: YES / NO If yes, Sample ID _____	
Sample No: MW-07		Weather: CLR P.CLDY CLDY FOG		Prepared By: J. Sidlo	
Sample Media: Groundwater		Temp: 63 °F Wind: Calm Mod High		Personnel:	
Sample Date: 4/8/24		Precip: Rain - Lite Mod High Snow - Lite Mod High		Sample Time: 13:25	

Purging Information

Date: ____/____/____	Time Started: 13:05	Time Completed: 13:30
Method: Electric 12V DC Sampling Pump		
Water Level: 123.60	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
13:20		6.71	0.462	1.69	5.06	14.2	318.5
13:22		6.68	0.460	1.27	5.05	14.2	317.4
13:24		6.67	0.459	1.06	5.01	14.3	316.9
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear Sl. Cloudy Cloudy	Odor (circle one) None Strong Weak
--	---

Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE	(Circle One) Monthly Quarterly	Duplicate Collected: <u>YES</u> / <u>NO</u> If yes, Sample ID <u>Field Blank</u>
Sample No: <u>MW-08</u>	Weather: <u>CLR</u> P.CLDY CLDY FOG	Prepared By: <u>JSidlo</u>
Sample Media: Groundwater	Temp: <u>59</u> °F Wind Calm <u>Mod</u> <u>High</u>	Personnel:
Sample Date: <u>4/8/24</u>	Precip: Rain Lite Mod High Snow: Lite Mod High	Sample Time: <u>15:20</u>

FB-08
4-8-24
15:25

Purging Information

Date: <u> </u> / <u> </u> / <u> </u>	Time Started: <u>15:00</u>	Time Completed: <u>15:30</u>
Method: Electric 12V DC Sampling Pump		
Water Level: <u>124.75</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
15:15		7.10	0.478	1.02	6.25	15.3	239.8
15:17		7.09	0.475	0.48	6.20	15.4	238.6
15:19		7.09	0.472	0.51	6.23	15.3	237.5
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) <u>Clear</u> Sl.Cloudy Cloudy	Odor (circle one) <u>None</u> Strong Weak
---	---

Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE	(Circle One) Monthly Quarterly	Duplicate Collected: YES / NO If yes, Sample ID _____
Sample No: MW-09	Weather CLR P.CLDY CLDY FOG	Prepared By: J. Sidlo
Sample Media: Groundwater	Temp 41 °F Wind Calm Mod High	Personnel:
Sample Date: 4/8/24	Precip Rain Light Mod High Snow- Light Mod High	Sample Time: 9:50

Purging Information

Date: ____/____/____	Time Started: 9:30	Time Completed: 10:00
Method: Electric 12V DC Sampling Pump		
Water Level: 114.62	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
9:45		7.05	0.418	0.418	6.84	15.6	191.6
9:47		7.04	0.416	0.53	6.77	15.6	192.0
9:49		7.03	0.419	0.79	6.74	15.7	191.0
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clean Sl. Cloudy Cloudy	Odor (circle one) None Strong Weak
--	---

Field Notes:

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Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES / <u>NO</u> If yes, Sample ID _____
Sample No: <u>MW-01</u>	Weather <u>CLR</u> <u>P.CLDY</u> CLDY FOG		Prepared By: <u>J. Sidlo</u>
Sample Media: Groundwater	Temp <u>50</u> °F Wind Calm (<u>Mod</u>) High		Personnel:
Sample Date: <u>11/19/24</u>	Precip <u>Rain</u> Lite Mod High Snow Lite Mod High		Sample Time: <u>15:10</u>

Purging Information

Date: ___/___/___	Time Started: <u>14:45</u>	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level:	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (m/V)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
15:00		6.87	0.401	2.19	6.14	15.4	201.3
15:03		6.88	0.402	1.90	6.15	15.4	201.9
15:06		6.87	0.400	1.89	6.16	15.4	203.1
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) <u>Clear</u> Sl.Cloudy Cloudy	Odor (circle one) <u>None</u> Strong Weak
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Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly		Duplicate Collected: YES / NO If yes, Sample ID _____	
Sample No: MW-28		Weather CLR P.CLDY CLDY FOG		Prepared By: J. Sidlo	
Sample Media: Groundwater		Temp 50° Wind Calm Mod High		Personnel:	
Sample Date: 11/19/24		Precip Rain Lite Mod High Snow Lite Mod High		Sample Time: 15:45	

Purging Information

Date: ____/____/____	Time Started: 15:20	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level: 140.60	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (m/V)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
15:35		6.91	0.56	0.24	7.54	14.3	259.8
15:38		6.90	0.56	0.42	7.46	14.3	260.9
15:42		6.92	0.56	0.54	7.69	14.3	261.5
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear Sl. Cloudy Cloudy	Odor (circle one) None Strong Weak
--	---

Field Notes:

No sample obtained

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES ☒ NO If yes, Sample ID _____
Sample No: <u>MW-3R</u>	Weather ☒ CLR ☐ P.CLDY ☐ CLDY ☐ FOG	Prepared By: <u>J. Sidlo</u>	
Sample Media: Groundwater	Temp <u>14</u> °F Wind ☒ Calm ☐ Mod ☐ High	Personnel:	
Sample Date: <u>11/15/24</u>	Precip ☐ Rain ☐ Lite ☐ Mod ☐ High ☐ Snow ☐ Lite ☐ Mod ☐ High	Sample Time: <u>1:15</u>	

Purging Information

Date: <u>11/15/24</u>	Time Started: <u>13:45</u>	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level: <u>123.6</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (m/V)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
<u>14:05</u>							
<u>14:08</u>							
<u>14:12</u>							
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) ☒ Clear ☐ Sl. Cloudy ☐ Cloudy	Odor (circle one) ☒ None ☐ Strong ☐ Weak
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Field Notes:

No water

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE	(Circle One) Monthly Quarterly	Duplicate Collected: YES / NO If yes, Sample ID _____
Sample No: <u>MW-4B</u>	Weather CLR <u>P.CLDY</u> CLDY FOG	Prepared By:
Sample Media: Groundwater	Temp <u>50</u> °F Wind Calm <u>Mod</u> High	Personnel:
Sample Date: <u>11/19/24</u>	Precip Rain <u>Lite</u> Med <u>High</u> Snow <u>Lite</u> Mod <u>High</u>	Sample Time: <u>14:15</u>

Purging Information

Date: ___/___/___	Time Started: <u>13:52</u>	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level: <u>118.10</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
<u>14:10</u>		<u>6.54</u>	<u>0.54</u>	<u>1.53</u>	<u>3.88</u>	<u>15.0</u>	<u>162.9</u>
<u>14:12</u>		<u>6.51</u>	<u>0.53</u>	<u>1.74</u>	<u>3.90</u>	<u>15.0</u>	<u>164.2</u>
<u>14:14</u>		<u>6.52</u>	<u>0.55</u>	<u>1.86</u>	<u>3.85</u>	<u>15.0</u>	<u>165.4</u>
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) <u>Clear</u> Sl.Cloudy Cloudy	Odor (circle one) <u>None</u> Strong Weak
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Field Notes:

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly		Duplicate Collected: YES / <u>NO</u> If yes, Sample ID _____	
Sample No: <u>MW-5B</u>		Weather: <u>CLR</u> P.CLDY CLDY FOG		Prepared By: <u>J. Sidlo</u>	
Sample Media: Groundwater		Temp: <u>33</u> °F Wind: <u>Calm</u> Mod High		Personnel:	
Sample Date: <u>11/22/24</u>		Precip: Rain Lite Mod High Snow: Lite Mod High		Sample Time: <u>10:05</u>	

Purging Information

Date: <u> </u> / <u> </u> / <u> </u>	Time Started: <u>9:45</u>	Time Completed: <u>10:10</u>
Method: Electric 12V DC Sampling Pump		
Water Level: <u>121.30</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (µS/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
10:00		7.31	0.451	4.38	8.56	12.8	276.2
10:02		7.30	0.454	3.87	8.59	12.9	276.7
10:04		7.31	0.452	3.50	8.53	12.9	277.2
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) <u>Clear</u> Sl. Cloudy Cloudy	Odor (circle one) <u>None</u> Strong Weak
--	---

Field Notes:

Pulled pump + it was dry. Used spare pump. Set at 123'
Lots of silt, pumping to clear up before readings.

No Sample

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES / NO If yes, Sample ID _____
Sample No: <u>MW-06</u>	Weather CLR P.CLDY CLDY FOG		Prepared By:
Sample Media: Groundwater	Temp ____°F Wind Calm Mod High		Personnel:
Sample Date: <u>11/19/24</u>	Precip Rain- Lite Mod High Snow- Lite Mod High		Sample Time:

Purging Information

Date: ____/____/____	Time Started:	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level: <u>116.20</u>	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear SI.Cloudy Cloudy	Odor (circle one) None Strong Weak
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Field Notes:

No Water

Pulled pump + it was dry. Used portable pump + hit bottom of well with no water.

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES ☒ NO If yes, Sample ID _____
Sample No: MW-07	Weather ☒ CLR ☐ P.CLDY ☐ CLDY ☐ FOG		Prepared By: J. Sidlo
Sample Media: Groundwater	Temp 46°F Wind 6 Calm Mod High		Personnel:
Sample Date: 11/21/24	Precip Rain- Lite Mod High Snow- Lite Mod High		Sample Time: 16:15

Purging Information

Date: __/__/__	Time Started: 15:55	Time Completed: 16:25
Method: Electric 12V DC Sampling Pump		
Water Level: 125.20	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. mS/m	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
16:10		6.75	0.455	23.9	6.06	13.8	283.0
16:12		6.76	0.456	16.9	6.04	13.7	283.7
16:14		6.76	0.456	11.8	6.09	13.6	284.7
				7.8			
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B, Ca, Cl, F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear ☐ Sl. Cloudy ☐ Cloudy ☐	Odor (circle one) None ☐ Strong ☐ Weak ☐
---	--

Field Notes:

Pulled pump & it was completely dry. Used portable pump & set at 128'

No Sample

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES / NO If yes, Sample ID _____
Sample No: MW-08	Weather CLR P.CLDY CLDY FOG		Prepared By:
Sample Media: Groundwater	Temp ____°F Wind Calm Mod High		Personnel:
Sample Date: 11/21/24	Precip Rain- Lite Mod High Snow- Lite Mod High		Sample Time:

Purging Information

Date: ____/____/____	Time Started:	Time Completed:
Method: Electric 12V DC Sampling Pump		
Water Level:	Purge Rate:	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (m/V)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) Clear SI.Cloudy Cloudy	Odor (circle one) None Strong Weak
--	------------------------------------

Field Notes:

Could not get to well due to construction in area.
Will try to sample in December if work is complete.

Groundwater Monitoring Sampling Collection Field Log

Project: WEC MW Sampling Hastings, NE		(Circle One) Monthly Quarterly	Duplicate Collected: YES / (NO) If yes, Sample ID _____
Sample No: MW-09	Weather: (CLR) P.CLDY CLDY FOG		Prepared By: J. Sidlo
Sample Media: Groundwater	Temp: 33 F Wind: (Calm) Mod High		Personnel: _____
Sample Date: 11/22/24	Precip: Rain Lite Mod High Snow: Lite Mod High		Sample Time: 10:45

Purging Information

Date: ____/____/____	Time Started: 10:25	Time Completed: 10:50
Method: Electric 12V DC Sampling Pump		
Water Level: 116.40	Purge Rate: _____	

Water Quality Parameters During Purging

Time	Volume Purged	*pH (mV)	*Cond. (S/m)	Turbidity (NTU)	DO (mg/L)	*Temp (°C)	ORP (mV)
10:40		7.03	0.477	0.83	7.69	15.9	169.8
10:42		7.04	0.475	0.69	7.64	15.9	171.3
10:44		7.06	0.477	0.65	7.77	15.9	173.8
Expected Range		6 to 8.5	0 to 100	0 to 5	4 to 10	10 to 20	-350 to 350
Physical Range		0 to 14	0 to 10000	0 to 10000	0 to 20	0 to 100	-750 to 750

Sampling Information

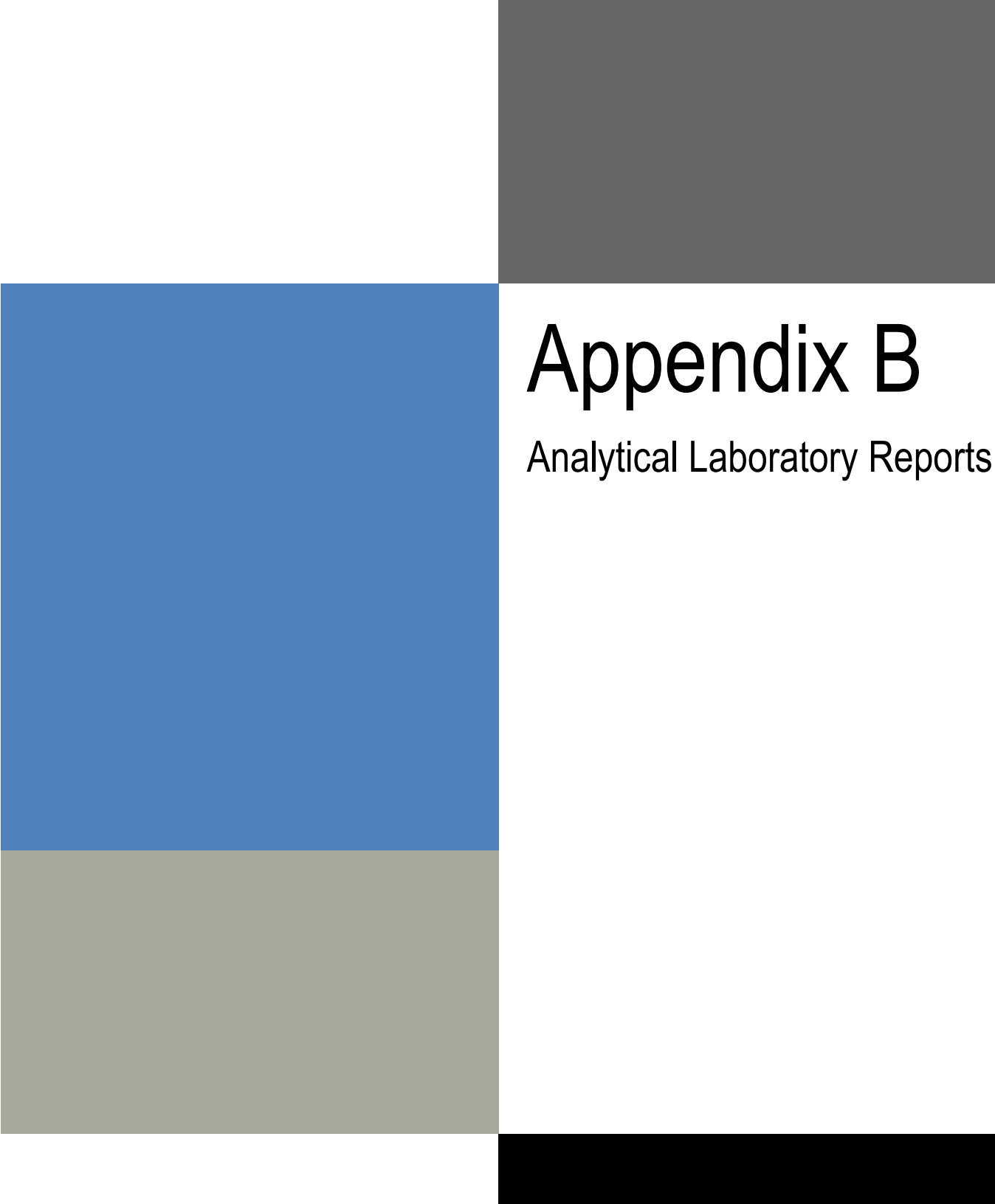
Sample Container	Preservative	Analysis Required	Method Number	Laboratory
1 x 250mL Poly	HNO ³	Metals	SW846	Test America
1 x 500mL Poly	None	B,Ca,Cl,F, TSS		Test America
3 x 1L Poly	None	Radium		Test America

Other Information

Appearance (circle one) (Clear) Sl.Cloudy Cloudy	Odor (circle one) (None) Strong Weak
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Field Notes:

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Appendix B

Analytical Laboratory Reports

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jenny Sidlo
Hastings Utilities
1228 North Denver Ave
PO BOX 289
Hastings, Nebraska 68901

Generated 7/16/2024 6:05:52 PM Revision 1

JOB DESCRIPTION

WEC MW's

JOB NUMBER

310-278572-1

Eurofins Cedar Falls

Job Notes

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

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Authorized for release by
Emily Mathews, Project Manager I
Emily.Mathews@et.eurofinsus.com
(319)595-2008

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Revision 1



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Case Narrative

Client: Hastings Utilities
Project: WEC MW's

Job ID: 310-278572-1

Job ID: 310-278572-1

Eurofins Cedar Falls

Job Narrative 310-278572-1

REVISION

The report being provided is a revision of the original report sent on 4/24/2024. The report (revision 1) is being revised due to Added calcium and chromium.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The samples were received on 4/10/2024 8:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.4°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-01 (310-278572-1), MW-2B (310-278572-2), MW-4B (310-278572-3) and MW-102B (310-278572-9). Elevated reporting limits (RLs) are provided.

Method 9056A_ORGFM_48H: The following sample was received outside of holding time: MW-5B (310-278572-4).

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

Metals

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

General Chemistry

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

Eurofins Cedar Falls

Sample Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-278572-1	MW-01	Water	04/08/24 13:55	04/10/24 08:50
310-278572-2	MW-2B	Water	04/08/24 14:40	04/10/24 08:50
310-278572-3	MW-4B	Water	04/08/24 11:05	04/10/24 08:50
310-278572-4	MW-5B	Water	04/08/24 09:15	04/10/24 08:50
310-278572-5	MW-06	Water	04/08/24 10:30	04/10/24 08:50
310-278572-6	MW-07	Water	04/08/24 13:25	04/10/24 08:50
310-278572-7	MW-08	Water	04/08/24 15:20	04/10/24 08:50
310-278572-8	MW-09	Water	04/08/24 09:50	04/10/24 08:50
310-278572-9	MW-102B	Water	04/08/24 08:20	04/10/24 08:50
310-278572-10	FB-08	Water	04/08/24 15:25	04/10/24 08:50

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-01

Lab Sample ID: 310-278572-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	30.3		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	10.3		1.00	0.390	mg/L	5		9056A	Total/NA
Sulfate	155		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00402		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0809		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.966		0.100	0.0760	mg/L	1		6020B	Total/NA
Iron	0.215		0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.0117		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0196		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0527		0.00500	0.00140	mg/L	1		6020B	Total/NA
Copper	0.00244	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Calcium	33.7		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0304		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00429		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0728		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.888		0.100	0.0760	mg/L	1		6020B	Dissolved
Cadmium	0.000126	J	0.000200	0.000100	mg/L	1		6020B	Dissolved
Cobalt	0.000232	J	0.000500	0.000170	mg/L	1		6020B	Dissolved
Lead	0.000284	J	0.000500	0.000260	mg/L	1		6020B	Dissolved
Lithium	0.00945	J	0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.0209		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.0538		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	34.4		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.00997		0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Dissolved Solids	382		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-2B

Lab Sample ID: 310-278572-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	30.3		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	9.18		1.00	0.390	mg/L	5		9056A	Total/NA
Sulfate	140		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00213		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.179		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.588		0.100	0.0760	mg/L	1		6020B	Total/NA
Lithium	0.0170		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.00209		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0356		0.00500	0.00140	mg/L	1		6020B	Total/NA
Calcium	75.5		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0161		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00249		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.156		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.512		0.100	0.0760	mg/L	1		6020B	Dissolved
Cadmium	0.000118	J	0.000200	0.000100	mg/L	1		6020B	Dissolved
Cobalt	0.000210	J	0.000500	0.000170	mg/L	1		6020B	Dissolved
Lead	0.000272	J	0.000500	0.000260	mg/L	1		6020B	Dissolved
Lithium	0.0135		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.00339		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.0339		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	74.5		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.0153		0.00500	0.00120	mg/L	1		6020B	Dissolved

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-2B (Continued)

Lab Sample ID: 310-278572-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	452		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-4B

Lab Sample ID: 310-278572-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	29.4		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	5.38		1.00	0.390	mg/L	5		9056A	Total/NA
Sulfate	230		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00228		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0516		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.840		0.100	0.0760	mg/L	1		6020B	Total/NA
Cobalt	0.000353	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Iron	0.228		0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.0262		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0101		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0363		0.00500	0.00140	mg/L	1		6020B	Total/NA
Copper	0.00718		0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.0108		0.00500	0.00210	mg/L	1		6020B	Total/NA
Calcium	57.6		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.00878		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00228		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0504		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.801		0.100	0.0760	mg/L	1		6020B	Dissolved
Cobalt	0.000242	J	0.000500	0.000170	mg/L	1		6020B	Dissolved
Copper	0.00197	J	0.00500	0.00180	mg/L	1		6020B	Dissolved
Lithium	0.0231		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.00965		0.00200	0.00130	mg/L	1		6020B	Dissolved
Nickel	0.00599		0.00500	0.00210	mg/L	1		6020B	Dissolved
Selenium	0.0367		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	61.1		0.500	0.190	mg/L	1		6020B	Dissolved
Total Suspended Solids	2.00	J	5.00	1.70	mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	460		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-5B

Lab Sample ID: 310-278572-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	25.0		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	11.4	H	1.00	0.390	mg/L	5		9056A	Total/NA
Fluoride	1.10		1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	175		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00371		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0901		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	1.25		0.100	0.0760	mg/L	1		6020B	Total/NA
Cobalt	0.000275	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Iron	0.0516	J	0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.0161		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0398		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0824		0.00500	0.00140	mg/L	1		6020B	Total/NA
Calcium	52.7		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0416		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00371		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0820		0.00200	0.000660	mg/L	1		6020B	Dissolved

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-5B (Continued)

Lab Sample ID: 310-278572-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.21		0.100	0.0760	mg/L	1		6020B	Dissolved
Cobalt	0.000267	J	0.000500	0.000170	mg/L	1		6020B	Dissolved
Lithium	0.0140		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.0395		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.0822		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	53.3		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.0344		0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Dissolved Solids	446		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-06

Lab Sample ID: 310-278572-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	32.3		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	7.36		1.00	0.390	mg/L	5		9056A	Total/NA
Fluoride	0.485	J	1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	143		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00288		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0547		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.787		0.100	0.0760	mg/L	1		6020B	Total/NA
Iron	0.187		0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.0133		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0122		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0575		0.00500	0.00140	mg/L	1		6020B	Total/NA
Nickel	0.00500		0.00500	0.00210	mg/L	1		6020B	Total/NA
Calcium	53.9		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0157		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00277		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0428		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.701		0.100	0.0760	mg/L	1		6020B	Dissolved
Lithium	0.0115		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.0114		0.00200	0.00130	mg/L	1		6020B	Dissolved
Nickel	0.00219	J	0.00500	0.00210	mg/L	1		6020B	Dissolved
Selenium	0.0554		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	52.0		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.00165	J	0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Suspended Solids	3.67	J	5.00	1.70	mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	376		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-07

