

Revision 0

2024

Abbreviated Data Summary Report
Environmental Monitoring
Upper Blackfoot Mining Complex
Lewis and Clark County, Montana



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Restriction on Disclosure and Use of Data: This report is based on the 2023 UBMC ADSR template provided to Tetra Tech, Inc. (TT) by North Wind Portage, Inc. (NWP). Data entry into data tables and data validation prior to the Q4 monitoring event were completed by NWP personnel and supplied to TT for the purpose of completing the Q4 monitoring event and this 2024 Abbreviated Data Summary Report. TT's quality review includes a technical review of the Q4 monitoring data and an editorial review of this report only. Prior project and data quality review was completed by NWP project personnel.	

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History of Revisions

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NWP Site Tour with Dave Bowers, DEQ Project Officer, May 2024

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Table of Contents

1.	INTRODUCTION	1
1.1	Site Location.....	1
1.2	Monitoring Activities	2
2.	SAMPLING STATIONS AND ANALYSIS	3
3.	ANALYTICAL RESULTS	4
3.1	SAP Deviations	4
3.2	Surface Water	5
3.2.1	Data Abnormalities	5
3.2.2	Human Health	5
3.2.3	Aquatic Life	5
3.3	Sediment.....	6
3.4	Groundwater.....	7
3.5	Groundwater Elevation Data	7
3.6	Residential Wells.....	7
4.	QUALITY ASSURANCE AND DATA VALIDATION	9
4.1	Quality Assurance (QA) Objectives	9
4.2	Data Validation.....	10
5.	CONCLUSIONS AND RECOMMENDATIONS	13
5.1	Conclusions	13
5.2	Recommendations	14
5.3	Corrective Actions.....	14
6.	REFERENCES	15

Appendices

Appendix A: Sampling Stations Performance Monitoring Schedules and Laboratory Analyses

Appendix B: Figures – Upper Blackfoot Mining Complex Project Overview (Detail 1 through Detail 5)

Appendix C: 2024 Surface Water Data Tables

Appendix D: 2024 Sediment Data Tables

Appendix E: 2024 Groundwater Data Tables

Appendix F: Historical Data Compilation Tables (RI – Present)

Appendix F-1: Surface Water Data Compilation Tables

Appendix F-2: Sediment Data Compilation Tables

Appendix F-3: Groundwater Data Compilation Tables

Appendix G: Field Notes

Appendix H: Laboratory Analytical Data Reports

Appendix I: Data Validation Reports

Tables

Table 1. Precision, Accuracy, and Completeness Summary.....	10
Table 2. Data Validation Sample Summary.....	11
Table 3. Data Validation Qualification Summary	12

Appendix A: Sampling Stations Performance Monitoring Schedules and Laboratory Analyses

Table 4. UBMC Surface Water and Sediment Sample Performance Monitoring Schedule.....	A-3
Table 5. UBMC Groundwater Sample Performance Monitoring Schedule.....	A-9
Table 6. UBMC Static Water Level and Transducer/Barologger Monitoring Station Schedule	A-11
Table 7. UBMC Residential Well Groundwater Sample Stations	A-13
Table 8. Laboratory Analyses	A-15

Appendix C: 2024 Surface Water Data Tables

Table 9. UBMC Surface Water Human Health Comparison (total recoverable metals, mg/L).....	C-3
Table 10. UBMC Surface Water Aquatic Life Comparison (total recoverable metals, mg/L).....	C-5
Table 11. UBMC Hardness Adjusted Aquatic Life Surface Water Quality Standards (mg/L)	C-7
Table 12. UBMC Surface Water Aquatic Life Comparison (dissolved metals, mg/L)	C-9
Table 13. UBMC Surface Water Physiochemical, Anions, and Cations	C-11
Table 14. Repository Area Surface Water Human Health Comparison (total recoverable metals, mg/L) .	C-13
Table 15. Repository Area Surface Water Aquatic Life Comparison (total recoverable metals, mg/L)	C-15
Table 16. Repository Area Hardness Adjusted Surface Water Quality Aquatic Life Standards (mg/L)	C-17
Table 17. Repository Area Surface Water Aquatic Life Comparison (dissolved metals, mg/L).....	C-19
Table 18. Repository Area Surface Water Physiochemical, Anions, and Cations.....	C-21

Appendix D: 2024 Sediment Data Tables

Table 19. UBMC Sediments vs. SSCLs (total recoverable metals, mg/Kg).....	D-3
Table 20. Repository Area Sediments vs. Nora Creek Background (total recoverable metals, mg/Kg) ..	D-5

Appendix E: 2024 Groundwater Data Tables

Table 21. UBMC Groundwater (dissolved metals, mg/L).....	E-3
Table 22. UBMC Groundwater Physiochemical, Anions, and Cations	E-5
Table 23. Repository Area Groundwater (dissolved metals, mg/L)	E-7
Table 24. Repository Area Groundwater Physiochemical, Anions, and Cations	E-9

Appendix F: Historical Data Compilation Tables (RI - Present)

Appendix F-1: Surface Water Data Compilation Tables

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation

Table 29. Repository Area Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 31. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)

Table 32. Repository Area Surface Water Physiochemical, Anions, and Cations; Historical Compilation

Appendix F-2: Sediment Data Compilation Tables

Table 33. UBMC Sediments vs. SSCLs, Historical Compilation (total recoverable metals, mg/Kg)

Table 34. Repository Area Sediments, Blackfoot River; Historical Compilation (total recoverable metals, mg/Kg)

Table 35. Repository Area Sediments, Nora Creek; Historical Compilation (total recoverable metals, mg/Kg)

Appendix F-3: Groundwater Data Compilation Tables

Table 36. UBMC Groundwater, Historical Compilation (dissolved metals, mg/L)

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation

Table 38. Repository Area Groundwater, Historical Compilation (dissolved metals, mg/L)

Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation

ACRONYMS AND ABBREVIATIONS

ADSR	Abbreviated Data Summary Report
a.k.a	also known as
cm	centimeter
DEQ	Montana Department of Environmental Quality
Diss.	dissolved
DSR	Data Summary Report
DQO	data quality objective
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
HHRA	Human Health Risk Assessment
mg/L	milligrams per liter
mg/Kg	milligrams per kilogram
MNR	monitored natural recovery
MS	matrix spike
MSD	matrix spike duplicate
mv	millivolts
NS	no sample collected/not sampled/no data collected
NWP	North Wind Portage, Inc.
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SSCLs	site-specific cleanup levels
Susp.	suspended
TRLs	target reporting limits
TT	Tetra Tech, Inc.
UBMC	Upper Blackfoot Mining Complex
umhos	micromhos
WTP	water treatment plant
°C	degrees Celsius
%	percent

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1. INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) has prepared this Abbreviated Data Summary Report (ADSR) on behalf of North Wind Portage, Inc. (NWP) for the Montana Department of Environmental Quality (DEQ) pursuant to DEQ/NWP Contract Number 421023, Task Order 09 and NWP/Tetra Tech Subcontract Number 8-00001717. This ADSR presents the 2024 data associated with field sampling and monitoring activities within the Upper Blackfoot Mining Complex (UBMC) and associated repository area located in Lewis and Clark County, Montana. This ADSR is intended to summarize sampling and monitoring activities completed during 2024 only. It does not include a detailed discussion of 2024 data compared to historical data or an in-depth discussion of data quality as it compares to the Quality Assurance Project Plan (QAPP) as outlined in the project Sampling and Analysis Plan (SAP) (NWP, 2024).

Starting with 2020 sampling and monitoring activities, ADSRs have been completed on an annual basis. These ADSRs summarize that year's sampling and monitoring activities, analytical data results, and include a brief discussion of data validation results, conclusions, and recommendations for that year only. A more comprehensive and in-depth data summary report (DSR), like UBMC DSRs prepared in the past, will be completed following 2026 monitoring activities with ADSRs completed annually prior to 2026. The comprehensive DSR will include a detailed analysis and discussion of data quality trends and an assessment of the performance of reclamation and restoration actions within the UBMC.

1.1 Site Location

The UBMC is located approximately 15 miles east of Lincoln, in Lewis & Clark County, Montana in a steep, forested area at the headwaters of the Blackfoot River. In 2014, construction began to remove mine waste and tailings within the floodplains in Mike Horse Creek, Beartrap Creek, and the upper Blackfoot River. Removal of nearly 1,000,000 cubic yards of mine waste and restoration of approximately 16,900 linear feet of floodplains and stream channels were completed by 2020.

The UBMC project also includes a repository site (a.k.a. Section 35) that was selected to permanently isolate mine waste from the environment. The repository site is located northeast of Highway 279 and south of Highway 200 in moderately sloping, partially timbered terrain approximately five miles west-southwest of the former Mike Horse Dam as shown in Appendix B, Detail 5.

Figures in Appendix B show the UBMC and repository site locations within Montana and include site detail figures showing the location of more specific site features and sample collection/monitoring station locations within the UBMC and repository areas.

Monitoring of surface water, sediment, and groundwater is an integral part of the final remedy at the UBMC. Surface water, sediment, and groundwater data were collected to document current environmental conditions and to make comparisons to historical environmental data for the purpose of assessing the performance of the reclamation and restoration actions completed within the UBMC. Groundwater elevation data were also collected to monitor hydrologic conditions within the UBMC and repository area.

1.2 Monitoring Activities

During 2024, the following environmental sampling and monitoring activities were performed:

- Quarterly collection of groundwater samples from repository site monitoring well S35-SW-03, located immediately down-gradient of the repository.
- Semi-annual collection of surface water and groundwater samples at other sampling stations.
- Annual collection of sediment samples during the fall (low-flow) monitoring event only.
- Annual monitoring of residential groundwater wells.
- Semi-annual collection of groundwater elevation data.
- Semi-annual collection of data from transducers installed in select repository area groundwater monitoring wells and piezometers.



Glacier Lily, Near Shaue Gulch Monitoring Wells, May 2024

2. SAMPLING STATIONS AND ANALYSIS

UBMC and repository area sampling stations, associated laboratory analysis, and performance monitoring schedules are summarized in Table 4, Table 5, Table 6, and Table 7 found in Appendix A.

The following summarizes where to find applicable surface water, sediment, groundwater, and residential well monitoring station information:

- Table 4. Surface Water and Sediment Sampling Stations and Performance Monitoring Schedule
- Table 5: Groundwater Sampling Stations and Performance Monitoring Schedule
- Table 6: Static Water Level and Transducer/Barologger Monitoring Stations and Schedule
- Table 7. Residential Well Groundwater Sampling Stations
- Table 8. Laboratory Analysis

Sampling station locations are shown on the Upper Blackfoot Mining Complex Overview, Details 1 through 5 figures, located in Appendix B. To maintain the privacy of private residences, detail figures do not indicate residential well locations.

Surface water, sediment, groundwater, residential well groundwater samples, and quality assurance/quality control (QA/QC) samples were collected and analyzed in accordance with the project SAP (NWP, 2024). Starting in 2020, residential well groundwater samples are only analyzed for total recoverable metals. Prior to 2020, residential well groundwater samples were analyzed for total recoverable metals and dissolved metals.



No Flow in Water Treatment Plant Outfall Channel Entering the Blackfoot River, May 2024

3. ANALYTICAL RESULTS

The following documents outline the applicable standards or site-specific cleanup levels (SSCL) that UBMC and repository area surface water, groundwater, and sediment analytical results are compared against. A detailed discussion of sampling objectives and data uses can be found in the project SAP (NWP, 2024).

- *Circular DEQ-7, Montana Numeric Water Quality Standards (DEQ-7) (DEQ, 2019)*
- *Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex State Superfund Facility (ROD) (DEQ, 2016)*
- *Final Baseline Human Health Risk Assessment, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana (HHRA) (DEQ, 2014)*

Tabular analytical data summary tables and comparison to applicable human health standards, aquatic life standards, or SSCLs for surface water, sediment, and groundwater samples can be found in the following appendices:

- Appendix C: Surface Water Data Tables
- Appendix D: Sediment Data Tables
- Appendix E: Groundwater Data Tables

Data tables summarizing residential well groundwater analytical results are not included in this ADSR. Contact the DEQ project officer as identified in the project SAP for residential well analytical data.

The raw analytical data package reports are provided in Appendix H. Associated data validation reports are provided in Appendix I. Appendix F contains the tabular results of historical surface water, groundwater, and sediment data collected from the remedial investigation (RI) to present. Brief narratives summarizing the analytical results, abnormalities, issues, or concerns encountered during 2024 are discussed in the following sections.

3.1 SAP Deviations

The following deviations from the SAP occurred in 2024:

- The water level in Carbonate Mine Repository monitoring well UCMW-4 was not measured in May 2024 due to the well being locked and no key available. During the September monitoring event, the lock was cut and replaced with a lock keyed like the other UBMC area monitoring well locks.
- Repository area monitoring well S35-MW-04 was dry during both the spring and fall monitoring events, so no groundwater samples were collected from this well.
- Transducer data in repository area monitoring well S35-MW-06 could not be downloaded in the field using the Levelloader™ device during the spring event. The transducer was removed from the well and transported back to the NWP office where data download was attempted using a transducer cradle and laptop connection. A reoccurring data corruption error message received in the field and the office resulted in data download failure.

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: 5 of 16

Monitoring well S35-MW-06 is an upgradient background well used to establish baseline groundwater conditions. Sampling was suspended in 2021 once the baseline had been established; therefore, a new transducer was not purchased and installed.

3.2 Surface Water

The following sections provide a brief overview of surface water analytical results. During the spring and fall monitoring events, water treatment plant (WTP) effluent was not flowing during sample collection at station BRSW-003A, Blackfoot River just downstream of the WTP outfall. No tributaries to the Blackfoot River were sampled in 2024.

Although not sampled in 2024, for documentation purposes and review of historical monitoring data summarized in Appendix F, the 2007 and 2008 samples from station BRSW-104 were likely collected from an old river channel and not within the main stem of the Blackfoot River. All station BRSW-104 samples collected after 2008 were collected from the main stem of the Blackfoot River.

Refer to Appendix C for a comparison of 2024 surface water analytical results to applicable standards and SSCLs. Refer to Appendix F for tabular results of historical monitoring data, including baseline RI surface water results.

3.2.1 Data Abnormalities

No abnormalities or concerns were encountered during 2024 field monitoring activities or review of the laboratory analytical data.

3.2.2 Human Health

Human health standards were not exceeded at any monitoring stations in 2024. Refer to Table 9 and Table 14 located in Appendix C for comparison of 2024 surface water sample analytical results to human health standards.

3.2.3 Aquatic Life

The acute aquatic life standard for zinc and the chronic aquatic life standard for cadmium were exceeded at Upper Mike Horse Creek station BRSW-304 for the fall event only. This station is sampled to assess the effectiveness of the capture system. No issues, abnormalities, or concerns are noted. Exceedances of aquatic life standards for these metals at station BRSW-304 are consistent with historical data.

No aquatic life standards were exceeded at any repository area surface water monitoring stations.

Refer to Table 10, Table 11, Table 12, Table 15, Table 16, and Table 17 located in Appendix C for comparison of 2024 surface water sample analytical results to applicable aquatic life standards.

The following summarizes the surface water acute and chronic aquatic life exceedances for 2024.

Acute Aquatic Life Standards

- Station BRSW-304: Mike Horse Creek – zinc (fall event)
-

Chronic Aquatic Life Standards

- Station BRSW-304: Mike Horse Creek - cadmium (fall event)

3.3 Sediment

In 2024, sediment samples were only collected at UBMC station BRSD-12 located at the end of the Engineering Evaluation and Cost Analysis (EE/CA) removals area and at repository area station S35-SD-08 located immediately upstream of the Highway 279 crossing at the outlet end of a marshy, wetland area during the fall monitoring event only.

A duplicate sample set was collected at station BRSD-12 (sample identification BRSD-12 and its duplicate BRSD-307). Results from sample BRSD-12 exceeded sediment SSCLs for aluminum, arsenic, cadmium, copper, lead, manganese, and zinc. Results from the duplicate sample, BRSD-307, did not exceed the aluminum SSCL. Exceedances of SSCLs at this monitoring station are consistent with historical data.

Starting with the 2020 ADSR, Nora Creek sediment sample analytical results are compared to the average background concentration (2012-2018) collected from the furthest upstream, background station, S35-SW-02, located along Nora Creek. In prior UBMC data summary reports, Nora Creek sediment analytical results were compared to UBMC SSCLs. Nora Creek is not considered impacted from historical mining-related activities within the UBMC; therefore, comparison of Nora Creek sediment data to UBMC sediment SSCLs is not applicable.

In 2024, the results from Nora Creek station S35-SD-08 exceeded the average background concentration for aluminum, arsenic, iron, manganese, and zinc. Although an exact explanation is not known for these concentrations being elevated when compared to upstream average concentrations, the 2024 metal concentrations are similar to those measured during previous events.

Sediment SSCLs and background exceedances are consistent with past monitoring events. No abnormalities, issues, or concerns were encountered during 2024 sediment sampling/monitoring activities.

Refer to Table 19 and Table 20 located in Appendix D for comparison of 2024 sediment sample analytical results to applicable SSCLs or background concentrations. Refer to Appendix F for tabular results of historical monitoring data.

Starting in 2020, and as shown in the historical monitoring and data tables shown in Appendix F, the unnamed tributary station S35-SD-05 sediment data are also compared to the furthest upstream Nora Creek sampling station average concentration. Sampling and monitoring of the unnamed tributary concluded in 2018. This unnamed tributary is also not considered to be impacted by UBMC mining-related activities, so comparison of its sediment sample data to UBMC SSCLs is also not applicable.

The following summarizes the UBMC sediment SSCL exceedances for 2024:

- Sample BRSD-12: Blackfoot River, end of EE/CA removals (no RI baseline data) – aluminum, arsenic, cadmium, copper, lead, manganese, and zinc (fall event)
- Sample BRSD-307 (Duplicate of sample BRSD-12): arsenic, cadmium, lead, manganese, and zinc (fall event)

3.4 Groundwater

Monitoring well LCMW-5, located within the Swamp Gulch/Carbonate Mine area, is the only UBMC area groundwater monitoring well where the sampling results exceed human health standards and/or SSCLs during both the spring and fall monitoring events. Sample results from well LCMW-5 exceed human health standards for cadmium and zinc and exceeded SSCLs for iron and manganese. These exceedances and concentrations are consistent with past sampling results. No Edith Mine Area monitoring wells were sampled in 2024. Refer to Table 21 and Table 23 for comparison of groundwater sample analytical results to human health standards and SSCLs.

No human health standards or UBMC SSCLs were exceeded at any repository area groundwater monitoring well stations.

Sediment accumulation in the bottom of several UBMC and repository area monitoring wells was noted during 2024 and prior sampling/monitoring events. To date, DEQ has not requested that these wells be purged or redeveloped. No other abnormalities, issues, or concerns were encountered during 2024 groundwater sampling and monitoring activities.

The following summarizes the human health standards and/or SSCL exceedances for 2024:

- Well LCMW-5: Swamp Gulch/Carbonate Mine area (downgradient of Carbonate Mine) – cadmium and manganese (spring and fall events), iron (fall event), and zinc (spring event)

3.5 Groundwater Elevation Data

Groundwater elevation data were collected from UBMC and repository area monitoring wells and piezometers during each sampling event using a water level meter to record static water levels in the well to the nearest one hundredth (1/100th) of a foot. In repository site wells and some piezometers, electronic down-hole instrumentation that continuously logs data (transducers) is installed for the purpose of continuously monitoring changes in groundwater elevation. Refer to Table 5 and Table 6 for identification of monitoring wells and piezometers that contain transducers. All 2024 groundwater elevation measurements were consistent with prior measurements. As previously mentioned in Section 3.1, the data from repository area monitoring well S35-MW-06 could not be downloaded due to a reoccurring data corruption error. No other abnormalities, issues, or concerns are noted.

3.6 Residential Wells

As previously stated, starting in 2020, residential well groundwater samples are only analyzed for total recoverable metals. Prior to 2020, residential well groundwater samples were analyzed for total recoverable metals and dissolved metals. DEQ-7 groundwater standards are based on the dissolved portion of the sample (DEQ, 2019); therefore, 2024 total recoverable metals analytical results cannot be compared directly to groundwater standards. Total recoverable metals analysis involves an unfiltered sample which includes dissolved metals and metals present in particulates in the water. Total recoverable metals concentrations are expected to be equal to or greater than a dissolved concentration since the dissolved concentration is a subset of the total recoverable metals concentration.

**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: 8 of 16

In 2024, all residential well total recoverable metals results were either non-detect or below the DEQ-7 standard (dissolved metals); therefore, it can be reasonably inferred that no DEQ-7 human health standards are exceeded in residential wells. This is consistent with previous residential well dissolved metals analytical results.

No abnormalities, issues, or concerns were encountered during 2024 residential well groundwater sampling and monitoring activities.



Sediment Accumulation in Monitoring Well S35-MW-03, September 2024

4. QUALITY ASSURANCE AND DATA VALIDATION

Section 3 of the SAP (NWP, 2024) discusses in detail the QAPP for field monitoring activities. The QAPP defines the data quality objectives (DQO), quality assurance (QA) objectives (including both qualitative and quantitative), and procedures for data verification and validation collectively referred to as data validation.

The following sections provide a brief summary of the review of 2024 sampling analytical data and compliance with QA objectives and data validation requirements. The raw sample analytical data packages are provided in Appendix H. Associated data validation reports are provided in Appendix I.

In summary, all 2024 sampling data met the requirements of the methods, indicating that the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose. In other words, the quantitative and qualitative QA objective requirements and data validation results concluded that no data were rejected or deemed unusable.

4.1 Quality Assurance (QA) Objectives

The DQOs are quantitative and qualitative statements that specify the quality of the data required for supporting sampling activities. The DQOs were prepared using U.S. Environmental Protection Agency (EPA) guidance for the DQO process (EPA, 2006) and are summarized in detail in the QAPP.

The overall QA objective for the UBMC is to produce well-documented data of known quality. Meeting this objective involves establishing and meeting quantitative and qualitative QA objective goals and acceptance criteria. Specific QA objective goals and acceptance criteria are summarized in detail in the QAPP found within the project SAP (NWP, 2023).

The laboratory sampling analytical data presented in this ADSR has been evaluated against the following QA objective goals.

- Quantitative QA goals: precision, accuracy, completeness, and target reporting limits (TRL), and
- Qualitative QA goals: representativeness and comparability.

The following is a brief explanation of each QA objective goal:

- Precision: Indicator of data quality. Generally, precision is a measure of the variability of a group of measurements compared to their mean value. Precision was calculated for laboratory duplicate sample sets and field duplicate sample sets. Laboratory duplicate sample sets include the matrix spike (MS) and matrix spike duplicate (MSD). Field sample duplicate sets include the field sample and field sample duplicate.
 - Accuracy: Indicator of data quality and is a measure of the bias in a measurement system. Analytical accuracy for laboratory data was assessed by evaluating MS sample percent recovery, instrument calibration data, and laboratory control sample results.
-

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: 10 of 16

- **Completeness:** An assessment of the amount of valid analytical data obtained from a measurement system compared to the amount of analytical data needed to achieve a particular statistical level of confidence. The percent completeness was calculated by dividing the number of samples with acceptable data by the total number of samples planned to be collected and multiplying the result by 100.
- **TRL:** The lowest concentration that needs to be reported for undiluted samples to obtain project objectives. Laboratory reporting limits were compared to TRLs defined in the QAPP.
- **Representativeness:** The degree to which sample data represent UBMC conditions. Sampling locations were selected to obtain representative surface water, groundwater, and sediment samples. Representative data were also obtained through the proper collection, handling, and analysis of equipment rinsate and field blank QA/QC samples.
- **Comparability:** Expresses the confidence with which one data set can be compared to another. Comparability was maximized by using standard EPA methods and standard sampling techniques.

Table 1 summarizes the 2024 QA objective goal analysis results. All 2024 sampling data met the quantitative and qualitative QA objective goals and requirements as defined in the QAPP.

Table 1. Precision, Accuracy, and Completeness Summary

QUALITY ASSURANCE OBJECTIVE	LAB MS/MSDs	FIELD DUPLICATES	ALL LAB RESULTS	ALL FIELD SAMPLING DATA
Precision	100%	99.2%	---	---
Accuracy	99.9%	---	95%	---
Completeness	---	---	100%	96.23%

Note:

MS = matrix spike

MSD = matrix spike duplicate

--- = not applicable

4.2 Data Validation

The sample laboratory analytical data have also been subjected to a formal EPA Level III data validation process that includes a review of laboratory performance criteria and sample-specific criteria. A detailed description of data validation requirements and procedures can be found in the QAPP (NWP, 2024). The data validation reports found in Appendix I conform to DEQ Data Validation Guidelines (DEQ, 2010) and contain the same information as required in the *Montana DEQ – Waste Management and Remediation Division, Data Validation Summary Form* (DEQ, 2018).

In addition, data validation was performed according to the following guidance:

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020 (EPA, 2020)*
- *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000 (EPA, 2000)*

**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: 11 of 16

- USEPA Office of Research and Development., 1993 and Updates, *Methods for the Determination of Inorganic Substances in Environmental Samples*, EPA 600-R-93-100, August 1993 (EPA, 1993)

Starting with 2020 post-construction performance monitoring sample analytical data, a minimum of twenty percent (20%) of the samples for each sample matrix (i.e., surface water, groundwater, and sediment) will be validated in accordance with the data validation guidelines and procedures outlined in the project QAPP. Prior to 2020, all sample analytical data underwent data validation. To comply with data validation procedures and guidance, more than 20% of the data for each sample medium was validated for the 2024 sample data set as summarized in Table 2. This is due to distribution of sample analytical results within the laboratory analytical data reports and to ensure that the QA/QC sample data were included in the data validation process.

Table 2 summarizes the matrix, laboratory data package, and corresponding total percent of the analytical data that were validated for each medium. Table 8 found in Appendix A summarizes the required laboratory analysis for each sample matrix. The complete data validation reports for individual laboratory data packages are attached in Appendix I.