Lab Sample ID: 310-278572-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	29.8		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	8.57		1.00	0.390	mg/L	5		9056A	Total/NA
Fluoride	0.620	J	1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	148		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00298		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0329		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.794		0.100	0.0760	mg/L	1		6020B	Total/NA
Iron	0.0371	J	0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.0152		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0137		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0633		0.00500	0.00140	mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-07 (Continued)

Lab Sample ID: 310-278572-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	42.5		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0169		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00305		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0295		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.729		0.100	0.0760	mg/L	1		6020B	Dissolved
Lithium	0.0133		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.0130		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.0599		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	42.1		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.0166		0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Dissolved Solids	362		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-08

Lab Sample ID: 310-278572-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	25.5		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	10.9		1.00	0.390	mg/L	5		9056A	Total/NA
Fluoride	0.775	J	1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	150		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00368		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0492		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	1.01		0.100	0.0760	mg/L	1		6020B	Total/NA
Lithium	0.0127		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0301		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.184		0.00500	0.00140	mg/L	1		6020B	Total/NA
Calcium	41.5		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0325		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00366		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0428		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.939		0.100	0.0760	mg/L	1		6020B	Dissolved
Lithium	0.0112		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.0290		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.177		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	41.2		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.0286		0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Dissolved Solids	378		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-09

Lab Sample ID: 310-278572-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	30.0		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	11.2		1.00	0.390	mg/L	5		9056A	Total/NA
Fluoride	1.35		1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	134		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00246		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0760		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	1.49		0.100	0.0760	mg/L	1		6020B	Total/NA
Iron	0.0503	J	0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.0122		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.0279		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.158		0.00500	0.00140	mg/L	1		6020B	Total/NA
Calcium	33.5		0.500	0.190	mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-09 (Continued)

Lab Sample ID: 310-278572-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0456		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00238		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0625		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	1.32		0.100	0.0760	mg/L	1		6020B	Dissolved
Lithium	0.00975	J	0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.0259		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.146		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	31.3		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.0392		0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Dissolved Solids	330		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-102B

Lab Sample ID: 310-278572-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	30.7		5.00	2.25	mg/L	5		9056A	Total/NA
Nitrate as N	9.32	H H3	1.00	0.390	mg/L	5		9056A	Total/NA
Sulfate	143		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00205		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.178		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.595		0.100	0.0760	mg/L	1		6020B	Total/NA
Lithium	0.0161		0.0100	0.00250	mg/L	1		6020B	Total/NA
Molybdenum	0.00206		0.00200	0.00130	mg/L	1		6020B	Total/NA
Selenium	0.0347		0.00500	0.00140	mg/L	1		6020B	Total/NA
Calcium	75.0		0.500	0.190	mg/L	1		6020B	Total/NA
Chromium	0.0156		0.00500	0.00120	mg/L	1		6020B	Total/NA
Arsenic	0.00212		0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.154		0.00200	0.000660	mg/L	1		6020B	Dissolved
Boron	0.540		0.100	0.0760	mg/L	1		6020B	Dissolved
Lithium	0.0145		0.0100	0.00250	mg/L	1		6020B	Dissolved
Molybdenum	0.00210		0.00200	0.00130	mg/L	1		6020B	Dissolved
Selenium	0.0336		0.00500	0.00140	mg/L	1		6020B	Dissolved
Calcium	74.4		0.500	0.190	mg/L	1		6020B	Dissolved
Chromium	0.0156		0.00500	0.00120	mg/L	1		6020B	Dissolved
Total Dissolved Solids	468		50.0	34.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: FB-08

Lab Sample ID: 310-278572-10

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-01

Lab Sample ID: 310-278572-1

Date Collected: 04/08/24 13:55

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30.3		5.00	2.25	mg/L			04/10/24 10:30	5
Nitrate as N	10.3		1.00	0.390	mg/L			04/10/24 10:30	5
Fluoride	<1.00		1.00	0.375	mg/L			04/10/24 10:30	5
Sulfate	155		5.00	2.10	mg/L			04/10/24 10:30	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 16:49	1
Arsenic	0.00402		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 16:49	1
Barium	0.0809		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 16:49	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 16:49	1
Boron	0.966		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 16:49	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 16:49	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 16:49	1
Iron	0.215		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 16:49	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 16:49	1
Lithium	0.0117		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 16:49	1
Molybdenum	0.0196		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 16:49	1
Selenium	0.0527		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 16:49	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 16:49	1
Copper	0.00244 J		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 16:49	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 16:49	1
Calcium	33.7		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 16:49	1
Chromium	0.0304		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 16:49	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 18:43	1
Arsenic	0.00429		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 18:43	1
Barium	0.0728		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 18:43	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 18:43	1
Boron	0.888		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 18:43	1
Cadmium	0.000126 J		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 18:43	1
Cobalt	0.000232 J		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 18:43	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 18:43	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 18:43	1
Lead	0.000284 J		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 18:43	1
Lithium	0.00945 J		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 18:43	1
Molybdenum	0.0209		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 18:43	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 18:43	1
Selenium	0.0538		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 18:43	1
Thallium	<0.00100	F1	0.00100	0.000570	mg/L		04/15/24 09:00	04/23/24 15:59	1
Calcium	34.4		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 18:43	1
Chromium	0.00997		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 18:43	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 13:55	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-01
Date Collected: 04/08/24 13:55
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-1
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	382		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-2B

Lab Sample ID: 310-278572-2

Date Collected: 04/08/24 14:40

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30.3		5.00	2.25	mg/L			04/10/24 10:43	5
Nitrate as N	9.18		1.00	0.390	mg/L			04/10/24 10:43	5
Fluoride	<1.00		1.00	0.375	mg/L			04/10/24 10:43	5
Sulfate	140		5.00	2.10	mg/L			04/10/24 10:43	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 16:52	1
Arsenic	0.00213		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 16:52	1
Barium	0.179		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 16:52	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 16:52	1
Boron	0.588		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 16:52	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 16:52	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 16:52	1
Iron	<0.100		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 16:52	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 16:52	1
Lithium	0.0170		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 16:52	1
Molybdenum	0.00209		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 16:52	1
Selenium	0.0356		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 16:52	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 16:52	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 16:52	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 16:52	1
Calcium	75.5		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 16:52	1
Chromium	0.0161		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 16:52	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:13	1
Arsenic	0.00249		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:13	1
Barium	0.156		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:13	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:13	1
Boron	0.512		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:13	1
Cadmium	0.000118	J	0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:13	1
Cobalt	0.000210	J	0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:13	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:13	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:13	1
Lead	0.000272	J	0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:13	1
Lithium	0.0135		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:13	1
Molybdenum	0.00339		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:13	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:13	1
Selenium	0.0339		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:13	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/23/24 16:02	1
Calcium	74.5		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:13	1
Chromium	0.0153		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:13	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 13:58	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-2B
Date Collected: 04/08/24 14:40
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-2
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	452		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-4B

Lab Sample ID: 310-278572-3

Date Collected: 04/08/24 11:05

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	29.4		5.00	2.25	mg/L			04/10/24 10:05	5
Nitrate as N	5.38		1.00	0.390	mg/L			04/10/24 10:05	5
Fluoride	<1.00		1.00	0.375	mg/L			04/10/24 10:05	5
Sulfate	230		5.00	2.10	mg/L			04/10/24 10:05	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:05	1
Arsenic	0.00228		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:05	1
Barium	0.0516		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:05	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:05	1
Boron	0.840		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:05	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:05	1
Cobalt	0.000353	J	0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:05	1
Iron	0.228		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:05	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:05	1
Lithium	0.0262		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:05	1
Molybdenum	0.0101		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:05	1
Selenium	0.0363		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:05	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:05	1
Copper	0.00718		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:05	1
Nickel	0.0108		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:05	1
Calcium	57.6		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:05	1
Chromium	0.00878		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:17	1
Arsenic	0.00228		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:17	1
Barium	0.0504		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:17	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:17	1
Boron	0.801		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:17	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:17	1
Cobalt	0.000242	J	0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:17	1
Copper	0.00197	J	0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:17	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:17	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:17	1
Lithium	0.0231		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:17	1
Molybdenum	0.00965		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:17	1
Nickel	0.00599		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:17	1
Selenium	0.0367		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:17	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:17	1
Calcium	61.1		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:17	1
Chromium	<0.00500		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:17	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:02	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-4B
Date Collected: 04/08/24 11:05
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-3
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	2.00	J	5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	460		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-5B

Lab Sample ID: 310-278572-4

Date Collected: 04/08/24 09:15

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	25.0		5.00	2.25	mg/L			04/10/24 11:58	5
Nitrate as N	11.4	H	1.00	0.390	mg/L			04/10/24 11:58	5
Fluoride	1.10		1.00	0.375	mg/L			04/10/24 11:58	5
Sulfate	175		5.00	2.10	mg/L			04/10/24 11:58	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:07	1
Arsenic	0.00371		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:07	1
Barium	0.0901		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:07	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:07	1
Boron	1.25		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:07	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:07	1
Cobalt	0.000275	J	0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:07	1
Iron	0.0516	J	0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:07	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:07	1
Lithium	0.0161		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:07	1
Molybdenum	0.0398		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:07	1
Selenium	0.0824		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:07	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:07	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:07	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:07	1
Calcium	52.7		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:07	1
Chromium	0.0416		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:07	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:20	1
Arsenic	0.00371		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:20	1
Barium	0.0820		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:20	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:20	1
Boron	1.21		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:20	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:20	1
Cobalt	0.000267	J	0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:20	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:20	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:20	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:20	1
Lithium	0.0140		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:20	1
Molybdenum	0.0395		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:20	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:20	1
Selenium	0.0822		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:20	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:20	1
Calcium	53.3		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:20	1
Chromium	0.0344		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:20	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:04	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-5B
Date Collected: 04/08/24 09:15
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-4
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/10/24 13:14	1
Total Dissolved Solids (SM 2540C)	446		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-06

Lab Sample ID: 310-278572-5

Date Collected: 04/08/24 10:30

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	32.3		5.00	2.25	mg/L			04/10/24 09:52	5
Nitrate as N	7.36		1.00	0.390	mg/L			04/10/24 09:52	5
Fluoride	0.485	J	1.00	0.375	mg/L			04/10/24 09:52	5
Sulfate	143		5.00	2.10	mg/L			04/10/24 09:52	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:09	1
Arsenic	0.00288		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:09	1
Barium	0.0547		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:09	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:09	1
Boron	0.787		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:09	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:09	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:09	1
Iron	0.187		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:09	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:09	1
Lithium	0.0133		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:09	1
Molybdenum	0.0122		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:09	1
Selenium	0.0575		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:09	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:09	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:09	1
Nickel	0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:09	1
Calcium	53.9		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:09	1
Chromium	0.0157		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:24	1
Arsenic	0.00277		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:24	1
Barium	0.0428		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:24	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:24	1
Boron	0.701		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:24	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:24	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:24	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:24	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:24	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:24	1
Lithium	0.0115		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:24	1
Molybdenum	0.0114		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:24	1
Nickel	0.00219	J	0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:24	1
Selenium	0.0554		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:24	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:24	1
Calcium	52.0		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:24	1
Chromium	0.00165	J	0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:24	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:11	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-06
Date Collected: 04/08/24 10:30
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-5
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	3.67	J	5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	376		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-07

Lab Sample ID: 310-278572-6

Date Collected: 04/08/24 13:25

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	29.8		5.00	2.25	mg/L			04/10/24 10:17	5
Nitrate as N	8.57		1.00	0.390	mg/L			04/10/24 10:17	5
Fluoride	0.620	J	1.00	0.375	mg/L			04/10/24 10:17	5
Sulfate	148		5.00	2.10	mg/L			04/10/24 10:17	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:11	1
Arsenic	0.00298		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:11	1
Barium	0.0329		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:11	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:11	1
Boron	0.794		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:11	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:11	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:11	1
Iron	0.0371	J	0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:11	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:11	1
Lithium	0.0152		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:11	1
Molybdenum	0.0137		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:11	1
Selenium	0.0633		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:11	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:11	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:11	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:11	1
Calcium	42.5		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:11	1
Chromium	0.0169		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:11	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:27	1
Arsenic	0.00305		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:27	1
Barium	0.0295		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:27	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:27	1
Boron	0.729		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:27	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:27	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:27	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:27	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:27	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:27	1
Lithium	0.0133		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:27	1
Molybdenum	0.0130		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:27	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:27	1
Selenium	0.0599		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:27	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:27	1
Calcium	42.1		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:27	1
Chromium	0.0166		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:27	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:13	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-07
Date Collected: 04/08/24 13:25
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-6
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	362		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-08

Lab Sample ID: 310-278572-7

Date Collected: 04/08/24 15:20

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	25.5		5.00	2.25	mg/L			04/10/24 10:55	5
Nitrate as N	10.9		1.00	0.390	mg/L			04/10/24 10:55	5
Fluoride	0.775	J	1.00	0.375	mg/L			04/10/24 10:55	5
Sulfate	150		5.00	2.10	mg/L			04/10/24 10:55	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:13	1
Arsenic	0.00368		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:13	1
Barium	0.0492		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:13	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:13	1
Boron	1.01		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:13	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:13	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:13	1
Iron	<0.100		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:13	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:13	1
Lithium	0.0127		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:13	1
Molybdenum	0.0301		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:13	1
Selenium	0.184		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:13	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:13	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:13	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:13	1
Calcium	41.5		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:13	1
Chromium	0.0325		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:13	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:31	1
Arsenic	0.00366		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:31	1
Barium	0.0428		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:31	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:31	1
Boron	0.939		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:31	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:31	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:31	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:31	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:31	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:31	1
Lithium	0.0112		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:31	1
Molybdenum	0.0290		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:31	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:31	1
Selenium	0.177		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:31	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:31	1
Calcium	41.2		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:31	1
Chromium	0.0286		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:31	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:15	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-08
Date Collected: 04/08/24 15:20
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-7
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	378		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-09

Lab Sample ID: 310-278572-8

Date Collected: 04/08/24 09:50

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30.0		5.00	2.25	mg/L			04/10/24 09:40	5
Nitrate as N	11.2		1.00	0.390	mg/L			04/10/24 09:40	5
Fluoride	1.35		1.00	0.375	mg/L			04/10/24 09:40	5
Sulfate	134		5.00	2.10	mg/L			04/10/24 09:40	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:16	1
Arsenic	0.00246		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:16	1
Barium	0.0760		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:16	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:16	1
Boron	1.49		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:16	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:16	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:16	1
Iron	0.0503 J		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:16	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:16	1
Lithium	0.0122		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:16	1
Molybdenum	0.0279		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:16	1
Selenium	0.158		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:16	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:16	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:16	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:16	1
Calcium	33.5		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:16	1
Chromium	0.0456		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:16	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:34	1
Arsenic	0.00238		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:34	1
Barium	0.0625		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:34	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:34	1
Boron	1.32		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:34	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:34	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:34	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:34	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:34	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:34	1
Lithium	0.00975 J		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:34	1
Molybdenum	0.0259		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:34	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:34	1
Selenium	0.146		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:34	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:34	1
Calcium	31.3		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:34	1
Chromium	0.0392		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:34	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:17	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-09
Date Collected: 04/08/24 09:50
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-8
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	330		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-102B

Lab Sample ID: 310-278572-9

Date Collected: 04/08/24 08:20

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30.7		5.00	2.25	mg/L			04/10/24 11:46	5
Nitrate as N	9.32	H H3	1.00	0.390	mg/L			04/10/24 11:46	5
Fluoride	<1.00		1.00	0.375	mg/L			04/10/24 11:46	5
Sulfate	143		5.00	2.10	mg/L			04/10/24 11:46	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:18	1
Arsenic	0.00205		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:18	1
Barium	0.178		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:18	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:18	1
Boron	0.595		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:18	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:18	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:18	1
Iron	<0.100		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:18	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:18	1
Lithium	0.0161		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:18	1
Molybdenum	0.00206		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:18	1
Selenium	0.0347		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:18	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:18	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:18	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:18	1
Calcium	75.0		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:18	1
Chromium	0.0156		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:18	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:38	1
Arsenic	0.00212		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:38	1
Barium	0.154		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:38	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:38	1
Boron	0.540		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:38	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:38	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:38	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:38	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:38	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:38	1
Lithium	0.0145		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:38	1
Molybdenum	0.00210		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:38	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:38	1
Selenium	0.0336		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:38	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:38	1
Calcium	74.4		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:38	1
Chromium	0.0156		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:38	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:19	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-102B
Date Collected: 04/08/24 08:20
Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-9
Matrix: Water

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	468		50.0	34.0	mg/L			04/10/24 16:03	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: FB-08

Lab Sample ID: 310-278572-10

Date Collected: 04/08/24 15:25

Matrix: Water

Date Received: 04/10/24 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00	0.450	mg/L			04/10/24 11:08	1
Nitrate as N	<0.200		0.200	0.0780	mg/L			04/10/24 11:08	1
Fluoride	<0.200		0.200	0.0750	mg/L			04/10/24 11:08	1
Sulfate	<1.00		1.00	0.420	mg/L			04/10/24 11:08	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 17:20	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 17:20	1
Barium	<0.00200		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 17:20	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 17:20	1
Boron	<0.100		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 17:20	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 17:20	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 17:20	1
Iron	<0.100		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 17:20	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 17:20	1
Lithium	<0.0100		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 17:20	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 17:20	1
Selenium	<0.00500		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 17:20	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 17:20	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 17:20	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 17:20	1
Calcium	<0.500		0.500	0.190	mg/L		04/11/24 09:00	04/19/24 17:20	1
Chromium	<0.00500		0.00500	0.00120	mg/L		04/11/24 09:00	04/19/24 17:20	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 19:41	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 19:41	1
Barium	<0.00200		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 19:41	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 19:41	1
Boron	<0.100		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 19:41	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 19:41	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 19:41	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 19:41	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 19:41	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 19:41	1
Lithium	<0.0100		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 19:41	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 19:41	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 19:41	1
Selenium	<0.00500		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 19:41	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 19:41	1
Calcium	<0.500		0.500	0.190	mg/L		04/15/24 09:00	04/22/24 19:41	1
Chromium	<0.00500		0.00500	0.00120	mg/L		04/15/24 09:00	04/22/24 19:41	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 14:21	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: FB-08

Lab Sample ID: 310-278572-10

Date Collected: 04/08/24 15:25

Matrix: Water

Date Received: 04/10/24 08:50

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1
Total Dissolved Solids (SM 2540C)	<50.0		50.0	34.0	mg/L			04/10/24 16:03	1

Definitions/Glossary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-418503/3

Matrix: Water

Analysis Batch: 418503

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	0.450	mg/L			04/10/24 09:15	1
Fluoride	<0.200		0.200	0.0750	mg/L			04/10/24 09:15	1
Sulfate	<1.00		1.00	0.420	mg/L			04/10/24 09:15	1

Lab Sample ID: LCS 310-418503/4

Matrix: Water

Analysis Batch: 418503

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.834		mg/L		98	90 - 110
Fluoride	2.00	2.032		mg/L		102	90 - 110
Sulfate	10.0	10.39		mg/L		104	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-418372/1-A

Matrix: Water

Analysis Batch: 419401

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 418372

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/11/24 09:00	04/19/24 16:09	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		04/11/24 09:00	04/19/24 16:09	1
Barium	<0.00200		0.00200	0.000660	mg/L		04/11/24 09:00	04/19/24 16:09	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/11/24 09:00	04/19/24 16:09	1
Boron	<0.100		0.100	0.0760	mg/L		04/11/24 09:00	04/19/24 16:09	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/11/24 09:00	04/19/24 16:09	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/11/24 09:00	04/19/24 16:09	1
Iron	<0.100		0.100	0.0360	mg/L		04/11/24 09:00	04/19/24 16:09	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/11/24 09:00	04/19/24 16:09	1
Lithium	<0.0100		0.0100	0.00250	mg/L		04/11/24 09:00	04/19/24 16:09	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		04/11/24 09:00	04/19/24 16:09	1
Selenium	<0.00500		0.00500	0.00140	mg/L		04/11/24 09:00	04/19/24 16:09	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/11/24 09:00	04/19/24 16:09	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/11/24 09:00	04/19/24 16:09	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/11/24 09:00	04/19/24 16:09	1

Lab Sample ID: LCS 310-418372/2-A

Matrix: Water

Analysis Batch: 419401

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 418372

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2105		mg/L		105	80 - 120
Arsenic	0.200	0.1970		mg/L		99	80 - 120
Barium	0.100	0.1040		mg/L		104	80 - 120
Beryllium	0.100	0.1056		mg/L		106	80 - 120
Boron	0.200	0.2324		mg/L		116	80 - 120
Cadmium	0.100	0.09456		mg/L		95	80 - 120
Cobalt	0.100	0.1077		mg/L		108	80 - 120
Iron	0.200	0.2094		mg/L		105	80 - 120

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

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

Lab Sample ID: LCS 310-418372/2-A
Matrix: Water
Analysis Batch: 419401

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418372

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.200	0.2137		mg/L		107	80 - 120
Lithium	0.200	0.2093		mg/L		105	80 - 120
Molybdenum	0.200	0.2026		mg/L		101	80 - 120
Selenium	0.400	0.3734		mg/L		93	80 - 120
Thallium	0.100	0.1065		mg/L		106	80 - 120
Copper	0.200	0.2062		mg/L		103	80 - 120
Nickel	0.200	0.1932		mg/L		97	80 - 120

Lab Sample ID: 310-278572-2 DU
Matrix: Water
Analysis Batch: 419401

Client Sample ID: MW-2B
Prep Type: Total/NA
Prep Batch: 418372

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Arsenic	0.00213		0.002042		mg/L		4	20
Barium	0.179		0.1717		mg/L		4	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	0.588		0.5538		mg/L		6	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Iron	<0.100		<0.100		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Lithium	0.0170		0.01563		mg/L		8	20
Molybdenum	0.00209		0.002020		mg/L		3	20
Selenium	0.0356		0.03483		mg/L		2	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Copper	<0.00500		<0.00500		mg/L		NC	20
Nickel	<0.00500		<0.00500		mg/L		NC	20

Lab Sample ID: MB 310-418524/1-B
Matrix: Water
Analysis Batch: 419537

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 418604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/15/24 09:00	04/22/24 18:37	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		04/15/24 09:00	04/22/24 18:37	1
Barium	<0.00200		0.00200	0.000660	mg/L		04/15/24 09:00	04/22/24 18:37	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/15/24 09:00	04/22/24 18:37	1
Boron	<0.100		0.100	0.0760	mg/L		04/15/24 09:00	04/22/24 18:37	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/15/24 09:00	04/22/24 18:37	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/15/24 09:00	04/22/24 18:37	1
Iron	<0.100		0.100	0.0360	mg/L		04/15/24 09:00	04/22/24 18:37	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/15/24 09:00	04/22/24 18:37	1
Lithium	<0.0100		0.0100	0.00250	mg/L		04/15/24 09:00	04/22/24 18:37	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		04/15/24 09:00	04/22/24 18:37	1
Selenium	<0.00500		0.00500	0.00140	mg/L		04/15/24 09:00	04/22/24 18:37	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/15/24 09:00	04/22/24 18:37	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/15/24 09:00	04/22/24 18:37	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/15/24 09:00	04/22/24 18:37	1

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

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

Lab Sample ID: LCS 310-418524/2-B
Matrix: Water
Analysis Batch: 419537

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 418604

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2127		mg/L		106	80 - 120
Arsenic	0.200	0.2147		mg/L		107	80 - 120
Barium	0.100	0.1043		mg/L		104	80 - 120
Beryllium	0.100	0.09351		mg/L		94	80 - 120
Boron	0.200	0.2079		mg/L		104	80 - 120
Cadmium	0.100	0.09383		mg/L		94	80 - 120
Cobalt	0.100	0.1015		mg/L		102	80 - 120
Iron	0.200	0.2105		mg/L		105	80 - 120
Lead	0.200	0.2062		mg/L		103	80 - 120
Lithium	0.200	0.1975		mg/L		99	80 - 120
Molybdenum	0.200	0.1990		mg/L		99	80 - 120
Selenium	0.400	0.4087		mg/L		102	80 - 120
Copper	0.200	0.1990		mg/L		99	80 - 120
Nickel	0.200	0.2006		mg/L		100	80 - 120

Lab Sample ID: LCS 310-418524/2-B
Matrix: Water
Analysis Batch: 419651

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 418604

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Thallium	0.100	0.1097		mg/L		110	80 - 120

Lab Sample ID: 310-278572-1 MS
Matrix: Water
Analysis Batch: 419537

Client Sample ID: MW-01
Prep Type: Dissolved
Prep Batch: 418604

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.00200		0.200	0.2125		mg/L		106	75 - 125
Arsenic	0.00388		0.200	0.2203		mg/L		108	75 - 125
Barium	0.0763		0.100	0.1744		mg/L		98	75 - 125
Beryllium	<0.00100		0.100	0.09845		mg/L		98	75 - 125
Boron	0.919		0.200	1.123	4	mg/L		102	75 - 125
Cadmium	<0.000200		0.100	0.09640		mg/L		96	75 - 125
Cobalt	<0.000500		0.100	0.1008		mg/L		101	75 - 125
Iron	<0.100		0.200	0.2076		mg/L		104	75 - 125
Lead	<0.000500		0.200	0.2010		mg/L		100	75 - 125
Lithium	0.0105		0.200	0.2126		mg/L		101	75 - 125
Molybdenum	0.0224		0.200	0.2350		mg/L		106	75 - 125
Selenium	0.0525		0.400	0.4584		mg/L		101	75 - 125
Thallium	<0.00100	F1	0.100	0.06463	F1	mg/L		65	75 - 125
Copper	<0.00500		0.200	0.1961		mg/L		98	75 - 125
Nickel	<0.00500		0.200	0.2004		mg/L		100	75 - 125

Lab Sample ID: 310-278572-1 MSD
Matrix: Water
Analysis Batch: 419537

Client Sample ID: MW-01
Prep Type: Dissolved
Prep Batch: 418604

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.00200		0.200	0.2032		mg/L		102	75 - 125	4	20

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

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

Lab Sample ID: 310-278572-1 MSD

Matrix: Water

Analysis Batch: 419537

Client Sample ID: MW-01

Prep Type: Dissolved

Prep Batch: 418604

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.00388		0.200	0.2117		mg/L		104	75 - 125	4	20
Barium	0.0763		0.100	0.1695		mg/L		93	75 - 125	3	20
Beryllium	<0.00100		0.100	0.09695		mg/L		97	75 - 125	2	20
Boron	0.919		0.200	1.073	4	mg/L		77	75 - 125	5	20
Cadmium	<0.000200		0.100	0.09247		mg/L		92	75 - 125	4	20
Cobalt	<0.000500		0.100	0.09883		mg/L		99	75 - 125	2	20
Iron	<0.100		0.200	0.1999		mg/L		100	75 - 125	4	20
Lead	<0.000500		0.200	0.1959		mg/L		98	75 - 125	3	20
Lithium	0.0105		0.200	0.2064		mg/L		98	75 - 125	3	20
Molybdenum	0.0224		0.200	0.2237		mg/L		101	75 - 125	5	20
Selenium	0.0525		0.400	0.4375		mg/L		96	75 - 125	5	20
Thallium	<0.00100	F1	0.100	0.06182	F1	mg/L		62	75 - 125	4	20
Copper	<0.00500		0.200	0.1913		mg/L		96	75 - 125	2	20
Nickel	<0.00500		0.200	0.1939		mg/L		97	75 - 125	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-418625/1-A

Matrix: Water

Analysis Batch: 419490

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 418625

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/12/24 13:25	04/22/24 13:24	1

Lab Sample ID: LCS 310-418625/2-A

Matrix: Water

Analysis Batch: 419490

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 418625

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001666		mg/L		100	80 - 120

Lab Sample ID: 310-278572-2 DU

Matrix: Water

Analysis Batch: 419490

Client Sample ID: MW-2B

Prep Type: Total/NA

Prep Batch: 418625

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	<0.000200		<0.000200		mg/L		NC	20

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

Lab Sample ID: MB 310-418380/1

Matrix: Water

Analysis Batch: 418380

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			04/10/24 13:14	1

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

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

Lab Sample ID: LCS 310-418380/2
Matrix: Water
Analysis Batch: 418380

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	103.0		mg/L		103	75 - 116

Lab Sample ID: MB 310-418421/1
Matrix: Water
Analysis Batch: 418421

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			04/11/24 07:12	1

Lab Sample ID: LCS 310-418421/2
Matrix: Water
Analysis Batch: 418421

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	94.00		mg/L		94	75 - 116

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

Lab Sample ID: MB 310-418406/1
Matrix: Water
Analysis Batch: 418406

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0	34.0	mg/L			04/10/24 16:03	1

Lab Sample ID: LCS 310-418406/2
Matrix: Water
Analysis Batch: 418406

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: 310-278572-8 DU
Matrix: Water
Analysis Batch: 418406

Client Sample ID: MW-09
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	330		324.0		mg/L		2	20

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

HPLC/IC

Analysis Batch: 418503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	9056A	
310-278572-2	MW-2B	Total/NA	Water	9056A	
310-278572-3	MW-4B	Total/NA	Water	9056A	
310-278572-4	MW-5B	Total/NA	Water	9056A	
310-278572-5	MW-06	Total/NA	Water	9056A	
310-278572-6	MW-07	Total/NA	Water	9056A	
310-278572-7	MW-08	Total/NA	Water	9056A	
310-278572-8	MW-09	Total/NA	Water	9056A	
310-278572-9	MW-102B	Total/NA	Water	9056A	
310-278572-10	FB-08	Total/NA	Water	9056A	
MB 310-418503/3	Method Blank	Total/NA	Water	9056A	
LCS 310-418503/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 418372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	3005A	
310-278572-2	MW-2B	Total/NA	Water	3005A	
310-278572-3	MW-4B	Total/NA	Water	3005A	
310-278572-4	MW-5B	Total/NA	Water	3005A	
310-278572-5	MW-06	Total/NA	Water	3005A	
310-278572-6	MW-07	Total/NA	Water	3005A	
310-278572-7	MW-08	Total/NA	Water	3005A	
310-278572-8	MW-09	Total/NA	Water	3005A	
310-278572-9	MW-102B	Total/NA	Water	3005A	
310-278572-10	FB-08	Total/NA	Water	3005A	
MB 310-418372/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-418372/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-278572-2 DU	MW-2B	Total/NA	Water	3005A	

Filtration Batch: 418524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Dissolved	Water	Filtration	
310-278572-2	MW-2B	Dissolved	Water	Filtration	
310-278572-3	MW-4B	Dissolved	Water	Filtration	
310-278572-4	MW-5B	Dissolved	Water	Filtration	
310-278572-5	MW-06	Dissolved	Water	Filtration	
310-278572-6	MW-07	Dissolved	Water	Filtration	
310-278572-7	MW-08	Dissolved	Water	Filtration	
310-278572-8	MW-09	Dissolved	Water	Filtration	
310-278572-9	MW-102B	Dissolved	Water	Filtration	
310-278572-10	FB-08	Dissolved	Water	Filtration	
MB 310-418524/1-B	Method Blank	Dissolved	Water	Filtration	
LCS 310-418524/2-B	Lab Control Sample	Dissolved	Water	Filtration	
310-278572-1 MS	MW-01	Dissolved	Water	Filtration	
310-278572-1 MSD	MW-01	Dissolved	Water	Filtration	

Prep Batch: 418604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Dissolved	Water	3005A	418524

Eurofins Cedar Falls

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Metals (Continued)

Prep Batch: 418604 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-2	MW-2B	Dissolved	Water	3005A	418524
310-278572-3	MW-4B	Dissolved	Water	3005A	418524
310-278572-4	MW-5B	Dissolved	Water	3005A	418524
310-278572-5	MW-06	Dissolved	Water	3005A	418524
310-278572-6	MW-07	Dissolved	Water	3005A	418524
310-278572-7	MW-08	Dissolved	Water	3005A	418524
310-278572-8	MW-09	Dissolved	Water	3005A	418524
310-278572-9	MW-102B	Dissolved	Water	3005A	418524
310-278572-10	FB-08	Dissolved	Water	3005A	418524
MB 310-418524/1-B	Method Blank	Dissolved	Water	3005A	418524
LCS 310-418524/2-B	Lab Control Sample	Dissolved	Water	3005A	418524
310-278572-1 MS	MW-01	Dissolved	Water	3005A	418524
310-278572-1 MSD	MW-01	Dissolved	Water	3005A	418524

Prep Batch: 418625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	7470A	
310-278572-2	MW-2B	Total/NA	Water	7470A	
310-278572-3	MW-4B	Total/NA	Water	7470A	
310-278572-4	MW-5B	Total/NA	Water	7470A	
310-278572-5	MW-06	Total/NA	Water	7470A	
310-278572-6	MW-07	Total/NA	Water	7470A	
310-278572-7	MW-08	Total/NA	Water	7470A	
310-278572-8	MW-09	Total/NA	Water	7470A	
310-278572-9	MW-102B	Total/NA	Water	7470A	
310-278572-10	FB-08	Total/NA	Water	7470A	
MB 310-418625/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-418625/2-A	Lab Control Sample	Total/NA	Water	7470A	
310-278572-2 DU	MW-2B	Total/NA	Water	7470A	

Analysis Batch: 419401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	6020B	418372
310-278572-2	MW-2B	Total/NA	Water	6020B	418372
310-278572-3	MW-4B	Total/NA	Water	6020B	418372
310-278572-4	MW-5B	Total/NA	Water	6020B	418372
310-278572-5	MW-06	Total/NA	Water	6020B	418372
310-278572-6	MW-07	Total/NA	Water	6020B	418372
310-278572-7	MW-08	Total/NA	Water	6020B	418372
310-278572-8	MW-09	Total/NA	Water	6020B	418372
310-278572-9	MW-102B	Total/NA	Water	6020B	418372
310-278572-10	FB-08	Total/NA	Water	6020B	418372
MB 310-418372/1-A	Method Blank	Total/NA	Water	6020B	418372
LCS 310-418372/2-A	Lab Control Sample	Total/NA	Water	6020B	418372
310-278572-2 DU	MW-2B	Total/NA	Water	6020B	418372

Analysis Batch: 419490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	7470A	418625
310-278572-2	MW-2B	Total/NA	Water	7470A	418625
310-278572-3	MW-4B	Total/NA	Water	7470A	418625

Eurofins Cedar Falls

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Metals (Continued)

Analysis Batch: 419490 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-4	MW-5B	Total/NA	Water	7470A	418625
310-278572-5	MW-06	Total/NA	Water	7470A	418625
310-278572-6	MW-07	Total/NA	Water	7470A	418625
310-278572-7	MW-08	Total/NA	Water	7470A	418625
310-278572-8	MW-09	Total/NA	Water	7470A	418625
310-278572-9	MW-102B	Total/NA	Water	7470A	418625
310-278572-10	FB-08	Total/NA	Water	7470A	418625
MB 310-418625/1-A	Method Blank	Total/NA	Water	7470A	418625
LCS 310-418625/2-A	Lab Control Sample	Total/NA	Water	7470A	418625
310-278572-2 DU	MW-2B	Total/NA	Water	7470A	418625

Analysis Batch: 419537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Dissolved	Water	6020B	418604
310-278572-2	MW-2B	Dissolved	Water	6020B	418604
310-278572-3	MW-4B	Dissolved	Water	6020B	418604
310-278572-4	MW-5B	Dissolved	Water	6020B	418604
310-278572-5	MW-06	Dissolved	Water	6020B	418604
310-278572-6	MW-07	Dissolved	Water	6020B	418604
310-278572-7	MW-08	Dissolved	Water	6020B	418604
310-278572-8	MW-09	Dissolved	Water	6020B	418604
310-278572-9	MW-102B	Dissolved	Water	6020B	418604
310-278572-10	FB-08	Dissolved	Water	6020B	418604
MB 310-418524/1-B	Method Blank	Dissolved	Water	6020B	418604
LCS 310-418524/2-B	Lab Control Sample	Dissolved	Water	6020B	418604
310-278572-1 MS	MW-01	Dissolved	Water	6020B	418604
310-278572-1 MSD	MW-01	Dissolved	Water	6020B	418604

Analysis Batch: 419651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Dissolved	Water	6020B	418604
310-278572-2	MW-2B	Dissolved	Water	6020B	418604
LCS 310-418524/2-B	Lab Control Sample	Dissolved	Water	6020B	418604

General Chemistry

Analysis Batch: 418380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-4	MW-5B	Total/NA	Water	I-3765-85	
MB 310-418380/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-418380/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 418406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	SM 2540C	
310-278572-2	MW-2B	Total/NA	Water	SM 2540C	
310-278572-3	MW-4B	Total/NA	Water	SM 2540C	
310-278572-4	MW-5B	Total/NA	Water	SM 2540C	
310-278572-5	MW-06	Total/NA	Water	SM 2540C	
310-278572-6	MW-07	Total/NA	Water	SM 2540C	
310-278572-7	MW-08	Total/NA	Water	SM 2540C	

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QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

General Chemistry (Continued)

Analysis Batch: 418406 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-8	MW-09	Total/NA	Water	SM 2540C	
310-278572-9	MW-102B	Total/NA	Water	SM 2540C	
310-278572-10	FB-08	Total/NA	Water	SM 2540C	
MB 310-418406/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-418406/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-278572-8 DU	MW-09	Total/NA	Water	SM 2540C	

Analysis Batch: 418421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-278572-1	MW-01	Total/NA	Water	I-3765-85	
310-278572-2	MW-2B	Total/NA	Water	I-3765-85	
310-278572-3	MW-4B	Total/NA	Water	I-3765-85	
310-278572-5	MW-06	Total/NA	Water	I-3765-85	
310-278572-6	MW-07	Total/NA	Water	I-3765-85	
310-278572-7	MW-08	Total/NA	Water	I-3765-85	
310-278572-8	MW-09	Total/NA	Water	I-3765-85	
310-278572-9	MW-102B	Total/NA	Water	I-3765-85	
310-278572-10	FB-08	Total/NA	Water	I-3765-85	
MB 310-418421/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-418421/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-01

Date Collected: 04/08/24 13:55

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 10:30
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 18:43
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 15:59
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 16:49
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 13:55
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-2B

Date Collected: 04/08/24 14:40

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 10:43
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:13
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419651	NFT2	EET CF	04/23/24 16:02
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 16:52
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 13:58
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-4B

Date Collected: 04/08/24 11:05

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 10:05
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:17
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:05

Eurofins Cedar Falls

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-4B

Date Collected: 04/08/24 11:05

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:02
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-5B

Date Collected: 04/08/24 09:15

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 11:58
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:20
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:07
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:04
Total/NA	Analysis	I-3765-85		1	418380	DGU1	EET CF	04/10/24 13:14
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-06

Date Collected: 04/08/24 10:30

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 09:52
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:24
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:09
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:11
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-07

Date Collected: 04/08/24 13:25

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 10:17

Eurofins Cedar Falls

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-07

Date Collected: 04/08/24 13:25

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:27
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:11
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:13
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-08

Date Collected: 04/08/24 15:20

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 10:55
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:31
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:13
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:15
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: MW-09

Date Collected: 04/08/24 09:50

Date Received: 04/10/24 08:50

Lab Sample ID: 310-278572-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 09:40
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:34
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:16
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:17
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Eurofins Cedar Falls

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Client Sample ID: MW-102B

Lab Sample ID: 310-278572-9

Date Collected: 04/08/24 08:20

Matrix: Water

Date Received: 04/10/24 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	418503	QTZ5	EET CF	04/10/24 11:46
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:38
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:18
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:19
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Client Sample ID: FB-08

Lab Sample ID: 310-278572-10

Date Collected: 04/08/24 15:25

Matrix: Water

Date Received: 04/10/24 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	418503	QTZ5	EET CF	04/10/24 11:08
Dissolved	Filtration	Filtration			418524	KM3E	EET CF	04/11/24 16:20
Dissolved	Prep	3005A			418604	KM3E	EET CF	04/15/24 09:00
Dissolved	Analysis	6020B		1	419537	A6US	EET CF	04/22/24 19:41
Total/NA	Prep	3005A			418372	KM3E	EET CF	04/11/24 09:00
Total/NA	Analysis	6020B		1	419401	DHM5	EET CF	04/19/24 17:20
Total/NA	Prep	7470A			418625	A6US	EET CF	04/12/24 13:25
Total/NA	Analysis	7470A		1	419490	A6US	EET CF	04/22/24 14:21
Total/NA	Analysis	I-3765-85		1	418421	DGU1	EET CF	04/11/24 07:12
Total/NA	Analysis	SM 2540C		1	418406	D7CP	EET CF	04/10/24 16:03

Laboratory References:

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

Accreditation/Certification Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	IA100001	05-27-24

1
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14

Method Summary

Client: Hastings Utilities
Project/Site: WEC MW's

Job ID: 310-278572-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
7470A	Preparation, Mercury	SW846	EET CF
Filtration	Sample Filtration	None	EET CF

Protocol References:

None = None

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

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

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

Laboratory References:

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



Environment Testing
America



310-278572 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Hastings</u>			
City/State:	CITY	STATE	Project:
		<u>NE</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>4-10-24</u>	<u>850</u>	<u>ML</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☐ Yes ☒ No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID:		<u>X</u>	Correction Factor (°C): <u>0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		<u>6.4</u>	Corrected Temp (°C): <u>0.4</u>
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Login Sample Receipt Checklist

Client: Hastings Utilities

Job Number: 310-278572-1

Login Number: 278572

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Costello, Mackenzie K

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

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jenny Sidlo
Hastings Utilities
1228 North Denver Ave
PO BOX 289
Hastings, Nebraska 68901

Generated 4/29/2024 10:59:01 AM

JOB DESCRIPTION

WEC MWs

JOB NUMBER

310-279097-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



Generated
4/29/2024 10:59:01 AM

Authorized for release by
Matthew Hummel, Project Manager I
Matthew.Hummel@et.eurofinsus.com
Designee for
Emily Mathews, Project Management Assistant I
Emily.Mathews@et.eurofinsus.com
(319)277-2401



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Case Narrative

Client: Hastings Utilities
Project: WEC MWs

Job ID: 310-279097-1

Job ID: 310-279097-1

Eurofins Cedar Falls

Job Narrative 310-279097-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The sample was received on 4/17/2024 8:45 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.3°C.

HPLC/IC

Method 300_ORGFM_28D: The following sample was diluted due to the nature of the sample matrix: MW-3R (310-279097-1). Elevated reporting limits (RLs) are provided.

Method 300_ORGFMS: The following sample was received outside of holding time for Nitrate: MW-3R (310-279097-1).

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

Metals

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

General Chemistry

Method I_3765_85: The following sample(s) was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: MW-3R (310-279097-1).