In summary, the validation of laboratory analytical data did not result in the rejection of any project data but did result in additional data flags and qualifiers. Data validation flags and qualifiers are summarized on Table 3, within the data validation reports found in Appendix I, and are also reflected on 2024 surface water, sediment, and groundwater data summary tables found in Appendix C, Appendix D, and Appendix E, respectively.

Table 2. Data Validation Sample Summary

MATRIX	LABORATORY DATA PACKAGE	SAMPLING QUARTER	TOTAL NO. SAMPLES VALIDATED	TOTAL NO. 2024 SAMPLES COLLECTED	PERCENT VALIDATED
GW	H24040347	Q1	1	24	95.8%
	H24050728	Q2	5		
	H24050730	Q2	5		
	H24060478	Q2	1		
	H24090914	Q3	2		
	H24100152	Q2	9		
			Total = 23		
SW	H24050729	Q2	6	24	100%
	H24050731	Q2	6		
	H24090913	Q3	12		
			Total = 24		
SED	H24090914	Q3	3	3	100%
			Total = 3		

Notes:

GW = groundwater

SW = surface water

SED = sediment

**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: 12 of 16

Table 3. Data Validation Qualification Summary

LABORATORY ANALYSIS	NO. OF SAMPLES QUALIFIED	QUALIFICATION FLAG
SURFACE WATER* = 24		
pH	24	J-
Conductivity	4	J+
GROUNDWATER SAMPLES* = 24		
pH	23	J-
Conductivity	2	J
Sodium	1	J+
Copper	2	J+
SEDIMENT SAMPLES* = 3		
Manganese	3	J+
Zinc	3	J+

Notes:

*Represents total number of actual samples collected

J = reported concentrations are estimated due to field duplicate, laboratory duplicate, or MS/MSD recovery

J+ = reported results are estimates with a high bias due to high MS/MSD recoveries, field blank, or equipment blank considerations

J- = reported results are estimates with a low bias due to exceeded holding times

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the 2024 sampling and monitoring results, NWP makes the following conclusions and recommendations.

5.1 Conclusions

- All 2024 sampling data met quantitative and qualitative QA objective and data validation requirements detailed in the QAPP. No data were rejected or deemed unusable; however, data validation resulted in additional data flags and qualifiers.
- No issues or concerns with data quality are noted as a result of data review abnormalities as discussed in Section 3.3 of this ADSR.
- Deviations from the SAP, as discussed in Section 3.1, are not expected to affect the overall data set or any long-term data trends analysis.
- No human health standards are exceeded in any surface water samples.
- The acute aquatic life standard for zinc and chronic aquatic life standard for cadmium were exceeded in results from samples collected at Upper Mike Horse Creek surface water station BRSW-304 during the fall event only. This station assesses the effectiveness of the seep capture system. Exceedances of aquatic life standards for zinc and cadmium in samples collected at this station are consistent with historical data.
- No aquatic life standards were exceeded at any repository area surface water monitoring stations.
- The pH for field and equipment blank QA/QC samples exceeds the acceptable pH range. This is expected given that laboratory-supplied deionized water preserved with nitric acid was used to collect the samples.
- Sediment SSCLs for aluminum, arsenic, cadmium, copper, lead, manganese, and zinc were exceeded in samples collected at UBMC station BRSD-12. Station BRSD-12 is located on the Blackfoot River at the end of the EE/CA removals area. Results from its duplicate sample, BRSD-307, also exceeded SSCLs for all these metals except arsenic. Exceedances of SSCLs in samples collected from this monitoring station are consistent with historical data.
- Results from samples collected from repository sediment station S35-SD-08 exceeded the average Nora Creek background concentration for aluminum, arsenic, iron, manganese, and zinc. Although an exact explanation is not known for these concentrations being elevated when compared to upstream average concentrations, the 2024 concentrations of these metals is consistent with those measured during previous events.
- Results from samples collected from monitoring well LCMW-5, located within the Swamp Gulch/Carbonate Mine area, were the only groundwater monitoring well results to exceed human health standards and/or SSCLs. Human health standards were exceeded for cadmium and zinc. SSCLs were exceeded for iron and manganese. These exceedances and concentrations are consistent with past sampling results.

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: 14 of 16

- No human health standards are exceeded at any repository area monitoring well sampled.
- Repository area monitoring well S35-MW-03's purpose is to monitor groundwater immediately downgradient of the repository. Arsenic concentrations detected in samples are consistent with historical data. No abnormalities, issues, or concerns are noted at this station.
- No abnormalities, issues, or concerns are noted for 2024 surface water, sediment, or groundwater sample collection stations.
- Residential well analytical results are consistent with historical results. No abnormalities, issues, or concerns are noted.
- Starting with the 2020 ADSR, Nora Creek sediment sample analytical results are compared to the average background concentration (2012-2018) from the furthest upstream, background station, S35-SW-02, located along Nora Creek. Nora Creek is not considered impacted from historical mining-related activities within the UBMC; therefore, comparison of Nora Creek sediment data to UBMC SSCLs is not applicable. This change will be reflected in all future SAPs, data tables, and data summary reports.
- Also starting with the 2020 ADSR and as shown in the historical monitoring and data tables shown in Appendix F, the unnamed tributary, located east of Nora Creek, sediment data are also compared to the furthest upstream Nora Creek sampling station average concentration. Sampling and monitoring of the unnamed tributary concluded in 2018. This unnamed tributary is also not considered to be impacted by UBMC mining-related activities, so comparison of its sediment sample data to UBMC SSCLs is also not applicable.

5.2 Recommendations

- Complete a comprehensive review of DEQ's UBMC project files to locate monitoring well completion logs for all groundwater monitoring wells planned to be sampled as part of the 2025 sampling plan. In accordance with *DEQ's Groundwater Sampling Guidance, Montana Department of Environmental Quality, Contaminated Site Cleanup Bureau* (DEQ, 2018), having copies of well completion logs will ensure the pump intake/inlet is placed properly within the well screen and will help ensure the accuracy of groundwater sample data collected. If well logs cannot be located, use of a downhole camera to inspect and document the well screen could be considered.
- Consider redevelopment and/or purging of select groundwater monitoring wells during 2025 field sampling and monitoring activities. Sediment buildup in the bottom of several monitoring wells was noted during completion of 2024 and prior sampling and monitoring activities. Redevelopment may reduce sample collection time and improve the overall quality of data collected.

5.3 Corrective Actions

No corrective actions are currently identified.

6. REFERENCES

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**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: 16 of 16

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ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: A-1

Appendix A

Sampling Stations Performance Monitoring Schedules and Laboratory Analyses

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Table 4. UBMC Surface Water and Sediment Sample Performance Monitoring Schedule

Sample Station	Description	Figure Detail No.	2024		2025		2026*		Notes**
			SW	SED	SW	SED	SW	SED	
EE/CA Performance Monitoring: Mike Horse Creek									
BRSW-301	Upper Mike Horse Creek above Little Nell	4					High/Low		Now on 5-year cycle. Next sampling event in 2026
Seep A	Seep above outcrop	4					High/Low		Now on 5-year cycle. Next sampling event in 2026
BRSW-304	Upper Mike Horse Creek below outcrop	4	High/Low		High/Low		High/Low		Annual sampling to assess capture system effectiveness
BRSW-20	Mike Horse Creek just above (upstream) forest service road (horseshoe bend) at the culvert	4					High/Low		Now on 5-year cycle. Next sampling event in 2026
BRSW-35	Mike Horse Creek above Mike Horse/Beartrap Confluence	4					High/Low		Now on 5-year cycle. Next sampling event in 2026
EE/CA Performance Monitoring: Beartrap Creek/Beartrap Creek Floodplain (EU11)									
BRSW-1	Beartrap Creek, upstream extent of restoration	4							Now on 5-year cycle. Next sampling event in 2027
BRSW-3	Beartrap Creek above confluence with Mike Horse Creek	4							Now on 5-year cycle. Next sampling event in 2027
BRSW-23	Beartrap Creek below confluence with Mike Horse Creek	4							Now on 5-year cycle. Next sampling event in 2027
BRSW-38	Beartrap Creek above Anaconda/Beartrap confluence	4							Now on 5-year cycle. Next sampling event in 2027
BRSW-6	Anaconda Creek above Anaconda/Beartrap confluence	4							Now on 5-year cycle. Next sampling event in 2027
EE/CA Performance Monitoring: Blackfoot River/Blackfoot River Floodplain (EU2)									
BRSW-29	Blackfoot River below confluence of Anaconda/Beartrap confluence (former description Beartrap Creek below Anaconda Creek)	4	High/Low						Continue to sample through 2024. 5-year cycle begins 2025
BRSW-36	Blackfoot River upstream of Blackfoot/Shauē confluence	4	High/Low						Continue to sample through 2024. 5-year cycle begins 2025
BRSW-10	Shauē Creek above Blackfoot/Shauē confluence	4	High/Low						Continue to sample through 2024. 5-year cycle begins 2025
BRSW-003A	Blackfoot River just downstream of WTP outfall	4	High/Low						New 2020 sampling station. Continue to sample through 2024. 5-year cycle begins 2025, represents short mixing zone below WTP outfall. Collect no further than 30 ft downstream of confluence. WTP effluent flow is from a rocky, constructed channel.
BRSW-33	Blackfoot River below Blackfoot/Shauē confluence	4	High/Low						Continue to sample through 2024. 5-year cycle begins 2025. Sediment meets standards in 2020, suspend sediment.
BRSW-12 / BRSD-12	End of EE/CA removals. Blackfoot River below Shauē Creek and above Pass Creek	4	High/Low	Low					Continue to sample through 2024. 5-year cycle begins 2025. Upper most MNR site. Collect sample 50-100 feet downstream of the reclaimed boundary within natural, undisturbed ground. Sediment should be natural sediment not reclaimed area sediment. Station should capture first water/sediment leaving restored area.

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Table 4. cont.

Sample Station	Description	Figure Detail No.	2024		2025		2026*		Notes**
			SW	SED	SW	SED	SW	SED	
ROD Evaluation Area 3: Surface Water/Sediment - Stevens Gulch & Unnamed Trib at WTP - Monitoring									
BRSW-400/BRSD-400	Unnamed tributary at WTP	4			High/Low	Low			Last sampled in 2020, incorrectly identified as A W-003A in May 2018 and October 2019. Starting in 2022, 5-year schedule for consistency with DEQ project schedule.
BRSW-108 / BRSD-108	Stevens Gulch upstream above road crossing	4			High/Low	Low			Now on 5-year cycle. Next sampling event in 2027, SW concentrations trending downward.
BRSW-26 / BRSD-26	Stevens Gulch downstream just above Meadow Creek Road	4			High/Low	Low			Now on 5-year cycle. Next sampling event in 2027, SW concentrations trending downward, pair with BRSW-108 / BRSD-108
ROD Evaluation Area 4: Upper Marsh (West) - Monitoring									
BRSW-110 / BRSD-110	Blackfoot River below Blackfoot/Pass confluence and first MNR station for western upper marsh per ROD	3, 4					High/Low	Low	Now on 5-year cycle. Next sampling event in 2026. Collect sample in area on west side of Mike Horse road, below the gate and above the culverts. Location will be dynamic depending on channel flow.
BRSW-107 / BRSD-107	Downstream river exit of western upper marsh MNR	3					High/Low	Low	Now on 5-year cycle. Next sampling event in 2026. Sample where Blackfoot River exits Western Upper Marsh and is out of the marsh.
ROD Evaluation Area 3: Surface Water/Sediment - EU 12/EU 13 Blackfoot River - Monitoring									
BRSW-31 / BRSD-31 (Suspended)	Blackfoot River upstream of Meadow Creek bridge	3							Starting in 2022, station suspended, redundant to BRSW-107. In the event we see unusual concentration in LCMW-1, we would sample BRSW-31.
BRSW-16 / BRSD-16	Blackfoot River upstream of Gilmore's bridge	3							Now on 5-year cycle. Next sampling event in 2027. Sample upstream of Gilmore's bridge. Requires private property access permission from Gilmore.
BRSW-104 / BRSD-104	Blackfoot River on main stem between Middle Marsh and Lower Marsh.	3							Now on 5-year cycle. Next sampling event in 2027. As shown on the RI map, BRSW-104 is not on the main stem of the Blackfoot. This sample should be collected on the main stem of the Blackfoot River. Purpose of sample is to "evaluate metal load in water and sediment between Middle Marsh and Lower Marsh. Located on Whittenburg's property.
BRSW-17 / BRSD-17	Blackfoot River downstream of Whittenberg's bridge.	2							Now on 5-year cycle. Next sampling event in 2027. Sample location is downstream of Whittenberg's (former owner) bridge. Access through private property. Private property owner permission required to access.
BRSW-102 / BRSD-102	Blackfoot River near Repository. Upstream of campground near rock outcrop. Accessed off of Hwy 279 on right side just past repository.	5							Starting in 2021, suspend and replace with BRSW-206 to capture SW below the confluence of Willow Crk and BFR. Upstream BRSW-17 meets aquatic standards.
BRSW-206	Blackfoot River below McInnis's private well	5							Now on 5-year cycle. Next sampling event in 2027. Sample Blackfoot River below McInnis's well. Station replaces sampling of BRSW-102.
BRSW-204 / BRSD-204	Blackfoot River below Blackfoot/Hardscrabble Creek confluence	1							Now on 5-year cycle. Next sampling event in 2027. Collect sample at a location that is below the confluence of Hardscrabble Crk/Blackfoot River. Station should capture upstream tributaries. Requires private property access permission from Louie Bouma.
BRSW-201 / BRSD-201	Blackfoot River above Blackfoot/Hogum Creek confluence	1							Starting in 2021, suspended station, BRSW-201 and BRSW-204 both meet standards in 2020. In the event see something in BRSW-204, then sample BRSW-201. Requires private property access permission for safe access. Note: Do not need to go as far upstream above Hogum Crk as GPS point indicates. Confluence hard to see due to access method during fall 2020 event (walking up the creek-NOT preferred, dangerous in spring conditions, NOT preferred in fall, waders required).

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Table 4. cont.

Sample Station	Description	Figure Detail No.	2024		2025		2026*		Notes**
			SW	SED	SW	SED	SW	SED	
UBMC Repository O&M									
S35-SW-01 / S35-SD-01	Nora Creek, upstream of HWY 279 wetland, south of access road	5			High/Low	Low			Annual until final cap complete. Shift to 5-year schedule sampling - baseline
S35-SW-06	Repository Underdrain Pipe	5	High/Low		High/Low		High/Low		---
S35-SW-08 / S35-SD-08	Nora Creek, immediately upstream of HWY 279 crossing	5	High/Low	Low	High/Low	Low	High/Low	Low	---
QA/QC									
BRSW-307 / BRSD-307	Duplicate, TBD	---	High/Low	Low	High/Low	Low	High/Low	Low	---
BRSW-308	Field Blank	---	High/Low		High/Low		High/Low		---
BRSW-309	Equipment Blank	---	High/Low		High/Low		High/Low		---

Notes:

Italics indicates QA/QC sample

MNR = monitored natural recovery

ROD = Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex, State Superfund Facility, Lewis and Clark County, March 2016

SED = sediment

SW = surface water

O&M = operation and maintenance

QA/QC = quality assurance/quality control

WTP = water treatment plant

Sampling station suspended starting in 2021

--- = not applicable

*Comprehensive Data Summary Report after completion of 2026 event (last DSR summarized 2019 data).

**Sampling frequency notes updated by D. Bowers, DEQ in 2023

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Table 5. UBMC Groundwater Sample Performance Monitoring Schedule

Sample Station	Sample Location Description	Figure Detail No.	Schedule			Notes**
			2024	2025	2026*	
UBMC						
Upper Mike Horse Canyon (above horseshoe bend)						
UMHMW-3	Near communications building/300 Level Adit	4				Now on 5-year cycle. Next sampling events in 2026
MHMW-8	Mike Horse Creek just upstream of horseshoe bend	4			High/Low	Now on 5-year cycle. Next sampling events in 2026
Beartrap Creek						
MW-2018-01	Above confluence of Beartrap Creek and Mike Horse Creek	4	High/Low	High/Low	High/Low	Continue to sample due to contamination detected when installed in 2018. 2022 first year meeting DEQ-7
MW-2018-03	Below the confluence of Beartrap Creek and Mike Horse Creek	4	High/Low	High/Low	High/Low	Continue to sample due to contamination detected in MW-2018-01.
MW-2019-03	Above confluence with Anaconda Creek	4				Now on 5-year cycle. Next sampling events in 2027
Blackfoot River						
MW-2019-04	Below confluence of Beartrap Creek and Anaconda Creek	4	High/Low			Continue to sample through 2024. 5-year cycle begins 2025
MW-2019-05	Downstream of Meadow Creek/Mike Horse Rd junction, river left	4	High/Low			Continue to sample through 2024. 5-year cycle begins 2025
Edith Mine Area (Suspended starting in 2021)						
EDP-1	East of Edith Mine area in forested upland south of fen	4				No sampling. Sample again in 2025 - part of Blackfoot River
EDP-2	East of Edith Mine area in/near the fen area south of Mike Horse Road	4				No sampling. Sample again in 2025 - part of Blackfoot River
EDMW-2	Below confluence of Shaue Gulch at Edith Mine Area (south of Mike Horse Road on east side of old road located south of Edith Mine scar)	4				No sampling. Sample again in 2025 - part of Blackfoot River
EDGW-105	Below confluence of Shaue Gulch at Edith Mine Area (south of Mike Horse Road on east side of old road located south of Edith Mine scar)	4				No sampling. Sample again in 2025 - part of Blackfoot River
Swamp Gulch Area						
LCMW-5	Swamp Gulch/Carbonate Mine area	3	High/Low	High/Low	High/Low	Still needs to be addressed per ROD, located adjacent to highway
LCMW-1 ***	Meadow Creek Bridge – shallow groundwater	3	High/Low	High/Low	High/Low	Still needs to be addressed per ROD, located adjacent to road near Meadow Creek bridge
REPOSITORY AREA						
S35-MW-01	East of Nora Creek	5	High/Low	High/Low	High/Low	Annual sampling until final cover installed, requires short hike and packing gear.
S35-MW-03	Entrance road from HWY 279	5	Quarterly	Quarterly	Quarterly	Annual sampling until final cover installed, located immediately on right hand side of paved access road.
S35-MW-04	East of Blackfoot River	5	High/Low	High/Low	High/Low	Annual sampling until final cover installed, can drive to this well on old road accessed off of dirt repository road.
S35-MW-06	Near top of ridge above repository, east of Blackfoot River					Starting in 2021, suspend sampling, upgradient background well, baseline established. Download transducer data bi-annually.
QUALITY ASSURANCE / QUALITY CONTROL SAMPLES (collected at UBMC project area)						
MHMW-9*	Duplicate of LCMW-1	---	High/Low	High/Low	High/Low	---
MHMW-10	Field Blank	---	High/Low	High/Low	High/Low	---
MHMW-11	Equipment Blank	---	High/Low	High/Low	High/Low	---

Note:
Bold denotes well with data logger/barologger
TBD = to be determined
Sampling station suspended starting in 2021
--- = not applicable
*Comprehensive Data Summary Report after completion of 2026 event (last DSR summarized 2019 data).
**Sampling frequency notes up dated by D. Bowers, DEQ in 2023
***Duplicate sample collection station

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ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: A-11

Table 6. UBMC Static Water Level and Transducer/Barologger Monitoring Station Schedule

Station	Description	Figure Detail No.	Frequency	Notes
UBMC				
Upper Mike Horse Creek (above horseshoe bend)				
UMHWMW-2D	Upper Mike Horse Creek	4	High/Low	
UMHWMW-2S	Upper Mike Horse Creek	4	High/Low	
UMHWMW-3	Near communications building/300 Level Adit	4	High/Low	Starting in 2021, sampling suspended, collect SWL
MHWMW-8	Mike Horse Creek just upstream of horseshoe bend	4	High/Low	
MIGW-01	Mike Horse Creek at horseshoe bend	4	High/Low	
Beartrap Creek				
MW-2019-03	Above confluence with Anaconda Creek	4	High/Low	Now on 5-year cycle. Next sampling events in 2027
Paymaster Repository Area				
PMMW-1	Paymaster Repository Area	4	High/Low	
PMMW-2	Paymaster Repository Area	4	High/Low	
PMMW-3	Paymaster Repository Area	4	High/Low	
Carbonate Mine Area				
UCMW-4	Carbonate Mine Area	3	High/Low	Stickup well
UCMW-11	Carbonate Mine Area	3	High/Low	Flushmount well
SWG-101	Carbonate Mine Area	3	High/Low	Stickup well
SWG-102	Carbonate Mine Area	3	High/Low	Flushmount well
Stevens Gulch				
SGGW-101	Stevens Gulch	4	High/Low	
Shaue Gulch				
SHGW-101	Shaue Gulch	4	High/Low	
SHGW-102	Shaue Gulch	4	High/Low	
REPOSITORY AREA				
Repository Area (Monitoring Wells)				
S35-MW-02	Ridge East of Nora Creek	5	High/Low	
S35-MW-05	East of Nora Creek near HWY 279	5	High/Low	Barologger in well
S35-MW-06	Near top of ridge above repository, east of Blackfoot River	5	High/Low	
Repository Area (Piezometers)				
S35-PZ-04	Repository Area, West of potential wetland	5	High/Low	
S35-PZ-10	Repository Area, Northeast corner of the site	5	High/Low	
S35-MW-205B	Repository area	5	High/Low	S35-MW-205B/205T are nested together
S35-MW-205T	Repository area	5	High/Low	S35-MW-205B/205T are nested together
S35-SB-215T1	Repository area	5	High/Low	
S35-SB-215T2	Repository area	5	High/Low	
S35-TP-101A	Repository area	5	High/Low	S35-TP-101A/101B/101C nested together
S35-TP-101B	Repository area	5	High/Low	S35-TP-101A/101B/101C nested together
S35-TP-101C	Repository area	5	High/Low	S35-TP-101A/101B/101C nested together
S35-TP-103	Repository area	5	High/Low	
S35-TP-112	Repository area	5	High/Low	
S35-TP-113	Repository area	5	High/Low	

Note:

Bold denotes well with data logger/barologger

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Table 7. UBMC Residential Well Groundwater Sample Stations

Residence	Frequency	Groundwater Sample Designation	Purge Volume, Gallons (3 well volumes)	Notes
Gilmore	Fall (low) or as directed by DEQ	BRRW-1	44	Contact prior to sampling. Do not just show up.
McInnis	Fall (low) or as directed by DEQ	BRRW-5	177	Contact prior to sampling. Do not just show up. Well by mobile home.

Note:
 To maintain resident privacy, data collection points not shown on figures

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: A-14

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Table 8. Laboratory Analyses

GW - Residential Wells		Parameters						
COCs ⁽¹⁾	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Physical	pH	Total SS	Total DS	EC	---	---	---	---
Anions	Bicarbonate	Carbonate	Chloride	Sulfate	Alkalinity	Hardness	Acidity	---
Cations	Calcium	Magnesium	Potassium	Sodium	---	---	---	---
Field	pH	Conductivity	Temp	DO %	DO mg/l	Redox	---	---
GW - Mining Area & Repository		Parameters						
COCs ⁽²⁾	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Physical	pH	Total SS	Total DS	EC	---	---	---	---
Anions	Bicarbonate	Carbonate	Chloride	Sulfate	Alkalinity	Hardness	Acidity	---
Cations	Calcium	Magnesium	Potassium	Sodium	---	---	---	---
Field	pH	Conductivity	Temp	DO %	DO mg/l	Redox	---	---
All SW		Parameters						
COCs ⁽³⁾	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Physical	pH	Total SS	Total DS	EC	---	---	---	---
Anions	Bicarbonate	Carbonate	Chloride	Sulfate	Alkalinity	Hardness	Acidity	---
Cations	Calcium	Magnesium	Potassium	Sodium	---	---	---	---
Field	pH	Conductivity	Temp	DO %	DO mg/l	Redox	---	---
All SED		Parameters						
COCs ⁽⁴⁾	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc

Notes:

COCs = contaminants of concern

DO = dissolved oxygen

DS = dissolved solids

EC = conductivity

GW = groundwater

SED = sediment

SS = suspended solids

SW = surface water

--- = not applicable

(1) Residential Well groundwater COCs are tested for Total Recoverable Metals.

(2) Mining area and repository groundwater COCs are tested for dissolved metals.

(3) All surface water COCs are tested for Total Recoverable Metals and Dissolved Aluminum.

(4) All sediment is tested for Total Recoverable Metals.