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

Eurofins Cedar Falls

Sample Summary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-279097-1	MW-3R	Water	04/10/24 13:25	04/17/24 08:45

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

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Client Sample ID: MW-3R

Lab Sample ID: 310-279097-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	30.5		5.00	2.25	mg/L	5			300.0	Total/NA
Nitrate as N	5.89	H H3	1.00	0.390	mg/L	5			300.0	Total/NA
Sulfate	190		5.00	2.10	mg/L	5			300.0	Total/NA
Arsenic	0.00254		0.00200	0.000530	mg/L	1			200.8	Total/NA
Barium	0.0558	B	0.00200	0.000660	mg/L	1			200.8	Total/NA
Boron	0.807		0.100	0.0760	mg/L	1			200.8	Total/NA
Lithium	0.0322		0.0100	0.00250	mg/L	1			200.8	Total/NA
Molybdenum	0.00804		0.00200	0.00130	mg/L	1			200.8	Total/NA
Selenium	0.0350		0.00500	0.00140	mg/L	1			200.8	Total/NA
Arsenic	0.00232		0.00200	0.000530	mg/L	1			200.8	Dissolved
Barium	0.0570		0.00200	0.000660	mg/L	1			200.8	Dissolved
Boron	0.793		0.100	0.0760	mg/L	1			200.8	Dissolved
Lithium	0.0313		0.0100	0.00250	mg/L	1			200.8	Dissolved
Molybdenum	0.00716		0.00200	0.00130	mg/L	1			200.8	Dissolved
Selenium	0.0364		0.00500	0.00140	mg/L	1			200.8	Dissolved

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Client Sample ID: MW-3R

Lab Sample ID: 310-279097-1

Date Collected: 04/10/24 13:25

Matrix: Water

Date Received: 04/17/24 08:45

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30.5		5.00	2.25	mg/L			04/17/24 15:52	5
Nitrate as N	5.89	H H3	1.00	0.390	mg/L			04/17/24 15:52	5
Fluoride	<1.00		1.00	0.375	mg/L			04/17/24 15:52	5
Sulfate	190		5.00	2.10	mg/L			04/17/24 15:52	5

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/18/24 09:00	04/23/24 21:04	1
Arsenic	0.00254		0.00200	0.000530	mg/L		04/18/24 09:00	04/23/24 21:04	1
Barium	0.0558	B	0.00200	0.000660	mg/L		04/18/24 09:00	04/23/24 21:04	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/18/24 09:00	04/23/24 21:04	1
Boron	0.807		0.100	0.0760	mg/L		04/18/24 09:00	04/23/24 21:04	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/18/24 09:00	04/23/24 21:04	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/18/24 09:00	04/23/24 21:04	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/18/24 09:00	04/23/24 21:04	1
Iron	<0.100		0.100	0.0360	mg/L		04/18/24 09:00	04/23/24 21:04	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/18/24 09:00	04/23/24 21:04	1
Lithium	0.0322		0.0100	0.00250	mg/L		04/18/24 09:00	04/23/24 21:04	1
Molybdenum	0.00804		0.00200	0.00130	mg/L		04/18/24 09:00	04/23/24 21:04	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/18/24 09:00	04/23/24 21:04	1
Selenium	0.0350		0.00500	0.00140	mg/L		04/18/24 09:00	04/23/24 21:04	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/18/24 09:00	04/23/24 21:04	1

Method: EPA 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/23/24 09:00	04/24/24 22:05	1
Arsenic	0.00232		0.00200	0.000530	mg/L		04/23/24 09:00	04/24/24 22:05	1
Barium	0.0570		0.00200	0.000660	mg/L		04/23/24 09:00	04/24/24 22:05	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/23/24 09:00	04/24/24 22:05	1
Boron	0.793		0.100	0.0760	mg/L		04/23/24 09:00	04/24/24 22:05	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/23/24 09:00	04/24/24 22:05	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/23/24 09:00	04/24/24 22:05	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/23/24 09:00	04/24/24 22:05	1
Iron	<0.100		0.100	0.0360	mg/L		04/23/24 09:00	04/24/24 22:05	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/23/24 09:00	04/24/24 22:05	1
Lithium	0.0313		0.0100	0.00250	mg/L		04/23/24 09:00	04/25/24 15:16	1
Molybdenum	0.00716		0.00200	0.00130	mg/L		04/23/24 09:00	04/24/24 22:05	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/23/24 09:00	04/24/24 22:05	1
Selenium	0.0364		0.00500	0.00140	mg/L		04/23/24 09:00	04/24/24 22:05	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/23/24 09:00	04/24/24 22:05	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/22/24 08:06	04/26/24 14:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00	H	5.00	3.70	mg/L			04/18/24 13:19	1
Total Dissolved Solids (SM 2540C)	<50.0		50.0	42.0	mg/L			04/17/24 17:50	1

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Definitions/Glossary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 310-419168/3

Matrix: Water

Analysis Batch: 419168

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	0.450	mg/L			04/17/24 10:37	1
Fluoride	<0.200		0.200	0.0750	mg/L			04/17/24 10:37	1
Sulfate	<1.00		1.00	0.420	mg/L			04/17/24 10:37	1

Lab Sample ID: LCS 310-419168/4

Matrix: Water

Analysis Batch: 419168

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	10.10		mg/L		101	90 - 110
Fluoride	2.00	2.086		mg/L		104	90 - 110
Sulfate	10.0	10.86		mg/L		109	90 - 110

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 310-419028/1-A

Matrix: Water

Analysis Batch: 419651

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 419028

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/18/24 09:00	04/23/24 19:59	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		04/18/24 09:00	04/23/24 19:59	1
Barium	0.0007910	J	0.00200	0.000660	mg/L		04/18/24 09:00	04/23/24 19:59	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/18/24 09:00	04/23/24 19:59	1
Boron	<0.100		0.100	0.0760	mg/L		04/18/24 09:00	04/23/24 19:59	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/18/24 09:00	04/23/24 19:59	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/18/24 09:00	04/23/24 19:59	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/18/24 09:00	04/23/24 19:59	1
Iron	<0.100		0.100	0.0360	mg/L		04/18/24 09:00	04/23/24 19:59	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/18/24 09:00	04/23/24 19:59	1
Lithium	<0.0100		0.0100	0.00250	mg/L		04/18/24 09:00	04/23/24 19:59	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		04/18/24 09:00	04/23/24 19:59	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/18/24 09:00	04/23/24 19:59	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/18/24 09:00	04/23/24 19:59	1

Lab Sample ID: LCS 310-419028/2-A

Matrix: Water

Analysis Batch: 419651

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 419028

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2125		mg/L		106	85 - 115
Barium	0.100	0.1024		mg/L		102	85 - 115
Beryllium	0.100	0.09945		mg/L		99	85 - 115
Cadmium	0.100	0.09924		mg/L		99	85 - 115
Cobalt	0.100	0.1132		mg/L		113	85 - 115
Copper	0.200	0.2181		mg/L		109	85 - 115
Lead	0.200	0.2169		mg/L		108	85 - 115
Lithium	0.200	0.2134		mg/L		107	85 - 115
Nickel	0.200	0.2010		mg/L		100	85 - 115

Eurofins Cedar Falls

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-419028/2-A

Matrix: Water

Analysis Batch: 419651

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 419028

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Thallium	0.100	0.1105		mg/L		110	85 - 115

Lab Sample ID: MB 310-419033/1-C

Matrix: Water

Analysis Batch: 419807

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 419548

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		04/23/24 09:00	04/24/24 21:19	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		04/23/24 09:00	04/24/24 21:19	1
Barium	<0.00200		0.00200	0.000660	mg/L		04/23/24 09:00	04/24/24 21:19	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		04/23/24 09:00	04/24/24 21:19	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		04/23/24 09:00	04/24/24 21:19	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		04/23/24 09:00	04/24/24 21:19	1
Copper	<0.00500		0.00500	0.00180	mg/L		04/23/24 09:00	04/24/24 21:19	1
Iron	<0.100		0.100	0.0360	mg/L		04/23/24 09:00	04/24/24 21:19	1
Lead	<0.000500		0.000500	0.000260	mg/L		04/23/24 09:00	04/24/24 21:19	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		04/23/24 09:00	04/24/24 21:19	1
Nickel	<0.00500		0.00500	0.00210	mg/L		04/23/24 09:00	04/24/24 21:19	1
Selenium	<0.00500		0.00500	0.00140	mg/L		04/23/24 09:00	04/24/24 21:19	1
Thallium	<0.00100		0.00100	0.000570	mg/L		04/23/24 09:00	04/24/24 21:19	1

Lab Sample ID: MB 310-419033/1-C

Matrix: Water

Analysis Batch: 419932

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 419548

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100	0.0760	mg/L		04/23/24 09:00	04/25/24 14:22	1
Lithium	<0.0100		0.0100	0.00250	mg/L		04/23/24 09:00	04/25/24 14:22	1

Lab Sample ID: LCS 310-419033/2-C

Matrix: Water

Analysis Batch: 419807

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Prep Batch: 419548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2200		mg/L		110	85 - 115
Arsenic	0.200	0.2063		mg/L		103	85 - 115
Barium	0.100	0.1098		mg/L		110	85 - 115
Beryllium	0.100	0.1046		mg/L		105	85 - 115
Cadmium	0.100	0.1029		mg/L		103	85 - 115
Cobalt	0.100	0.1118		mg/L		112	85 - 115
Copper	0.200	0.2115		mg/L		106	85 - 115
Iron	0.200	0.2157		mg/L		108	85 - 115
Lead	0.200	0.2160		mg/L		108	85 - 115
Molybdenum	0.200	0.1927		mg/L		96	85 - 115
Nickel	0.200	0.2043		mg/L		102	85 - 115
Selenium	0.400	0.4061		mg/L		102	85 - 115
Thallium	0.100	0.1077		mg/L		108	85 - 115

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-419033/2-C

Matrix: Water

Analysis Batch: 419932

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Prep Batch: 419548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.1972		mg/L		99	85 - 115
Lithium	0.200	0.2127		mg/L		106	85 - 115

Lab Sample ID: 310-279097-1 DU

Matrix: Water

Analysis Batch: 419807

Client Sample ID: MW-3R

Prep Type: Dissolved

Prep Batch: 419548

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Arsenic	0.00232		0.002368		mg/L		2	20
Barium	0.0570		0.05606		mg/L		2	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	0.793		0.8018		mg/L		1	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Copper	<0.00500		<0.00500		mg/L		NC	20
Iron	<0.100		<0.100		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Molybdenum	0.00716		0.006946		mg/L		3	20
Nickel	<0.00500		<0.00500		mg/L		NC	20
Selenium	0.0364		0.03668		mg/L		0.8	20
Thallium	<0.00100		<0.00100		mg/L		NC	20

Lab Sample ID: 310-279097-1 DU

Matrix: Water

Analysis Batch: 419932

Client Sample ID: MW-3R

Prep Type: Dissolved

Prep Batch: 419548

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Lithium	0.0313		0.03128		mg/L		0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 310-419379/1-A

Matrix: Water

Analysis Batch: 420030

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 419379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		04/22/24 08:06	04/26/24 13:53	1

Lab Sample ID: LCS 310-419379/2-A

Matrix: Water

Analysis Batch: 420030

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 419379

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001675		mg/L		100	85 - 115

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

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

Lab Sample ID: MB 310-419156/1

Matrix: Water

Analysis Batch: 419156

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			04/18/24 13:19	1

Lab Sample ID: LCS 310-419156/2

Matrix: Water

Analysis Batch: 419156

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	97.00		mg/L		97	75 - 116

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

Lab Sample ID: MB 310-419043/1

Matrix: Water

Analysis Batch: 419043

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0	42.0	mg/L			04/17/24 17:50	1

Lab Sample ID: LCS 310-419043/2

Matrix: Water

Analysis Batch: 419043

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	978.0		mg/L		98	90 - 110

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

HPLC/IC

Analysis Batch: 419168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	300.0	
MB 310-419168/3	Method Blank	Total/NA	Water	300.0	
LCS 310-419168/4	Lab Control Sample	Total/NA	Water	300.0	

Metals

Prep Batch: 419028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	200.8	
MB 310-419028/1-A	Method Blank	Total/NA	Water	200.8	
LCS 310-419028/2-A	Lab Control Sample	Total/NA	Water	200.8	

Filtration Batch: 419033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Dissolved	Water	Filtration	
MB 310-419033/1-C	Method Blank	Dissolved	Water	Filtration	
LCS 310-419033/2-C	Lab Control Sample	Dissolved	Water	Filtration	
310-279097-1 DU	MW-3R	Dissolved	Water	Filtration	

Prep Batch: 419379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	245.1	
MB 310-419379/1-A	Method Blank	Total/NA	Water	245.1	
LCS 310-419379/2-A	Lab Control Sample	Total/NA	Water	245.1	

Prep Batch: 419548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Dissolved	Water	200.8	419033
MB 310-419033/1-C	Method Blank	Dissolved	Water	200.8	419033
LCS 310-419033/2-C	Lab Control Sample	Dissolved	Water	200.8	419033
310-279097-1 DU	MW-3R	Dissolved	Water	200.8	419033

Analysis Batch: 419651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	200.8	419028
MB 310-419028/1-A	Method Blank	Total/NA	Water	200.8	419028
LCS 310-419028/2-A	Lab Control Sample	Total/NA	Water	200.8	419028

Analysis Batch: 419807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Dissolved	Water	200.8	419548
MB 310-419033/1-C	Method Blank	Dissolved	Water	200.8	419548
LCS 310-419033/2-C	Lab Control Sample	Dissolved	Water	200.8	419548
310-279097-1 DU	MW-3R	Dissolved	Water	200.8	419548

Analysis Batch: 419932

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Dissolved	Water	200.8	419548
MB 310-419033/1-C	Method Blank	Dissolved	Water	200.8	419548
LCS 310-419033/2-C	Lab Control Sample	Dissolved	Water	200.8	419548
310-279097-1 DU	MW-3R	Dissolved	Water	200.8	419548

Eurofins Cedar Falls

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Metals

Analysis Batch: 420030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	245.1	419379
MB 310-419379/1-A	Method Blank	Total/NA	Water	245.1	419379
LCS 310-419379/2-A	Lab Control Sample	Total/NA	Water	245.1	419379

General Chemistry

Analysis Batch: 419043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	SM 2540C	
MB 310-419043/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-419043/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 419156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-279097-1	MW-3R	Total/NA	Water	I-3765-85	
MB 310-419156/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-419156/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Client Sample ID: MW-3R
Date Collected: 04/10/24 13:25
Date Received: 04/17/24 08:45

Lab Sample ID: 310-279097-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		5	419168	QTZ5	EET CF	04/17/24 15:52
Dissolved	Filtration	Filtration			419033	QTZ5	EET CF	04/17/24 16:20
Dissolved	Prep	200.8			419548	KM3E	EET CF	04/23/24 09:00
Dissolved	Analysis	200.8		1	419932	DHM5	EET CF	04/25/24 15:16
Dissolved	Filtration	Filtration			419033	QTZ5	EET CF	04/17/24 16:20
Dissolved	Prep	200.8			419548	KM3E	EET CF	04/23/24 09:00
Dissolved	Analysis	200.8		1	419807	DHM5	EET CF	04/24/24 22:05
Total/NA	Prep	200.8			419028	QTZ5	EET CF	04/18/24 09:00
Total/NA	Analysis	200.8		1	419651	NFT2	EET CF	04/23/24 21:04
Total/NA	Prep	245.1			419379	A6US	EET CF	04/22/24 08:06
Total/NA	Analysis	245.1		1	420030	A6US	EET CF	04/26/24 14:34
Total/NA	Analysis	I-3765-85		1	419156	DGU1	EET CF	04/18/24 13:19
Total/NA	Analysis	SM 2540C		1	419043	D7CP	EET CF	04/17/24 17:50

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

Accreditation/Certification Summary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	IA100001	09-29-24

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

Method Summary

Client: Hastings Utilities
Project/Site: WEC MWs

Job ID: 310-279097-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	EPA	EET CF
200.8	Metals (ICP/MS)	EPA	EET CF
245.1	Mercury (CVAA)	EPA	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
200.8	Preparation, Total Metals	EPA	EET CF
245.1	Preparation, Mercury	EPA	EET CF
Filtration	Sample Filtration	None	EET CF

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

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

Laboratory References:

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



Environment Testing
America



310-279097 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Hastings</u>			
City/State:	<u>NE</u>	Project:	
Receipt Information			
Date/Time Received:	<u>4/17/24</u>	<u>0845</u>	Received By: <u>[Signature]</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☐ Yes ☒ No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>T</u>		Correction Factor (°C): <u>to 0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		Corrected Temp (°C):	
• Sample Container Temperature			
Container(s) used:	<u>PL 250 NHC</u>		CONTAINER 2
Uncorrected Temp (°C):	<u>2.3</u>		
Corrected Temp (°C):	<u>2.3</u>		
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Login Sample Receipt Checklist

Client: Hastings Utilities

Job Number: 310-279097-1

SDG Number:

Login Number: 279097

List Number: 1

Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

PREPARED FOR

Attn: Jenny Sidlo
Hastings Utilities
1228 North Denver Ave
PO BOX 289
Hastings, Nebraska 68901

Generated 5/15/2024 4:11:55 PM

JOB DESCRIPTION

WEC MW Sampling

JOB NUMBER

160-53805-1

Eurofins St. Louis

Job Notes

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

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

Authorization



Generated
5/15/2024 4:11:55 PM

Authorized for release by
Casey Robertson, Project Manager
Casey.Robertson@et.eurofinsus.com
Designee for
Erika Jordan, Project Manager
erika.jordan@et.eurofinsus.com
(314)298-8566

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Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 160-53805-1

Job ID: 160-53805-1

Eurofins St. Louis

CASE NARRATIVE

Client: Public Power Generation Agency

Project: WEC MW Sampling

Report Number: 160-53805

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

The matrix for the Method Blank and LCS/LCSD is as close to the samples as can be reasonably achieved. Detailed information can be found in the most current revision of the associated SOP.

The method blank (MB) z-score is within limits, unless stated otherwise below, and is stored in the level IV raw data.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

Receipt

The samples were received on 4/17/2024 11:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved. The temperature of the cooler at receipt time was 23.8°C.

Method 903.0 - Radium-226 (GFPC)

Samples MW-01 (160-53805-1), MW-2B (160-53805-2), MW-4B (160-53805-3), MW-5B (160-53805-4), MW-06 (160-53805-5), MW-07 (160-53805-6), MW-08 (160-53805-7) and MW-09 (160-53805-8) were analyzed for Radium-226 (GFPC). The samples were prepared on 4/19/2024 and analyzed on 5/15/2024.

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

Eurofins St. Louis

Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 160-53805-1

Job ID: 160-53805-1 (Continued)

Eurofins St. Louis

Method 904.0 - Radium-228 (GFPC)

Samples MW-01 (160-53805-1), MW-2B (160-53805-2), MW-4B (160-53805-3), MW-5B (160-53805-4), MW-06 (160-53805-5), MW-07 (160-53805-6), MW-08 (160-53805-7) and MW-09 (160-53805-8) were analyzed for Radium-228 (GFPC). The samples were prepared on 4/19/2024 and analyzed on 5/6/2024.

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

Method Ra226_Ra228 - Combined Radium-226 and Radium-228

Samples MW-01 (160-53805-1), MW-2B (160-53805-2), MW-4B (160-53805-3), MW-5B (160-53805-4), MW-06 (160-53805-5), MW-07 (160-53805-6), MW-08 (160-53805-7) and MW-09 (160-53805-8) were analyzed for Combined Radium-226 and Radium-228. The samples were analyzed on 5/15/2024.

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

Eurofins St. Louis

Cedar Falls, IA 50613
phone 319.277.2401 fax 319.277.2425

phone 319.277.2401 fax 319.277.2425

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

1st America Laboratories, Inc.

Project Manager: Jenny Sidlo

Client Contact

1228 N Dnever Ave

Hastings, NE 68901

402-462-3664

(xxx) xxx-xxxx FAX

Project Name: WEC MW Sampling

Ash Pond

P O # 8-501.5

Analysis Turnaround Time

CALENDAR DAYS WORKING DAYS

TAT if different from Below

2 weeks

1 week

2 days

1 day

Sample Identification

Sample Date

Sample Time

Sample Type (C=Comp, G=Grab)

Matrix

of Cont.

MW-01

MW-02

MW-03

MW-04

MW-05

MW-06

MW-07

MW-08

MW-09

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:

Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard

Flammable

Skin Irritant

Poison B

Unknown

Special Instructions/QC Requirements & Comments

Custody Seals Intact: Yes No

Relinquished by:

Relinquished by:

Relinquished by:

Custody Seal No.:

Company: Hastings Utilities

Company:

Company:

Received by:

4-15-24

12:30

Date/Time:

Date/Time:

Date/Time:

Company:

Company:

Company:

Received in Laboratory:

Received in Laboratory:

Received in Laboratory:

Company:

Company:

Company:

Date/Time:

Date/Time:

Date/Time:

Therm ID No.:

Corr'd:

Company:

Company:

Company:

Date/Time:

Date/Time:

Date/Time:

Project Manager: Jenny Sidlo

Site Contact:

Lab Contact:

Date:

Carrier:

COC No:

1 of 1 COCs

Sampler:

For Lab Use Only:

Walk-in Client:

Lab Sampling:

Job / SDG No.:

Sample Specific Notes:

Combined Radium

Radium 226 EPA 903.0 & 228 EPA 904

Perfrom MS / MSD (Y / N)

Filtered Sample (Y / N)

160-53805 Chain of Custody

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client

Disposal by Lab

Archive for

Months

Login Sample Receipt Checklist

Client: Hastings Utilities

Job Number: 160-53805-1

Login Number: 53805

List Source: Eurofins St. Louis

List Number: 1

Creator: Pinette, Meadow L

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.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Samplers name was not on the COC
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Definitions/Glossary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Qualifiers

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-53805-1	MW-01	Water	04/08/24 13:55	04/17/24 11:15
160-53805-2	MW-2B	Water	04/08/24 14:40	04/17/24 11:15
160-53805-3	MW-4B	Water	04/08/24 11:05	04/17/24 11:15
160-53805-4	MW-5B	Water	04/08/24 09:15	04/17/24 11:15
160-53805-5	MW-06	Water	04/08/24 10:30	04/17/24 11:15
160-53805-6	MW-07	Water	04/08/24 13:25	04/17/24 11:15
160-53805-7	MW-08	Water	04/08/24 15:20	04/17/24 11:15
160-53805-8	MW-09	Water	04/08/24 09:50	04/17/24 11:15

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Client Sample ID: MW-01

Lab Sample ID: 160-53805-1

Date Collected: 04/08/24 13:55

Matrix: Water

Date Received: 04/17/24 11:15

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.148		0.0803	0.0814	1.00	0.0973	pCi/L	04/19/24 08:06	05/15/24 07:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.1		30 - 110					04/19/24 08:06	05/15/24 07:30	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.40		0.451	0.469	1.00	0.529	pCi/L	04/19/24 08:10	05/06/24 12:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.1		30 - 110					04/19/24 08:10	05/06/24 12:52	1
Y Carrier	86.4		30 - 110					04/19/24 08:10	05/06/24 12:52	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.55		0.458	0.476	5.00	0.529	pCi/L		05/15/24 15:01	1

Client Sample ID: MW-2B

Lab Sample ID: 160-53805-2

Date Collected: 04/08/24 14:40

Matrix: Water

Date Received: 04/17/24 11:15

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.206		0.0875	0.0895	1.00	0.0884	pCi/L	04/19/24 08:06	05/15/24 07:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.1		30 - 110					04/19/24 08:06	05/15/24 07:30	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.07		0.556	0.587	1.00	0.624	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.1		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	81.1		30 - 110					04/19/24 08:10	05/06/24 12:53	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Client Sample ID: MW-2B

Date Collected: 04/08/24 14:40

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-2

Matrix: Water

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.28		0.563	0.594	5.00	0.624	pCi/L		05/15/24 15:01	1

Client Sample ID: MW-4B

Date Collected: 04/08/24 11:05

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-3

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.164		0.0858	0.0871	1.00	0.104	pCi/L	04/19/24 08:06	05/15/24 07:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		30 - 110					04/19/24 08:06	05/15/24 07:46	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.35		0.455	0.472	1.00	0.565	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	89.7		30 - 110					04/19/24 08:10	05/06/24 12:53	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.51		0.463	0.480	5.00	0.565	pCi/L		05/15/24 15:01	1

Client Sample ID: MW-5B

Date Collected: 04/08/24 09:15

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-4

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.188		0.0920	0.0935	1.00	0.111	pCi/L	04/19/24 08:06	05/15/24 07:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.9		30 - 110					04/19/24 08:06	05/15/24 07:46	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Client Sample ID: MW-5B

Lab Sample ID: 160-53805-4

Date Collected: 04/08/24 09:15

Matrix: Water

Date Received: 04/17/24 11:15

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.746		0.382	0.388	1.00	0.527	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.9		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	86.7		30 - 110					04/19/24 08:10	05/06/24 12:53	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.933		0.393	0.399	5.00	0.527	pCi/L		05/15/24 15:01	1