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: A-16

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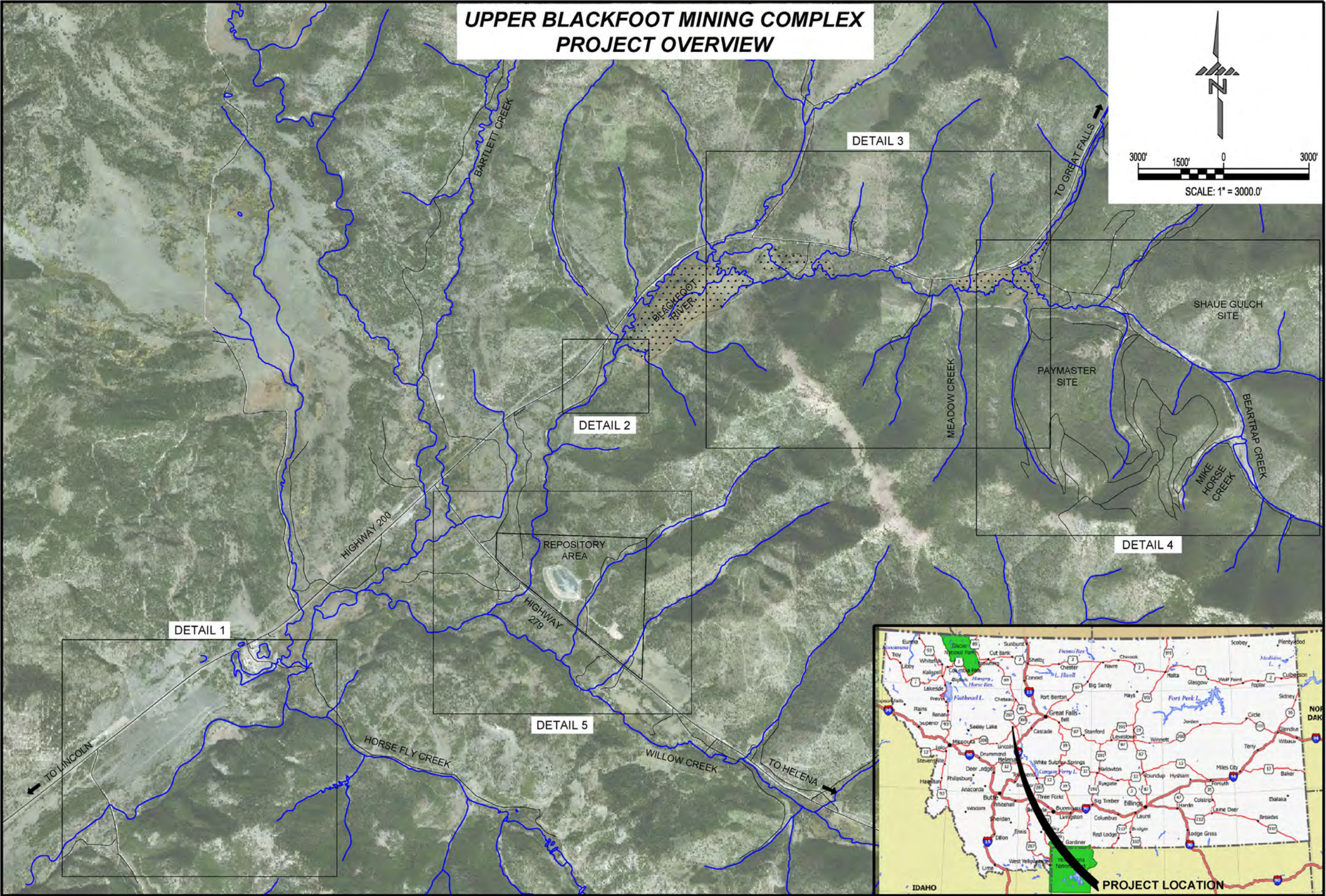
ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: B-1

Appendix B

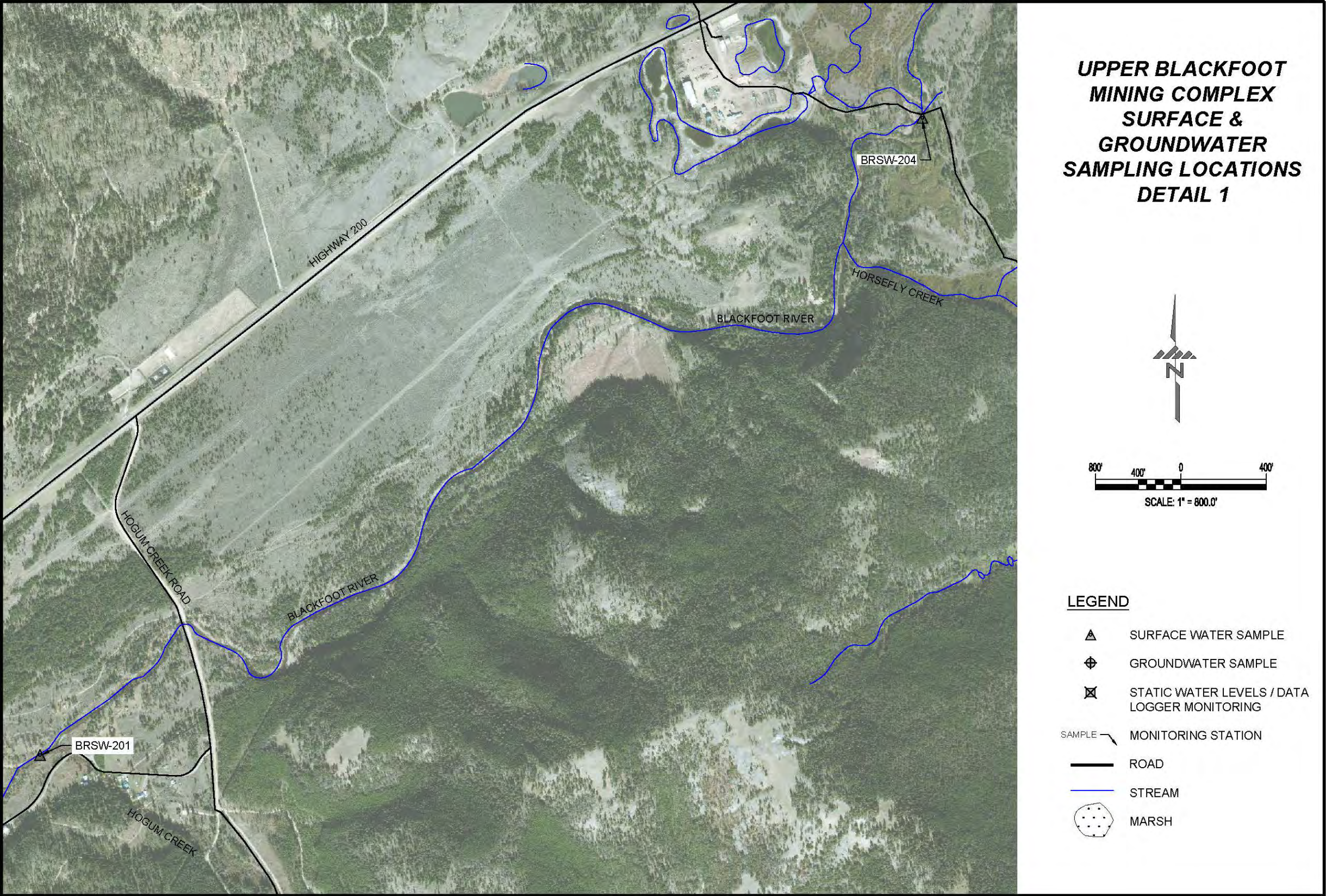
Figures

Upper Blackfoot Mining Complex Project Overview (Detail 1 through Detail 5)

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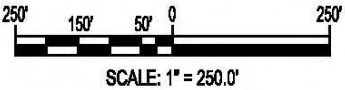
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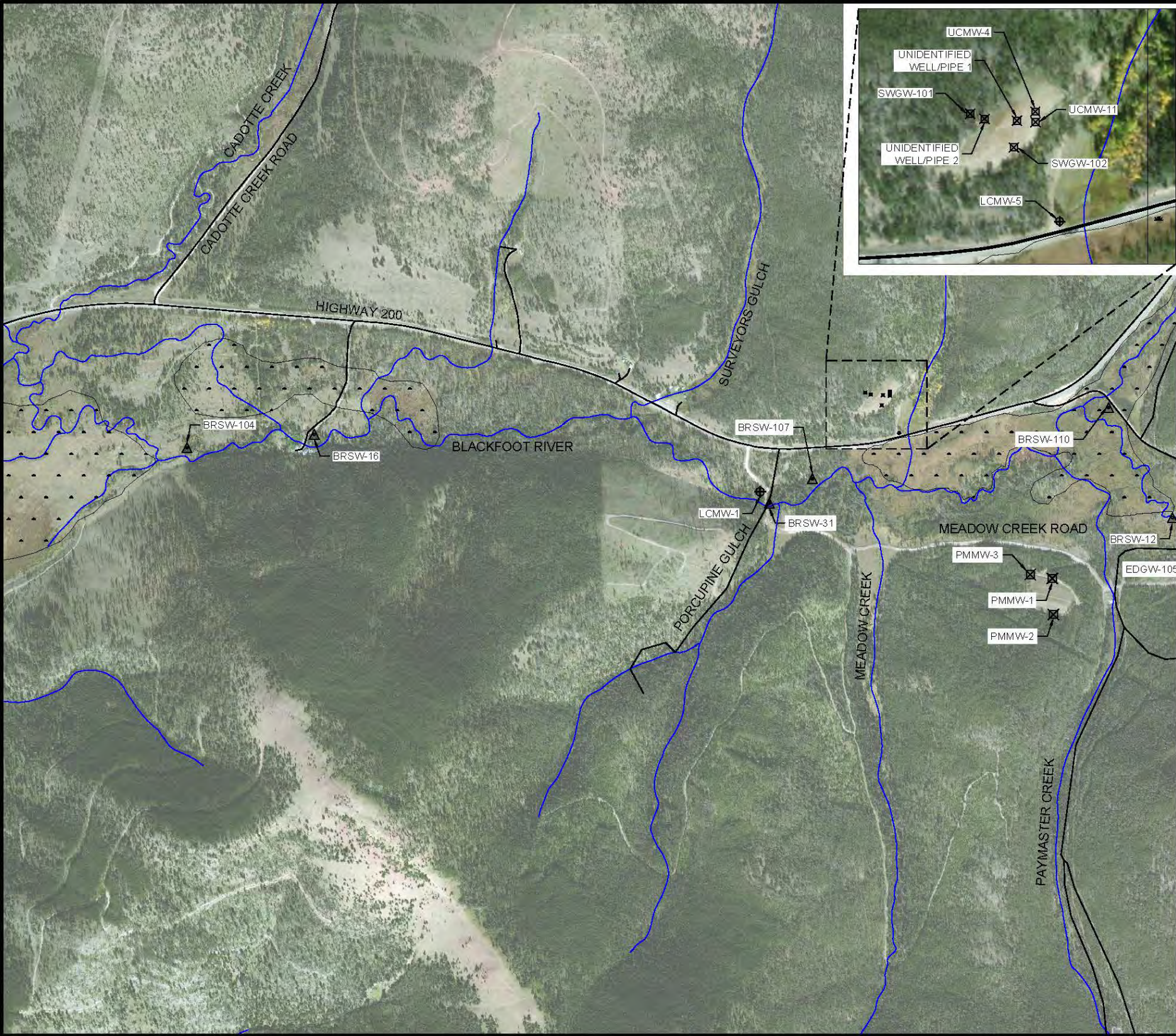
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MINING COMPLEX
SURFACE &
GROUNDWATER
SAMPLING LOCATIONS
DETAIL 2**



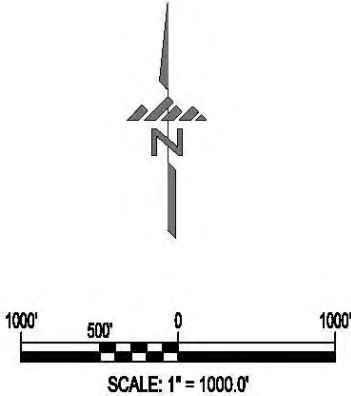
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-  GROUNDWATER SAMPLE
-  STATIC WATER LEVELS / DATA
LOGGER MONITORING
-  MONITORING STATION
-  ROAD
-  STREAM
-  MARSH

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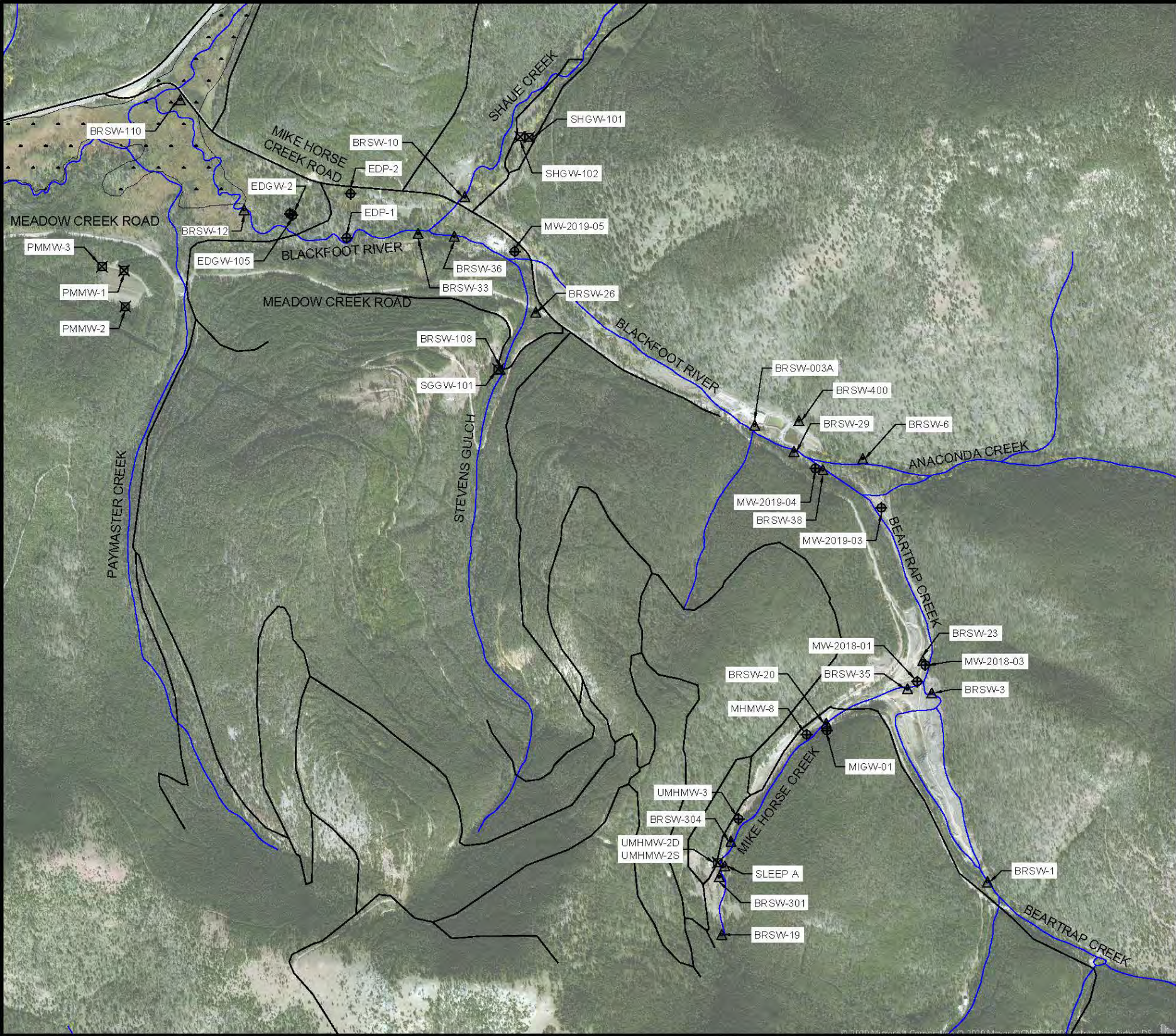
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MINING COMPLEX
SURFACE &
GROUNDWATER
SAMPLING LOCATIONS
DETAIL 3**



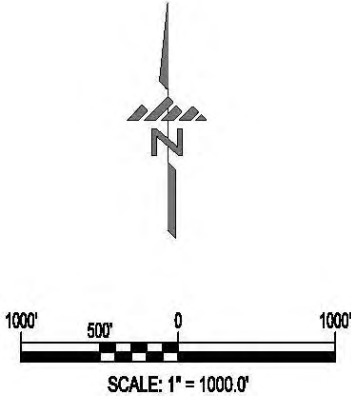
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- SURFACE WATER SAMPLE
- GROUNDWATER SAMPLE
- STATIC WATER LEVELS / DATA LOGGER MONITORING
- MONITORING STATION
- ROAD
- STREAM
- MARSH

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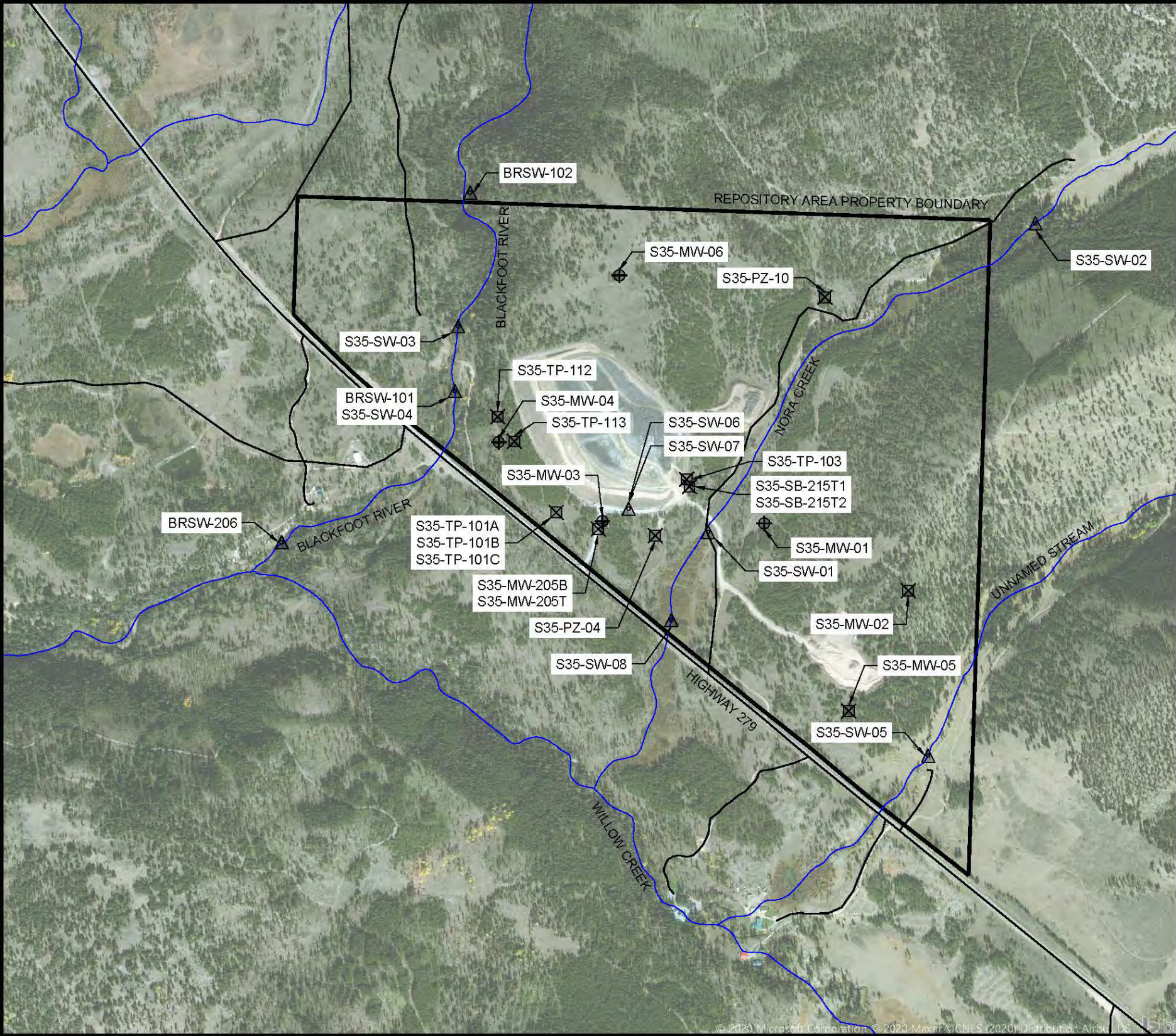
**UPPER BLACKFOOT
MINING COMPLEX
SURFACE &
GROUNDWATER
SAMPLING LOCATIONS
DETAIL 4**



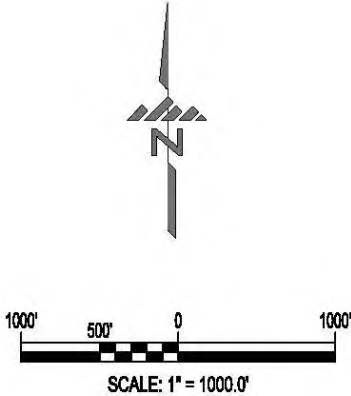
LEGEND

-  SURFACE WATER SAMPLE
-  GROUNDWATER SAMPLE
-  STATIC WATER LEVELS / DATA LOGGER MONITORING
-  MONITORING STATION
-  ROAD
-  STREAM
-  MARSH

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**UPPER BLACKFOOT
MINING COMPLEX
SURFACE &
GROUNDWATER
SAMPLING LOCATIONS
DETAIL 5**



LEGEND

- SURFACE WATER SAMPLE
- GROUNDWATER SAMPLE
- STATIC WATER LEVELS / DATA LOGGER MONITORING
- MONITORING STATION
- ROAD
- STREAM
- MARSH

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Appendix C

2024 Surface Water Data Tables

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Table 9. UBMC Surface Water Human Health Comparison (total recoverable metals, mg/L)

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L)									
Collection									
Sample ID	Creek/River	Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
		Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-304	Mike Horse	5/20/2024	<0.003	0.00038	0.004	<0.03	0.0015	<0.005	0.06
BRSW-304	Mike Horse	9/23/2024	<0.003	0.00109	0.01	<0.03	0.0024	0.01	0.16
BRSW-29	Blackfoot	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-29	Blackfoot	9/23/2024	<0.003	0.00009	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	Blackfoot	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	Blackfoot	9/23/2024	<0.003	0.00023	<0.001	<0.03	<0.0005	<0.005	0.05
BRSW-36	Blackfoot	5/20/2024	<0.003	0.00016	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-36	Blackfoot	9/23/2024	<0.003	0.00013	0.001	<0.03	<0.0005	0.017	0.02
BRSW-33	Blackfoot	5/20/2024	<0.003	0.00012	0.002	<0.03	<0.0005	<0.005	0.02
BRSW-33	Blackfoot	9/23/2024	<0.003	0.00026	0.001	<0.03	<0.0005	0.011	0.06
BRSW-10	Shaue	5/20/2024	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	Shaue	9/23/2024	<0.003	0.0001	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-12	Blackfoot	5/20/2024	<0.003	0.00016	0.002	0.04	0.0006	0.015	0.03
BRSW-307	Blackfoot	5/20/2024	<0.003	0.00014	0.002	0.04	0.0009	0.015	0.03
BRSW-12	Blackfoot	9/23/2024	<0.003	0.00033	0.002	0.07	<0.0005	0.057	0.08
BRSW-307	Blackfoot	9/23/2024	<0.003	0.00033	0.002	0.06	<0.0005	0.058	0.08
BRSW-308 ¹	QA/QC	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	QA/QC	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	QA/QC	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	QA/QC	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019, human health standard

---- Circular DEQ-7 does not have a human health standard for iron and manganese

** SSCL, Final Baseline Human Health Risk Assessment, Section 10, Page 10-1

Duplicate of BRSW-12

mg/L = milligrams per liter

QA/QC = quality assurance/quality control sample

1 = Field blank

2 = Equipment blank

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Table 10. UBMC Surface Water Aquatic Life Comparison (total recoverable metals, mg/L)

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L)									
Sample ID	Creek/River	Collection Date	Arsenic	Cadmium**	Copper**	Iron	Lead**	Manganese	Zinc**
Standard (acute/chronic)*			0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-304	Mike Horse	5/20/2024	<0.003	0.00038	0.004	<0.03	0.0015	<0.005	0.06
BRSW-304	Mike Horse	9/23/2024	<0.003	0.00109	0.010	<0.03	0.0024	0.01	0.16
BRSW-29	Blackfoot	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-29	Blackfoot	9/23/2024	<0.003	0.00009	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	Blackfoot	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	Blackfoot	9/23/2024	<0.003	0.00023	<0.001	<0.03	<0.0005	<0.005	0.05
BRSW-36	Blackfoot	5/20/2024	<0.003	0.00016	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-36	Blackfoot	9/23/2024	<0.003	0.00013	0.001	<0.03	<0.0005	0.017	0.02
BRSW-33	Blackfoot	5/20/2024	<0.003	0.00012	0.002	<0.03	<0.0005	<0.005	0.02
BRSW-33	Blackfoot	9/23/2024	<0.003	0.00026	0.001	<0.03	<0.0005	0.011	0.06
BRSW-10	Shaue	5/20/2024	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	Shaue	9/23/2024	<0.003	0.0001	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-12	Blackfoot	5/20/2024	<0.003	0.00016	0.002	0.04	0.0006	0.015	0.03
BRSW-307	Blackfoot	5/20/2024	<0.003	0.00014	0.002	0.04	0.0009	0.015	0.03
BRSW-12	Blackfoot	9/23/2024	<0.003	0.00033	0.002	0.07	<0.0005	0.057	0.08
BRSW-307	Blackfoot	9/23/2024	<0.003	0.00033	0.002	0.06	<0.0005	0.058	0.08
BRSW-308 ¹	QA/QC	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	QA/QC	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	QA/QC	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	QA/QC	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01

Note:

< Indicates the concentration is less than the reporting limit

Exceeds acute standard

Exceeds chronic standard

*Circular DEQ-7, Montana Numeric Water Quality Standards (DEQ-7), June 2019, aquatic life standards

**Calculated per DEQ-7

---- No standard or not applicable

Duplicate of BRSW-12

mg/L = milligrams per liter

QA/QC = quality assurance/quality control sample

1 = Field blank

2 = Equipment blank

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Table 11. UBMC Hardness Adjusted Aquatic Life Surface Water Quality Standards (mg/L)

Hardness Adjusted Surface Water Quality Standards (mg/L)										
Sample ID	Creek/River	Collection Date	Cadmium		Copper		Lead		Zinc	
			Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-304	Mike Horse	5/20/2024	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
BRSW-304	Mike Horse	9/23/2024	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-29	Blackfoot	5/20/2024	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-29	Blackfoot	9/23/2024	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
BRSW-003A	Blackfoot	5/20/2024	0.00145	0.00063	0.011	0.007	0.0576	0.0022	0.09	0.09
BRSW-003A	Blackfoot	9/23/2024	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
BRSW-36	Blackfoot	5/20/2024	0.00145	0.00063	0.011	0.007	0.0576	0.0022	0.09	0.09
BRSW-36	Blackfoot	9/23/2024	0.00398	0.00144	0.029	0.018	0.2138	0.0083	0.23	0.23
BRSW-33	Blackfoot	5/20/2024	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
BRSW-33	Blackfoot	9/23/2024	0.00294	0.00113	0.021	0.014	0.1438	0.0056	0.17	0.17
BRSW-10	Shaue	5/20/2024	0.00076	0.00037	0.006	0.004	0.0246	0.0010	0.05	0.05
BRSW-10	Shaue	9/23/2024	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
BRSW-12	Blackfoot	5/20/2024	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
BRSW-307	Blackfoot	5/20/2024	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
BRSW-12	Blackfoot	9/23/2024	0.00273	0.00106	0.020	0.013	0.1310	0.0051	0.16	0.16
BRSW-307	Blackfoot	9/23/2024	0.00272	0.00106	0.020	0.013	0.1299	0.0051	0.16	0.16
BRSW-308 ¹	QA/QC	5/20/2024	----	----	----	----	----	----	----	----
BRSW-308 ¹	QA/QC	9/23/2024	----	----	----	----	----	----	----	----
BRSW-309 ²	QA/QC	5/20/2024	----	----	----	----	----	----	----	----
BRSW-309 ²	QA/QC	9/23/2024	----	----	----	----	----	----	----	----

Note: ----- = No standard or not applicable
Duplicate of BRSW-12
mg/L = milligrams per liter
QA/QC = quality assurance/quality control sample
1 = Field blank
2 = Equipment blank

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Table 12. UBMC Surface Water Aquatic Life Comparison (dissolved metals, mg/L)

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L)				
Sample ID	Creek/River	Collection	Aluminum	pH**
		Standard (acute/chro)	0.75/0.087	6.5 - 9.0
BRSW-304	Mike Horse	5/20/2024	<0.03	7.9
BRSW-304	Mike Horse	9/23/2024	<0.03	8.0
BRSW-29	Blackfoot	5/20/2024	<0.03	8.0
BRSW-29	Blackfoot	9/23/2024	<0.03	7.8
BRSW-003A	Blackfoot	5/20/2024	<0.03	7.8
BRSW-003A	Blackfoot	9/23/2024	<0.03	8.0
BRSW-36	Blackfoot	5/20/2024	<0.03	7.8
BRSW-36	Blackfoot	9/23/2024	<0.03	7.5
BRSW-33	Blackfoot	5/20/2024	<0.03	7.7
BRSW-33	Blackfoot	9/23/2024	<0.03	7.6
BRSW-10	Shaue	5/20/2024	<0.03	7.5
BRSW-10	Shaue	9/23/2024	<0.03	7.2
BRSW-12	Blackfoot	5/20/2024	<0.03	7.7
BRSW-307	Blackfoot	5/20/2024	<0.03	7.6
BRSW-12	Blackfoot	9/23/2024	<0.03	7.8
BRSW-307	Blackfoot	9/23/2024	<0.03	7.7
BRSW-308 ¹	QA/QC	5/20/2024	<0.03	6.4 J-
BRSW-308 ¹	QA/QC	9/23/2024	<0.03	5.7 J-
BRSW-309 ²	QA/QC	5/20/2024	<0.03	6.4 J-
BRSW-309 ²	QA/QC	9/23/2024	<0.03	6.3 J-

Note: < Indicates the concentration is less than the reporting limit
Dissolved aluminum standard is only applied when pH is between 6.5 and 9
Exceeds acute standard/Outside of range
Exceeds chronic standard
*Circular DEQ-7, Montana Numeric Water Quality Standards , June 2019, aquatic life standards
The aluminum standard is for dissolved metals only per Circular DEQ-7
**Dissolved aluminum standard is only applied when pH is between 6.5 and 9.0
---- No standard
Duplicate of BRSW-12
mg/L = milligrams per liter
QA/QC= quality assurance/quality control sample
1 = Field blank
2 = Equipment blank
J- = validation flag denotes the associated value is estimated low

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Table 13. UBMC Surface Water Physiochemical, Anions, and Cations

UBMC / Mike Horse Area Surface Water																	
			Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Creek/River	Collection Date	pH*	Conductivity, umhos/cm	Hardness, mg/L	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
		Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-304	Mike Horse	5/20/2024	7.9 J-	187	92		<10	99	85	100	<4	<1	8	20	10	<1	<1
BRSW-304	Mike Horse	9/23/2024	8.0 J-	245	126		<10	128	110	130	<4	<1	15	29	13	<1	<1
BRSW-29	Blackfoot	5/20/2024	8.0 J-	157	75		<10	88	70	85	<4	<1	8	16	9	<1	1
BRSW-29	Blackfoot	9/23/2024	7.8 J-	233	120		<10	128	100	120	<4	<1	17	26	13	<1	2
BRSW-003A	Blackfoot	5/20/2024	7.8 J-	156	76		<10	91	700	85	<4	<1	8	16	9	<1	1
BRSW-003A	Blackfoot	9/23/2024	8.0 J-	233	115		<10	118	98	120	<4	<1	13	26	12	<1	2
BRSW-36	Blackfoot	5/20/2024	7.8 J-	164	76		<10	96	69	84	<4	<1	12	16	9	<1	1
BRSW-36	Blackfoot	9/23/2024	7.5 J-	448	213		<10	288	88	110	<4	<1	134	49	22	1	10
BRSW-33	Blackfoot	5/20/2024	7.7 J-	140	65		<10	85	59	59	<4	<1	9	14	7	<1	1
BRSW-33	Blackfoot	9/23/2024	7.6 J-	335	156		<10	202	80	97	<4	<1	83	36	16	1	7
BRSW-10	Shaue	5/20/2024	7.5 J-	87	39		<10	52	41	41	<4	<1	2	9	4	<1	1
BRSW-10	Shaue	9/23/2024	7.2 J-	137	68		<10	76	63	77	<4	<1	4	16	7	<1	2
BRSW-12	Blackfoot	5/20/2024	7.7 J-	139	65		<10	79	57	69	<4	<1	10	14	7	<1	2
BRSW-307	Blackfoot	5/20/2024	7.6 J-	139	65		<10	79	58	71	<4	<1	10	14	7	<1	2
BRSW-12	Blackfoot	9/23/2024	7.8 J-	312	145		<10	192	77	93	<4	<1	75	33	15	1	6
BRSW-307	Blackfoot	9/23/2024	7.7 J-	311	144		<10	187	77	93	<4	<1	71	33	15	1	6
BRSW-308 ¹	QA/QC	5/20/2024	6.4 J-	5 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	QA/QC	9/23/2024	5.7 J-	6 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	QA/QC	5/20/2024	6.4 J-	5 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	QA/QC	9/23/2024	6.3 J-	5 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1

Note: < Indicates the concentration is less than the reporting limit

Outside of acceptable range

*B-1 Classification Standards ARM 17.30.623(2)(c)

---- No standard

Duplicate of BRSW-12

mg/L = milligrams per liter

umhos/cm = micromhos/centimeter

1 = Field blank

2 = Equipment blank

J+ = validation flag denotes the reported results are estimates with a high bias

J- = validation flag denotes the associated value is estimated with low bias

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**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: C-13

Table 14. Repository Area Surface Water Human Health Comparison (total recoverable metals, mg/L)

Repository Area Surface Water (total recoverable metals, mg/L)									
<i>Sample ID</i>	<i>Creek/River</i>	<i>Collection</i>	<i>Arsenic</i>	<i>Cadmium</i>	<i>Copper</i>	<i>Iron</i>	<i>Lead</i>	<i>Manganese</i>	<i>Zinc</i>
		<i>Date</i>							
		Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
S35-SW-08	Nora	5/20/2024	<0.003	<0.00008	<0.001	0.18	<0.0005	0.015	<0.01
S35-SW-08	Nora	9/24/2024	<0.003	<0.00008	<0.001	0.47	<0.0005	0.051	<0.01
S35-SW-06	Underdrain Pipe	5/20/2024	<0.003	<0.00008	<0.001	0.03	0.001	<0.005	<0.01
S35-SW-06	Underdrain Pipe	9/24/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019 (DEQ-7), human health standard

---- No Circular DEQ-7 human health standard for iron and manganese

** SSCL, Final Baseline Human Health Risk Assessment, Section 10, Page 10-1

mg/L = milligrams per liter

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: C-14

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**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: C-15

Table 15. Repository Area Surface Water Aquatic Life Comparison (total recoverable metals, mg/L)

Repository Area Surface Water (total recoverable metals, mg/L)									
<i>Sample ID</i>	<i>Creek/River</i>	<i>Collection</i>	<i>Arsenic</i>	<i>Cadmium**</i>	<i>Copper**</i>	<i>Iron</i>	<i>Lead**</i>	<i>Manganese</i>	<i>Zinc**</i>
		<i>Date</i>							
		Standard (acute/<u>chronic</u>)*	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
S35-SW-08	Nora	5/20/2024	<0.003	<0.00008	<0.001	0.18	<0.0005	0.015	<0.01
S35-SW-08	Nora	9/24/2024	<0.003	<0.00008	<0.001	0.47	<0.0005	0.051	<0.01
S35-SW-06	Underdrain Pipe	5/20/2024	<0.003	<0.00008	<0.001	0.03	0.001	<0.005	<0.01
S35-SW-06	Underdrain Pipe	9/24/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01

Note: < Indicates the concentration is less than the reporting limit

Exceeds acute standard

Exceeds chronic standard

*Circular DEQ-7, Montana Numeric Water Quality Standards (DEQ-7) , June 2019, aquatic life standards

**Calculated per Circular DEQ-7

---- No standard

mg/L = milligrams per liter

NS = No sample collected

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: C-16

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Table 16. Repository Area Hardness Adjusted Surface Water Quality Aquatic Life Standards (mg/L)

Hardness Adjusted Surface Water Quality Standards (mg/L)									
Sample ID	ion Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
S35-SW-08	5/20/2024	0.00173	0.00073	0.0128	0.0086	0.0724	0.0028	0.111	0.111
S35-SW-08	9/24/2024	0.00227	0.00091	0.0166	0.0109	0.1030	0.0040	0.140	0.140
S35-SW-06	5/20/2024	0.00526	0.00181	0.0373	0.0227	0.3069	0.0120	0.289	0.289
S35-SW-06	9/24/2024	0.00582	0.00197	0.0411	0.0248	0.3504	0.0137	0.316	0.316

Note: mg/L = milligrams per liter

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: C-18

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Table 17. Repository Area Surface Water Aquatic Life Comparison (dissolved metals, mg/L)

Repository Area Surface Water (dissolved metals, mg/L)				
Sample ID	Creek/River	Collection Date	Aluminum	pH
			Standard (acute/chronic)*	0.75/0.087
S35-SW-08	Nora	5/20/2024	<0.03	6.5 - 9.0
S35-SW-08	Nora	9/24/2024	<0.03	7.5
S35-SW-06	Underdrain Pipe	5/20/2024	<0.03	7.4
S35-SW-06	Underdrain Pipe	9/24/2024	<0.03	8.0
				7.6

Note: < Indicates the concentration is less than the reporting limit

Exceeds acute standard

Exceeds chronic standard

*Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019, aquatic life standards

*The aluminum standard is for dissolved metals only per Circular DEQ-7

*Dissolved aluminum standard only applies when pH is between 6.5 and 9.0 per Circular DEQ-7

mg/L = milligrams per liter

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Table 18. Repository Area Surface Water Physiochemical, Anions, and Cations

Repository Area Surface Water																
			Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Creek/River	Collection Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
		Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-SW-08	Nora	5/20/2024	7.5 J-	196	91	<10	118	74	90	<4	<1	21	21	9	<1	2
S35-SW-08	Nora	9/24/2024	7.4 J-	236	120	79	139	110	140	<4	<1	7	27	13	1	3
S35-SW-06	Underdrain Pipe	5/20/2024	8.0 J-	589	283	<10	376	190	230	<4	5	112	78	21	2	6
S35-SW-06	Underdrain Pipe	9/24/2024	7.6 J-	592	314	<10	388	190	230	<4	5	106	89	22	2	6

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*B-1 Classification Standards ARM 17.30.623(2)(c)

---- No standard

mg/L = milligrams per liter

umhos = micromhos

J- = validation flag denotes the reported results are estimates with a low bias

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Appendix D

2024 Sediment Data Tables

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA

Revision: 0 Page: D-2

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**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: D-3

Table 19. UBMC Sediments vs. SSCLs (total recoverable metals, mg/Kg)

UBMC / Mike Horse Area Sediments (total recoverable metals, mg/Kg)										
<i>Sample ID</i>	<i>Creek/River</i>	<i>Collection Date</i>	<i>Aluminum</i>	<i>Arsenic</i>	<i>Cadmium</i>	<i>Copper</i>	<i>Iron</i>	<i>Lead</i>	<i>Manganese</i>	<i>Zinc</i>
Site-Specific Cleanup Level			8980**	17*	3.53*	197*	35800**	91*	578**	315*
BRSD-12	Blackfoot	9/23/2024	9330	20	7.24	220	22800	559	2620 J+	1480 J+
BRSD-307	Blackfoot	9/23/2024	8340	24	7.7	233	22300	563	2490 J+	1440 J+

Note:

Exceeds site-specific cleanup level

*Aquatic life based SSCL, Table 5B, EU 13 Streambed Sediment, *Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex, Lewis and Clark County, Montana*, March 2016 (ROD)

**SSCL based on background, Table 5B EU 13 Streambed Sediment, ROD

Duplicate of BRSW-12

mg/Kg = milligrams per kilogram

J+ = validation flag denotes the associated value is estimated high

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA

Revision: 0 Page: D-4

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**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: D-5

Table 20. Repository Area Sediments vs. Nora Creek Background (total recoverable metals, mg/Kg)

Repository Area Sediments (total recoverable metals, mg/Kg)										
<i>Collection</i>										
<i>Sample ID</i>	<i>Creek/River</i>	<i>Date</i>	<i>Aluminum</i>	<i>Arsenic</i>	<i>Cadmium</i>	<i>Copper</i>	<i>Iron</i>	<i>Lead</i>	<i>Manganese</i>	<i>Zinc</i>
Nora Creek Background Reference*			3376	2	0.4	33	2387	4	21	15
S35-SD-08	Nora	9/24/2024**	3550	3	<0.05	7	9390	4	137 J+	21 J+

Note:

Exceeds Nora Creek background average concentration

*Average of S35-SW-02 background data (2012-2018)

**The chain of custody says the sample was collected on 9/23/24 which is an error. The sample was actually collected on 9/24/24 concurrently with S35-SW-08.

mg/Kg = milligrams per kilogram

J+ = validation flag denotes the reported results are estimates with a high bias

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA

Revision: 0 Page: D-6

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Appendix E

2024 Groundwater Data Tables

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Table 21. UBMC Groundwater (dissolved metals, mg/L)

UBMC / Mike Horse Area Groundwater (dissolved metals, mg/L)									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard	20**	0.01*	0.005*	1.3*	14**	0.015*	0.94**	2*
MW-2018-01	5/21/2024	<0.03	<0.003	0.00403	0.001	<0.05	<0.0005	<0.005	1.55
MW-2018-01	9/26/2024	<0.03	<0.003	0.00249	<0.001	<0.05	<0.0005	<0.005	0.75
MW-2018-03	5/21/2024	<0.03	<0.003	0.00029	0.002	<0.05	<0.0005	<0.005	0.05
MW-2018-03	9/26/2024	<0.03	<0.003	0.00032	<0.001	<0.05	<0.0005	<0.005	0.05
MW-2019-04	5/21/2024	<0.03	<0.003	0.00015	0.001	<0.05	<0.0005	<0.005	0.03
MW-2019-04	9/27/2024	<0.03	<0.003	0.00025	0.001 J+	<0.05	<0.0005	<0.005	0.04
MW-2019-05	5/21/2024	<0.03	<0.003	0.00039	0.002	<0.05	<0.0005	<0.005	0.07
MW-2019-05	9/27/2024	<0.03	<0.003	0.0011	0.001 J+	<0.05	<0.0005	<0.005	0.14
LCMW-1	5/22/2024	<0.03	<0.003	0.00140	0.014	0.19	<0.0005	0.031	0.08
MHMW-9	5/22/2024	<0.03	<0.003	0.00137	0.014	0.19	<0.0005	0.031	0.08
LCMW-1	10/1/2024	<0.03	<0.003	0.00164	0.016	0.18	<0.0005	0.032	0.09
MHMW-9	10/1/2024	<0.03	<0.003	0.00161	0.016	0.19	<0.0005	0.031	0.09
LCMW-5	5/22/2024	1.47	<0.003	0.133	1.02	6.76	0.0099	11.4	5.15
LCMW-5	10/1/2024	<0.03	<0.003	0.012	0.021	16.1	0.0005	6.29	0.64
MHMW-10 ¹	5/22/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ¹	9/26/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ²	5/21/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ²	9/26/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*Circular DEQ-7, Montana Numeric Water Quality Standards , June 2019, human health standard

**SSCL, Table 4A, Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex State Superfund Facility, Lewis and Clark County, Montana , March 2016 (ROD)

Groundwater standards are for dissolved metals only

Duplicate of LCMW-1

mg/L = milligrams per liter

1 = Field blank

2 = Equipment blank

J+ validation flag denotes that the result is an estimate with high bias

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Table 22. UBMC Groundwater Physiochemical, Anions, and Cations

UBMC / Mike Horse Area Groundwater																
Sample ID	Collection Date	Physiochemical						Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MW-2018-01	5/21/2024	6.6 J-	744	379		<10	548	21	25	<4	<1	361	73	48	1	2
MW-2018-01	9/26/2024	6.6 J-	626	327		<10	453	37	45	<4	<1	271	63	41	<1	2
MW-2018-03	5/21/2024	7.2 J-	242	116		12	145	74	90	<4	<1	45	24	14	<1	1
MW-2018-03	9/26/2024	7.4 J-	268	135		<10	158	110	130	<4	<1	32	28	16	<1	1
MW-2019-04	5/21/2024	7.4 J-	178	85		<10	107	71	86	<4	<1	16	18	9	<1	1
MW-2019-04	9/27/2024	7.4 J-	246	127		<10	141	100	130	<4	<1	23	28	14	<1	2
MW-2019-05	5/21/2024	7.5 J-	180	83		13	112	69	83	<4	<1	20	18	9	<1	2
MW-2019-05	9/27/2024	7.4 J-	418	191		<10	267	96	120	<4	<1	113	42	21	1	11
LCMW-1	5/22/2024	6.7 J-	217	89		<10	131	46	56	<4	2	53	19	10	<1	4
MHMW-9	5/22/2024	6.8 J-	217	89		<10	130	46	56	<4	2	53	19	10	<1	4
LCMW-1	10/1/2024	6.8 J-	302 J	97		<10	157	55	67	<4	1	53	21	10	1	4
MHMW-9	10/1/2024	6.8 J-	232 J	100		<10	147	56	67	<4	1	52	22	11	1	5
LCMW-5	5/22/2024	5.0 J-	762	321		<10	610	<4	<4	<4	3	376	85	26	2	8
LCMW-5	10/1/2024	6.0 J-	710	306		11	541	14	17	<4	<1	325	80	26	3	6
MHMW-10 ¹	5/22/2024	6.2 J-	5	<1		<20	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ¹	9/26/2024	6.0 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-11 ²	5/21/2024	6.9 J-	5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-11 ²	9/26/2024	6.0 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*B-1 Classification Standards ARM 17.30.623(2)(c)

---- No standard

Duplicate of LCMW-1

mg/L = milligrams per liter

umhos/cm = micromhos/centimeter

1 = Field blank

2 = Equipment blank

J- = validation flag denotes the associated value is estimated with low bias

J = validation flag denotes that the result is an estimate

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**ABBREVIATED DATA SUMMARY REPORT,
2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT
MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA**

Revision: 0
Page: E-7

Table 23. Repository Area Groundwater (dissolved metals, mg/L)

Repository Area Groundwater (dissolved metals, mg/L)									
<i>Collection</i>									
<i>Sample ID</i>	<i>Date</i>	<i>Aluminum</i>	<i>Arsenic</i>	<i>Cadmium</i>	<i>Copper</i>	<i>Iron</i>	<i>Lead</i>	<i>Manganese</i>	<i>Zinc</i>
	Standard*	----/20**	0.01	0.005	1.3	----/14**	0.015	----/0.94**	2
S35-MW-01	6/14/2024	0.16	<0.003	<0.00008	0.002	0.1	<0.0005	0.007	<0.01
S35-MW-01	9/24/2024	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	4/9/2024	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/21/2024	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	9/24/2024	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/18/2024	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/21/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
S35-MW-04	9/24/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*Circular DEQ-7, *Montana Numeric Water Quality Standards*, June 2019, human health standard

---- No Circular DEQ-7 human health standard for aluminum, iron, and manganese

**SSCL, Table 4A, *Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex State Superfund Facility, Lewis and Clark County, Montana*, March 2016 (ROD)

Groundwater standards are for dissolved metals only

NS = No sample collected

mg/L = milligrams per liter

ABBREVIATED DATA SUMMARY REPORT, 2024 ENVIRONMENTAL MONITORING, UPPER BLACKFOOT MINING COMPLEX, LEWIS & CLARK COUNTY, MONTANA	Revision: 0 Page: E-8

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Table 24. Repository Area Groundwater Physiochemical, Anions, and Cations

Repository Area Groundwater															
Sample ID	Collection Date	Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-MW-01	6/14/2024	7 J-	102	45	<10	198	49	60	<4	<1	2	10	5	1	2 J+
S35-MW-01	9/24/2024	7.6 J-	235	121	<10	134	120	140	<4	<1	5	27	13	1	2
S35-MW-03	4/9/2024	7.8 J-	558	231	15	335	230	280	<4	28	9	67	16	2	12
S35-MW-03	5/21/2024	7.6 J-	554	252	14	327	240	290	<4	29	10	73	17	2	12
S35-MW-03	9/24/2024	7.9 J-	548	266	14	326	230	280	<4	25	10	77	18	2	12
S35-MW-03	12/18/2024	7.7	583	268	11	327	240	300	<4	26	10	78	18	2	12
S35-MW-04	5/21/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
S35-MW-04	9/24/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*B-1 Classification Standards ARM 17.30.623(2)(c)

---- No standard

NS = No sample collected

mg/L = milligrams per liter

umhos = micromhos

J- = validation flag denotes the associated value is estimated with low bias

J+ = validation flag denotes the reported results are estimates with a high bias

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Appendix F

Historical Data Compilation Tables (RI – Present)

Appendix F-1: Surface Water Compilation Data Tables

Appendix F-2: Sediment Compilation Data Tables

Appendix F-3: Groundwater Compilation Data Tables

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Appendix F-1: Surface Water Compilation Data Tables

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
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Table 29. Repository Area Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)

Table 31. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)

Table 32. Repository Area Surface Water Physiochemical, Anions, and Cations; Historical Compilation

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Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 1 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
AW-003A	10/9/2007	0.002	0.0872	0.226	0.11	<0.0005	30.9	60.40
AW-003A	5/21/2018	<0.003	0.00092	0.007	<0.03	<0.0005	0.017	0.13
AW-003A	10/2/2019	<0.003	0.00100	0.007	<0.03	0.0006	0.014	0.16
BRSW-1	4/29/2011	<0.003	<0.00008	0.001	0.13	<0.0005	<0.005	<0.01
BRSW-1	6/13/2011	<0.003	<0.00008	0.001	0.1	<0.0005	0.006	<0.01
BRSW-1	9/19/2011	<0.003	<0.00008	<0.001	0.25	<0.0005	0.008	<0.01
BRSW-1	12/11/2011	<0.003	<0.00008	<0.001	0.08	<0.0005	0.006	<0.01
BRSW-1	3/26/2012	<0.003	<0.00008	0.002	0.25	<0.0005	0.006	<0.01
BRSW-1	5/7/2012	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-1	10/2/2012	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	12/10/2012	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	3/25/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/24/2013	<0.003	<0.00008	0.001	0.03	<0.0005	<0.005	<0.01
BRSW-1	9/12/2013	<0.003	<0.00008	0.001	0.54	0.0011	0.026	<0.01
BRSW-1	12/13/2013	<0.003	<0.00008	<0.001	0.03	<0.0005	<0.005	<0.01
BRSW-1	3/30/2014	<0.003	<0.00008	<0.001	0.04	<0.0005	<0.005	<0.01
BRSW-1	5/27/2014	<0.003	<0.00008	0.001	0.13	<0.0005	0.007 J	<0.01 J
BRSW-1	10/10/2014	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	12/20/2014	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	3/10/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/19/2015	<0.003	<0.00008	0.002 U	0.16	0.0005	<0.005	<0.01
BRSW-1	10/6/2015	0.003	<0.00008	<0.001	0.08	0.0006	<0.005	<0.01
BRSW-1	12/15/2015	<0.003	<0.00008	<0.001	0.04	0.0007	<0.005	<0.01
BRSW-1	3/22/2016	<0.003	0.0003	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/12/2016	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
BRSW-1	10/17/2016	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	12/21/2016	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/31/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	9/29/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-3A	4/30/2011	<0.003	0.0292	0.314	0.52	0.0028	8.76	6.45
BRSW-3A	6/14/2011	<0.003	0.0242	0.168	0.9	0.0201	7.43	5.22
BRSW-3A	9/20/2011	<0.003	0.00236	0.035	0.56	0.0108	0.723	0.52
BRSW-3A	12/11/2011	<0.003	0.00083	0.001	0.08	0.0023	0.595	0.48
BRSW-3A	3/27/2012	<0.003	0.00426	0.022	0.44	0.0032	1.5	1.36
BRSW-3A	5/7/2012	<0.003	0.00217	0.005	0.13	0.0019	1.14	0.83
BRSW-3A	10/2/2012	<0.003	0.00025	0.001	<0.03	0.0008	0.199	0.22
BRSW-3A	12/10/2012	<0.003	0.00164	0.004	0.08	0.0007	0.958	0.82
BRSW-3A	3/25/2013	<0.003	0.00147	0.005	0.06	0.0005	0.838	0.49
BRSW-3A	5/23/2013	<0.003	0.00302	0.01	0.21	0.0023	1.73	0.84
BRSW-3A	9/12/2013	<0.003	0.00032	0.002	0.06	0.0009	0.23	0.13
BRSW-3A	12/14/2013	<0.003	0.0003	0.001 U	0.03	<0.0005	0.26	0.17
BRSW-3A	3/30/2014	<0.003	0.0012	0.008	0.18	0.0018	0.669	0.39
BRSW-3A	5/27/2014	<0.003	0.00136	0.005	0.11	0.0013	0.939 J	0.36 J
BRSW-3A	10/10/2014	<0.003	0.00015	0.002	<0.03	<0.0005	0.13	0.08
BRSW-3A	12/20/2014	<0.003	0.00084	0.004	0.13	0.0023	0.681	0.27
BRSW-3A	3/10/2015	<0.003	0.00325	0.007	0.11	0.001	1.74	0.84
BRSW-3A	5/19/2015	<0.003	0.00212	0.018	0.53	0.0028	0.958	0.45
BRSW-3B	4/30/2011	0.003	0.291	4.75	4.46	0.0177	116	46.7
BRSW-3B	6/14/2011	<0.003	0.0488	0.447	2.26	0.0432	18	10.3
BRSW-3B	9/20/2011	<0.003	0.00056	0.002	<0.03	<0.0005	0.045	0.79
BRSW-3B	12/11/2011	<0.003	0.0008	0.004	0.31	0.0115	0.303	0.49
BRSW-3B	3/27/2012	0.012	0.00363	0.033	3.7	0.129	2.01	1.56
BRSW-3B	5/7/2012	<0.003	0.00152	0.002	0.09	0.0011	0.662	0.47
BRSW-3B	10/2/2012	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.26
BRSW-3B	12/10/2012	<0.003	0.00009	<0.001	<0.03	<0.0005	0.084	0.21
BRSW-3B	3/25/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.014	0.11
BRSW-24	3/25/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.013	0.11
BRSW-3B	5/23/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.07
BRSW-24	5/23/2013	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	0.07
BRSW-3B	9/12/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.007	0.07
BRSW-24	9/12/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.007	0.07
BRSW-3B	12/14/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.04
BRSW-24	12/14/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.04
BRSW-3B	3/30/2014	<0.003	0.00016	0.001	0.07	0.0008	0.031	0.07
BRSW-24	3/30/2014	<0.003	0.00019	0.001	0.08	0.0012	0.036	0.07
BRSW-3B	5/27/2014	<0.003	0.00046	0.002	0.08	0.0005	0.24 J	0.13 J
BRSW-24	5/27/2014	<0.003	0.00055	0.002	0.1	0.0006	0.304 J	0.16 J
BRSW-3B	10/10/2014	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-24	10/10/2014	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-3B	12/20/2014	<0.003	0.00013	<0.001	<0.03	<0.0005	0.075	0.06
BRSW-24	12/20/2014	<0.003	0.00012	<0.001	<0.03	<0.0005	0.071	0.05
BRSW-3B	3/10/2015	<0.003	0.00037	<0.001	0.03	<0.0005	0.207	0.13
BRSW-24	3/10/2015	<0.003	0.00036	<0.001	<0.03	<0.0005	0.207	0.13
BRSW-3B	5/19/2015	<0.003	0.00017	0.002 U	0.19	0.0007	0.058	0.06
BRSW-24	5/19/2015	<0.003	0.00016	0.002 U	0.18	0.0007	0.057	0.06
BRSW-3B	10/6/2015	0.022	0.00601	0.138	4.77	1.56	2.61	0.97
BRSW-24	10/6/2015	0.022	0.00598	0.137	4.7	1.53	2.57	0.96
BRSW-3B	12/15/2015	0.004	0.00077	0.02	0.82	0.104	0.414	0.13
BRSW-24	12/15/2015	0.003	0.0007	0.019	0.74	0.101	0.417	0.12
BRSW-3B	3/22/2016	<0.003	0.00015	0.001	0.06	0.0028	0.151	0.04
BRSW-24	3/22/2016	<0.003	0.00014	0.001	0.06	0.0029	0.148	0.03