Client Sample ID: MW-06

Lab Sample ID: 160-53805-5

Date Collected: 04/08/24 10:30

Matrix: Water

Date Received: 04/17/24 11:15

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0951	U	0.0788	0.0793	1.00	0.118	pCi/L	04/19/24 08:06	05/15/24 07:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.5		30 - 110					04/19/24 08:06	05/15/24 07:46	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0956	U	0.280	0.280	1.00	0.500	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.5		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	85.6		30 - 110					04/19/24 08:10	05/06/24 12:53	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.191	U	0.291	0.291	5.00	0.500	pCi/L		05/15/24 15:01	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Client Sample ID: MW-07

Date Collected: 04/08/24 13:25

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-6

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0942	U	0.0822	0.0826	1.00	0.125	pCi/L	04/19/24 08:06	05/15/24 07:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.8		30 - 110					04/19/24 08:06	05/15/24 07:46	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.954		0.453	0.462	1.00	0.618	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.8		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	81.5		30 - 110					04/19/24 08:10	05/06/24 12:53	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.05		0.460	0.469	5.00	0.618	pCi/L		05/15/24 15:47	1

Client Sample ID: MW-08

Date Collected: 04/08/24 15:20

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-7

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.105		0.0702	0.0708	1.00	0.0934	pCi/L	04/19/24 08:06	05/15/24 07:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.4		30 - 110					04/19/24 08:06	05/15/24 07:46	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.36		0.440	0.457	1.00	0.520	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.4		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	85.6		30 - 110					04/19/24 08:10	05/06/24 12:53	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Client Sample ID: MW-08

Date Collected: 04/08/24 15:20

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-7

Matrix: Water

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.47		0.446	0.462	5.00	0.520	pCi/L		05/15/24 15:47	1

Client Sample ID: MW-09

Date Collected: 04/08/24 09:50

Date Received: 04/17/24 11:15

Lab Sample ID: 160-53805-8

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.105		0.0703	0.0710	1.00	0.0937	pCi/L	04/19/24 08:06	05/15/24 07:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		30 - 110					04/19/24 08:06	05/15/24 07:46	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.480		0.318	0.321	1.00	0.468	pCi/L	04/19/24 08:10	05/06/24 12:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		30 - 110					04/19/24 08:10	05/06/24 12:53	1
Y Carrier	86.0		30 - 110					04/19/24 08:10	05/06/24 12:53	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.585		0.326	0.329	5.00	0.468	pCi/L		05/15/24 15:47	1

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-657669/1-A
Matrix: Water
Analysis Batch: 661646

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 657669

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04735	U	0.0534	0.0536	1.00	0.0854	pCi/L	04/19/24 08:06	05/15/24 07:30	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		30 - 110					04/19/24 08:06	05/15/24 07:30	1

Lab Sample ID: LCS 160-657669/2-A
Matrix: Water
Analysis Batch: 661646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 657669

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226		11.3	11.10		1.15	1.00	0.0918	pCi/L	98	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	94.4		30 - 110							

Lab Sample ID: 160-53805-4 DU
Matrix: Water
Analysis Batch: 661817

Client Sample ID: MW-5B
Prep Type: Total/NA
Prep Batch: 657669

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.188		0.2088		0.105	1.00	0.129	pCi/L	0.11	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	89.6		30 - 110							

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-657670/1-A
Matrix: Water
Analysis Batch: 660062

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 657670

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5136		0.330	0.333	1.00	0.485	pCi/L	04/19/24 08:10	05/06/24 12:34	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		30 - 110					04/19/24 08:10	05/06/24 12:34	1
Y Carrier	83.4		30 - 110					04/19/24 08:10	05/06/24 12:34	1

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-657670/2-A
Matrix: Water
Analysis Batch: 660062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 657670

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228	8.97	9.488		1.28	1.00	0.472	pCi/L	106	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	94.4		30 - 110
Y Carrier	86.0		30 - 110

Lab Sample ID: 160-53805-4 DU
Matrix: Water
Analysis Batch: 660322

Client Sample ID: MW-5B
Prep Type: Total/NA
Prep Batch: 657670

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.746		1.148		0.456	1.00	0.568	pCi/L	0.48	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	89.6		30 - 110
Y Carrier	87.5		30 - 110

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Rad

Prep Batch: 657669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-53805-1	MW-01	Total/NA	Water	PrecSep-21	
160-53805-2	MW-2B	Total/NA	Water	PrecSep-21	
160-53805-3	MW-4B	Total/NA	Water	PrecSep-21	
160-53805-4	MW-5B	Total/NA	Water	PrecSep-21	
160-53805-5	MW-06	Total/NA	Water	PrecSep-21	
160-53805-6	MW-07	Total/NA	Water	PrecSep-21	
160-53805-7	MW-08	Total/NA	Water	PrecSep-21	
160-53805-8	MW-09	Total/NA	Water	PrecSep-21	
MB 160-657669/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-657669/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-53805-4 DU	MW-5B	Total/NA	Water	PrecSep-21	

Prep Batch: 657670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-53805-1	MW-01	Total/NA	Water	PrecSep_0	
160-53805-2	MW-2B	Total/NA	Water	PrecSep_0	
160-53805-3	MW-4B	Total/NA	Water	PrecSep_0	
160-53805-4	MW-5B	Total/NA	Water	PrecSep_0	
160-53805-5	MW-06	Total/NA	Water	PrecSep_0	
160-53805-6	MW-07	Total/NA	Water	PrecSep_0	
160-53805-7	MW-08	Total/NA	Water	PrecSep_0	
160-53805-8	MW-09	Total/NA	Water	PrecSep_0	
MB 160-657670/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-657670/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-53805-4 DU	MW-5B	Total/NA	Water	PrecSep_0	

Tracer/Carrier Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-53805-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
160-53805-1	MW-01	92.1	
160-53805-2	MW-2B	93.1	
160-53805-3	MW-4B	93.4	
160-53805-4	MW-5B	91.9	
160-53805-4 DU	MW-5B	89.6	
160-53805-5	MW-06	97.5	
160-53805-6	MW-07	86.8	
160-53805-7	MW-08	96.4	
160-53805-8	MW-09	97.7	
LCS 160-657669/2-A	Lab Control Sample	94.4	
MB 160-657669/1-A	Method Blank	97.7	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
160-53805-1	MW-01	92.1	86.4
160-53805-2	MW-2B	93.1	81.1
160-53805-3	MW-4B	93.4	89.7
160-53805-4	MW-5B	91.9	86.7
160-53805-4 DU	MW-5B	89.6	87.5
160-53805-5	MW-06	97.5	85.6
160-53805-6	MW-07	86.8	81.5
160-53805-7	MW-08	96.4	85.6
160-53805-8	MW-09	97.7	86.0
LCS 160-657670/2-A	Lab Control Sample	94.4	86.0
MB 160-657670/1-A	Method Blank	97.7	83.4
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jenny Sidlo
Hastings Utilities
1228 North Denver Ave
PO BOX 289
Hastings, Nebraska 68901

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JOB DESCRIPTION

WEC MW Sampling
WEC

JOB NUMBER

310-295709-1

Eurofins Cedar Falls

Job Notes

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

Authorization



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Authorized for release by
Samuel Miller, Project Management Assistant I
Samuel.Miller@et.eurofinsus.com
(319)277-2401

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Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 310-295709-1

Job ID: 310-295709-1

Eurofins Cedar Falls

Job Narrative 310-295709-1

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

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

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

Receipt

The samples were received on 11/21/2024 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.4°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-4B (310-295709-1) and MW-2B (310-295709-3). Elevated reporting limits (RLs) are provided.

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

Metals

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

General Chemistry

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

Eurofins Cedar Falls

Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 310-295709-1

Job ID: 310-295709-2

Eurofins Cedar Falls

Job Narrative 310-295709-2

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

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Receipt

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HPLC/IC

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

Eurofins Cedar Falls

Sample Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-295709-1	MW-4B	Water	11/19/24 14:15	11/21/24 08:30
310-295709-2	MW-01	Water	11/19/24 15:10	11/21/24 08:30
310-295709-3	MW-2B	Water	11/19/24 15:45	11/21/24 08:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
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Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Client Sample ID: MW-4B

Lab Sample ID: 310-295709-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	27.5		5.00	2.25	mg/L	5			9056A	Total/NA
Nitrate as N	5.29		1.00	0.390	mg/L	5			9056A	Total/NA
Sulfate	210		5.00	2.10	mg/L	5			9056A	Total/NA
Arsenic	0.00267		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.0507		0.00200	0.000660	mg/L	1			6020B	Total/NA
Boron	0.739		0.100	0.0760	mg/L	1			6020B	Total/NA
Calcium	54.2		0.500	0.190	mg/L	1			6020B	Total/NA
Chromium	0.0141		0.00500	0.00120	mg/L	1			6020B	Total/NA
Cobalt	0.000763		0.000500	0.000170	mg/L	1			6020B	Total/NA
Iron	0.416		0.100	0.0360	mg/L	1			6020B	Total/NA
Lithium	0.0323		0.0100	0.00250	mg/L	1			6020B	Total/NA
Molybdenum	0.0135		0.00200	0.00130	mg/L	1			6020B	Total/NA
Selenium	0.0424		0.00500	0.00140	mg/L	1			6020B	Total/NA
Total Dissolved Solids	524		50.0	42.0	mg/L	1			SM 2540C	Total/NA

Client Sample ID: MW-01

Lab Sample ID: 310-295709-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	26.5		5.00	2.25	mg/L	5			9056A	Total/NA
Nitrate as N	10.4		1.00	0.390	mg/L	5			9056A	Total/NA
Fluoride	0.549	J	1.00	0.375	mg/L	5			9056A	Total/NA
Sulfate	113		5.00	2.10	mg/L	5			9056A	Total/NA
Arsenic	0.00432		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.0722		0.00200	0.000660	mg/L	1			6020B	Total/NA
Boron	1.12		0.100	0.0760	mg/L	1			6020B	Total/NA
Calcium	29.7		0.500	0.190	mg/L	1			6020B	Total/NA
Chromium	0.0268		0.00500	0.00120	mg/L	1			6020B	Total/NA
Iron	0.146		0.100	0.0360	mg/L	1			6020B	Total/NA
Lithium	0.00951	J	0.0100	0.00250	mg/L	1			6020B	Total/NA
Molybdenum	0.0483		0.00200	0.00130	mg/L	1			6020B	Total/NA
Selenium	0.0629		0.00500	0.00140	mg/L	1			6020B	Total/NA
Total Dissolved Solids	210		50.0	42.0	mg/L	1			SM 2540C	Total/NA

Client Sample ID: MW-2B

Lab Sample ID: 310-295709-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	28.9		5.00	2.25	mg/L	5			9056A	Total/NA
Nitrate as N	9.26		1.00	0.390	mg/L	5			9056A	Total/NA
Sulfate	135		5.00	2.10	mg/L	5			9056A	Total/NA
Arsenic	0.00206		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.198		0.00200	0.000660	mg/L	1			6020B	Total/NA
Boron	0.510		0.100	0.0760	mg/L	1			6020B	Total/NA
Calcium	81.4		0.500	0.190	mg/L	1			6020B	Total/NA
Chromium	0.0162		0.00500	0.00120	mg/L	1			6020B	Total/NA
Lithium	0.0145		0.0100	0.00250	mg/L	1			6020B	Total/NA
Molybdenum	0.00209		0.00200	0.00130	mg/L	1			6020B	Total/NA
Selenium	0.0334		0.00500	0.00140	mg/L	1			6020B	Total/NA
Total Dissolved Solids	454		50.0	42.0	mg/L	1			SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Client Sample ID: MW-4B

Lab Sample ID: 310-295709-1

Date Collected: 11/19/24 14:15

Matrix: Water

Date Received: 11/21/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.5		5.00	2.25	mg/L			11/21/24 10:11	5
Nitrate as N	5.29		1.00	0.390	mg/L			11/21/24 10:11	5
Fluoride	<1.00		1.00	0.375	mg/L			11/21/24 10:11	5
Sulfate	210		5.00	2.10	mg/L			11/21/24 10:11	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/25/24 09:30	11/25/24 18:01	1
Arsenic	0.00267		0.00200	0.000530	mg/L		11/25/24 09:30	11/25/24 18:01	1
Barium	0.0507		0.00200	0.000660	mg/L		11/25/24 09:30	11/25/24 18:01	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/25/24 09:30	11/25/24 18:01	1
Boron	0.739		0.100	0.0760	mg/L		11/25/24 09:30	11/25/24 18:01	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/25/24 09:30	11/25/24 18:01	1
Calcium	54.2		0.500	0.190	mg/L		11/25/24 09:30	11/25/24 18:01	1
Chromium	0.0141		0.00500	0.00120	mg/L		11/25/24 09:30	11/25/24 18:01	1
Cobalt	0.000763		0.000500	0.000170	mg/L		11/25/24 09:30	11/25/24 18:01	1
Iron	0.416		0.100	0.0360	mg/L		11/25/24 09:30	11/25/24 18:01	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/25/24 09:30	11/25/24 18:01	1
Lithium	0.0323		0.0100	0.00250	mg/L		11/25/24 09:30	11/25/24 18:01	1
Molybdenum	0.0135		0.00200	0.00130	mg/L		11/25/24 09:30	11/25/24 18:01	1
Selenium	0.0424		0.00500	0.00140	mg/L		11/25/24 09:30	11/25/24 18:01	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/25/24 09:30	11/25/24 18:01	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 09:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<3.16		3.16	2.34	mg/L			11/25/24 23:51	1
Total Dissolved Solids (SM 2540C)	524		50.0	42.0	mg/L			11/21/24 16:34	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Client Sample ID: MW-01

Lab Sample ID: 310-295709-2

Date Collected: 11/19/24 15:10

Matrix: Water

Date Received: 11/21/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	26.5		5.00	2.25	mg/L			11/21/24 10:22	5
Nitrate as N	10.4		1.00	0.390	mg/L			11/21/24 10:22	5
Fluoride	0.549	J	1.00	0.375	mg/L			11/21/24 10:22	5
Sulfate	113		5.00	2.10	mg/L			11/21/24 10:22	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/25/24 09:30	11/25/24 18:03	1
Arsenic	0.00432		0.00200	0.000530	mg/L		11/25/24 09:30	11/25/24 18:03	1
Barium	0.0722		0.00200	0.000660	mg/L		11/25/24 09:30	11/25/24 18:03	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/25/24 09:30	11/25/24 18:03	1
Boron	1.12		0.100	0.0760	mg/L		11/25/24 09:30	11/25/24 18:03	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/25/24 09:30	11/25/24 18:03	1
Calcium	29.7		5.00	0.190	mg/L		11/25/24 09:30	11/25/24 18:03	1
Chromium	0.0268		0.00500	0.00120	mg/L		11/25/24 09:30	11/25/24 18:03	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		11/25/24 09:30	11/25/24 18:03	1
Iron	0.146		0.100	0.0360	mg/L		11/25/24 09:30	11/25/24 18:03	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/25/24 09:30	11/25/24 18:03	1
Lithium	0.00951	J	0.0100	0.00250	mg/L		11/25/24 09:30	11/25/24 18:03	1
Molybdenum	0.0483		0.00200	0.00130	mg/L		11/25/24 09:30	11/25/24 18:03	1
Selenium	0.0629		0.00500	0.00140	mg/L		11/25/24 09:30	11/25/24 18:03	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/25/24 09:30	11/25/24 18:03	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 09:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<3.33		3.33	2.47	mg/L			11/25/24 23:51	1
Total Dissolved Solids (SM 2540C)	210		50.0	42.0	mg/L			11/21/24 16:34	1

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Client Sample ID: MW-2B

Lab Sample ID: 310-295709-3

Date Collected: 11/19/24 15:45

Matrix: Water

Date Received: 11/21/24 08:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28.9		5.00	2.25	mg/L			11/21/24 10:33	5
Nitrate as N	9.26		1.00	0.390	mg/L			11/21/24 10:33	5
Fluoride	<1.00		1.00	0.375	mg/L			11/21/24 10:33	5
Sulfate	135		5.00	2.10	mg/L			11/21/24 10:33	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/25/24 09:30	11/25/24 18:06	1
Arsenic	0.00206		0.00200	0.000530	mg/L		11/25/24 09:30	11/25/24 18:06	1
Barium	0.198		0.00200	0.000660	mg/L		11/25/24 09:30	11/25/24 18:06	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/25/24 09:30	11/25/24 18:06	1
Boron	0.510		0.100	0.0760	mg/L		11/25/24 09:30	11/25/24 18:06	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/25/24 09:30	11/25/24 18:06	1
Calcium	81.4		0.500	0.190	mg/L		11/25/24 09:30	11/25/24 18:06	1
Chromium	0.0162		0.00500	0.00120	mg/L		11/25/24 09:30	11/25/24 18:06	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		11/25/24 09:30	11/25/24 18:06	1
Iron	<0.100		0.100	0.0360	mg/L		11/25/24 09:30	11/25/24 18:06	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/25/24 09:30	11/25/24 18:06	1
Lithium	0.0145		0.0100	0.00250	mg/L		11/25/24 09:30	11/25/24 18:06	1
Molybdenum	0.00209		0.00200	0.00130	mg/L		11/25/24 09:30	11/25/24 18:06	1
Selenium	0.0334		0.00500	0.00140	mg/L		11/25/24 09:30	11/25/24 18:06	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/25/24 09:30	11/25/24 18:06	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 09:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<3.33		3.33	2.47	mg/L			11/25/24 23:51	1
Total Dissolved Solids (SM 2540C)	454		50.0	42.0	mg/L			11/21/24 16:34	1

Definitions/Glossary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-441003/5
Matrix: Water
Analysis Batch: 441003

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	0.450	mg/L			11/21/24 09:49	1
Nitrate as N	<0.200		0.200	0.0780	mg/L			11/21/24 09:49	1
Fluoride	<0.200		0.200	0.0750	mg/L			11/21/24 09:49	1
Sulfate	<1.00		1.00	0.420	mg/L			11/21/24 09:49	1

Lab Sample ID: LCS 310-441003/6
Matrix: Water
Analysis Batch: 441003

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.039		mg/L		90	90 - 110
Nitrate as N	2.00	1.975		mg/L		99	90 - 110
Fluoride	2.00	1.899		mg/L		95	90 - 110
Sulfate	10.0	9.976		mg/L		100	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-440701/1-A
Matrix: Water
Analysis Batch: 440930

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 440701

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/25/24 09:30	11/25/24 17:08	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/25/24 09:30	11/25/24 17:08	1
Barium	<0.00200		0.00200	0.000660	mg/L		11/25/24 09:30	11/25/24 17:08	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/25/24 09:30	11/25/24 17:08	1
Boron	<0.100		0.100	0.0760	mg/L		11/25/24 09:30	11/25/24 17:08	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/25/24 09:30	11/25/24 17:08	1
Calcium	<0.500		0.500	0.190	mg/L		11/25/24 09:30	11/25/24 17:08	1
Chromium	<0.00500		0.00500	0.00120	mg/L		11/25/24 09:30	11/25/24 17:08	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		11/25/24 09:30	11/25/24 17:08	1
Iron	<0.100		0.100	0.0360	mg/L		11/25/24 09:30	11/25/24 17:08	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/25/24 09:30	11/25/24 17:08	1
Lithium	<0.0100		0.0100	0.00250	mg/L		11/25/24 09:30	11/25/24 17:08	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		11/25/24 09:30	11/25/24 17:08	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/25/24 09:30	11/25/24 17:08	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/25/24 09:30	11/25/24 17:08	1

Lab Sample ID: LCS 310-440701/2-A
Matrix: Water
Analysis Batch: 440930

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 440701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2091		mg/L		105	80 - 120
Arsenic	0.200	0.2045		mg/L		102	80 - 120
Barium	0.100	0.1064		mg/L		106	80 - 120
Beryllium	0.100	0.1010		mg/L		101	80 - 120
Boron	0.200	0.2173		mg/L		109	80 - 120
Cadmium	0.100	0.1021		mg/L		102	80 - 120

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

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

Lab Sample ID: LCS 310-440701/2-A

Matrix: Water

Analysis Batch: 440930

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 440701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	2.00	2.005		mg/L		100	80 - 120
Chromium	0.100	0.1016		mg/L		102	80 - 120
Cobalt	0.100	0.1024		mg/L		102	80 - 120
Iron	0.200	0.2046		mg/L		102	80 - 120
Lead	0.200	0.1993		mg/L		100	80 - 120
Lithium	0.200	0.2090		mg/L		104	80 - 120
Molybdenum	0.200	0.2022		mg/L		101	80 - 120
Selenium	0.400	0.3971		mg/L		99	80 - 120
Thallium	0.100	0.1045		mg/L		105	80 - 120

Lab Sample ID: 310-295709-3 DU

Matrix: Water

Analysis Batch: 440930

Client Sample ID: MW-2B

Prep Type: Total/NA

Prep Batch: 440701

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Arsenic	0.00206		0.002052		mg/L		0.3	20
Barium	0.198		0.1928		mg/L		3	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	0.510		0.5120		mg/L		0.5	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Calcium	81.4		79.54		mg/L		2	20
Chromium	0.0162		0.01604		mg/L		1	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Iron	<0.100		<0.100		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Lithium	0.0145		0.01424		mg/L		2	20
Molybdenum	0.00209		0.001995	J	mg/L		5	20
Selenium	0.0334		0.03340		mg/L		0.1	20
Thallium	<0.00100		<0.00100		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-441526/1-A

Matrix: Water

Analysis Batch: 441801

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 441526

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 09:33	1

Lab Sample ID: LCS 310-441526/2-A

Matrix: Water

Analysis Batch: 441801

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 441526

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001677		mg/L		101	80 - 120

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

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

Lab Sample ID: MB 310-440903/1
Matrix: Water
Analysis Batch: 440903

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			11/25/24 23:51	1

Lab Sample ID: LCS 310-440903/2
Matrix: Water
Analysis Batch: 440903

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	97.00		mg/L		97	81 - 116

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

Lab Sample ID: MB 310-440577/1
Matrix: Water
Analysis Batch: 440577

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0	42.0	mg/L			11/21/24 16:34	1

Lab Sample ID: LCS 310-440577/2
Matrix: Water
Analysis Batch: 440577

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	992.0		mg/L		99	88 - 110

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

HPLC/IC

Analysis Batch: 441003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	9056A	
310-295709-2	MW-01	Total/NA	Water	9056A	
310-295709-3	MW-2B	Total/NA	Water	9056A	
MB 310-441003/5	Method Blank	Total/NA	Water	9056A	
LCS 310-441003/6	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 440701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	3005A	
310-295709-2	MW-01	Total/NA	Water	3005A	
310-295709-3	MW-2B	Total/NA	Water	3005A	
MB 310-440701/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-440701/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-295709-3 DU	MW-2B	Total/NA	Water	3005A	