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 2 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-3B	5/12/2016	<0.003	0.00123	0.006	0.28	0.0153	0.888	0.3
BRSW-24	5/12/2016	<0.003	0.00126	0.006	0.29	0.0162	0.903	0.3
BRSW-3B	10/17/2016	<0.003	0.00052	0.002	0.04	0.0013	0.095	0.12
BRSW-24	10/17/2016	<0.003	0.00049	0.002	0.05	0.0015	0.094	0.12
BRSW-3B	12/21/2016	<0.003	<0.00008	<0.001	0.05	0.0011	0.019	0.01
BRSW-24	12/21/2016	<0.003	<0.00008	<0.001	0.05	0.0011	0.019	0.01
BRSW-3B	5/1/2017	<0.003	0.00125	0.003	0.04	0.0009	0.081	0.25
BRSW-307	5/1/2017	<0.003	0.0012	0.003	0.04	0.0011	0.081	0.24
BRSW-3B	10/14/2017	<0.003	0.00009	0.004	0.1	0.0056	0.025	0.04
BRSW-307	10/14/2017	<0.003	0.00013	0.004	0.1	0.0056	0.021	0.04
BRSW-3B	5/22/2018	<0.003	<0.00008	0.001	0.07	0.0006	0.005	<0.01
BRSW-3B	10/11/2018	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.011	<0.01
BRSW-3	5/30/2019	<0.003	<0.00008	0.002	0.12	0.0021	0.012	0.01
BRSW-3	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.009	<0.01
BRSW-307	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.009	<0.01
BRSW-3	5/28/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-307	5/28/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-3	9/29/2020	<0.003	0.00008	<0.001	<0.03	<0.0005	0.007	0.02
BRSW-307	9/29/2020	<0.003	0.00008	<0.001	<0.03	<0.0005	0.007	0.02
BRSW-3	5/25/2021	<0.003	<0.00008	0.002	0.19	0.0007	0.007	0.01
BRSW-307	5/25/2021	<0.003	<0.00008	0.002	0.16	0.0009	0.007	0.01
BRSW-3	9/21/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.008	<0.01
BRSW-3	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-307	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-3	9/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.01	<0.01
BRSW-4	10/10/2007	<0.002	0.0342	0.682	0.06	0.0481	1.39	4.01
BRSW-4A	6/17/2008	<0.003	0.0204	0.886	0.2	0.0798	1.19	2.54
BRSW-6	10/9/2007	<0.002	<0.00008	<0.001	0.03	<0.0005	<0.003	<0.01
BRSW-6	6/17/2008	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-6	5/30/2019	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-6	10/1/2019	<0.003	<0.00008	<0.001	0.11	<0.0005	0.085	0.01
BRSW-6	9/29/2020	<0.003	<0.00008	<0.001	0.1	<0.0005	0.052	<0.01
BRSW-9	10/9/2007	<0.002	0.00711	0.018	0.11	0.0019	1.47	3.42
BRSW-10	5/26/2020	<0.003	<0.00008	0.009	0.05	<0.0005	<0.005	0.01
BRSW-10	9/29/2020	<0.003	0.00021	0.002	<0.03	<0.0005	<0.005	0.01
BRSW-10	5/24/2021	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/20/2021	<0.003	0.00013	0.002	<0.03	<0.0005	<0.005	0.01
BRSW-10	5/15/2022	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/15/2022	<0.003	0.00015	0.003	<0.03	<0.0005	<0.005	0.01
BRSW-10	6/22/2023	<0.003	<0.00008	0.006	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/24/2023	<0.003	0.00012	0.002	<0.03	<0.0005	<0.005	0.01
BRSW-10	5/20/2024	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/23/2024	<0.003	0.0001	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-11	10/5/2007	<0.002	<0.00008	<0.001	0.61	<0.0005	0.126	<0.01
BRSW-12	10/5/2007	<0.002	0.00511	0.012	0.09	0.0019	0.33	1.75
BRSW-12	5/22/2018	<0.003	0.00171	0.015	0.12	0.0082	0.142	0.3
BRSW-307	5/22/2018	<0.003	0.00172	0.015	0.11	0.0073	0.141	0.29
BRSW-12	5/30/2019	<0.003	0.00060	0.008	0.16	0.0065	0.045	0.11
BRSW-307	5/30/2019	<0.003	0.00056	0.008	0.16	0.0074	0.046	0.12
BRSW-12	5/26/2020	<0.003	0.0003	0.006	0.29	0.0041	0.033	0.06
BRSW-12	9/29/2020	<0.003	0.00061	0.002	0.07	<0.0005	0.09	0.17
BRSW-12	5/25/2021	<0.003	0.00023	0.004	0.16	0.002	0.024	0.05
BRSW-12	9/20/2021	<0.003	0.00056	0.002 J	0.08	0.0006	0.068	0.14
BRSW-12	5/15/2022	<0.003	0.00021	0.002	0.06	0.0007 J+	0.017	0.05
BRSW-12	9/15/2022	<0.003	0.00046	0.002	0.1	<0.0005	0.03	0.09
BRSW-12	6/22/2023	<0.003	0.00021	0.003	0.04 J+	0.0008	0.02	0.04
BRSW-307	6/22/2023	<0.003	0.00021	0.003	0.04 J+	<0.0005	0.019	0.04
BRSW-12	9/24/2023	<0.003	0.00042	0.002	0.07	<0.0005	0.076	0.08
BRSW-307	9/24/2023	<0.003	0.00039	0.002	0.07	<0.0005	0.076	0.08
BRSW-12	5/20/2024	<0.003	0.00016	0.002	0.04	0.0006	0.015	0.03
BRSW-307	5/20/2024	<0.003	0.00014	0.002	0.04	0.0009	0.015	0.03
BRSW-12	9/23/2024	<0.003	0.00033	0.002	0.07	<0.0005	0.057	0.08
BRSW-307	9/23/2024	<0.003	0.00033	0.002	0.06	<0.0005	0.058	0.08
BRSW-13	10/5/2007	<0.002	0.00038	0.136	6.72	0.0062	0.354	0.07
BRSW-13	5/2/2017	<0.003	<0.00008	0.042	1.22	0.0006 U	0.106	0.03
BRSW-13	10/13/2017	<0.003	0.00033	0.102	4.48	0.0011	0.309	0.07
BRSW-14	5/2/2017	<0.003	<0.00008	0.002 U	0.14	0.0005 U	0.009	<0.01
BRSW-14	10/13/2017	<0.003	<0.00008	0.003	0.43	0.0013	0.071	<0.01
BRSW-15	5/2/2017	<0.003	0.00036	0.004	0.11	<0.0005	0.097	0.02
BRSW-15	10/13/2017	<0.003	0.00069	0.011	1.61	0.0062	0.918	0.04
BRSW-16	10/4/2007	<0.002	0.00136	0.005	0.19	0.0009	0.076	0.55
BRSW-16	6/17/2008	<0.003	0.00141	0.010	0.12	0.0034	0.051	0.42
BRSW-16	9/28/2020	<0.003	0.0004	0.006	0.31	0.0008	0.051	0.13
BRSW-16	5/24/2021	<0.003	0.00038	0.008	0.23	0.0027	0.059	0.12
BRSW-16	9/20/2021	<0.003	0.00036	0.004 J	0.21	0.0006	0.024	0.12
BRSW-16	5/15/2022	<0.003	0.00029	0.007	0.18	0.0013 J+	0.038	0.1
BRSW-16	9/15/2022	<0.003	0.00028	0.004	0.14	0.0006	0.015	0.1
BRSW-17	10/3/2007	<0.002	<0.00008	0.001	0.17	<0.0005	0.111	0.12
BRSW-17	6/16/2008	<0.003	0.00053	0.003	0.06	0.0006	0.019	0.23
BRSW-17	9/28/2020	<0.003	0.00013	0.002	0.2	<0.0005	0.096	0.04
BRSW-17	5/24/2021	<0.003	0.00022	0.004	0.14	0.0005	0.046	0.09
BRSW-17	9/20/2021	<0.003	<0.00008	<0.001 UJ	0.16	<0.0005	0.11	0.03

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 3 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-17	5/15/2022	<0.003	0.00025	0.003	0.16	0.0005 J+	0.049	0.1
BRSW-17	10/21/2022	<0.003	0.00029	0.001	0.2	<0.0005	0.152	0.13
BRSW-18 ³	5/2/2017	<0.003	<0.00008	0.001 U	0.05	<0.0005	0.019	<0.01
BRSW-18 ³	10/13/2017	<0.003	<0.00008	<0.001	0.06	<0.0005	0.158	<0.01
BRSW-19	5/1/2017	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-20	5/31/2019	<0.003	0.0017	0.013	0.05	0.0007	0.018	0.25
BRSW-20	10/2/2019	<0.003	0.00238	0.004	<0.03	<0.0005	<0.005	0.38
BRSW-20	5/28/2020	<0.003	0.00113	0.009	<0.03	0.0007	0.012	0.17
BRSW-20	9/30/2020	<0.003	0.00146	0.004	0.04	0.0008	0.007	0.22
BRSW-20	9/21/2021	<0.003	0.00149	0.004	0.25	0.0024	0.017	0.23
BRSW-21	10/5/2007	<0.002	0.00012	0.007	6.1	<0.0005	0.303	0.06
BRSW-21	5/2/2017	<0.003	<0.00008	0.004	1.36	<0.0005	0.074	0.02
BRSW-21	10/13/2017	<0.003	0.00013	0.005	3.08	0.0005	0.257	0.06
BRSW-22	4/30/2011	<0.003	0.0308	0.031	<0.03	0.0119	0.439	6.84
BRSW-24	4/30/2011	<0.003	0.0314	0.033	<0.03	0.0116	0.448	6.85
BRSW-22	6/13/2011	<0.003	0.00958	0.195	0.12	0.0175	0.424	1.57
BRSW-24	6/13/2011	<0.003	0.00975	0.2	0.17	0.0202	0.425	1.57
BRSW-22	9/19/2011	<0.003	0.0104	0.082	<0.03	0.0085	0.169	1.51
BRSW-24	9/19/2011	<0.003	0.0105	0.087	<0.03	0.0083	0.168	1.56
BRSW-22	12/11/2011	<0.003	0.00958	0.018	<0.03	0.0054	<0.005	2.11
BRSW-24	12/11/2011	<0.003	0.00964	0.018	<0.03	0.0054	<0.005	2.13
BRSW-22	3/26/2012	<0.003	0.0154	0.023	<0.03	0.0059	<0.005	3.45
BRSW-24	3/26/2012	<0.003	0.0156	0.023	<0.03	0.0059	<0.005	3.43
BRSW-22	5/7/2012	<0.003	0.00456	0.059	<0.03	0.0033	0.072	0.76
BRSW-24	5/7/2012	<0.003	0.00454	0.058	<0.03	0.0034	0.079	0.73
BRSW-22	10/2/2012	<0.003	0.00613	0.019	<0.03	0.005	<0.005	1.12
BRSW-24	10/2/2012	<0.003	0.00612	0.017	<0.03	0.0046	<0.005	1.06
BRSW-22	12/10/2012	<0.003	0.00904	0.016	<0.03	0.0049	<0.005	2.03
BRSW-24	12/10/2012	<0.003	0.00909	0.016	<0.03	0.0049	<0.005	2.06
BRSW-22	3/25/2013	<0.003	0.011	0.017	<0.03	0.0077	<0.005	2.57
BRSW-22	5/24/2013	<0.003	0.0039	0.044	<0.03	0.0033	0.058	0.61
BRSW-22	9/12/2013	<0.003	0.00481	0.025	<0.03	0.0044	0.012	0.76
BRSW-22	12/13/2013	<0.003	0.00928	0.043	0.06	0.0149	0.014	2.16
BRSW-22	3/29/2014	<0.003	0.0134	0.167	0.14	0.0406	0.087	3.06
BRSW-22	5/27/2014	<0.003	0.00307	0.064	0.12	0.0184	0.073 J	0.49 J
BRSW-22	10/10/2014	<0.003	0.00694	0.055	<0.03	0.0038	0.077	1.2
BRSW-22	12/20/2014	<0.003	0.0064	0.016	<0.03	0.0024	<0.005	1.43
BRSW-22	3/10/2015	<0.003	0.0091	0.026	<0.03	0.0024	0.023	1.88
BRSW-22	5/19/2015	<0.003	0.00381	0.054	0.04	0.0031	0.069	0.65
BRSW-22	10/6/2015	<0.003	0.00802	0.056	<0.03	0.0037	0.101	1.29
BRSW-22	12/15/2015	<0.003	0.00807	0.016	<0.03	0.0042	<0.005	1.58
BRSW-22	3/22/2016	<0.003	0.0075	0.01	<0.03	0.0028	<0.005	1.73
BRSW-22	5/12/2016	<0.003	0.00305	0.038	<0.03	0.002	0.054	0.47
BRSW-22	5/1/2017	<0.003	0.00137	0.004	0.07	0.0012	0.008	0.31
BRSW-22	10/14/2017	<0.003	0.00194	0.003	<0.03	<0.0005	<0.005	0.31
BRSW-22	5/23/2018	<0.003	0.00123	0.012	0.05	0.001	0.025	0.19
BRSW-22	10/11/2018	<0.003	0.00122	0.004	<0.03	<0.0005	<0.005	0.18
BRSW-23	10/10/2007	<0.002	0.00328	0.014	0.7	0.0063	1.21	0.69
BRSW-23	4/30/2011	<0.003	0.00739	0.049	1.18	0.0291	1.06	1.71
BRSW-23	6/14/2011	<0.003	0.00394	0.077	0.22	0.0122	0.448	0.74
BRSW-23	9/20/2011	<0.003	0.00203	0.008	0.12	0.128	0.377	0.47
BRSW-23	12/11/2011	<0.003	0.00175	0.005	0.11	0.0073	0.553	0.56
BRSW-23	3/27/2012	<0.003	0.0079	0.031	0.64	0.036	0.595	1.91
BRSW-23	5/7/2012	0.004	0.00362	0.029	0.83	0.0705	0.567	0.76
BRSW-23	10/2/2012	<0.003	0.00118	0.004	0.08	0.009	0.349	0.25
BRSW-23	12/10/2012	<0.003	0.00234	0.007	0.13	0.0054	0.889	0.73
BRSW-23	3/25/2013	<0.003	0.00234	0.007	0.07	0.0034	0.717	0.64
BRSW-23	5/23/2013	<0.003	0.00175	0.01	0.09	0.0063	0.305	0.36
BRSW-23	9/12/2013	<0.003	0.00098	0.005	0.17	0.0044	0.203	0.19
BRSW-23	12/14/2013	<0.003	0.00222	0.007	0.15	0.0062	0.684	0.63
BRSW-23	3/30/2014	<0.003	0.00415	0.01	0.15	0.0071	0.574	1.13
BRSW-23	5/27/2014	<0.003	0.00122	0.015	0.16	0.0107	0.225 J	0.23 J
BRSW-23	10/10/2014	<0.003	0.00156	0.006	0.07	0.0042	0.269	0.39
BRSW-23	12/20/2014	<0.003	0.00236	0.005	0.14	0.0035	0.579	0.66
BRSW-23	3/10/2015	<0.003	0.00508	0.013	0.18	0.008	1.19	1.28
BRSW-23	5/19/2015	<0.003	0.0033	0.025	0.36	0.01	0.479	0.69
BRSW-23	10/6/2015	<0.003	0.00284	0.012	0.47	0.0084	0.733	0.61
BRSW-23	12/15/2015	<0.003	0.0162	0.111	2.58	0.0436	5.88 J+	2.9
BRSW-23	3/22/2016	<0.003	0.0216	0.082	1.62	0.0291	4.29	4.84
BRSW-23	5/12/2016	<0.003	0.0146	0.042	0.98	0.0166	4.71	2.86
BRSW-23	10/17/2016	<0.003	0.0425	0.24	7.36	0.0571	10.6	10.3
BRSW-23	5/1/2017	<0.003	0.00455	0.014	0.25	0.0198	0.164	0.95
BRSW-23	10/14/2017	<0.003	0.00012	0.001	<0.03	0.0007	0.017	0.04
BRSW-23	5/22/2018	<0.003	0.00042	0.003	0.08	0.0007	0.028	0.07
BRSW-23	5/30/2019	<0.003	0.00047	0.003	0.12	0.0024	0.022	0.09
BRSW-23	10/1/2019	<0.003	0.00011	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-23	5/28/2020	<0.003	0.0003	0.002	0.03	0.0006	0.006	0.06
BRSW-23	9/29/2020	<0.003	0.00018	0.001	0.04	0.0007	0.009	0.03
BRSW-23	5/25/2021	<0.003	0.00079	0.002	0.19	0.0009	0.011	0.15
BRSW-23	9/21/2021	<0.003	0.00016	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-23	5/16/2022	<0.003	0.00074	0.002	0.07	0.0006	0.005	0.15
BRSW-23	9/16/2022	<0.003	0.00019	<0.001	<0.03	<0.0005	0.007	0.04

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 4 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-26	5/21/2018	<0.003	0.00137	0.078	0.66	0.0041	0.074	0.25
BRSW-26	5/29/2019	<0.003	0.00133	0.061	<0.03	<0.0005	0.049	0.23
BRSW-26	10/2/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
BRSW-26	9/30/2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
BRSW-29	10/9/2007	<0.002	0.00426	0.006	0.13	0.0024	0.761	0.84
BRSW-29	5/22/2018	<0.003	0.00197	0.009	0.1	0.0056	0.17	0.3
BRSW-29	5/30/2019	<0.003	0.00016	0.001	0.05	0.0005	0.008	0.03
BRSW-29	10/1/2019	<0.003	0.00016	0.001 U	0.04	<0.0005	0.042	0.03
BRSW-29	5/26/2020	<0.003	0.00017	0.001	0.04	<0.0005	<0.005	0.03
BRSW-29	9/29/2020	<0.003	0.00008	<0.001	0.04	<0.0005	0.024	0.02
BRSW-29	5/24/2021	<0.003	0.00014	0.002	0.04	<0.0005	<0.005	0.03
BRSW-29	9/20/2021	<0.003	0.00013	<0.001	<0.03	<0.0005	0.01	0.03
BRSW-29	5/16/2022	<0.003	<0.00008	0.002	<0.03	0.0005	<0.005	0.03
BRSW-29	9/16/2022	<0.003	0.00012	<0.001	0.04	<0.0005	0.016	0.02
BRSW-29	6/22/2023	<0.003	0.00008	<0.001	<0.03	<0.0005	<0.005	0.01
BRSW-29	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.008	0.02
BRSW-29	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-29	9/23/2024	<0.003	0.00009	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-31	10/4/2007	<0.002	0.00225	0.022	1.03	0.0055	0.273	0.81
BRSW-31	6/16/2008	<0.003	0.00149	0.012	0.13	0.0042	0.055	0.39
BRSW-31	5/3/2017	<0.003	0.00096	0.009	0.18	0.0017	0.055	0.27
BRSW-31	10/12/2017	<0.003	0.00121	0.013	0.56	0.0025	0.266	0.42
BRSW-31	5/22/2018	<0.003	0.00101	0.008	0.14	0.0032	0.044	0.25
BRSW-31	10/12/2018	<0.003	0.00151	0.017	0.74	0.0013	0.329	0.52
BRSW-307	10/12/2018	<0.003	0.00152	0.017	0.72	0.0013	0.329	0.52
BRSW-31	9/28/2020	<0.003	0.00073	0.016	0.82	0.0028	0.331	0.21
BRSW-33	10/9/2007	<0.002	0.00575	0.012	0.07	0.0031	0.341	1.67
BRSW-33	5/26/2020	<0.003	0.00018	0.004	0.11	0.0007	0.008	0.04
BRSW-33	9/29/2020	<0.003	0.00032	0.002	<0.03	<0.0005	0.027	0.07
BRSW-33	5/24/2021	<0.003	0.00018	0.002	0.06	<0.0005	0.006	0.04
BRSW-33	9/20/2021	<0.003	0.00072	0.002	<0.03	<0.0005	0.025	0.08
BRSW-33	5/15/2022	<0.003	0.0002	0.002	<0.03	<0.0005	<0.005	0.04
BRSW-33	9/15/2022	<0.003	0.00034	0.002	0.04	<0.0005	0.024	0.08
BRSW-33	6/22/2023	<0.003	0.00018	0.002	<0.03	<0.0005	<0.005	0.03
BRSW-33	9/24/2023	<0.003	0.00029	0.002	0.04	<0.0005	0.019	0.05
BRSW-33	5/20/2024	<0.003	0.00012	0.002	<0.03	<0.0005	<0.005	0.02
BRSW-33	9/23/2024	<0.003	0.00026	0.001	<0.03	<0.0005	0.011	0.06
BRSW-35	5/30/2019	<0.003	0.00240	0.008	0.06	0.0014	0.063	0.40
BRSW-35	10/1/2019	<0.003	0.00044	0.002	<0.03	<0.0005	<0.005	0.06
BRSW-35	9/29/2020	<0.003	0.00075	0.002	<0.03	<0.0005	<0.005	0.1
BRSW-35	5/25/2021	<0.003	0.00326	0.006	0.16	0.0015	0.027	0.65
BRSW-35	9/21/2021	<0.003	0.00085	0.002	0.04	0.0008	<0.005	0.11
BRSW-36	10/9/2007	<0.002	0.00922	0.014	0.08	0.0013	1.31	3.61
BRSW-36	5/22/2018	<0.003	0.00168	0.009	0.11	0.0062	0.121	0.29
BRSW-36	5/26/2020	<0.003	0.00025	0.002	0.17	0.0014	0.013	0.06
BRSW-36	9/29/2020	<0.003	0.00036	0.002	<0.03	<0.0005	0.022	0.09
BRSW-36	5/24/2021	<0.003	0.00021	0.002	0.07	<0.0005	0.005	0.05
BRSW-36	9/20/2021	<0.003	0.00047	0.003	<0.03	<0.0005	0.022	0.12
BRSW-36	5/15/2022	<0.003	0.00022	0.001	<0.03	<0.0005	<0.005	0.05
BRSW-36	9/15/2022	<0.003	0.00017	0.002	0.04	<0.0005	0.04	0.03
BRSW-36	6/22/2023	<0.003	0.00022	0.001 J+	<0.03	<0.0005	<0.005	0.04
BRSW-36	9/24/2023	<0.003	0.00014	0.002	<0.03	<0.0005	0.008	0.02
BRSW-36	5/20/2024	<0.003	0.00016	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-36	9/23/2024	<0.003	0.00013	0.001	<0.03	<0.0005	0.017	0.02
BRSW-38	4/30/2011	<0.003	0.0174	0.094	2.38	0.0376	2.67	3.86
BRSW-38	9/20/2011	<0.003	0.00462	0.005	0.13	0.0087	0.672	1.05
BRSW-38	6/13/2011	<0.003	0.00434	0.027	0.19	0.0212	0.352	0.75
BRSW-38	12/11/2011	<0.003	0.00467	0.004	0.17	0.0065	0.775	1.22
BRSW-38	3/27/2012	<0.003	0.013	0.118	5.88	0.0647	1.66	2.64
BRSW-38	5/7/2012	<0.003	0.00521	0.028	0.56	0.0214	0.698	1.12
BRSW-38	10/2/2012	<0.003	0.00399	0.005	0.15	0.0092	0.748	0.89
BRSW-38	12/10/2012	<0.003	0.00838	0.027	1.63	0.0252	2.48	2.04
BRSW-38	3/25/2013	<0.003	0.0079	0.073	2.66	0.0329	2.07	1.99
BRSW-38	5/23/2013	<0.003	0.00402	0.023	0.54	0.0206	0.642 J+	0.74
BRSW-38	9/12/2013	<0.003	0.00446	0.006	0.21	0.0089	0.896	0.88
BRSW-38	12/13/2013	<0.003	0.00682	0.017	0.63	0.0172	1.31	1.79
BRSW-38	3/29/2014	<0.003	0.00615	0.032	1.26	0.0236	1.43	1.39
BRSW-38	5/27/2014	<0.003	0.00278	0.02	0.29	0.0192	0.292 J	0.48 J
BRSW-38	10/10/2014	<0.003	0.00389	0.012	0.35	0.0124	0.799	0.87
BRSW-38	12/20/2014	<0.003	0.00472	0.03	1.21	0.0199	1.21	1.11
BRSW-38	3/10/2015	<0.003	0.00619	0.03	0.77	0.0239	1.22	1.39
BRSW-38	5/19/2015	<0.003	0.00813	0.064	1.27	0.0254	1.01	1.54
BRSW-38	10/6/2015	<0.003	0.00837	0.053	2.62	0.0359	1.48	1.78
BRSW-38	12/15/2015	<0.003	0.00809	0.013	0.28	0.0126	0.613	1.94
BRSW-38	3/22/2016	<0.003	0.0098	0.022	0.56	0.0213	0.899	2.61
BRSW-38	5/12/2016	<0.003	0.00852	0.034	0.58	0.0268	1.09	1.67
BRSW-38	10/17/2016	<0.003	0.00743	0.024	0.9	0.0244	1.37	1.58
BRSW-38	12/20/2016	<0.003	0.00333	0.005	0.15	0.0049	0.343	0.8
BRSW-38	5/30/2019	<0.003	0.00032	0.002	0.07	0.0007	0.012	0.06
BRSW-38	10/1/2019	<0.003	0.00024	0.002	<0.03	0.0009	0.011	0.05
BRSW-38	5/26/2020	<0.003	0.00032	0.002	0.05	0.0005	0.006	0.06
BRSW-38	9/29/2020	<0.003	0.00021	0.001	<0.03	<0.0005	0.007	0.04

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 5 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-38	5/24/2021	<0.003	0.0003	0.002	0.07	0.0007	0.006	0.06
BRSW-38	9/20/2021	<0.003	0.00025	0.001	0.04	0.0006	0.017	0.04
BRSW-38	5/16/2022	<0.003	0.00026	0.001	0.04	<0.0005	<0.005	0.06
BRSW-38	9/16/2022	<0.003	0.00017	0.001	0.04	0.0006	0.008	0.03
BRSW-39A	10/10/2007	<0.002	0.005	0.009	0.41	0.0063	2.12	1.06
BRSW-39	5/22/2018	<0.003	0.0054	0.03	0.3	0.0231	0.625	0.83
BRSW-44	10/10/2007	<0.002	0.0199	0.093	0.05	0.0257	0.596	3.08
BRSW-44	6/17/2008	<0.003	0.00622	0.085	0.09	0.0189	1.019	1.11
BRSW-48	4/30/2011	<0.003	0.0163	0.122	3.11	0.0317	3.04	3.51
BRSW-48	6/13/2011	<0.003	0.0029	0.04	0.2	0.0202	0.316	0.51
BRSW-48	9/20/2011	<0.003	0.00277	0.008	0.38	0.0131	0.779	0.58
BRSW-48	12/11/2011	<0.003	0.00296	0.009	0.8	0.0191	1.41	0.8
BRSW-48	3/27/2012	0.004	0.0103	0.12	6.77	0.0619	1.57	2.3
BRSW-48	5/7/2012	0.003	0.00381	0.034	0.93	0.0483	0.657	0.8
BRSW-48	10/2/2012	<0.003	0.00199	0.007	0.47	0.0229	0.874	0.41
BRSW-48	12/10/2012	<0.003	0.00627	0.044	3.35	0.0371	2.96	1.5
BRSW-48	3/25/2013	<0.003	0.008	0.138	4.81	0.0432	3.11	1.73
BRSW-48	5/23/2013	<0.003	0.00228	0.017	0.34	0.0097	0.453	0.43
BRSW-48	9/12/2013	<0.003	0.00208	0.008	0.59	0.0147	0.816	0.37
BRSW-48	12/14/2013	<0.003	0.00511	0.034	1.8	0.0303	2.04	1.22
BRSW-48	3/30/2014	<0.003	0.00652	0.047	2.04	0.0261	1.58	1.56
BRSW-48	5/27/2014	<0.003	0.00159	0.021	0.34	0.0252	0.285 J	0.27 J
BRSW-48	10/10/2014	<0.003	0.0026	0.021	1	0.0226	0.776	0.59
BRSW-48	12/20/2014	<0.003 J+	0.00427	0.047	2.25	0.0289	1.37	1.01
BRSW-48	3/10/2015	<0.003	0.00675	0.059	1.92	0.0439	1.73	1.55
BRSW-48	5/19/2015	<0.003	0.00372	0.04	1.06	0.0166	0.608	0.76
BRSW-48	10/6/2015	<0.003	0.00876	0.154	8.55	0.0933	3.09	1.64
BRSW-48	12/15/2015	<0.003	0.0218	0.2	5.51	0.354	7.56 J+	3.92
BRSW-48	3/22/2016	<0.003	0.0223	0.211	5.05	0.416	7.38	4.57
BRSW-48	5/12/2016	<0.003	0.019	0.168	4.12	0.236	6.24	3.36
BRSW-48	10/17/2016	<0.003	0.0344	0.34	15.2	0.563	12.6	6.39
BRSW-48	12/20/2016	<0.003	0.0255	0.125	9.41	0.373	10.2	4.95
BRSW-101	10/3/2007	<0.002	0.00015	<0.001	0.050	<0.0005	0.004	0.09
BRSW-101	6/16/2008	<0.003	0.0005	0.003	0.070	0.0006	0.015	0.24
BRSW-102	10/3/2007	<0.002	0.00107	0.003	0.070	0.0016	0.012	0.1
BRSW-102	6/16/2008	<0.003	0.00051	0.003	0.060	0.0006	0.016	0.22
BRSW-102	9/28/2020	<0.003	<0.00008	0.001	0.12	<0.0005	0.009	0.03
BRSW-103	10/3/2007	<0.002	<0.00008	0.002	0.88	0.0016	0.226	<0.01
BRSW-103	6/16/2008	<0.003	0.00011	0.004	0.78	0.0025	0.103	0.03
BRSW-104	10/3/2007	<0.002	0.0012	0.004	0.08	<0.0005	0.039	0.52
BRSW-104	6/16/2008	<0.003	0.00129	0.010	0.14	0.0037	0.05	0.38
BRSW-104	5/3/2017	<0.003	0.00086	0.008	0.15	0.0015	0.04	0.26
BRSW-104	10/12/2017	<0.003	0.00087	0.006	0.24	0.0008	0.094	0.33
BRSW-104	9/28/2020	<0.003	0.00037	0.005	0.26	0.0007	0.03	0.12
BRSW-104	5/24/2021	<0.003	0.00037	0.007	0.23	0.0024	0.053	0.12
BRSW-104	9/20/2021	<0.003	0.00031	0.003 J	0.11	<0.0005	0.01	0.11
BRSW-307	9/20/2021	<0.003	0.00033	0.005 J	0.11	<0.0005	0.01	0.11
BRSW-104	5/15/2022	<0.003	0.0003	0.006	0.16	0.0011 J+	0.032	0.1
BRSW-104	10/21/2022	<0.003	0.00035	0.004	0.14	<0.0005	0.033	0.14
BRSW-105	10/4/2007	<0.002	0.00164	0.006	0.17	<0.0005	0.139	0.72
BRSW-105	6/16/2008	<0.003	0.00139	0.013	0.13	0.004	0.051	0.36
BRSW-106	10/4/2007	<0.002	0.00193	0.015	0.82	0.0035	0.216	0.76
BRSW-106	6/16/2008	<0.003	0.00146	0.012	0.11	0.0034	0.059	0.39
BRSW-107	10/4/2007	<0.002	0.00228	0.027	0.81	0.0048	0.256	0.93
BRSW-107	6/16/2008	<0.003	0.00163	0.013	0.12	0.0045	0.063	0.42
BRSW-107	5/3/2017	<0.003	0.00118	0.011	0.18	0.002	0.067	0.32
BRSW-107	10/12/2017	<0.003	0.00118	0.015	0.54	0.0032	0.263	0.4
BRSW-107	9/28/2020	<0.003	0.00066	0.015	0.78	0.0017	0.326	0.2
BRSW-107	5/24/2021	<0.003	0.0004	0.008	0.27	0.0028	0.072	0.12
BRSW-107	9/20/2021	<0.003	0.00069	0.017 J	0.79	0.0022	0.342	0.2
BRSW-108	10/10/2007	<0.002	0.0011	0.159	0.01	0.0012	0.374	0.22
BRSW-108	6/17/2008	<0.003	0.00042	0.055	0.23	0.001	0.137	0.1
BRSW-108	10/6/2015	<0.003	0.00095	0.143	0.04	0.0011	0.306	0.2 J+
BRSW-108	5/12/2016	<0.003	0.00062	0.089	0.05	0.0009	0.177	0.14
BRSW-108	5/2/2017	<0.001	0.00079	0.111	0.1	<0.001	0.241	0.19
BRSW-108	10/13/2017	<0.003	0.00087	0.135	0.04	0.0008	0.286	0.2
BRSW-108	5/21/2018	<0.003	0.00026	0.033	0.26	0.0011	0.085	0.07
BRSW-108	10/11/2018	<0.003	0.00088	0.127	0.15	0.0008	0.287	0.20
BRSW-108	5/29/2019	<0.003	0.00024	0.029	0.14	0.0009	0.076	0.06
BRSW-108	10/2/2019	<0.003	0.00094	0.131	0.05	0.0008	0.286	0.21
BRSW-108	9/30/2020	<0.003	0.00078	0.124	0.1	0.0009	0.262	0.19
BRSW-109	10/9/2007	<0.002	0.00632	0.015	0.11	0.0019	1.13	2.6
BRSW-110	10/4/2007	<0.002	0.00316	0.015	3.18	0.0156	0.278	1.04
BRSW-110	5/3/2017	<0.003	0.00033	0.087	0.56	<0.0005	0.017	0.01
BRSW-110	10/12/2017	<0.003	0.0013	0.004	0.45	0.0017	0.22	0.42
BRSW-110	9/28/2020	<0.003	0.00403	0.043	1.65	0.0429	4.31	0.75
BRSW-110	5/24/2021	<0.003	0.0003	0.003	0.07	0.0005	0.032	0.09
BRSW-110	9/20/2021	<0.003	0.00087	0.008 J	1.28	0.0113	10.5	0.26
BRSW-201	11/3/2011	<0.003	<0.00008	<0.001	<0.050	<0.0005	<0.005	0.01
BRSW-201	9/28/2020	<0.003	<0.00008	<0.001	0.09	<0.0005	0.005	<0.01
BRSW-202	11/3/2011	<0.003	<0.00008	<0.001	<0.050	<0.0005	<0.005	0.02
BRSW-203	11/3/2011	<0.003	<0.00008	0.001	<0.050	<0.0005	0.008	0.01

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 6 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-204	11/3/2011	<0.003	<0.00008	<0.001	<0.050	<0.0005	0.008	0.01
BRSW-204	9/28/2020	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-204	5/24/2021	<0.003	<0.00008	0.005	0.36	0.0006	0.028	0.03
BRSW-204	9/20/2021	<0.003	<0.00008	<0.001 UJ	0.03	<0.0005	<0.005	<0.01
BRSW-204	5/15/2022	<0.003	<0.00008	0.002	0.13	<0.0005	0.012	0.03
BRSW-204	9/15/2022	<0.003	<0.00008	<0.001	0.04	<0.0005	<0.005	<0.01
BRSW-205	11/3/2011	<0.003	<0.00008	<0.001	0.06	<0.0005	0.007	0.03
BRSW-206	11/3/2011	<0.003	0.00017	<0.001	<0.050	<0.0005	0.013	0.12
BRSW-206	5/24/2021	<0.003	0.0002	0.005	0.14	<0.0005	0.034	0.09
BRSW-206	9/20/2021	<0.003	<0.00008	<0.001 UJ	0.09	<0.0005	<0.005	0.02
BRSW-206	5/15/2022	<0.003	0.00015	0.002	0.15	<0.0005	0.024	0.07
BRSW-206	9/15/2022	<0.003	<0.00008	<0.001	0.11	<0.0005	<0.005	0.02
BRSW-301	3/22/2016	<0.003	0.00557	0.037	0.11	0.0194	0.01	0.65
BRSW-301	5/12/2016	<0.003	0.0164	0.266	0.15	0.0202	0.526	2.43
BRSW-301	5/1/2017	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-301	5/23/2018	<0.003	<0.00008	<0.001	0.04	<0.0005	<0.005	<0.01
BRSW-301	5/31/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-301	9/30/2020	<0.003	<0.00008	0.001	0.2	0.0016	0.018	<0.01
BRSW-301	5/25/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-301	9/21/2021	<0.003	<0.00008	<0.001	0.08	<0.0005	0.005	<0.01
BRSW-301	5/16/2022	<0.003	<0.00008	0.001	0.07	0.0006	<0.005	<0.01
BRSW-301	9/16/2022	<0.003	<0.00008	0.001	0.24	0.0012	0.015	<0.01
BRSW-301	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-302	3/22/2016	<0.003	0.00227	0.005	0.04	0.0015	<0.005	0.26
BRSW-302	5/12/2016	<0.003	0.00091	0.012	<0.03	0.0013	0.025	0.12
BRSW-303	3/22/2016	<0.003	0.00211	0.009	<0.03	0.0026	<0.005	0.27
BRSW-303	5/12/2016	<0.003	0.001	0.012	<0.03	0.0015	0.024	0.13
BRSW-303	5/1/2017	<0.003	0.00167	0.011	0.07	0.0025	0.04	0.29
BRSW-303	10/14/2017	<0.003	0.00071	0.005	<0.03	0.0007	<0.005	0.1
BRSW-304	3/22/2016	<0.003	0.0108	0.16	<0.03	0.0099	0.196	1.77
BRSW-304	5/12/2016	<0.003	0.00252	0.058	<0.03	0.002	0.097	0.32
BRSW-304	5/1/2017	<0.003	0.0103	0.246	0.06	0.0057	0.41	1.49
BRSW-304	10/14/2017	<0.003	0.00209	0.036	<0.03	0.0017	0.034	0.28
BRSW-304	5/23/2018	<0.003	0.00121	0.019	0.04	0.0012	0.04	0.17
BRSW-304	5/31/2019	<0.003	0.0012	0.028	<0.03	0.0011	0.041	0.17
BRSW-304	10/2/2019	<0.003	0.00186	0.022	<0.03	0.0019	0.020	0.26
BRSW-304	5/28/2020	<0.003	0.00086	0.017	<0.03	0.0016	0.025	0.12
BRSW-304	9/30/2020	<0.003	0.0018	0.025	<0.03	0.0021	0.018	0.24
BRSW-304	9/24/2023	<0.003	0.00158	0.016	<0.03	0.0015	0.007	0.23
BRSW-304	5/20/2024	<0.003	0.00038	0.004	<0.03	0.0015	<0.005	0.06
BRSW-304	9/23/2024	<0.003	0.00109	0.01	<0.03	0.0024	0.01	0.16
BRSW-305	3/22/2016	<0.003	0.00321	0.009	<0.03	0.0006	<0.005	0.51
BRSW-305	5/12/2016	<0.003	0.00272	0.05	<0.03	0.0022	0.079	0.35
BRSW-305	5/23/2018	<0.003	0.00106	0.015	0.04	0.0011	0.028	0.15
BRSW-306	3/22/2016	<0.003	0.006	0.015	<0.03	0.0007	0.007	1.59
BRSW-306	5/12/2016	<0.003	0.00276	0.045	<0.03	0.0025	0.068	0.36
BRSW-308 ¹	5/30/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	5/26/2020	<0.003	<0.00008	<0.001	<0.02	<0.0005	<0.005	<0.01
BRSW-308 ¹	9/29/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	5/27/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	9/20/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	9/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-308 ¹	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	5/30/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	5/26/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	9/28/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	5/25/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	9/20/2021	<0.003	<0.00008	<0.001 UJ	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	9/15/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-309 ²	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-400	5/1/2017	<0.003	0.00087	0.005	<0.03	<0.0005	0.013	0.13
BRSW-400	9/29/2020	<0.003	0.00134	0.012	0.05	0.0013	0.03	0.18
BRSW-003A	9/29/2020	<0.003	0.00033	0.001	<0.03	<0.0005	0.006	0.08
BRSW-003A	5/24/2021	<0.003	0.00014	0.001	0.04	<0.0005	<0.005	0.03
BRSW-003A	9/20/2021	<0.003	0.00026	<0.001	<0.03	<0.0005	0.012	0.06
BRSW-003A	5/16/2022	<0.003	0.00011	0.001	0.03	<0.0005	<0.005	0.03
BRSW-003A	9/16/2022	<0.003	0.00027	<0.001	<0.03	<0.0005	<0.005	0.06
BRSW-003A	6/22/2023	<0.003	0.00011	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	9/24/2023	<0.003	0.00019	0.0009	0.011	<0.0005	0.05	0.04

Table 25. UBMC Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 7 of 7

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Human Health Comparison								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
BRSW-003A	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	9/23/2024	<0.003	0.00023	<0.001	<0.03	<0.0005	<0.005	0.05
MHSW-101	7/16/2008	<0.003	0.00814	0.077	0.15	0.0252	0.091	1.04
MHSW-102	7/16/2008	<0.003	0.00081	0.001	<0.050	0.0058	<0.005	0.12
MHTDS-9	10/20/2016	<0.003	0.0153	0.012	<0.05	0.0039	0.211	2.6
Seep A	5/1/2017	0.007	0.357	15.6	0.83	0.135	22.3	53.4
Seep A	5/23/2018	<0.003	0.00281	0.038	0.05	0.0014	0.091	0.49
Seep A	5/31/2019	<0.003	0.0011	0.007	0.03	0.0006	0.014	0.21
Seep A	10/2/2019	<0.003	0.00069	0.002	<0.03	0.0007	0.013	0.12
Seep A	9/30/2020	<0.003	0.00061	0.001	<0.03	0.0006	0.018	0.1
SeepB	5/1/2017	<0.003	0.00111	0.015	0.48	0.0123	0.077	0.2

Note: < Indicates the concentration is less than the reporting limit
Exceeds standard
*Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019, human health standard
---- Circular DEQ-7 does not have a human health standard for iron and manganese
** SSCL, Final Baseline Human Health Risk Assessment, Section 10, Page 10-1
Italics = baseline data collected by Pioneer Technical Services, Inc., Final Remedial Investigation Report, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana, dated January 31, 2013
Duplicate Sample
mg/L = milligrams per liter
J = validation flag denotes that the result is an estimate with high or low bias
J+ = validation flag denotes that the result is an estimate with high bias
U = validation flag denotes the reported result is a false positive/non-detect
UJ = validation flag denotes the associated value is considered estimated at an elevated level of detection
1 = Field blank
2 = Equipment blank
3 = Sample not collected in the historic BRSW-18 (at Aspen Grove CG) location. Collected on Swamp Gulch downstream of BRSW-14.

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Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 1 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
AW-003A	10/9/2007	0.002	0.0872	0.226	0.11	<0.0005	30.9	60.40
AW-003A	5/21/2018	<0.003	0.00092	0.007	<0.03	<0.0005	0.017	0.13
AW-003A	10/1/2019	<0.003	0.00100	0.007	<0.03	0.0006	0.014	0.16
BRSW-1	4/29/2011	<0.003	<0.00008	0.001	0.13	<0.0005	<0.005	<0.01
BRSW-1	6/13/2011	<0.003	<0.00008	0.001	0.1	<0.0005	0.006	<0.01
BRSW-1	9/19/2011	<0.003	<0.00008	<0.001	0.25	<0.0005	0.008	<0.01
BRSW-1	12/11/2011	<0.003	<0.00008	<0.001	0.08	<0.0005	0.006	<0.01
BRSW-1	3/26/2012	<0.003	<0.00008	0.002	0.25	<0.0005	0.006	<0.01
BRSW-1	5/7/2012	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-1	10/2/2012	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	12/10/2012	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	3/25/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/24/2013	<0.003	<0.00008	0.001	0.03	<0.0005	<0.005	<0.01
BRSW-1	9/12/2013	<0.003	<0.00008	0.001	0.54	0.0011	0.026	<0.01
BRSW-1	12/13/2013	<0.003	<0.00008	<0.001	0.03	<0.0005	<0.005	<0.01
BRSW-1	3/30/2014	<0.003	<0.00008	<0.001	0.04	<0.0005	<0.005	<0.01
BRSW-1	5/27/2014	<0.003	<0.00008	0.001	0.13	<0.0005	0.007 J	<0.01 J
BRSW-1	10/10/2014	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	12/20/2014	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	3/10/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/19/2015	<0.003	<0.00008	0.002 U	0.16	0.0005	<0.005	<0.01
BRSW-1	10/6/2015	0.003	<0.00008	<0.001	0.08	0.0006	<0.005	<0.01
BRSW-1	12/15/2015	<0.003	<0.00008	<0.001	0.04	0.0007	<0.005	<0.01
BRSW-1	3/22/2016	<0.003	0.0003	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/12/2016	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
BRSW-1	10/17/2016	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	12/21/2016	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	5/31/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-1	9/29/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-3A	4/30/2011	<0.003	0.0292	0.314	0.52	0.0028	8.76	6.45
BRSW-3A	6/14/2011	<0.003	0.0242	0.168	0.9	0.0201	7.43	5.22
BRSW-3A	9/20/2011	<0.003	0.00236	0.035	0.56	0.0108	0.723	0.52
BRSW-3A	12/11/2011	<0.003	0.00083	0.001	0.08	0.0023	0.595	0.48
BRSW-3A	3/27/2012	<0.003	0.00426	0.022	0.44	0.0032	1.5	1.36
BRSW-3A	5/7/2012	<0.003	0.00217	0.005	0.13	0.0019	1.14	0.83
BRSW-3A	10/2/2012	<0.003	0.00025	0.001	<0.03	0.0008	0.199	0.22
BRSW-3A	12/10/2012	<0.003	0.00164	0.004	0.08	0.0007	0.958	0.82
BRSW-3A	3/25/2013	<0.003	0.00147	0.005	0.06	0.0005	0.838	0.49
BRSW-3A	5/23/2013	<0.003	0.00302	0.01	0.21	0.0023	1.73	0.84
BRSW-3A	9/12/2013	<0.003	0.00032	0.002	0.06	0.0009	0.23	0.13
BRSW-3A	12/14/2013	<0.003	0.0003	0.001 U	0.03	<0.0005	0.26	0.17
BRSW-3A	3/30/2014	<0.003	0.0012	0.008	0.18	0.0018	0.669	0.39
BRSW-3A	5/27/2014	<0.003	0.00136	0.005	0.11	0.0013	0.939 J	0.36 J
BRSW-3A	10/10/2014	<0.003	0.00015	0.002	<0.03	<0.0005	0.13	0.08
BRSW-3A	12/20/2014	<0.003	0.00084	0.004	0.13	0.0023	0.681	0.27
BRSW-3A	3/10/2015	<0.003	0.00325	0.007	0.11	0.001	1.74	0.84
BRSW-3A	5/19/2015	<0.003	0.00212	0.018	0.53	0.0028	0.958	0.45
BRSW-3B	4/30/2011	0.003	0.291	4.75	4.46	0.0177	116	46.7
BRSW-3B	6/14/2011	<0.003	0.0488	0.447	2.26	0.0432	18	10.3
BRSW-3B	9/20/2011	<0.003	0.00056	0.002	<0.03	<0.0005	0.045	0.79
BRSW-3B	12/11/2011	<0.003	0.0008	0.004	0.31	0.0115	0.303	0.49