Analysis Batch: 440930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	6020B	440701
310-295709-2	MW-01	Total/NA	Water	6020B	440701
310-295709-3	MW-2B	Total/NA	Water	6020B	440701
MB 310-440701/1-A	Method Blank	Total/NA	Water	6020B	440701
LCS 310-440701/2-A	Lab Control Sample	Total/NA	Water	6020B	440701
310-295709-3 DU	MW-2B	Total/NA	Water	6020B	440701

Prep Batch: 441526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	7470A	
310-295709-2	MW-01	Total/NA	Water	7470A	
310-295709-3	MW-2B	Total/NA	Water	7470A	
MB 310-441526/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-441526/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 441801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	7470A	441526
310-295709-2	MW-01	Total/NA	Water	7470A	441526
310-295709-3	MW-2B	Total/NA	Water	7470A	441526
MB 310-441526/1-A	Method Blank	Total/NA	Water	7470A	441526
LCS 310-441526/2-A	Lab Control Sample	Total/NA	Water	7470A	441526

General Chemistry

Analysis Batch: 440577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	SM 2540C	
310-295709-2	MW-01	Total/NA	Water	SM 2540C	
310-295709-3	MW-2B	Total/NA	Water	SM 2540C	
MB 310-440577/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-440577/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

General Chemistry

Analysis Batch: 440903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295709-1	MW-4B	Total/NA	Water	I-3765-85	
310-295709-2	MW-01	Total/NA	Water	I-3765-85	
310-295709-3	MW-2B	Total/NA	Water	I-3765-85	
MB 310-440903/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-440903/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Client Sample ID: MW-4B

Date Collected: 11/19/24 14:15

Date Received: 11/21/24 08:30

Lab Sample ID: 310-295709-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	441003	WZC8	EET CF	11/21/24 10:11
Total/NA	Prep	3005A			440701	F5MW	EET CF	11/25/24 09:30
Total/NA	Analysis	6020B		1	440930	A6US	EET CF	11/25/24 18:01
Total/NA	Prep	7470A			441526	QTZ5	EET CF	12/04/24 13:50
Total/NA	Analysis	7470A		1	441801	QTZ5	EET CF	12/06/24 09:52
Total/NA	Analysis	I-3765-85		1	440903	MDU9	EET CF	11/25/24 23:51
Total/NA	Analysis	SM 2540C		1	440577	XJ7V	EET CF	11/21/24 16:34

Client Sample ID: MW-01

Date Collected: 11/19/24 15:10

Date Received: 11/21/24 08:30

Lab Sample ID: 310-295709-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	441003	WZC8	EET CF	11/21/24 10:22
Total/NA	Prep	3005A			440701	F5MW	EET CF	11/25/24 09:30
Total/NA	Analysis	6020B		1	440930	A6US	EET CF	11/25/24 18:03
Total/NA	Prep	7470A			441526	QTZ5	EET CF	12/04/24 13:50
Total/NA	Analysis	7470A		1	441801	QTZ5	EET CF	12/06/24 09:54
Total/NA	Analysis	I-3765-85		1	440903	MDU9	EET CF	11/25/24 23:51
Total/NA	Analysis	SM 2540C		1	440577	XJ7V	EET CF	11/21/24 16:34

Client Sample ID: MW-2B

Date Collected: 11/19/24 15:45

Date Received: 11/21/24 08:30

Lab Sample ID: 310-295709-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	441003	WZC8	EET CF	11/21/24 10:33
Total/NA	Prep	3005A			440701	F5MW	EET CF	11/25/24 09:30
Total/NA	Analysis	6020B		1	440930	A6US	EET CF	11/25/24 18:06
Total/NA	Prep	7470A			441526	QTZ5	EET CF	12/04/24 13:50
Total/NA	Analysis	7470A		1	441801	QTZ5	EET CF	12/06/24 09:56
Total/NA	Analysis	I-3765-85		1	440903	MDU9	EET CF	11/25/24 23:51
Total/NA	Analysis	SM 2540C		1	440577	XJ7V	EET CF	11/21/24 16:34

Laboratory References:

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

Accreditation/Certification Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	IA100001	09-29-25

- 1
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- 13
- 14

Method Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-295709-1
SDG: WEC

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
7470A	Preparation, Mercury	SW846	EET 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.

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

Laboratory References:

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



Environment Testing
America



310-295709 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>PPGA</u>			
City/State:	CITY <u>Hastings</u>	STATE <u>NE</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>11-21-24</u>	TIME <u>830</u>	Received By: <u>PH</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☐ Yes ☒ No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>P</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>2.9</u>		Corrected Temp (°C): <u>2.9</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			

[illegible]

Login Sample Receipt Checklist

Client: Hastings Utilities

Job Number: 310-295709-1

SDG Number: WEC

Login Number: 295709

List Number: 1

Creator: Hirsch, Preston

List Source: Eurofins Cedar Falls

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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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

Eurofins Cedar Falls

ANALYTICAL REPORT

PREPARED FOR

Attn: Jenny Sidlo
Hastings Utilities
1228 North Denver Ave
PO BOX 289
Hastings, Nebraska 68901

Generated 12/18/2024 3:40:59 PM Revision 1

JOB DESCRIPTION

WEC MW Sampling

JOB NUMBER

310-296140-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



Generated
12/18/2024 3:40:59 PM
Revision 1

Authorized for release by
Conner Calhoun, Client Service Manager
Conner.Calhoun@et.eurofinsus.com
Designee for
Samuel Miller, Project Management Assistant I
Samuel.Miller@et.eurofinsus.com
(319)277-2401

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Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 310-296140-1

Job ID: 310-296140-1

Eurofins Cedar Falls

Job Narrative 310-296140-1

REVISION

The report being provided is a revision of the original report sent on 12/17/2024. The report (revision 1) is being revised due to COCs need to be on separate reports..

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

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

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

Receipt

The samples were received on 11/27/2024 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.7°C and 1.7°C.

HPLC/IC

Method 300_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-10S (310-296140-8), MW-10M (310-296140-9), MW-11S (310-296140-10), MW-11M (310-296140-11), MW-12M (310-296140-13), MW-13M (310-296140-14) and MW-113M (310-296140-15). Elevated reporting limits (RLs) are provided.

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

Metals

Method 245.1: The continuing calibration verification (CCV) associated with batch 310-441801 recovered above the upper control limit for mercury. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 245.2: The continuing calibration verification (CCV) associated with batch 310-441801 recovered above the upper control limit for mercury. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

General Chemistry

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

Eurofins Cedar Falls

Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 310-296140-1

Job ID: 310-296140-2

Eurofins Cedar Falls

Job Narrative 310-296140-2

REVISION

The report being provided is a revision of the original report sent on 12/17/2024. The report (revision 1) is being revised due to Client requested report be split by COC submitted.

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

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

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

Receipt

The samples were received on 11/27/2024 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.7°C and 1.7°C.

HPLC/IC

Method 300_ORGFMS: The following samples were received outside of holding time: MW-5B (310-296140-5), MW-07 (310-296140-6), MW-09 (310-296140-7), MW-10S (310-296140-8), MW-10M (310-296140-9), MW-11S (310-296140-10), MW-11M (310-296140-11), MW-13S (310-296140-12), MW-12M (310-296140-13), MW-13M (310-296140-14) and MW-113M (310-296140-15).

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

Eurofins Cedar Falls

Sample Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-296140-5	MW-5B	Water	11/22/24 10:05	11/27/24 09:10
310-296140-6	MW-07	Water	11/21/24 16:15	11/27/24 09:10
310-296140-7	MW-09	Water	11/22/24 10:45	11/27/24 09:10

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Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Client Sample ID: MW-5B

Lab Sample ID: 310-296140-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24.2		5.00	2.25	mg/L	5		300.0	Total/NA
Nitrate as N	10.5	H H3	1.00	0.390	mg/L	5		300.0	Total/NA
Fluoride	1.44		1.00	0.375	mg/L	5		300.0	Total/NA
Sulfate	122		5.00	2.10	mg/L	5		300.0	Total/NA
Arsenic	0.00486		0.00200	0.000530	mg/L	1		200.8	Total/NA
Barium	0.0707		0.00200	0.000660	mg/L	1		200.8	Total/NA
Boron	1.18		0.100	0.0760	mg/L	1		200.8	Total/NA
Calcium	38.7		0.500	0.190	mg/L	1		200.8	Total/NA
Chromium	0.0306		0.00500	0.00120	mg/L	1		200.8	Total/NA
Cobalt	0.000234	J	0.000500	0.000170	mg/L	1		200.8	Total/NA
Iron	0.0899	J	0.100	0.0360	mg/L	1		200.8	Total/NA
Lithium	0.0124		0.0100	0.00250	mg/L	1		200.8	Total/NA
Molybdenum	0.0378		0.00200	0.00130	mg/L	1		200.8	Total/NA
Selenium	0.0619		0.00500	0.00140	mg/L	1		200.8	Total/NA
Thallium	0.000627	J	0.00100	0.000570	mg/L	1		200.8	Total/NA
Vanadium	0.0110		0.00500	0.00110	mg/L	1		200.8	Total/NA
Total Dissolved Solids	364		50.0	42.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-07

Lab Sample ID: 310-296140-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27.4		5.00	2.25	mg/L	5		300.0	Total/NA
Nitrate as N	9.10	H H3	1.00	0.390	mg/L	5		300.0	Total/NA
Fluoride	0.691	J	1.00	0.375	mg/L	5		300.0	Total/NA
Sulfate	149		5.00	2.10	mg/L	5		300.0	Total/NA
Arsenic	0.00308		0.00200	0.000530	mg/L	1		200.8	Total/NA
Barium	0.0537		0.00200	0.000660	mg/L	1		200.8	Total/NA
Boron	1.10		0.100	0.0760	mg/L	1		200.8	Total/NA
Calcium	42.8		0.500	0.190	mg/L	1		200.8	Total/NA
Chromium	0.0221		0.00500	0.00120	mg/L	1		200.8	Total/NA
Iron	0.182		0.100	0.0360	mg/L	1		200.8	Total/NA
Lead	0.000281	J	0.000500	0.000260	mg/L	1		200.8	Total/NA
Lithium	0.0129		0.0100	0.00250	mg/L	1		200.8	Total/NA
Molybdenum	0.0164		0.00200	0.00130	mg/L	1		200.8	Total/NA
Selenium	0.0626		0.00500	0.00140	mg/L	1		200.8	Total/NA
Vanadium	0.00748		0.00500	0.00110	mg/L	1		200.8	Total/NA
Total Suspended Solids	7.67		5.00	3.70	mg/L	1		I-3765-85	Total/NA
Total Dissolved Solids	346		50.0	42.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-09

Lab Sample ID: 310-296140-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	26.4		5.00	2.25	mg/L	5		300.0	Total/NA
Nitrate as N	8.27	H H3	1.00	0.390	mg/L	5		300.0	Total/NA
Fluoride	1.25		1.00	0.375	mg/L	5		300.0	Total/NA
Sulfate	139		5.00	2.10	mg/L	5		300.0	Total/NA
Arsenic	0.00292		0.00200	0.000530	mg/L	1		200.8	Total/NA
Barium	0.0947		0.00200	0.000660	mg/L	1		200.8	Total/NA
Boron	0.986		0.100	0.0760	mg/L	1		200.8	Total/NA
Calcium	39.1		0.500	0.190	mg/L	1		200.8	Total/NA
Chromium	0.0211		0.00500	0.00120	mg/L	1		200.8	Total/NA
Iron	0.0592	J	0.100	0.0360	mg/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Client Sample ID: MW-09 (Continued) Lab Sample ID: 310-296140-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Lithium	0.0103		0.0100	0.00250	mg/L	1			200.8	Total/NA
Molybdenum	0.0157		0.00200	0.00130	mg/L	1			200.8	Total/NA
Selenium	0.0835		0.00500	0.00140	mg/L	1			200.8	Total/NA
Vanadium	0.00643		0.00500	0.00110	mg/L	1			200.8	Total/NA
Total Dissolved Solids	340		50.0	42.0	mg/L	1			SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Client Sample ID: MW-5B

Lab Sample ID: 310-296140-5

Date Collected: 11/22/24 10:05

Matrix: Water

Date Received: 11/27/24 09:10

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	24.2		5.00	2.25	mg/L			11/27/24 10:03	5
Nitrate as N	10.5	H H3	1.00	0.390	mg/L			11/27/24 10:03	5
Fluoride	1.44		1.00	0.375	mg/L			11/27/24 10:03	5
Sulfate	122		5.00	2.10	mg/L			11/27/24 10:03	5

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		12/04/24 09:00	12/05/24 15:49	1
Arsenic	0.00486		0.00200	0.000530	mg/L		12/04/24 09:00	12/05/24 15:49	1
Barium	0.0707		0.00200	0.000660	mg/L		12/04/24 09:00	12/05/24 15:49	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		12/04/24 09:00	12/05/24 15:49	1
Boron	1.18		0.100	0.0760	mg/L		12/04/24 09:00	12/05/24 15:49	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		12/04/24 09:00	12/05/24 15:49	1
Calcium	38.7		0.500	0.190	mg/L		12/04/24 09:00	12/05/24 15:49	1
Chromium	0.0306		0.00500	0.00120	mg/L		12/04/24 09:00	12/05/24 15:49	1
Cobalt	0.000234	J	0.000500	0.000170	mg/L		12/04/24 09:00	12/05/24 15:49	1
Iron	0.0899	J	0.100	0.0360	mg/L		12/04/24 09:00	12/05/24 15:49	1
Lead	<0.000500		0.000500	0.000260	mg/L		12/04/24 09:00	12/05/24 15:49	1
Lithium	0.0124		0.0100	0.00250	mg/L		12/04/24 09:00	12/05/24 15:49	1
Manganese	<0.0100		0.0100	0.00360	mg/L		12/04/24 09:00	12/05/24 15:49	1
Molybdenum	0.0378		0.00200	0.00130	mg/L		12/04/24 09:00	12/05/24 15:49	1
Nickel	<0.00500		0.00500	0.00210	mg/L		12/04/24 09:00	12/05/24 15:49	1
Selenium	0.0619		0.00500	0.00140	mg/L		12/04/24 09:00	12/05/24 15:49	1
Thallium	0.000627	J	0.00100	0.000570	mg/L		12/04/24 09:00	12/05/24 15:49	1
Vanadium	0.0110		0.00500	0.00110	mg/L		12/04/24 09:00	12/05/24 15:49	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200	^+	0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 10:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	3.70	mg/L			11/27/24 12:05	1
Total Dissolved Solids (SM 2540C)	364		50.0	42.0	mg/L			11/27/24 21:15	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Client Sample ID: MW-07

Lab Sample ID: 310-296140-6

Date Collected: 11/21/24 16:15

Matrix: Water

Date Received: 11/27/24 09:10

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.4		5.00	2.25	mg/L			11/27/24 12:10	5
Nitrate as N	9.10	H H3	1.00	0.390	mg/L			11/27/24 12:10	5
Fluoride	0.691	J	1.00	0.375	mg/L			11/27/24 12:10	5
Sulfate	149		5.00	2.10	mg/L			11/27/24 12:10	5

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		12/04/24 09:00	12/05/24 15:51	1
Arsenic	0.00308		0.00200	0.000530	mg/L		12/04/24 09:00	12/05/24 15:51	1
Barium	0.0537		0.00200	0.000660	mg/L		12/04/24 09:00	12/05/24 15:51	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		12/04/24 09:00	12/05/24 15:51	1
Boron	1.10		0.100	0.0760	mg/L		12/04/24 09:00	12/05/24 15:51	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		12/04/24 09:00	12/05/24 15:51	1
Calcium	42.8		0.500	0.190	mg/L		12/04/24 09:00	12/05/24 15:51	1
Chromium	0.0221		0.00500	0.00120	mg/L		12/04/24 09:00	12/05/24 15:51	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		12/04/24 09:00	12/05/24 15:51	1
Iron	0.182		0.100	0.0360	mg/L		12/04/24 09:00	12/05/24 15:51	1
Lead	0.000281	J	0.000500	0.000260	mg/L		12/04/24 09:00	12/05/24 15:51	1
Lithium	0.0129		0.0100	0.00250	mg/L		12/04/24 09:00	12/05/24 15:51	1
Manganese	<0.0100		0.0100	0.00360	mg/L		12/04/24 09:00	12/05/24 15:51	1
Molybdenum	0.0164		0.00200	0.00130	mg/L		12/04/24 09:00	12/05/24 15:51	1
Nickel	<0.00500		0.00500	0.00210	mg/L		12/04/24 09:00	12/05/24 15:51	1
Selenium	0.0626		0.00500	0.00140	mg/L		12/04/24 09:00	12/05/24 15:51	1
Thallium	<0.00100		0.00100	0.000570	mg/L		12/04/24 09:00	12/05/24 15:51	1
Vanadium	0.00748		0.00500	0.00110	mg/L		12/04/24 09:00	12/05/24 15:51	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200	^+	0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 11:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	7.67		5.00	3.70	mg/L			11/27/24 12:05	1
Total Dissolved Solids (SM 2540C)	346		50.0	42.0	mg/L			11/27/24 21:15	1

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Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Client Sample ID: MW-09

Lab Sample ID: 310-296140-7

Date Collected: 11/22/24 10:45

Matrix: Water

Date Received: 11/27/24 09:10

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	26.4		5.00	2.25	mg/L			11/27/24 12:21	5
Nitrate as N	8.27	H H3	1.00	0.390	mg/L			11/27/24 12:21	5
Fluoride	1.25		1.00	0.375	mg/L			11/27/24 12:21	5
Sulfate	139		5.00	2.10	mg/L			11/27/24 12:21	5

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		12/04/24 09:00	12/05/24 15:53	1
Arsenic	0.00292		0.00200	0.000530	mg/L		12/04/24 09:00	12/05/24 15:53	1
Barium	0.0947		0.00200	0.000660	mg/L		12/04/24 09:00	12/05/24 15:53	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		12/04/24 09:00	12/05/24 15:53	1
Boron	0.986		0.100	0.0760	mg/L		12/04/24 09:00	12/05/24 15:53	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		12/04/24 09:00	12/05/24 15:53	1
Calcium	39.1		0.500	0.190	mg/L		12/04/24 09:00	12/05/24 15:53	1
Chromium	0.0211		0.00500	0.00120	mg/L		12/04/24 09:00	12/05/24 15:53	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		12/04/24 09:00	12/05/24 15:53	1
Iron	0.0592	J	0.100	0.0360	mg/L		12/04/24 09:00	12/05/24 15:53	1
Lead	<0.000500		0.000500	0.000260	mg/L		12/04/24 09:00	12/05/24 15:53	1
Lithium	0.0103		0.0100	0.00250	mg/L		12/04/24 09:00	12/05/24 15:53	1
Manganese	<0.0100		0.0100	0.00360	mg/L		12/04/24 09:00	12/05/24 15:53	1
Molybdenum	0.0157		0.00200	0.00130	mg/L		12/04/24 09:00	12/05/24 15:53	1
Nickel	<0.00500		0.00500	0.00210	mg/L		12/04/24 09:00	12/05/24 15:53	1
Selenium	0.0835		0.00500	0.00140	mg/L		12/04/24 09:00	12/05/24 15:53	1
Thallium	<0.00100		0.00100	0.000570	mg/L		12/04/24 09:00	12/05/24 15:53	1
Vanadium	0.00643		0.00500	0.00110	mg/L		12/04/24 09:00	12/05/24 15:53	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200	^+	0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 11:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	3.70	mg/L			11/27/24 12:05	1
Total Dissolved Solids (SM 2540C)	340		50.0	42.0	mg/L			11/27/24 21:15	1

Eurofins Cedar Falls

Definitions/Glossary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 310-441404/3

Matrix: Water

Analysis Batch: 441404

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	0.450	mg/L			11/26/24 22:49	1
Sulfate	<1.00		1.00	0.420	mg/L			11/26/24 22:49	1
Fluoride	<0.200		0.200	0.0750	mg/L			11/26/24 22:49	1

Lab Sample ID: LCS 310-441404/4

Matrix: Water

Analysis Batch: 441404

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.248		mg/L		92	90 - 110
Sulfate	10.0	9.901		mg/L		99	90 - 110
Fluoride	2.00	1.961		mg/L		98	90 - 110

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 310-441301/1-A

Matrix: Water

Analysis Batch: 442002

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 441301

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0790	mg/L		12/03/24 09:00	12/09/24 11:52	1
Nickel	<0.0500		0.0500	0.0150	mg/L		12/03/24 09:00	12/09/24 11:52	1
Vanadium	<0.0500		0.0500	0.0120	mg/L		12/03/24 09:00	12/09/24 11:52	1
Molybdenum	<0.0500		0.0500	0.0120	mg/L		12/03/24 09:00	12/09/24 11:52	1
Calcium	<1.00		1.00	0.330	mg/L		12/03/24 09:00	12/09/24 11:52	1
Selenium	<0.100		0.100	0.0290	mg/L		12/03/24 09:00	12/09/24 11:52	1
Manganese	<0.0100		0.0100	0.00320	mg/L		12/03/24 09:00	12/09/24 11:52	1
Boron	<0.200		0.200	0.0610	mg/L		12/03/24 09:00	12/09/24 11:52	1

Lab Sample ID: MB 310-441301/1-A

Matrix: Water

Analysis Batch: 442390

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 441301

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<0.0500		0.0500	0.0240	mg/L		12/03/24 09:00	12/12/24 16:04	1

Lab Sample ID: LCS 310-441301/2-A

Matrix: Water

Analysis Batch: 442002

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 441301

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	2.00	2.007		mg/L		100	85 - 115
Nickel	2.00	1.925		mg/L		96	85 - 115
Vanadium	1.00	0.9888		mg/L		99	85 - 115
Molybdenum	2.00	1.950		mg/L		98	85 - 115
Calcium	20.0	18.63		mg/L		93	85 - 115
Selenium	4.00	4.013		mg/L		100	85 - 115
Manganese	1.00	0.9713		mg/L		97	85 - 115
Boron	2.00	1.956		mg/L		98	85 - 115

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QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 310-441301/2-A
Matrix: Water
Analysis Batch: 442390

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 441301

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lithium	2.00	1.915		mg/L		96	85 - 115

Lab Sample ID: 310-296140-4 DU
Matrix: Water
Analysis Batch: 442002

Client Sample ID: Neutralizaion Pond
Prep Type: Total/NA
Prep Batch: 441301

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Iron	0.546		0.4668	J	mg/L		16	20
Nickel	<0.0500		<0.0500		mg/L		NC	20
Vanadium	<0.0500		<0.0500		mg/L		NC	20
Molybdenum	0.174		0.1724		mg/L		1	20
Calcium	40.8		41.20		mg/L		1	20
Selenium	<0.100		<0.100		mg/L		NC	20
Manganese	0.0109		0.01039		mg/L		4	20
Boron	0.724		0.7326		mg/L		1	20