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
AW-003A	10/9/2007	0.00738	0.00239	0.052	0.030	0.4768	0.0186	0.39	0.39
AW-003A	5/21/2018	0.00113	0.00052	0.009	0.006	0.0417	0.0016	0.08	0.08
AW-003A	10/2/2019	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-1	4/29/2011	0.00119	0.00054	0.009	0.006	0.0444	0.0017	0.08	0.08
BRSW-1	6/13/2011	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-1	9/19/2011	0.00196	0.00081	0.014	0.010	0.0848	0.0033	0.12	0.12
BRSW-1	12/11/2011	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
BRSW-1	3/26/2012	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
BRSW-1	5/7/2012	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10
BRSW-1	10/2/2012	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
BRSW-1	12/10/2012	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-1	3/25/2013	0.00177	0.00075	0.013	0.009	0.0744	0.0029	0.11	0.11
BRSW-1	5/24/2013	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10
BRSW-1	9/12/2013	0.00210	0.00086	0.015	0.010	0.0932	0.0036	0.13	0.13
BRSW-1	12/13/2013	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-1	3/30/2014	0.00151	0.00065	0.011	0.008	0.0605	0.0024	0.10	0.10
BRSW-1	5/27/2014	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
BRSW-1	10/10/2014	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-1	12/20/2014	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-1	3/10/2015	0.00177	0.00075	0.013	0.009	0.0744	0.0029	0.11	0.11
BRSW-1	5/19/2015	0.00160	0.00069	0.012	0.008	0.0654	0.0025	0.10	0.10
BRSW-1	10/6/2015	0.00220	0.00089	0.016	0.011	0.0986	0.0038	0.14	0.14
BRSW-1	12/15/2015	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-1	3/22/2016	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
BRSW-1	5/12/2016	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
BRSW-1	10/17/2016	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13
BRSW-1	12/21/2016	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13
BRSW-1	5/31/2019	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
BRSW-1	10/1/2019	0.00212	0.00086	0.016	0.010	0.0943	0.0037	0.13	0.13
BRSW-1	9/29/2020	0.00212	0.00086	0.016	0.010	0.0943	0.0037	0.13	0.13
BRSW-3A	4/30/2011	0.00353	0.00131	0.025	0.016	0.1824	0.0071	0.20	0.20
BRSW-3A	6/14/2011	0.00365	0.00135	0.026	0.017	0.1910	0.0074	0.21	0.21
BRSW-3A	9/20/2011	0.00294	0.00113	0.021	0.014	0.1438	0.0056	0.17	0.17
BRSW-3A	12/11/2011	0.00292	0.00112	0.021	0.014	0.1426	0.0056	0.17	0.17
BRSW-3A	3/27/2012	0.00393	0.00143	0.028	0.018	0.2099	0.0082	0.22	0.22
BRSW-3A	5/7/2012	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17
BRSW-3A	10/2/2012	0.00257	0.00101	0.019	0.012	0.1208	0.0047	0.16	0.16
BRSW-3A	12/10/2012	0.00290	0.00112	0.021	0.013	0.1415	0.0055	0.17	0.17
BRSW-3A	3/25/2013	0.00268	0.00105	0.019	0.013	0.1276	0.0050	0.16	0.16
BRSW-3A	5/23/2013	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
BRSW-3A	9/12/2013	0.00249	0.00099	0.018	0.012	0.1163	0.0045	0.15	0.15
BRSW-3A	12/14/2013	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-3A	3/30/2014	0.00248	0.00098	0.018	0.012	0.1151	0.0045	0.15	0.15
BRSW-3A	5/27/2014	0.00170	0.00072	0.013	0.008	0.0704	0.0027	0.11	0.11
BRSW-3A	10/10/2014	0.00253	0.00100	0.018	0.012	0.1185	0.0046	0.15	0.15
BRSW-3A	12/20/2014	0.00268	0.00105	0.019	0.013	0.1276	0.0050	0.16	0.16
BRSW-3A	3/10/2015	0.00347	0.00129	0.025	0.016	0.1787	0.0070	0.20	0.20
BRSW-3A	5/19/2015	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-3B	4/30/2011	0.00738	0.00239	0.052	0.030	0.4768	0.0186	0.39	0.39
BRSW-3B	6/14/2011	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-3B	9/20/2011	0.00329	0.00123	0.024	0.015	0.1665	0.0065	0.19	0.19
BRSW-3B	12/11/2011	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 2 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-3B	3/27/2012	0.012	0.00363	0.033	3.7	0.129	2.01	1.56
BRSW-3B	5/7/2012	<0.003	0.00152	0.002	0.09	0.0011	0.662	0.47
BRSW-3B	10/2/2012	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.26
BRSW-3B	12/10/2012	<0.003	0.00009	<0.001	<0.03	<0.0005	0.084	0.21
BRSW-3B	3/25/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.014	0.11
BRSW-24	3/25/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.013	0.11
BRSW-3B	5/23/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.07
BRSW-24	5/23/2013	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	0.07
BRSW-3B	9/12/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.007	0.07
BRSW-24	9/12/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.007	0.07
BRSW-3B	12/14/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.04
BRSW-24	12/14/2013	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.04
BRSW-3B	3/30/2014	<0.003	0.00016	0.001	0.07	0.0008	0.031	0.07
BRSW-24	3/30/2014	<0.003	0.00019	0.001	0.08	0.0012	0.036	0.07
BRSW-3B	5/27/2014	<0.003	0.00046	0.002	0.08	0.0005	0.24 J	0.13 J
BRSW-24	5/27/2014	<0.003	0.00055	0.002	0.1	0.0006	0.304 J	0.16 J
BRSW-3B	10/10/2014	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-24	10/10/2014	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-3B	12/20/2014	<0.003	0.00013	<0.001	<0.03	<0.0005	0.075	0.06
BRSW-24	12/20/2014	<0.003	0.00012	<0.001	<0.03	<0.0005	0.071	0.05
BRSW-3B	3/10/2015	<0.003	0.00037	<0.001	0.03	<0.0005	0.207	0.13
BRSW-24	3/10/2015	<0.003	0.00036	<0.001	<0.03	<0.0005	0.207	0.13
BRSW-3B	5/19/2015	<0.003	0.00017	0.002 U	0.19	0.0007	0.058	0.06
BRSW-24	5/19/2015	<0.003	0.00016	0.002 U	0.18	0.0007	0.057	0.06
BRSW-3B	10/6/2015	0.022	0.00601	0.138	4.77	1.56	2.61	0.97
BRSW-24	10/6/2015	0.022	0.00598	0.137	4.7	1.53	2.57	0.96
BRSW-3B	12/15/2015	0.004	0.00077	0.02	0.82	0.104	0.414	0.13
BRSW-24	12/15/2015	0.003	0.0007	0.019	0.74	0.101	0.417	0.12
BRSW-3B	3/22/2016	<0.003	0.00015	0.001	0.06	0.0028	0.151	0.04
BRSW-24	3/22/2016	<0.003	0.00014	0.001	0.06	0.0029	0.148	0.03
BRSW-3B	5/12/2016	<0.003	0.00123	0.006	0.28	0.0153	0.888	0.3
BRSW-24	5/12/2016	<0.003	0.00126	0.006	0.29	0.0162	0.903	0.3
BRSW-3B	10/17/2016	<0.003	0.00052	0.002	0.04	0.0013	0.095	0.12
BRSW-24	10/17/2016	<0.003	0.00049	0.002	0.05	0.0015	0.094	0.12
BRSW-3B	12/21/2016	<0.003	<0.00008	<0.001	0.05	0.0011	0.019	0.01
BRSW-24	12/21/2016	<0.003	<0.00008	<0.001	0.05	0.0011	0.019	0.01
BRSW-3B	5/1/2017	<0.003	0.00125	0.003	0.04	0.0009	0.081	0.25
BRSW-307	5/1/2017	<0.003	0.0012	0.003	0.04	0.0011	0.081	0.24
BRSW-3B	10/14/2017	<0.003	0.00009	0.004	0.1	0.0056	0.025	0.04
BRSW-307	10/14/2017	<0.003	0.00013	0.004	0.1	0.0056	0.021	0.04
BRSW-3B	5/22/2018	<0.003	<0.00008	0.001	0.07	0.0006	0.005	<0.01
BRSW-3B	10/11/2018	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.011	<0.01
BRSW-3	5/30/2019	<0.003	<0.00008	0.002	0.12	0.0021	0.012	0.01
BRSW-3	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.009	<0.01
BRSW-307	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.009	<0.01
BRSW-3	5/28/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-307	5/28/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-3	9/29/2020	<0.003	0.00008	<0.001	<0.03	<0.0005	0.007	0.02
BRSW-307	9/29/2020	<0.003	0.00008	<0.001	<0.03	<0.0005	0.007	0.02
BRSW-3	5/25/2021	<0.003	<0.00008	0.002	0.19	0.0007	0.007	0.01
BRSW-307	5/25/2021	<0.003	<0.00008	0.002	0.16	0.0009	0.007	0.01
BRSW-3	9/21/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.008	<0.01

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-3B	3/27/2012	0.00448	0.00159	0.032	0.020	0.2489	0.0097	0.25	0.25
BRSW-3B	5/7/2012	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-3B	10/2/2012	0.00210	0.00086	0.015	0.010	0.0932	0.0036	0.13	0.13
BRSW-3B	12/10/2012	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13
BRSW-3B	3/25/2013	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13
BRSW-24	3/25/2013	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
BRSW-3B	5/23/2013	0.00138	0.00061	0.010	0.007	0.0537	0.0021	0.09	0.09
BRSW-24	5/23/2013	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
BRSW-3B	9/12/2013	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
BRSW-24	9/12/2013	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-3B	12/14/2013	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
BRSW-24	12/14/2013	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
BRSW-3B	3/30/2014	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-24	3/30/2014	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
BRSW-3B	5/27/2014	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
BRSW-24	5/27/2014	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
BRSW-3B	10/10/2014	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-24	10/10/2014	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-3B	12/20/2014	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
BRSW-24	12/20/2014	0.00190	0.00079	0.014	0.009	0.0816	0.0032	0.12	0.12
BRSW-3B	3/10/2015	0.00190	0.00079	0.014	0.009	0.0816	0.0032	0.12	0.12
BRSW-24	3/10/2015	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
BRSW-3B	5/19/2015	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-24	5/19/2015	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-3B	10/6/2015	0.00581	0.00196	0.041	0.025	0.3489	0.0136	0.32	0.32
BRSW-24	10/6/2015	0.00593	0.00200	0.042	0.025	0.3589	0.0140	0.32	0.32
BRSW-3B	12/15/2015	0.00297	0.00114	0.022	0.014	0.1462	0.0057	0.18	0.18
BRSW-24	12/15/2015	0.00290	0.00112	0.021	0.013	0.1415	0.0055	0.17	0.17
BRSW-3B	3/22/2016	0.00260	0.00102	0.019	0.012	0.1230	0.0048	0.16	0.16
BRSW-24	3/22/2016	0.00264	0.00103	0.019	0.012	0.1253	0.0049	0.16	0.16
BRSW-3B	5/12/2016	0.00471	0.00166	0.034	0.021	0.2661	0.0104	0.26	0.26
BRSW-24	5/12/2016	0.00466	0.00164	0.033	0.020	0.2621	0.0102	0.26	0.26
BRSW-3B	10/17/2016	0.00281	0.00109	0.020	0.013	0.1356	0.0053	0.17	0.17
BRSW-24	10/17/2016	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17
BRSW-3B	12/21/2016	0.00220	0.00089	0.016	0.011	0.0986	0.0038	0.14	0.14
BRSW-24	12/21/2016	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
BRSW-3B	5/1/2017	0.00170	0.00072	0.013	0.008	0.0704	0.0027	0.11	0.11
BRSW-307	5/1/2017	0.00171	0.00073	0.013	0.009	0.0714	0.0028	0.11	0.11
BRSW-3B	10/14/2017	0.00277	0.00107	0.020	0.013	0.1333	0.0052	0.17	0.17
BRSW-307	10/14/2017	0.00270	0.00105	0.020	0.013	0.1287	0.0050	0.16	0.16
BRSW-3B	5/22/2018	0.00147	0.00064	0.011	0.007	0.0585	0.0023	0.10	0.10
BRSW-3B	10/11/2018	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-3	5/30/2019	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-3	10/1/2019	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-307	10/1/2019	0.00236	0.00094	0.017	0.011	0.1085	0.0042	0.14	0.14
BRSW-3	5/28/2020	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
BRSW-307	5/28/2020	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-3	9/29/2020	0.00231	0.00093	0.017	0.011	0.1052	0.0041	0.14	0.14
BRSW-307	9/29/2020	0.00229	0.00092	0.017	0.011	0.1041	0.0041	0.14	0.14
BRSW-3	5/25/2021	0.00196	0.00081	0.014	0.010	0.0848	0.0033	0.12	0.12
BRSW-307	5/25/2021	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-3	9/21/2021	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 3 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-3	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-307	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-3	9/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.01	<0.01
BRSW-4	10/10/2007	<0.002	0.0342	0.682	0.06	0.0481	1.39	4.01
BRSW-4A	6/17/2008	<0.003	0.0204	0.886	0.2	0.0798	1.19	2.54
BRSW-6	10/9/2007	<0.002	<0.00008	<0.001	0.03	<0.0005	<0.003	<0.01
BRSW-6	6/17/2008	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-6	5/30/2019	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-6	10/1/2019	<0.003	<0.00008	<0.001	0.11	<0.0005	0.085	0.01
BRSW-6	9/29/2020	<0.003	<0.00008	<0.001	0.1	<0.0005	0.052	<0.01
BRSW-9	10/9/2007	<0.002	0.00711	0.018	0.11	0.0019	1.47	3.42
BRSW-10	5/26/2020	<0.003	<0.00008	0.009	0.05	<0.0005	<0.005	0.01
BRSW-10	9/29/2020	<0.003	0.00021	0.002	<0.03	<0.0005	<0.005	0.01
BRSW-10	5/24/2021	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/20/2021	<0.003	0.00013	0.002	<0.03	<0.0005	<0.005	0.01
BRSW-10	5/15/2022	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/15/2022	<0.003	0.00015	0.003	<0.03	<0.0005	<0.005	0.01
BRSW-10	6/22/2023	<0.003	<0.00008	0.006	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/24/2023	<0.003	0.00012	0.002	<0.03	<0.0005	<0.005	0.01
BRSW-10	5/20/2024	<0.003	<0.00008	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-10	9/23/2024	<0.003	0.0001	0.003	<0.03	<0.0005	<0.005	<0.01
BRSW-11	10/5/2007	<0.002	<0.00008	<0.001	0.61	<0.0005	0.126	<0.01
BRSW-12	10/5/2007	<0.002	0.00511	0.012	0.09	0.0019	0.33	1.75
BRSW-12	5/22/2018	<0.003	0.00171	0.015	0.12	0.0082	0.142	0.3
BRSW-307	5/22/2018	<0.003	0.00172	0.015	0.11	0.0073	0.141	0.29
BRSW-12	5/30/2019	<0.003	0.0006	0.008	0.16	0.0065	0.045	0.11
BRSW-307	5/30/2019	<0.003	0.00056	0.008	0.16	0.0074	0.046	0.12
BRSW-12	5/26/2020	<0.003	0.0003	0.006	0.29	0.0041	0.033	0.06
BRSW-12	9/29/2020	<0.003	0.00061	0.002	0.07	<0.0005	0.09	0.17
BRSW-12	5/25/2021	<0.003	0.00023	0.004	0.16	0.002	0.024	0.05
BRSW-12	9/20/2021	<0.003	0.00056	0.002 J	0.08	0.0006	0.068	0.14
BRSW-12	5/15/2022	<0.003	0.00021	0.002	0.06	0.0007 J+	0.017	0.05
BRSW-12	9/15/2022	<0.003	0.00046	0.002	0.1	<0.0005	0.03	0.09
BRSW-12	6/22/2023	<0.003	0.00021	0.003	0.04 J+	0.0008	0.02	0.04
BRSW-307	6/22/2023	<0.003	0.00021	0.003	0.04 J+	<0.0005	0.019	0.04
BRSW-12	9/24/2023	<0.003	0.00042	0.002	0.07	<0.0005	0.076	0.08
BRSW-307	9/24/2023	<0.003	0.00039	0.002	0.07	<0.0005	0.076	0.08
BRSW-12	5/20/2024	<0.003	0.00016	0.002	0.04	0.0006	0.015	0.03
BRSW-307	5/20/2024	<0.003	0.00014	0.002	0.04	0.0009	0.015	0.03
BRSW-12	9/23/2024	<0.003	0.00033	0.002	0.07	<0.0005	0.057	0.08
BRSW-307	9/23/2024	<0.003	0.00033	0.002	0.06	<0.0005	0.058	0.08
BRSW-13	10/5/2007	<0.002	0.00038	0.136	6.72	0.0062	0.354	0.07
BRSW-13	5/2/2017	<0.003	<0.00008	0.042	1.22	0.0006 U	0.106	0.03
BRSW-13	10/13/2017	<0.003	0.00033	0.102	4.48	0.0011	0.309	0.07
BRSW-14	5/2/2017	<0.003	<0.00008	0.002 U	0.14	<0.0005 U	0.009	<0.01
BRSW-14	10/13/2017	<0.003	<0.00008	0.003	0.43	0.0013	0.071	<0.01
BRSW-15	5/2/2017	<0.003	0.00036	0.004	0.11	<0.0005	0.097	0.02
BRSW-15	10/13/2017	<0.003	0.00069	0.011	1.61	0.0062	0.918	0.04
BRSW-16	10/4/2007	<0.002	0.00136	0.005	0.19	0.0009	0.076	0.55
BRSW-16	6/17/2008	<0.003	0.00141	0.010	0.12	0.0034	0.051	0.42
BRSW-16	9/28/2020	<0.003	0.0004	0.006	0.31	0.0008	0.051	0.13
BRSW-16	5/24/2021	<0.003	0.00038	0.008	0.23	0.0027	0.059	0.12

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-3	5/16/2022	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-307	5/16/2022	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-3	9/16/2022	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-4	10/10/2007	0.00319	0.00121	0.023	0.015	0.1604	0.0063	0.19	0.19
BRSW-4A	6/17/2008	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
BRSW-6	10/9/2007	0.00173	0.00073	0.013	0.009	0.0724	0.0028	0.11	0.11
BRSW-6	6/17/2008	0.00113	0.00052	0.009	0.006	0.0417	0.0016	0.08	0.08
BRSW-6	5/30/2019	0.00104	0.00048	0.008	0.006	0.0373	0.0015	0.07	0.07
BRSW-6	10/1/2019	0.00184	0.00077	0.014	0.009	0.0785	0.0031	0.12	0.12
BRSW-6	9/29/2020	0.00190	0.00079	0.014	0.009	0.0816	0.0032	0.12	0.12
BRSW-9	10/9/2007	0.00378	0.00138	0.027	0.017	0.1998	0.0078	0.22	0.22
BRSW-10	5/26/2020	0.00074	0.00037	0.006	0.004	0.0238	0.0009	0.05	0.05
BRSW-10	9/29/2020	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
BRSW-10	5/24/2021	0.00079	0.00039	0.006	0.004	0.0262	0.0010	0.06	0.06
BRSW-10	9/20/2021	0.00127	0.00057	0.009	0.007	0.0481	0.0019	0.08	0.08
BRSW-10	5/15/2022	0.00066	0.00033	0.005	0.004	0.0207	0.0008	0.05	0.05
BRSW-10	9/15/2022	0.00128	0.00057	0.010	0.007	0.0490	0.0019	0.09	0.09
BRSW-10	6/22/2023	0.00093	0.00044	0.007	0.005	0.0321	0.0012	0.06	0.06
BRSW-10	9/24/2023	0.00111	0.00051	0.008	0.006	0.0408	0.0016	0.08	0.08
BRSW-10	5/20/2024	0.00076	0.00037	0.006	0.004	0.0246	0.0010	0.05	0.05
BRSW-10	9/23/2024	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
BRSW-11	10/5/2007	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-12	10/5/2007	0.00294	0.00113	0.021	0.014	0.1438	0.0056	0.17	0.17
BRSW-12	5/22/2018	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
BRSW-307	5/22/2018	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
BRSW-12	5/30/2019	0.00111	0.00051	0.008	0.006	0.0408	0.0016	0.08	0.08
BRSW-307	5/30/2019	0.00108	0.00050	0.008	0.006	0.0390	0.0015	0.07	0.07
BRSW-12	5/26/2020	0.00134	0.00059	0.010	0.007	0.0518	0.0020	0.09	0.09
BRSW-12	9/29/2020	0.00251	0.00099	0.018	0.012	0.1174	0.0046	0.15	0.15
BRSW-12	5/25/2021	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-12	9/20/2021	0.00248	0.00098	0.018	0.012	0.1151	0.0045	0.15	0.15
BRSW-12	5/15/2022	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
BRSW-12	9/15/2022	0.00260	0.00102	0.019	0.012	0.1230	0.0048	0.16	0.16
BRSW-12	6/22/2023	0.00170	0.00072	0.013	0.008	0.0704	0.0027	0.11	0.11
BRSW-307	6/22/2023	0.00166	0.00071	0.012	0.008	0.0684	0.0027	0.11	0.11
BRSW-12	9/24/2023	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-307	9/24/2023	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13
BRSW-12	5/20/2024	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
BRSW-307	5/20/2024	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
BRSW-12	9/23/2024	0.00273	0.00106	0.020	0.013	0.1310	0.0051	0.16	0.16
BRSW-307	9/23/2024	0.00272	0.00106	0.020	0.013	0.1299	0.0051	0.16	0.16
BRSW-13	10/5/2007	0.00055	0.00029	0.004	0.003	0.0161	0.0006	0.04	0.04
BRSW-13	5/2/2017	0.00028	0.00016	0.002	0.002	0.0067	0.0003	0.02	0.02
BRSW-13	10/13/2017	0.00053	0.00028	0.004	0.003	0.0154	0.0006	0.04	0.04
BRSW-14	5/2/2017	0.00106	0.00049	0.008	0.006	0.0381	0.0015	0.07	0.07
BRSW-14	10/13/2017	0.00117	0.00053	0.009	0.006	0.0435	0.0017	0.08	0.08
BRSW-15	5/2/2017	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
BRSW-15	10/13/2017	0.00184	0.00077	0.014	0.009	0.0785	0.0031	0.12	0.12
BRSW-16	10/4/2007	0.00255	0.00100	0.019	0.012	0.1196	0.0047	0.15	0.15
BRSW-16	6/17/2008	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
BRSW-16	9/28/2020	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-16	5/24/2021	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 4 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-16	9/20/2021	<0.003	0.00036	0.004 J	0.21	0.0006	0.024	0.12
BRSW-16	5/15/2022	<0.003	0.00029	0.007	0.18	0.0013 J+	0.038	0.1
BRSW-16	9/15/2022	<0.003	0.00028	0.004	0.14	0.0006	0.015	0.1
BRSW-17	10/3/2007	<0.002	<0.00008	0.001	0.17	<0.0005	0.111	0.12
BRSW-17	6/16/2008	<0.003	0.00053	0.003	0.06	0.0006	0.019	0.23
BRSW-17	9/28/2020	<0.003	0.00013	0.002	0.2	<0.0005	0.096	0.04
BRSW-17	5/24/2021	<0.003	0.00022	0.004	0.14	0.0005	0.046	0.09
BRSW-17	9/20/2021	<0.003	<0.00008	<0.001 UJ	0.16	<0.0005	0.11	0.03
BRSW-17	5/15/2022	<0.003	0.00025	0.003	0.16	0.0005 J+	0.049	0.1
BRSW-17	10/21/2022	<0.003	0.00029	0.001	0.2	<0.0005	0.152	0.13
BRSW-18 ³	5/2/2017	<0.003	<0.00008	0.001 U	0.05	<0.0005	0.019	<0.01
BRSW-18 ³	10/13/2017	<0.003	<0.00008	<0.001	0.06	<0.0005	0.158	<0.01
BRSW-19	5/1/2017	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-20	5/31/2019	<0.003	0.0017	0.013	0.05	0.0007	0.018	0.25
BRSW-20	10/2/2019	<0.003	0.00238	0.004	<0.03	<0.0005	<0.005	0.38
BRSW-20	5/28/2020	<0.003	0.00113	0.009	<0.03	0.0007	0.012	0.17
BRSW-20	9/30/2020	<0.003	0.00146	0.004	0.04	0.0008	0.007	0.22
BRSW-20	9/21/2021	<0.003	0.00149	0.004	0.25	0.0024	0.017	0.23
BRSW-21	10/5/2007	<0.002	0.00012	0.007	6.1	<0.0005	0.303	0.06
BRSW-21	5/2/2017	<0.003	<0.00008	0.004	1.36	<0.0005	0.074	0.02
BRSW-21	10/13/2017	<0.003	0.00013	0.005	3.08	0.0005	0.257	0.06
BRSW-22	4/30/2011	<0.003	0.0308	0.031	<0.03	0.0119	0.439	6.84
BRSW-24	4/30/2011	<0.003	0.0314	0.033	<0.03	0.0116	0.448	6.85
BRSW-22	6/13/2011	<0.003	0.00958	0.195	0.12	0.0175	0.424	1.57
BRSW-24	6/13/2011	<0.003	0.00975	0.2	0.17	0.0202	0.425	1.57
BRSW-22	9/19/2011	<0.003	0.0104	0.082	<0.03	0.0085	0.169	1.51
BRSW-24	9/19/2011	<0.003	0.0105	0.087	<0.03	0.0083	0.168	1.56
BRSW-22	12/11/2011	<0.003	0.00958	0.018	<0.03	0.0054	<0.005	2.11
BRSW-24	12/11/2011	<0.003	0.00964	0.018	<0.03	0.0054	<0.005	2.13
BRSW-22	3/26/2012	<0.003	0.0154	0.023	<0.03	0.0059	<0.005	3.45
BRSW-24	3/26/2012	<0.003	0.0156	0.023	<0.03	0.0059	<0.005	3.43
BRSW-22	5/7/2012	<0.003	0.00456	0.059	<0.03	0.0033	0.072	0.76
BRSW-24	5/7/2012	<0.003	0.00454	0.058	<0.03	0.0034	0.079	0.73
BRSW-22	10/2/2012	<0.003	0.00613	0.019	<0.03	0.005	<0.005	1.12
BRSW-24	10/2/2012	<0.003	0.00612	0.017	<0.03	0.0046	<0.005	1.06
BRSW-22	12/10/2012	<0.003	0.00904	0.016	<0.03	0.0049	<0.005	2.03
BRSW-24	12/10/2012	<0.003	0.00909	0.016	<0.03	0.0049	<0.005	2.06
BRSW-22	3/25/2013	<0.003	0.011	0.017	<0.03	0.0077	<0.005	2.57
BRSW-22	5/24/2013	<0.003	0.0039	0.044	<0.03	0.0033	0.058	0.61
BRSW-22	9/12/2013	<0.003	0.00481	0.025	<0.03	0.0044	0.012	0.76
BRSW-22	12/13/2013	<0.003	0.00928	0.043	0.06	0.0149	0.014	2.16
BRSW-22	3/29/2014	<0.003	0.0134	0.167	0.14	0.0406	0.087	3.06
BRSW-22	5/27/2014	<0.003	0.00307	0.064	0.12	0.0184	0.073 J	0.49 J
BRSW-22	10/10/2014	<0.003	0.00694	0.055	<0.03	0.0038	0.077	1.2
BRSW-22	12/20/2014	<0.003	0.0064	0.016	<0.03	0.0024	<0.005	1.43
BRSW-22	3/10/2015	<0.003	0.0091	0.026	<0.03	0.0024	0.023	1.88
BRSW-22	5/19/2015	<0.003	0.00381	0.054	0.04	0.0031	0.069	0.65
BRSW-22	10/6/2015	<0.003	0.00802	0.056	<0.03	0.0037	0.101	1.29
BRSW-22	12/15/2015	<0.003	0.00807	0.016	<0.03	0.0042	<0.005	1.58
BRSW-22	3/22/2016	<0.003	0.0075	0.01	<0.03	0.0028	<0.005	1.73
BRSW-22	5/12/2016	<0.003	0.00305	0.038	<0.03	0.002	0.054	0.47
BRSW-22	5/1/2017	<0.003	0.00137	0.004	0.07	0.0012	0.008	0.31