Lab Sample ID: 310-296140-4 DU
Matrix: Water
Analysis Batch: 442390

Client Sample ID: Neutralizaion Pond
Prep Type: Total/NA
Prep Batch: 441301

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Lithium	0.0595		0.06007		mg/L		1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 310-441427/1-A
Matrix: Water
Analysis Batch: 441732

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 441427

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		12/04/24 09:00	12/05/24 15:34	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		12/04/24 09:00	12/05/24 15:34	1
Barium	<0.00200		0.00200	0.000660	mg/L		12/04/24 09:00	12/05/24 15:34	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		12/04/24 09:00	12/05/24 15:34	1
Boron	<0.100		0.100	0.0760	mg/L		12/04/24 09:00	12/05/24 15:34	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		12/04/24 09:00	12/05/24 15:34	1
Calcium	<0.500		0.500	0.190	mg/L		12/04/24 09:00	12/05/24 15:34	1
Chromium	<0.00500		0.00500	0.00120	mg/L		12/04/24 09:00	12/05/24 15:34	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		12/04/24 09:00	12/05/24 15:34	1
Iron	<0.100		0.100	0.0360	mg/L		12/04/24 09:00	12/05/24 15:34	1
Lead	<0.000500		0.000500	0.000260	mg/L		12/04/24 09:00	12/05/24 15:34	1
Lithium	<0.0100		0.0100	0.00250	mg/L		12/04/24 09:00	12/05/24 15:34	1
Manganese	<0.0100		0.0100	0.00360	mg/L		12/04/24 09:00	12/05/24 15:34	1
Molybdenum	<0.00200		0.00200	0.00130	mg/L		12/04/24 09:00	12/05/24 15:34	1
Nickel	<0.00500		0.00500	0.00210	mg/L		12/04/24 09:00	12/05/24 15:34	1
Selenium	<0.00500		0.00500	0.00140	mg/L		12/04/24 09:00	12/05/24 15:34	1
Thallium	<0.00100		0.00100	0.000570	mg/L		12/04/24 09:00	12/05/24 15:34	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		12/04/24 09:00	12/05/24 15:34	1

Eurofins Cedar Falls

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-441427/2-A
Matrix: Water
Analysis Batch: 441732

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 441427

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2275		mg/L		114	85 - 115
Arsenic	0.200	0.2144		mg/L		107	85 - 115
Barium	0.100	0.1046		mg/L		105	85 - 115
Beryllium	0.100	0.09746		mg/L		97	85 - 115
Boron	0.200	0.2043		mg/L		102	85 - 115
Cadmium	0.100	0.1028		mg/L		103	85 - 115
Calcium	2.00	1.814		mg/L		91	85 - 115
Chromium	0.100	0.1045		mg/L		105	85 - 115
Cobalt	0.100	0.1129		mg/L		113	85 - 115
Iron	0.200	0.2102		mg/L		105	85 - 115
Lead	0.200	0.2186		mg/L		109	85 - 115
Lithium	0.200	0.2041		mg/L		102	85 - 115
Manganese	0.100	0.1034		mg/L		103	85 - 115
Molybdenum	0.200	0.1912		mg/L		96	85 - 115
Nickel	0.200	0.2126		mg/L		106	85 - 115
Selenium	0.400	0.4073		mg/L		102	85 - 115
Thallium	0.100	0.08713		mg/L		87	85 - 115
Vanadium	0.100	0.1019		mg/L		102	85 - 115

Lab Sample ID: 310-296140-14 DU
Matrix: Water
Analysis Batch: 441732

Client Sample ID: MW-13M
Prep Type: Total/NA
Prep Batch: 441427

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Arsenic	0.00260		0.002635		mg/L		1	20
Barium	0.184		0.1861		mg/L		1	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	0.0794	J	<0.100		mg/L		NC	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Chromium	0.00201	J	0.001980	J	mg/L		2	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Iron	<0.100		<0.100		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Lithium	0.0159		0.01665		mg/L		5	20
Manganese	<0.0100		<0.0100		mg/L		NC	20
Molybdenum	0.00175	J	0.001739	J	mg/L		0.4	20
Nickel	<0.00500		<0.00500		mg/L		NC	20
Selenium	0.0104		0.01020		mg/L		2	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Vanadium	0.00486	J	0.004898	J	mg/L		0.9	20

Lab Sample ID: 310-296140-14 DU
Matrix: Water
Analysis Batch: 442140

Client Sample ID: MW-13M
Prep Type: Total/NA
Prep Batch: 441427

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	66.5		106.5	F3	mg/L		46	20

Eurofins Cedar Falls

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Method: 245.2 - Mercury (CVAA)

Lab Sample ID: MB 310-441527/1-A
Matrix: Water
Analysis Batch: 441801

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 441527

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200	^+	0.000200	0.000110	mg/L		12/04/24 13:50	12/06/24 10:37	1

Lab Sample ID: LCS 310-441527/2-A
Matrix: Water
Analysis Batch: 441801

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 441527

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001523	^+	mg/L		91	85 - 115

Lab Sample ID: 310-296140-2 MS
Matrix: Water
Analysis Batch: 441801

Client Sample ID: Coal Pile Lagoon
Prep Type: Total/NA
Prep Batch: 441527

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	<0.000200	^+	0.00167	0.001759	^+	mg/L		106	70 - 130

Lab Sample ID: 310-296140-2 MSD
Matrix: Water
Analysis Batch: 441801

Client Sample ID: Coal Pile Lagoon
Prep Type: Total/NA
Prep Batch: 441527

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Mercury	<0.000200	^+	0.00167	0.001828	^+	mg/L		110	70 - 130	4	20

Lab Sample ID: MB 310-442497/1-A
Matrix: Water
Analysis Batch: 442626

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 442497

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		12/16/24 10:30	12/16/24 16:21	1

Lab Sample ID: LCS 310-442497/2-A
Matrix: Water
Analysis Batch: 442626

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 442497

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001481		mg/L		89	85 - 115

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

Lab Sample ID: MB 310-441149/1
Matrix: Water
Analysis Batch: 441149

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			11/27/24 12:05	1

Eurofins Cedar Falls

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

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

Lab Sample ID: LCS 310-441149/2
Matrix: Water
Analysis Batch: 441149

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	99.00		mg/L		99	81 - 116

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

Lab Sample ID: MB 310-441182/1
Matrix: Water
Analysis Batch: 441182

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0	42.0	mg/L			11/27/24 21:15	1

Lab Sample ID: LCS 310-441182/2
Matrix: Water
Analysis Batch: 441182

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	990.0		mg/L		99	88 - 110

Lab Sample ID: 310-296140-6 DU
Matrix: Water
Analysis Batch: 441182

Client Sample ID: MW-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	346		360.0		mg/L		4	16

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

HPLC/IC

Analysis Batch: 441404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	300.0	
310-296140-6	MW-07	Total/NA	Water	300.0	
310-296140-7	MW-09	Total/NA	Water	300.0	

Metals

Prep Batch: 441427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	200.8	
310-296140-6	MW-07	Total/NA	Water	200.8	
310-296140-7	MW-09	Total/NA	Water	200.8	

Prep Batch: 441527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	245.1	
310-296140-6	MW-07	Total/NA	Water	245.1	
310-296140-7	MW-09	Total/NA	Water	245.1	

Analysis Batch: 441732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	200.8	441427
310-296140-6	MW-07	Total/NA	Water	200.8	441427
310-296140-7	MW-09	Total/NA	Water	200.8	441427

Analysis Batch: 441801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	245.1	441527
310-296140-6	MW-07	Total/NA	Water	245.1	441527
310-296140-7	MW-09	Total/NA	Water	245.1	441527

General Chemistry

Analysis Batch: 441149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	I-3765-85	
310-296140-6	MW-07	Total/NA	Water	I-3765-85	
310-296140-7	MW-09	Total/NA	Water	I-3765-85	

Analysis Batch: 441182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-296140-5	MW-5B	Total/NA	Water	SM 2540C	
310-296140-6	MW-07	Total/NA	Water	SM 2540C	
310-296140-7	MW-09	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Client Sample ID: MW-5B

Date Collected: 11/22/24 10:05

Date Received: 11/27/24 09:10

Lab Sample ID: 310-296140-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		5	441404	WZC8	EET CF	11/27/24 10:03
Total/NA	Prep	200.8			441427	F5MW	EET CF	12/04/24 09:00
Total/NA	Analysis	200.8		1	441732	NFT2	EET CF	12/05/24 15:49
Total/NA	Prep	245.1			441527	QTZ5	EET CF	12/04/24 13:50
Total/NA	Analysis	245.1		1	441801	QTZ5	EET CF	12/06/24 10:54
Total/NA	Analysis	I-3765-85		1	441149	DGU1	EET CF	11/27/24 12:05
Total/NA	Analysis	SM 2540C		1	441182	MDU9	EET CF	11/27/24 21:15

Client Sample ID: MW-07

Date Collected: 11/21/24 16:15

Date Received: 11/27/24 09:10

Lab Sample ID: 310-296140-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		5	441404	WZC8	EET CF	11/27/24 12:10
Total/NA	Prep	200.8			441427	F5MW	EET CF	12/04/24 09:00
Total/NA	Analysis	200.8		1	441732	NFT2	EET CF	12/05/24 15:51
Total/NA	Prep	245.1			441527	QTZ5	EET CF	12/04/24 13:50
Total/NA	Analysis	245.1		1	441801	QTZ5	EET CF	12/06/24 11:12
Total/NA	Analysis	I-3765-85		1	441149	DGU1	EET CF	11/27/24 12:05
Total/NA	Analysis	SM 2540C		1	441182	MDU9	EET CF	11/27/24 21:15

Client Sample ID: MW-09

Date Collected: 11/22/24 10:45

Date Received: 11/27/24 09:10

Lab Sample ID: 310-296140-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		5	441404	WZC8	EET CF	11/27/24 12:21
Total/NA	Prep	200.8			441427	F5MW	EET CF	12/04/24 09:00
Total/NA	Analysis	200.8		1	441732	NFT2	EET CF	12/05/24 15:53
Total/NA	Prep	245.1			441527	QTZ5	EET CF	12/04/24 13:50
Total/NA	Analysis	245.1		1	441801	QTZ5	EET CF	12/06/24 11:14
Total/NA	Analysis	I-3765-85		1	441149	DGU1	EET CF	11/27/24 12:05
Total/NA	Analysis	SM 2540C		1	441182	MDU9	EET CF	11/27/24 21:15

Laboratory References:

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

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	IA100001	09-29-25

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

Method Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 310-296140-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	EPA	EET CF
200.8	Metals (ICP/MS)	EPA	EET CF
245.1	Mercury (CVAA)	EPA	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
200.8	Preparation, Total Metals	EPA	EET CF
245.1	Preparation, Mercury	EPA	EET CF

Protocol References:

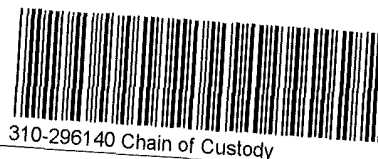
EPA = US Environmental Protection Agency
SM = "Standard Methods For The Examination Of Water And Wastewater"
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

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



Environment Testing
America



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>PPGA</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>11/27/24</u>	TIME <u>9:10</u>	Received By: <u>XB</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☒ Yes ☐ No	If yes: Cooler # <u>1</u> of <u>3</u>
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>2</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.7</u>		Corrected Temp (°C): <u>1.7</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>DPGA</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>11/27/24</u>	TIME <u>9:10</u>	Received By: <u>XB</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☒ Yes ☐ No	If yes: Cooler # <u>2</u> of <u>3</u>
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>2</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.7</u>		Corrected Temp (°C): <u>1.7</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>DPGA</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>11/27/24</u>	TIME <u>910</u>	Received By: <u>XB</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☒ Yes ☒ No	If yes: Cooler # <u>3</u> of <u>3</u>
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>Z</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.9</u>		Corrected Temp (°C): <u>0.9</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE. If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other*

Form No. CA-C-WI-002. Rev. 4.3. dated 12/05/2013

[illegible]

Cedar Falls, IA 50613-6907
phone 319.277.2401 fax 319.277.2425

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Project Manager: Emily Mathews

Client Contact		Project Manager: Emily Mathews		Site Contact:		Date:		COC No								
Jenny Sidlo		Email: emily.mathews@et.eurofinsus.com		Lab Contact:		Carrier:		of COCs								
PPGA		Cell 319-277-2401						Sampler								
Hastings, NE 68901		Analysis Turnaround Time						For Lab Use Only:								
(XXX) XXX-XXXX		☐ CALENDAR DAYS ☐ WORKING DAYS						Walk-in Client:								
Project Name WEC MW Sampling		Other: ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day						Lab Sampling								
Site WEC								Job / SDG No								
P O # 8-501.5																
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes									
MW-10S	11/21/2024	13 40	G			2	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total ICPMS Metals (Listed Below)	Mercury	Chloride, Fluoride, Sulfate	Nitrate	TDS	TSS		
MW-10M	11/21/2024	14 25	G			2	X	X	X	X	X	X	X	X		
MW-11S	11/22/2024	13 05	G			2	X	X	X	X	X	X	X	X		
MW-11M	11/22/24	13 45	G			2	X	X	X	X	X	X	X	X		
MW-13S	11/21/24	17 50	G			2	X	X	X	X	X	X	X	X		
MW-12M	11/21/24	15 10	G			2	X	X	X	X	X	X	X	X		
MW-13M	11/21/24	17 00	G			2	X	X	X	X	X	X	X	X		
MW-113M	11/21/24	13 00	G			2	X	X	X	X	X	X	X	X		
EB-01	11/22/24	14 00	G			2	X	X	X	X	X	X	X	X		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)									
Possible Hazard Identification:							Return to Client			Disposal by Lab		Archive for				
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample							Non-Hazard			Flammable		Skin Irritant		Poison B		
Special Instructions/QC Requirements & Comments: Please report MDL and RL on lab results report. Metals list: Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Molybdenum, Nickel, Selenium, Thallium							Unknown									
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No					Cooler Temp (°C)			Obs'd		Corr'd		Therm ID No		
Relinquished by:		Company		Date/Time 11-25-24 13:00			Received by			Company		Date/Time				
Relinquished by:		Company		Date/Time			Received by			Company		Date/Time				
Relinquished by:		Company		Date/Time			Received in Laboratory by			Company		Date/Time				

Login Sample Receipt Checklist

Client: Hastings Utilities

Job Number: 310-296140-1

SDG Number:

Login Number: 296140

List Number: 1

Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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

Eurofins Cedar Falls

ANALYTICAL REPORT

PREPARED FOR

Attn: Jenny Sidlo
Hastings Utilities
1228 North Denver Ave
PO BOX 289
Hastings, Nebraska 68901
Generated 12/26/2024 11:28:35 PM

JOB DESCRIPTION

WEC MW Sampling

JOB NUMBER

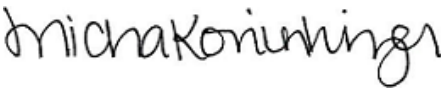
160-56421-1

Job Notes

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

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

Authorization



Generated
12/26/2024 11:28:35 PM

Authorized for release by
Micha Korrinhizer, Project Manager
Micha.Korrinhizer@et.eurofinsus.com
Designee for
Erika Smith, Project Manager
erika.smith@et.eurofinsus.com
(314)298-8566

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Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 160-56421-1

Job ID: 160-56421-1

Eurofins St. Louis

CASE NARRATIVE

Client: Public Power Generation Agency

Project: WEC MW Sampling

Report Number: 160-56421-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

The matrix for the Method Blank and LCS/LCSD is as close to the samples as can be reasonably achieved. Detailed information can be found in the most current revision of the associated SOP.

The method blank (MB) z-score is within limits, unless stated otherwise below, and is stored in the level IV raw data.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

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

Receipt

The samples were received on 11/26/2024 8:20 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved. The temperature of the cooler at receipt time was 11.6°C.

Method 903.0 - Radium-226 (GFPC)

Samples MW-01 (160-56421-1), MW-2B (160-56421-2), MW-4B (160-56421-3), MW-5B (160-56421-4), MW-07 (160-56421-5) and MW-09 (160-56421-6) were analyzed for Radium-226 (GFPC). The samples were prepared on 11/27/2024 and analyzed on 12/23/2024.

Method 904.0 - Radium-228 (GFPC)

Eurofins St. Louis

Case Narrative

Client: Hastings Utilities
Project: WEC MW Sampling

Job ID: 160-56421-1

Job ID: 160-56421-1 (Continued)

Eurofins St. Louis

Samples MW-01 (160-56421-1), MW-2B (160-56421-2), MW-4B (160-56421-3), MW-5B (160-56421-4), MW-07 (160-56421-5) and MW-09 (160-56421-6) were analyzed for Radium-228 (GFPC). The samples were prepared on 11/27/2024 and analyzed on 12/17/2024.

Method Ra226_Ra228 - Combined Radium-226 and Radium-228

Samples MW-01 (160-56421-1), MW-2B (160-56421-2), MW-4B (160-56421-3), MW-5B (160-56421-4), MW-07 (160-56421-5) and MW-09 (160-56421-6) were analyzed for Combined Radium-226 and Radium-228. The samples were prepared on 11/27/2024 and analyzed on 12/23/2024 and 12/26/2024.

Eurofins St. Louis

Login Sample Receipt Checklist

Client: Hastings Utilities

Job Number: 160-56421-1

Login Number: 56421

List Source: Eurofins St. Louis

List Number: 1

Creator: Worthington, Sierra M

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

Definitions/Glossary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Qualifiers

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

Protocol References:

- EPA = US Environmental Protection Agency
- None = None
- TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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

Sample Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-56421-1	MW-01	Water	11/19/24 15:10	11/26/24 08:20
160-56421-2	MW-2B	Water	11/19/24 15:45	11/26/24 08:20
160-56421-3	MW-4B	Water	11/19/24 14:15	11/26/24 08:20
160-56421-4	MW-5B	Water	11/22/24 10:05	11/26/24 08:20
160-56421-5	MW-07	Water	11/21/24 16:15	11/26/24 08:20
160-56421-6	MW-09	Water	11/22/24 10:45	11/26/24 08:20

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

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Client Sample ID: MW-01

Lab Sample ID: 160-56421-1

Date Collected: 11/19/24 15:10

Matrix: Water

Date Received: 11/26/24 08:20

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.153		0.0972	0.0981	1.00	0.128	pCi/L	11/27/24 08:24	12/23/24 08:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.0		30 - 110					11/27/24 08:24	12/23/24 08:50	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.983		0.454	0.463	1.00	0.608	pCi/L	11/27/24 11:18	12/17/24 11:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.0		30 - 110					11/27/24 11:18	12/17/24 11:15	1
Y Carrier	80.4		30 - 110					11/27/24 11:18	12/17/24 11:15	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.14		0.464	0.473	5.00	0.608	pCi/L		12/26/24 19:00	1

Client Sample ID: MW-2B

Lab Sample ID: 160-56421-2

Date Collected: 11/19/24 15:45

Matrix: Water

Date Received: 11/26/24 08:20

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.247		0.104	0.106	1.00	0.106	pCi/L	11/27/24 08:24	12/23/24 08:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.4		30 - 110					11/27/24 08:24	12/23/24 08:51	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.52		0.457	0.478	1.00	0.503	pCi/L	11/27/24 11:18	12/17/24 11:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.4		30 - 110					11/27/24 11:18	12/17/24 11:13	1
Y Carrier	81.1		30 - 110					11/27/24 11:18	12/17/24 11:13	1

Eurofins St. Louis

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Client Sample ID: MW-2B

Date Collected: 11/19/24 15:45

Date Received: 11/26/24 08:20

Lab Sample ID: 160-56421-2

Matrix: Water

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.76		0.469	0.490	5.00	0.503	pCi/L		12/26/24 19:00	1

Client Sample ID: MW-4B

Date Collected: 11/19/24 14:15

Date Received: 11/26/24 08:20

Lab Sample ID: 160-56421-3

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.147		0.0896	0.0906	1.00	0.112	pCi/L	11/27/24 08:24	12/23/24 08:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.1		30 - 110					11/27/24 08:24	12/23/24 08:51	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0703	U	0.368	0.368	1.00	0.664	pCi/L	11/27/24 11:18	12/17/24 11:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.1		30 - 110					11/27/24 11:18	12/17/24 11:13	1
Y Carrier	78.1		30 - 110					11/27/24 11:18	12/17/24 11:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.218	U	0.379	0.379	5.00	0.664	pCi/L		12/26/24 19:00	1

Client Sample ID: MW-5B

Date Collected: 11/22/24 10:05

Date Received: 11/26/24 08:20

Lab Sample ID: 160-56421-4

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.148		0.0868	0.0878	1.00	0.108	pCi/L	11/27/24 08:24	12/23/24 08:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.9		30 - 110					11/27/24 08:24	12/23/24 08:51	1

Eurofins St. Louis

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Client Sample ID: MW-5B

Lab Sample ID: 160-56421-4

Date Collected: 11/22/24 10:05

Matrix: Water

Date Received: 11/26/24 08:20

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.760		0.443	0.448	1.00	0.647	pCi/L	11/27/24 11:18	12/17/24 11:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.9		30 - 110					11/27/24 11:18	12/17/24 11:13	1
Y Carrier	76.6		30 - 110					11/27/24 11:18	12/17/24 11:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.908		0.451	0.457	5.00	0.647	pCi/L		12/26/24 19:00	1

Client Sample ID: MW-07

Lab Sample ID: 160-56421-5

Date Collected: 11/21/24 16:15

Matrix: Water

Date Received: 11/26/24 08:20

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.159		0.101	0.102	1.00	0.136	pCi/L	11/27/24 08:24	12/23/24 08:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.3		30 - 110					11/27/24 08:24	12/23/24 08:51	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.42		0.516	0.532	1.00	0.645	pCi/L	11/27/24 11:18	12/17/24 11:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.3		30 - 110					11/27/24 11:18	12/17/24 11:13	1
Y Carrier	75.1		30 - 110					11/27/24 11:18	12/17/24 11:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.58		0.526	0.542	5.00	0.645	pCi/L		12/26/24 19:00	1

Eurofins St. Louis

Client Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Client Sample ID: MW-09

Lab Sample ID: 160-56421-6

Date Collected: 11/22/24 10:45

Matrix: Water

Date Received: 11/26/24 08:20

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.169		0.0972	0.0984	1.00	0.121	pCi/L	11/27/24 08:24	12/23/24 08:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		30 - 110					11/27/24 08:24	12/23/24 08:51	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.07		0.448	0.458	1.00	0.567	pCi/L	11/27/24 11:18	12/17/24 11:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		30 - 110					11/27/24 11:18	12/17/24 11:13	1
Y Carrier	77.4		30 - 110					11/27/24 11:18	12/17/24 11:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.24		0.458	0.468	5.00	0.567	pCi/L		12/26/24 19:00	1

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-690773/1-A
Matrix: Water
Analysis Batch: 695128

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 690773

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01162	U	0.0600	0.0600	1.00	0.118	pCi/L	11/27/24 08:24	12/23/24 08:48	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		30 - 110					11/27/24 08:24	12/23/24 08:48	1

Lab Sample ID: LCS 160-690773/2-A
Matrix: Water
Analysis Batch: 695128

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 690773

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226		9.58	10.32		1.11	1.00	0.168	pCi/L	108	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	87.1		30 - 110							

Lab Sample ID: 160-56421-1 DU
Matrix: Water
Analysis Batch: 695128

Client Sample ID: MW-01
Prep Type: Total/NA
Prep Batch: 690773

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.153		0.1976		0.103	1.00	0.121	pCi/L	0.22	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	86.5		30 - 110							

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-690796/1-A
Matrix: Water
Analysis Batch: 694145

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 690796

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5255	U	0.360	0.363	1.00	0.537	pCi/L	11/27/24 11:18	12/17/24 11:14	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		30 - 110					11/27/24 11:18	12/17/24 11:14	1
Y Carrier	78.1		30 - 110					11/27/24 11:18	12/17/24 11:14	1

QC Sample Results

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-690796/2-A
Matrix: Water
Analysis Batch: 694145

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 690796

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228	8.25	9.889		1.40	1.00	0.589	pCi/L	120	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	87.1		30 - 110
Y Carrier	75.1		30 - 110

Lab Sample ID: 160-56421-1 DU
Matrix: Water
Analysis Batch: 694145

Client Sample ID: MW-01
Prep Type: Total/NA
Prep Batch: 690796

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.983		0.3503	U	0.418	1.00	0.687	pCi/L	0.72	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	86.5		30 - 110
Y Carrier	74.0		30 - 110

QC Association Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Rad

Prep Batch: 690773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-56421-1	MW-01	Total/NA	Water	PrecSep-21	
160-56421-2	MW-2B	Total/NA	Water	PrecSep-21	
160-56421-3	MW-4B	Total/NA	Water	PrecSep-21	
160-56421-4	MW-5B	Total/NA	Water	PrecSep-21	
160-56421-5	MW-07	Total/NA	Water	PrecSep-21	
160-56421-6	MW-09	Total/NA	Water	PrecSep-21	
MB 160-690773/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-690773/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-56421-1 DU	MW-01	Total/NA	Water	PrecSep-21	

Prep Batch: 690796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-56421-1	MW-01	Total/NA	Water	PrecSep_0	
160-56421-2	MW-2B	Total/NA	Water	PrecSep_0	
160-56421-3	MW-4B	Total/NA	Water	PrecSep_0	
160-56421-4	MW-5B	Total/NA	Water	PrecSep_0	
160-56421-5	MW-07	Total/NA	Water	PrecSep_0	
160-56421-6	MW-09	Total/NA	Water	PrecSep_0	
MB 160-690796/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-690796/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-56421-1 DU	MW-01	Total/NA	Water	PrecSep_0	

Tracer/Carrier Summary

Client: Hastings Utilities
Project/Site: WEC MW Sampling

Job ID: 160-56421-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

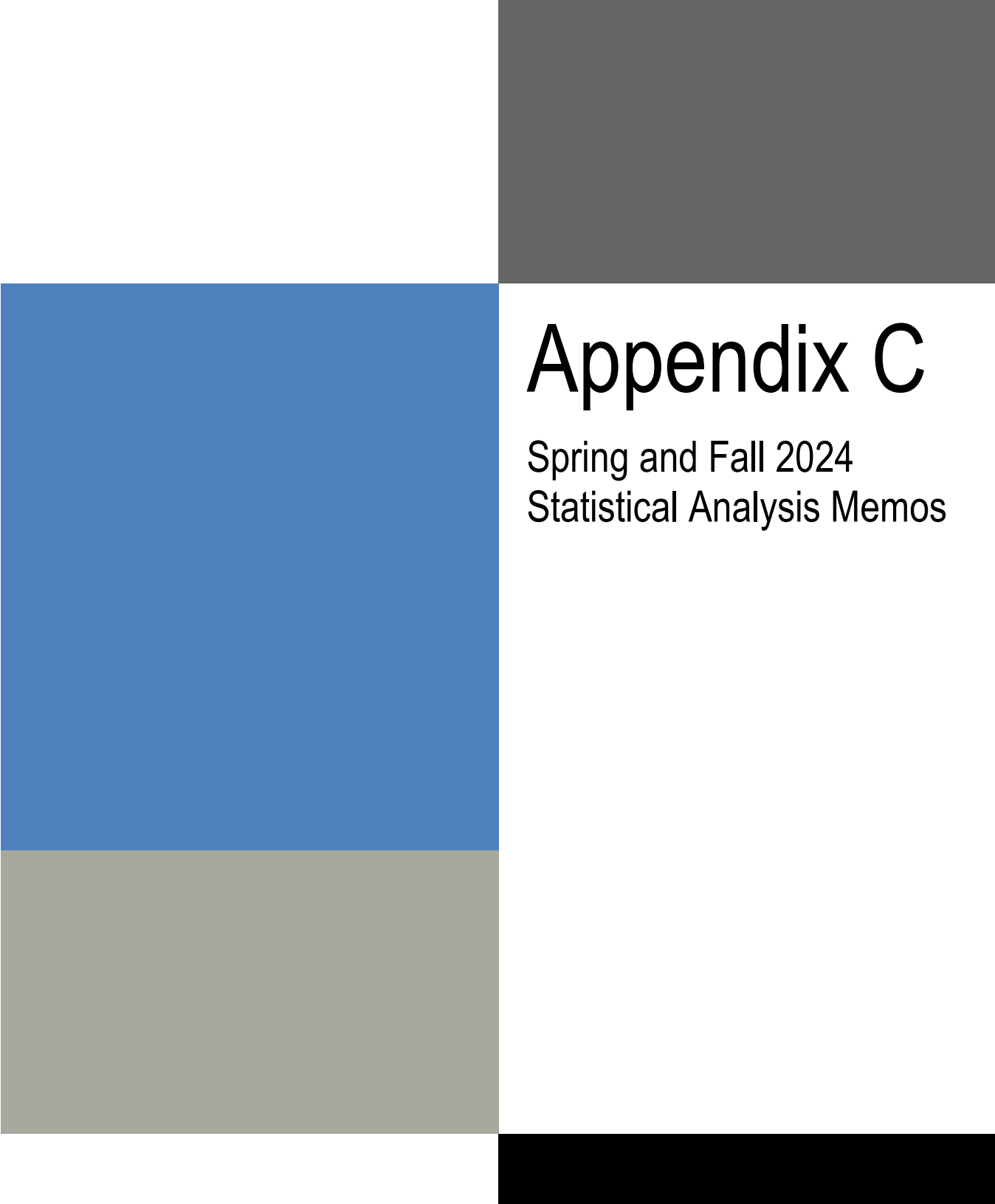
		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
160-56421-1	MW-01	82.0	
160-56421-1 DU	MW-01	86.5	
160-56421-2	MW-2B	92.4	
160-56421-3	MW-4B	87.1	
160-56421-4	MW-5B	90.9	
160-56421-5	MW-07	88.3	
160-56421-6	MW-09	83.8	
LCS 160-690773/2-A	Lab Control Sample	87.1	
MB 160-690773/1-A	Method Blank	93.4	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
160-56421-1	MW-01	82.0	80.4
160-56421-1 DU	MW-01	86.5	74.0
160-56421-2	MW-2B	92.4	81.1
160-56421-3	MW-4B	87.1	78.1
160-56421-4	MW-5B	90.9	76.6
160-56421-5	MW-07	88.3	75.1
160-56421-6	MW-09	83.8	77.4
LCS 160-690796/2-A	Lab Control Sample	87.1	75.1
MB 160-690796/1-A	Method Blank	93.4	78.1
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			



Appendix C

Spring and Fall 2024
Statistical Analysis Memos

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Memo

Date: Monday, July 22, 2024

To: Public Power Generation Agency (PPGA)

From: HDR Engineering, Inc.

Subject: Summary of Statistical Analysis and Evaluation for SSIs and SSLs – Spring 2024
WEC Temporary Ash Disposal Area
CCR Groundwater Monitoring Network

Whelan Energy Center (WEC), operated by Hastings Utilities, City of Hastings (Hastings), is located at 4520 East South Street, Hastings, Adams County, Nebraska, approximately two miles east of the City of Hastings, Nebraska. WEC consists of two fossil fuel combustion units. WEC Unit No. 1 (WEC1) is owned and operated by Hastings. WEC Unit No. 2 (WEC2) is owned by Public Power Generation Agency (PPGA), of which Hastings is a member and acts as operating agent for PPGA. WEC Temporary Ash Disposal Area is an existing unlined CCR surface impoundment of approximately 23.2 acres serving the two fossil fuel combustion units. Approximately 6.1 acres of the WEC Temporary Ash Disposal Area had been retrofitted to a composite liner (landfill cell and leachate pond) at the time of the spring 2024 sampling event.

An assessment monitoring program, including groundwater sampling, was initiated for the WEC Temporary Ash Disposal Area in July 2018, as required by the CCR rule, within the 90-day period specified in 40 CFR §257.95 and Title 132 Chapter 7 Section 004.

The semiannual spring 2024 sampling event was analyzed for parameters in the Appendix III and Appendix IV list, as required by 40 CFR §257.95(b). The statistical analysis was performed in accordance with the methods described in the *Groundwater Monitoring Statistical Certification* for the WEC Temporary Ash Disposal Area, dated February 9, 2018, and the Title 132 Groundwater Sampling and Analysis Plan (SAP), dated August 6, 2021. Monitoring results used to calculate background threshold values (BTVs) were obtained during sampling events conducted between November 2016 and November 2022. Background data sets will be updated every two years or during a monitoring program transition, as recommended by the United States Environmental Protection Agency's (U.S. EPA) Unified Guidance, "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities" (2009). The next BTV update will be conducted in fall 2024.

Downgradient sampling results from the spring 2024 assessment monitoring event were used to evaluate for SSIs over background and statistically significant levels (SSLs) over the groundwater protection standard (GWPS). The calculated BTVs and the evaluation for SSIs above BTVs for the Appendix III and Appendix IV constituents are provided in **Table D1**.

Table D1. Summary of Evaluation for SSIs over Background

Well ID:		MW-1	MW-2B	MW-3R	MW-4B	MW-7	MW-8	
Constituent	BTV (UPL):	Unit	Assessment Monitoring Results in accordance with §257.95(b)(1) – April 2024					
Appendix III Constituents								
Boron	1.64	mg/L	0.966	0.588	0.807	0.840	0.794	1.01
Calcium	74.6	mg/L	33.7	<u>75.5</u>	57.6	57.6	42.5	41.5
Chloride	34.7	mg/L	30.3	30.3	30.5	29.4	29.8	25.5
Fluoride	1.50	mg/L	<1.00	<1.00	<1.00	<1.00	0.620J	0.775J
pH	6.20 – 7.47*	SU	6.70	6.89	6.51	6.58	6.67	7.09
Sulfate	198	mg/L	155	140	190	<u>230</u>	148	150
TDS	576	mg/L	382	452	<50.0	460	362	378
Appendix IV Constituents								
Antimony	0.002	mg/L	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Arsenic	0.00628	mg/L	0.00402	0.00213	0.00254	0.00228	0.00298	0.00368
Barium	0.0613	mg/L	<u>0.0809</u>	<u>0.179</u>	0.0558	0.0516	0.0329	0.0492
Beryllium	0.001	mg/L	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Cadmium	0.0001	mg/L	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.0484	mg/L	0.0304	0.0161	0.00653	0.00878	0.0169	0.0325
Cobalt	0.001	mg/L	<0.000500	<0.000500	<0.000500	<0.000353J	<0.000500	<0.000500
Fluoride	1.50	mg/L	<1.00	<1.00	<1.00	<1.00	0.620J	0.775J
Lead	0.0207	mg/L	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
Lithium	0.0171	mg/L	0.0117	0.0170	<u>0.0322</u>	<u>0.0262</u>	0.0152	0.0127
Mercury	0.0002	mg/L	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Molybdenum	0.0467	mg/L	0.0196	0.00209	0.00804	0.0101	0.0137	0.0301
Radium 226+228	2.03	pCi/L	1.55	<u>2.28</u>	[1]	1.51	1.05	1.47
Selenium	0.140	mg/L	0.0527	0.0356	0.0350	0.0363	0.0633	<u>0.184</u>
Thallium	0.001	mg/L	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100

Bold and underlined concentration indicates an SSI over background.

* Indicates the lower bound of the range which is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).

“J” indicates that the result is less than the laboratory reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

[1] Radium was not sampled at MW-3R during the spring 2024 sampling event due to a sampling error.

The calculated lower confidence levels (LCLs) and the evaluation for SSLs over the GWPS for the Appendix IV constituents are provided in **Table D2**. There were no Appendix IV constituents detected over the GWPS during the spring 2024 sampling event; therefore, the WEC Temporary Ash Disposal Area will remain in assessment monitoring for the fall 2024 sampling event.

Table D2. Summary of Evaluation for SSLs over GWPS

Well ID:		MW-1	MW-2B	MW-3R	MW-4B	MW-7	MW-8	
Constituent	GWPS ^[1]	Unit	Confidence Intervals in accordance with §257.95(d)(1)					
Antimony	0.006	mg/L	0.001	0.001	0.001	0.001	0.001	0.001
Arsenic	0.01	mg/L	0.003731	0.002072	0.002322	0.002496	0.003408	0.003865
Barium	2.00	mg/L	0.07534	0.1703	0.07228	0.0327	0.04912	0.04243
Beryllium	0.004	mg/L	0.00033	0.00033	0.00033	0.00033	0.00033	0.00033
Cadmium	0.005	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Chromium	0.1	mg/L	0.02978	0.01651	0.005447	0.006092	0.01461	0.03524
Cobalt	0.006	mg/L	0.000149	0.00017	0.00017	0.0005	0.000104	0.000131
Fluoride	4.00	mg/L	0.314	0.31	0.299	0.28	0.3717	0.8054
Lead	0.0207 ^[2]	mg/L	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026
Lithium	0.04	mg/L	0.01112	0.01405	0.0292	0.02696	0.01378	0.01092
Mercury	0.002	mg/L	0.00011	0.00011	0.00011	0.00011	0.00011	0.00011
Molybdenum	0.100	mg/L	0.03319	0.002537	0.004167	0.006173	0.0186	0.04126
Radium 226+228	5.00	pCi/L	1.017	1.346	0.9039	0.702	0.956	0.505
Selenium	0.140 ^[2]	mg/L	0.0404	0.03483	0.03515	0.02827	0.04885	0.0476
Thallium	0.002	mg/L	0.00057	0.00057	0.00057	0.00057	0.00057	0.00057

^[1] GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2) unless specified otherwise.

^[2] GWPS is established as the upper tolerance limit when the background level is higher than the U.S. EPA MCL.

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Memo

Date: Monday, January 27, 2025

To: Public Power Generation Agency (PPGA)

From: HDR Engineering, Inc.

Subject: Summary of Statistical Analysis and Evaluation for SSIs and SSLs – Fall 2024
WEC Temporary Ash Disposal Area
CCR Groundwater Monitoring Network

Whelan Energy Center (WEC), operated by Hastings Utilities, City of Hastings (Hastings), is located at 4520 East South Street, Hastings, Adams County, Nebraska, approximately two miles east of the City of Hastings, Nebraska. WEC consists of two fossil fuel combustion units. WEC Unit No. 1 (WEC1) is owned and operated by Hastings. WEC Unit No. 2 (WEC2) is owned by Public Power Generation Agency (PPGA), of which Hastings is a member and acts as operating agent for PPGA. WEC Temporary Ash Disposal Area is an existing unlined CCR surface impoundment of approximately 23.2 acres serving the two fossil fuel combustion units. Approximately 6.1 acres of the WEC Temporary Ash Disposal Area had been retrofitted to a composite liner (landfill cell and leachate pond) at the time of the fall 2024 sampling event.

An assessment monitoring program, including groundwater sampling, was initiated for the WEC Temporary Ash Disposal Area in July 2018, as required by the CCR rule, within the 90-day period specified in 40 CFR §257.95 and Title 132 Chapter 7 Section 004.

The semiannual fall 2024 sampling event was analyzed for parameters in the Appendix III and Appendix IV list, as required by 40 CFR §257.95(b). The statistical analysis was performed in accordance with the methods described in the *Groundwater Monitoring Statistical Certification* for the WEC Temporary Ash Disposal Area, dated February 9, 2018, and the Title 132 Groundwater Sampling and Analysis Plan (SAP), dated August 6, 2021.

Monitoring results used to calculate background threshold values (BTVs) were obtained during sampling events conducted between November 2016 and November 2022. Background data sets will be updated approximately every two years or during a monitoring program transition, as recommended by the United States Environmental Protection Agency's (U.S. EPA) Unified Guidance, "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities" (2009). BTVs were planned to be updated in fall 2024. However, one upgradient monitoring well (MW-6) and two downgradient monitoring wells (MW-3R and MW-8) were unable to be sampled during the fall 2024 sampling event, and therefore four measurements have not been collected for all of the network wells since the last BTV update. BTVs will instead be conducted in 2025, or as soon as four measurements have been collected from each network monitoring well. Downgradient sampling results from the fall 2024 assessment monitoring event were used to evaluate for SSIs over background and statistically significant levels (SSLs) over the groundwater protection standard (GWPS). The calculated BTVs and the evaluation for SSIs above BTVs for the Appendix III and Appendix IV constituents are provided in **Table D1**.

Table D1. Summary of Evaluation for SSIs over Background

Well ID:		MW-1	MW-2B	MW-3R	MW-4B	MW-7	MW-8	
Constituent	BTV (UPL):	Unit	Assessment Monitoring Results in accordance with §257.95(b)(1) – November 2024					
Appendix III Constituents								
Boron	1.64	mg/L	1.12	0.51	N.S.	0.739	1.10	N.S.
Calcium	74.6	mg/L	29.7	81.4	N.S.	54.2	42.8	N.S.
Chloride	34.7	mg/L	26.5	28.9	N.S.	27.5	27.4	N.S.
Fluoride	1.50	mg/L	0.549J	<1.00	N.S.	<1.00	0.691J	N.S.
pH	6.20 – 7.47*	SU	6.87	6.92	N.S.	6.52	6.76	N.S.
Sulfate	198	mg/L	113	135	N.S.	210	149	N.S.
TDS	576	mg/L	210	454	N.S.	524	346	N.S.
Appendix IV Constituents								
Antimony	0.002	mg/L	<0.00200	<0.00200	N.S.	<0.00200	<0.00200	N.S.
Arsenic	0.00628	mg/L	0.00432	0.00206	N.S.	0.00267	0.00308	N.S.
Barium	0.0613	mg/L	0.0722	0.198	N.S.	0.0507	0.0537	N.S.
Beryllium	0.001	mg/L	<0.00100	<0.00100	N.S.	<0.00100	<0.00100	N.S.
Cadmium	0.0001	mg/L	<0.000200	<0.000200	N.S.	<0.000200	<0.000200	N.S.
Chromium	0.0484	mg/L	0.0268	0.0162	N.S.	0.0141	0.0221	N.S.
Cobalt	0.001	mg/L	<0.000500	<0.000500	N.S.	0.000763	<0.000500	N.S.
Fluoride	1.50	mg/L	0.549J	<1.00	N.S.	<1.00	0.691J	N.S.
Lead	0.0207	mg/L	<0.000500	<0.000500	N.S.	<0.000500	0.000281J	N.S.
Lithium	0.0171	mg/L	0.00951J	0.0145	N.S.	0.0323	0.0129	N.S.
Mercury	0.0002	mg/L	<0.000200	<0.000200	N.S.	<0.000200	<0.000200	N.S.
Molybdenum	0.0467	mg/L	0.0483	0.00209	N.S.	0.0135	0.0164	N.S.
Radium 226+228	2.03	pCi/L	1.14	1.76	N.S.	0.218U	1.58	N.S.
Selenium	0.140	mg/L	0.0629	0.0334	N.S.	0.0424	0.0626	N.S.
Thallium	0.001	mg/L	<0.00100	<0.00100	N.S.	<0.00100	<0.00100	N.S.

Bold and underlined concentration indicates an SSI over background.

* Indicates the lower bound of the range which is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).

"J" indicates that the result is less than the laboratory reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

"U" indicates that the laboratory result is less than the sample detection limit. This flag is only noted for radium results.

The calculated lower confidence levels (LCLs) and the evaluation for SSLs over the GWPS for the Appendix IV constituents are provided in **Table D2**. There were no Appendix IV constituents detected over the GWPS during the fall 2024 sampling event; therefore, the WEC Temporary Ash Disposal Area will remain in assessment monitoring for the spring 2025 sampling event.

Table D2. Summary of Evaluation for SSLs over GWPS

Well ID:		MW-1	MW-2B	MW-3R	MW-4B	MW-7	MW-8	
Constituent	GWPS ^[1]	Unit	Confidence Intervals in accordance with §257.95(d)(1)					
Antimony	0.006	mg/L	0.001	0.001	0.001	0.001	0.001	0.001
Arsenic	0.01	mg/L	0.00402	0.00203	0.002231	0.002385	0.003037	0.003649
Barium	2.00	mg/L	0.06979	0.1795	0.06023	0.03739	0.033	0.03574
Beryllium	0.004	mg/L	0.00033	0.00033	0.00033	0.00033	0.00033	0.00033
Cadmium	0.005	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Chromium	0.1	mg/L	0.0262	0.01675	0.005447	0.008032	0.0126	0.03479
Cobalt	0.006	mg/L	0.000099	0.00017	0.000108	0.00025	0.00017	0.000102
Fluoride	4.00	mg/L	0.4006	0.375	0.374	0.375	0.5288	0.8183
Lead	0.0207 ^[2]	mg/L	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026
Lithium	0.04	mg/L	0.009677	0.01477	0.02812	0.02274	0.01238	0.009459
Mercury	0.002	mg/L	0.00011	0.00011	0.00011	0.00011	0.00011	0.00011
Molybdenum	0.100	mg/L	0.02736	0.00209	0.005597	0.008606	0.01297	0.03026
Radium 226+228	5.00	pCi/L	0.848	1.066	0.7338	0.8318	0.9076	0.5416
Selenium	0.140 ^[2]	mg/L	0.04127	0.0356	0.03364	0.03254	0.04103	0.04261
Thallium	0.002	mg/L	0.00057	0.00057	0.00057	0.00057	0.00057	0.00057

^[1] GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2) unless specified otherwise.

^[2] GWPS is established as the upper tolerance limit when the background level is higher than the U.S. EPA MCL.

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