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-16	9/20/2021	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
BRSW-16	5/15/2022	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
BRSW-16	9/15/2022	0.00212	0.00086	0.016	0.010	0.0943	0.0037	0.13	0.13
BRSW-17	10/3/2007	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-17	6/16/2008	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
BRSW-17	9/28/2020	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-17	5/24/2021	0.00145	0.00063	0.011	0.007	0.0576	0.0022	0.09	0.09
BRSW-17	9/20/2021	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-17	5/15/2022	0.00147	0.00064	0.011	0.007	0.0585	0.0023	0.10	0.10
BRSW-17	10/21/2022	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-18 ³	5/2/2017	0.00091	0.00043	0.007	0.005	0.0312	0.0012	0.06	0.06
BRSW-18 ³	10/13/2017	0.00117	0.00053	0.009	0.006	0.0435	0.0017	0.08	0.08
BRSW-19	5/1/2017	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
BRSW-20	5/31/2019	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-20	10/2/2019	0.00264	0.00103	0.019	0.012	0.1253	0.0049	0.16	0.16
BRSW-20	5/28/2020	0.00153	0.00066	0.011	0.008	0.0615	0.0024	0.10	0.10
BRSW-20	9/30/2020	0.00248	0.00098	0.018	0.012	0.1151	0.0045	0.15	0.15
BRSW-20	9/21/2021	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
BRSW-21	10/5/2007	0.00051	0.00027	0.004	0.003	0.0147	0.0006	0.04	0.04
BRSW-21	5/2/2017	0.00024	0.00015	0.002	0.002	0.0055	0.0002	0.02	0.02
BRSW-21	10/13/2017	0.00049	0.00026	0.004	0.003	0.0140	0.0005	0.04	0.04
BRSW-22	4/30/2011	0.00533	0.00183	0.038	0.023	0.3125	0.0122	0.29	0.29
BRSW-24	4/30/2011	0.00522	0.00180	0.037	0.023	0.3042	0.0119	0.29	0.29
BRSW-22	6/13/2011	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-24	6/13/2011	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
BRSW-22	9/19/2011	0.00279	0.00108	0.020	0.013	0.1345	0.0052	0.17	0.17
BRSW-24	9/19/2011	0.00281	0.00109	0.020	0.013	0.1356	0.0053	0.17	0.17
BRSW-22	12/11/2011	0.00373	0.00137	0.027	0.017	0.1961	0.0076	0.21	0.21
BRSW-24	12/11/2011	0.00375	0.00137	0.027	0.017	0.1973	0.0077	0.22	0.22
BRSW-22	3/26/2012	0.00621	0.00207	0.044	0.026	0.3805	0.0148	0.33	0.33
BRSW-24	3/26/2012	0.00642	0.00213	0.045	0.027	0.3979	0.0155	0.34	0.34
BRSW-22	5/7/2012	0.00179	0.00075	0.013	0.009	0.0755	0.0029	0.11	0.11
BRSW-24	5/7/2012	0.00179	0.00075	0.013	0.009	0.0755	0.0029	0.11	0.11
BRSW-22	10/2/2012	0.00299	0.00114	0.022	0.014	0.1473	0.0057	0.18	0.18
BRSW-24	10/2/2012	0.00297	0.00114	0.022	0.014	0.1462	0.0057	0.18	0.18
BRSW-22	12/10/2012	0.00450	0.00159	0.032	0.020	0.2502	0.0097	0.25	0.25
BRSW-24	12/10/2012	0.00450	0.00159	0.032	0.020	0.2502	0.0097	0.25	0.25
BRSW-22	3/25/2013	0.00537	0.00184	0.038	0.023	0.3152	0.0123	0.29	0.29
BRSW-22	5/24/2013	0.00173	0.00073	0.013	0.009	0.0724	0.0028	0.11	0.11
BRSW-22	9/12/2013	0.00264	0.00103	0.019	0.012	0.1253	0.0049	0.16	0.16
BRSW-22	12/13/2013	0.00386	0.00141	0.028	0.017	0.2049	0.0080	0.22	0.22
BRSW-22	3/29/2014	0.00451	0.00160	0.032	0.020	0.2515	0.0098	0.25	0.25
BRSW-22	5/27/2014	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-22	10/10/2014	0.00260	0.00102	0.019	0.012	0.1230	0.0048	0.16	0.16
BRSW-22	12/20/2014	0.00312	0.00118	0.023	0.014	0.1556	0.0061	0.18	0.18
BRSW-22	3/10/2015	0.00312	0.00118	0.023	0.014	0.1556	0.0061	0.18	0.18
BRSW-22	5/19/2015	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-22	10/6/2015	0.00303	0.00116	0.022	0.014	0.1497	0.0058	0.18	0.18
BRSW-22	12/15/2015	0.00420	0.00151	0.030	0.019	0.2292	0.0089	0.24	0.24
BRSW-22	3/22/2016	0.00404	0.00146	0.029	0.018	0.2176	0.0085	0.23	0.23
BRSW-22	5/12/2016	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
BRSW-22	5/1/2017	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 5 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-22	10/14/2017	<0.003	<u>0.00194</u>	0.003	<0.03	<0.0005	<0.005	0.31
BRSW-22	5/23/2018	<0.003	<u>0.00123</u>	0.012	0.05	0.001	0.025	0.19
BRSW-22	10/11/2018	<0.003	<u>0.00122</u>	0.004	<0.03	<0.0005	<0.005	0.18
BRSW-23	10/10/2007	<0.002	0.00328	0.014	0.7	<u>0.0063</u>	1.21	0.69
BRSW-23	4/30/2011	<0.003	0.00739	0.049	<u>1.18</u>	<u>0.0291</u>	1.06	1.71
BRSW-23	6/14/2011	<0.003	0.00394	0.077	0.22	<u>0.0122</u>	0.448	0.74
BRSW-23	9/20/2011	<0.003	<u>0.00203</u>	0.008	0.12	0.128	0.377	0.47
BRSW-23	12/11/2011	<0.003	<u>0.00175</u>	0.005	0.11	<u>0.0073</u>	0.553	0.56
BRSW-23	3/27/2012	<0.003	0.0079	0.031	0.64	<u>0.036</u>	0.595	1.91
BRSW-23	5/7/2012	0.004	0.00362	0.029	0.83	<u>0.0705</u>	0.567	0.76
BRSW-23	10/2/2012	<0.003	<u>0.00118</u>	0.004	0.08	<u>0.009</u>	0.349	0.25
BRSW-23	12/10/2012	<0.003	<u>0.00234</u>	0.007	0.13	<u>0.0054</u>	0.889	0.73
BRSW-23	3/25/2013	<0.003	<u>0.00234</u>	0.007	0.07	0.0034	0.717	0.64
BRSW-23	5/23/2013	<0.003	<u>0.00175</u>	<u>0.01</u>	0.09	<u>0.0063</u>	0.305	0.36
BRSW-23	9/12/2013	<0.003	<u>0.00098</u>	0.005	0.17	<u>0.0044</u>	0.203	0.19
BRSW-23	12/14/2013	<0.003	<u>0.00222</u>	0.007	0.15	<u>0.0062</u>	0.684	0.63
BRSW-23	3/30/2014	<0.003	0.00415	0.01	0.15	<u>0.0071</u>	0.574	1.13
BRSW-23	5/27/2014	<0.003	<u>0.00122</u>	0.015	0.16	<u>0.0107</u>	0.225 J	0.23 J
BRSW-23	10/10/2014	<0.003	<u>0.00156</u>	0.006	0.07	0.0042	0.269	0.39
BRSW-23	12/20/2014	<0.003	<u>0.00236</u>	0.005	0.14	0.0035	0.579	0.66
BRSW-23	3/10/2015	<0.003	0.00508	0.013	0.18	<u>0.008</u>	1.19	1.28
BRSW-23	5/19/2015	<0.003	0.0033	0.025	0.36	<u>0.01</u>	0.479	0.69
BRSW-23	10/6/2015	<0.003	0.00284	0.012	0.47	<u>0.0084</u>	0.733	0.61
BRSW-23	12/15/2015	<0.003	0.0162	0.111	<u>2.58</u>	<u>0.0436</u>	5.88 J+	2.9
BRSW-23	3/22/2016	<0.003	0.0216	0.082	<u>1.62</u>	<u>0.0291</u>	4.29	4.84
BRSW-23	5/12/2016	<0.003	0.0146	<u>0.042</u>	0.98	0.0166	4.71	2.86
BRSW-23	10/17/2016	<0.003	0.0425	0.24	<u>7.36</u>	<u>0.0571</u>	10.6	10.3
BRSW-23	5/1/2017	<0.003	0.00455	<u>0.014</u>	0.25	<u>0.0198</u>	0.164	0.95
BRSW-23	10/14/2017	<0.003	0.00012	0.001	<0.03	0.0007	0.017	0.04
BRSW-23	5/22/2018	<0.003	0.00042	0.003	0.08	0.0007	0.028	0.07
BRSW-23	5/30/2019	<0.003	0.00047	0.003	0.12	0.0024	0.022	0.09
BRSW-23	10/1/2019	<0.003	0.00011	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-23	5/28/2020	<0.003	0.0003	0.002	0.03	0.0006	0.006	0.06
BRSW-23	9/29/2020	<0.003	0.00018	0.001	0.04	0.0007	0.009	0.03
BRSW-23	5/25/2021	<0.003	0.00079	0.002	0.19	0.0009	0.011	0.15
BRSW-23	9/21/2021	<0.003	0.00016	<0.001	<0.03	<0.0005	<0.005	0.03
BRSW-23	5/16/2022	<0.003	<u>0.00074</u>	0.002	0.07	0.0006	0.005	0.15
BRSW-23	9/16/2022	<0.003	0.00019	<0.001	<0.03	<0.0005	0.007	0.04
BRSW-26	5/21/2018	<0.003	0.00137	0.078	0.66	<u>0.0041</u>	0.074	0.25
BRSW-26	5/29/2019	<0.003	0.00133	0.061	<0.03	<0.0005	0.049	0.23
BRSW-26	9/30/2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
BRSW-29	10/9/2007	<0.002	0.00426	0.006	0.13	0.0024	0.761	0.84
BRSW-29	5/22/2018	<0.003	0.00197	<u>0.009</u>	0.1	<u>0.0056</u>	0.17	0.3
BRSW-29	5/30/2019	<0.003	0.00016	0.001	0.05	0.0005	0.008	0.03
BRSW-29	10/1/2019	<0.004	0.00016	0.001 U	0.04	<0.0005	0.042	0.03
BRSW-29	5/26/2020	<0.003	0.00017	0.001	0.04	<0.0005	<0.005	0.03
BRSW-29	9/29/2020	<0.003	0.00008	<0.001	0.04	<0.0005	0.024	0.02
BRSW-29	5/24/2021	<0.003	0.00014	0.002	0.04	<0.0005	<0.005	0.03
BRSW-29	9/20/2021	<0.003	0.00013	<0.001	<0.03	<0.0005	0.01	0.03
BRSW-29	5/16/2022	<0.003	<0.00008	0.002	<0.03	0.0005	<0.005	0.03
BRSW-29	9/16/2022	<0.003	0.00012	<0.001	0.04	<0.0005	0.016	0.02
BRSW-29	6/22/2023	<0.003	0.00008	<0.001	<0.03	<0.0005	<0.005	0.01

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-22	10/14/2017	0.00329	0.00123	0.024	0.015	0.1665	0.0065	0.19	0.19
BRSW-22	5/23/2018	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-22	10/11/2018	0.00236	0.00094	0.017	0.011	0.1085	0.0042	0.14	0.14
BRSW-23	10/10/2007	0.00303	0.00116	0.022	0.014	0.1497	0.0058	0.18	0.18
BRSW-23	4/30/2011	0.00242	0.00096	0.018	0.012	0.1118	0.0044	0.15	0.15
BRSW-23	6/14/2011	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
BRSW-23	9/20/2011	0.00257	0.00101	0.019	0.012	0.1208	0.0047	0.16	0.16
BRSW-23	12/11/2011	0.00266	0.00104	0.019	0.013	0.1264	0.0049	0.16	0.16
BRSW-23	3/27/2012	0.00222	0.00090	0.016	0.011	0.0997	0.0039	0.14	0.14
BRSW-23	5/7/2012	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-23	10/2/2012	0.00299	0.00114	0.022	0.014	0.1473	0.0057	0.18	0.18
BRSW-23	12/10/2012	0.00279	0.00108	0.020	0.013	0.1345	0.0052	0.17	0.17
BRSW-23	3/25/2013	0.00262	0.00103	0.019	0.012	0.1242	0.0048	0.16	0.16
BRSW-23	5/23/2013	0.00179	0.00075	0.013	0.009	0.0755	0.0029	0.11	0.11
BRSW-23	9/12/2013	0.00240	0.00096	0.018	0.011	0.1107	0.0043	0.15	0.15
BRSW-23	12/14/2013	0.00255	0.00100	0.019	0.012	0.1196	0.0047	0.15	0.15
BRSW-23	3/30/2014	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-23	5/27/2014	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
BRSW-23	10/10/2014	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-23	12/20/2014	0.00262	0.00103	0.019	0.012	0.1242	0.0048	0.16	0.16
BRSW-23	3/10/2015	0.00296	0.00113	0.021	0.014	0.1450	0.0056	0.18	0.18
BRSW-23	5/19/2015	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-23	10/6/2015	0.00279	0.00108	0.020	0.013	0.1345	0.0052	0.17	0.17
BRSW-23	12/15/2015	0.00457	0.00162	0.033	0.020	0.2555	0.0100	0.26	0.26
BRSW-23	3/22/2016	0.00369	0.00136	0.027	0.017	0.1935	0.0075	0.21	0.21
BRSW-23	5/12/2016	0.00738	0.00239	0.052	0.030	0.4768	0.0186	0.39	0.39
BRSW-23	10/17/2016	0.00599	0.00201	0.042	0.025	0.3632	0.0142	0.32	0.32
BRSW-23	5/1/2017	0.00184	0.00077	0.014	0.009	0.0785	0.0031	0.12	0.12
BRSW-23	10/14/2017	0.00272	0.00106	0.020	0.013	0.1299	0.0051	0.16	0.16
BRSW-23	5/22/2018	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
BRSW-23	5/30/2019	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
BRSW-23	10/1/2019	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
BRSW-23	5/28/2020	0.00158	0.00068	0.012	0.008	0.0644	0.0025	0.10	0.10
BRSW-23	9/29/2020	0.00236	0.00094	0.017	0.011	0.1085	0.0042	0.14	0.14
BRSW-23	5/25/2021	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-23	9/21/2021	0.00229	0.00092	0.017	0.011	0.1041	0.0041	0.14	0.14
BRSW-23	5/16/2022	0.00164	0.00070	0.012	0.008	0.0674	0.0026	0.11	0.11
BRSW-23	9/16/2022	0.00229	0.00092	0.017	0.011	0.1041	0.0041	0.14	0.14
BRSW-26	5/21/2018	0.00053	0.00028	0.004	0.003	0.0154	0.0006	0.04	0.04
BRSW-26	5/29/2019	0.00060	0.00031	0.005	0.003	0.0184	0.0007	0.04	0.04
BRSW-26	9/30/2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
BRSW-29	10/9/2007	0.00246	0.00097	0.018	0.012	0.1140	0.0044	0.15	0.15
BRSW-29	5/22/2018	0.00134	0.00059	0.010	0.007	0.0518	0.0020	0.09	0.09
BRSW-29	5/30/2019	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
BRSW-29	10/1/2019	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13
BRSW-29	5/26/2020	0.00147	0.00064	0.011	0.007	0.0585	0.0023	0.10	0.10
BRSW-29	9/29/2020	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
BRSW-29	5/24/2021	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
BRSW-29	9/20/2021	0.00225	0.00091	0.016	0.011	0.1019	0.0040	0.14	0.14
BRSW-29	5/16/2022	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
BRSW-29	9/16/2022	0.00216	0.00088	0.016	0.010	0.0965	0.0038	0.13	0.13
BRSW-29	6/22/2023	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 6 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-29	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.008	0.02
BRSW-29	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-29	9/23/2024	<0.003	0.00009	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-31	10/4/2007	<0.002	<u>0.00225</u>	0.022	<u>1.03</u>	<u>0.0055</u>	0.273	0.81
BRSW-31	6/16/2008	<0.003	0.00149	0.012	0.13	<u>0.0042</u>	0.055	0.39
BRSW-31	5/3/2017	<0.003	<u>0.00096</u>	<u>0.009</u>	0.18	0.0017	0.055	0.27
BRSW-31	10/12/2017	<0.003	<u>0.00121</u>	<u>0.013</u>	0.56	0.0025	0.266	0.42
BRSW-31	5/22/2018	<0.003	0.00101	0.008	0.14	<u>0.0032</u>	0.044	0.25
BRSW-31	10/12/2018	<0.003	<u>0.00151</u>	0.017	0.74	0.0013	0.329	0.52
BRSW-307	10/12/2018	<0.003	<u>0.00152</u>	0.017	0.72	0.0013	0.329	0.52
BRSW-31	9/28/2020	<0.003	0.00073	0.016	0.82	0.0028	0.331	0.21
BRSW-33	10/9/2007	<0.002	0.00575	0.012	0.07	0.0031	0.341	1.67
BRSW-33	5/26/2020	<0.003	0.00018	0.004	0.11	0.0007	0.008	0.04
BRSW-33	9/29/2020	<0.003	0.00032	0.002	<0.03	<0.0005	0.027	0.07
BRSW-33	5/24/2021	<0.003	0.00018	0.002	0.06	<0.0005	0.006	0.04
BRSW-33	9/20/2021	<0.003	0.00072	0.002	<0.03	<0.0005	0.025	0.08
BRSW-33	5/15/2022	<0.003	0.0002	0.002	<0.03	<0.0005	<0.005	0.04
BRSW-33	9/15/2022	<0.003	0.00034	0.002	0.04	<0.0005	0.024	0.08
BRSW-33	6/22/2023	<0.003	0.00018	0.002	<0.03	<0.0005	<0.005	0.03
BRSW-33	9/24/2023	<0.003	0.00029	0.002	0.04	<0.0005	0.019	0.05
BRSW-33	5/20/2024	<0.003	0.00012	0.002	<0.03	<0.0005	<0.005	0.02
BRSW-33	9/23/2024	<0.003	0.00026	0.001	<0.03	<0.0005	0.011	0.06
BRSW-35	5/30/2019	<0.003	0.00240	0.008	0.06	0.0014	0.063	0.4
BRSW-35	10/1/2019	<0.003	0.00044	0.002	<0.03	<0.0005	<0.005	0.06
BRSW-35	9/29/2020	<0.003	0.00075	0.002	<0.03	<0.0005	<0.005	0.1
BRSW-35	5/25/2021	<0.003	0.00326	0.006	0.16	0.0015	0.027	0.65
BRSW-35	9/21/2021	<0.003	0.00085	0.002	0.04	0.0008	<0.005	0.11
BRSW-36	10/9/2007	<0.002	0.00922	0.014	0.08	0.0013	1.31	3.61
BRSW-36	5/22/2018	<0.003	0.00168	<u>0.009</u>	0.11	<u>0.0062</u>	0.121	0.29
BRSW-36	5/26/2020	<0.003	0.00025	0.002	0.17	0.0014	0.013	0.06
BRSW-36	9/29/2020	<0.003	0.00036	0.002	<0.03	<0.0005	0.022	0.09
BRSW-36	5/24/2021	<0.003	0.00021	0.002	0.07	<0.0005	0.005	0.05
BRSW-36	9/20/2021	<0.003	0.00047	0.003	<0.03	<0.0005	0.022	0.12
BRSW-36	5/15/2022	<0.003	0.00022	0.001	<0.03	<0.0005	<0.005	0.05
BRSW-36	9/15/2022	<0.003	0.00017	0.002	0.04	<0.0005	0.04	0.03
BRSW-36	6/22/2023	<0.003	0.00022	0.001 J+	<0.03	<0.0005	<0.005	0.04
BRSW-36	9/24/2023	<0.003	0.00014	0.002	<0.03	<0.0005	0.008	0.02
BRSW-36	5/20/2024	<0.003	0.00016	0.001	<0.03	<0.0005	<0.005	0.03
BRSW-36	9/23/2024	<0.003	0.00013	0.001	<0.03	<0.0005	0.017	0.02
BRSW-38	4/30/2011	<0.003	0.0174	0.094	<u>2.38</u>	<u>0.0376</u>	2.67	3.86
BRSW-38	6/13/2011	<0.003	0.00434	0.027	0.19	0.0212	0.352	0.75
BRSW-38	9/20/2011	<0.003	0.00462	0.005	0.13	<u>0.0087</u>	0.672	1.05
BRSW-38	12/11/2011	<0.003	0.00467	0.004	0.17	<u>0.0065</u>	0.775	1.22
BRSW-38	3/27/2012	<0.003	0.013	0.118	<u>5.88</u>	<u>0.0647</u>	1.66	2.64
BRSW-38	5/7/2012	<0.003	0.00521	0.028	0.56	<u>0.0214</u>	0.698	1.12
BRSW-38	10/2/2012	<0.003	0.00399	0.005	0.15	<u>0.0092</u>	0.748	0.89
BRSW-38	12/10/2012	<0.003	0.00838	0.027	<u>1.63</u>	<u>0.0252</u>	2.48	2.04
BRSW-38	3/25/2013	<0.003	0.0079	0.073	<u>2.66</u>	<u>0.0329</u>	2.07	1.99
BRSW-38	5/23/2013	<0.003	0.00402	0.023	0.54	<u>0.0206</u>	0.642 J+	0.74
BRSW-38	9/12/2013	<0.003	0.00446	0.006	0.21	<u>0.0089</u>	0.896	0.88
BRSW-38	12/13/2013	<0.003	0.00682	<u>0.017</u>	0.63	<u>0.0172</u>	1.31	1.79
BRSW-38	3/29/2014	<0.003	0.00615	0.032	<u>1.26</u>	<u>0.0236</u>	1.43	1.39

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-29	9/24/2023	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-29	5/20/2024	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-29	9/23/2024	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
BRSW-31	10/4/2007	0.00257	0.00101	0.019	0.012	0.1208	0.0047	0.16	0.16
BRSW-31	6/16/2008	0.00117	0.00053	0.009	0.006	0.0435	0.0017	0.08	0.08
BRSW-31	5/3/2017	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
BRSW-31	10/12/2017	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-31	5/22/2018	0.00098	0.00046	0.007	0.005	0.0346	0.0014	0.07	0.07
BRSW-31	10/12/2018	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-307	10/12/2018	0.00205	0.00084	0.015	0.010	0.0900	0.0035	0.13	0.13
BRSW-31	9/28/2020	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
BRSW-33	10/9/2007	0.00301	0.00115	0.022	0.014	0.1485	0.0058	0.18	0.18
BRSW-33	5/26/2020	0.00128	0.00057	0.010	0.007	0.0490	0.0019	0.09	0.09
BRSW-33	9/29/2020	0.00272	0.00106	0.020	0.013	0.1299	0.0051	0.16	0.16
BRSW-33	5/24/2021	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
BRSW-33	9/20/2021	0.00277	0.00107	0.020	0.013	0.1333	0.0052	0.17	0.17
BRSW-33	5/15/2022	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
BRSW-33	9/15/2022	0.00275	0.00107	0.020	0.013	0.1322	0.0052	0.17	0.17
BRSW-33	6/22/2023	0.00170	0.00072	0.013	0.008	0.0704	0.0027	0.11	0.11
BRSW-33	9/24/2023	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13
BRSW-33	5/20/2024	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
BRSW-33	9/23/2024	0.00294	0.00113	0.021	0.014	0.1438	0.0056	0.17	0.17
BRSW-35	5/30/2019	0.00153	0.00066	0.011	0.008	0.0615	0.0024	0.10	0.10
BRSW-35	10/1/2019	0.00255	0.00100	0.019	0.012	0.1196	0.0047	0.15	0.15
BRSW-35	9/29/2020	0.00249	0.00099	0.018	0.012	0.1163	0.0045	0.15	0.15
BRSW-35	5/25/2021	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
BRSW-35	9/21/2021	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
BRSW-36	10/9/2007	0.00413	0.00149	0.030	0.018	0.2240	0.0087	0.23	0.23
BRSW-36	5/22/2018	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-36	5/26/2020	0.00158	0.00068	0.012	0.008	0.0644	0.0025	0.10	0.10
BRSW-36	9/29/2020	0.00325	0.00122	0.023	0.015	0.1640	0.0064	0.19	0.19
BRSW-36	5/24/2021	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
BRSW-36	9/20/2021	0.00329	0.00123	0.024	0.015	0.1665	0.0065	0.19	0.19
BRSW-36	5/15/2022	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
BRSW-36	9/15/2022	0.00334	0.00125	0.024	0.015	0.1701	0.0066	0.20	0.20
BRSW-36	6/22/2023	0.00210	0.00086	0.015	0.010	0.0932	0.0036	0.13	0.13
BRSW-36	9/24/2023	0.00259	0.00102	0.019	0.012	0.1219	0.0047	0.16	0.16
BRSW-36	5/20/2024	0.00145	0.00063	0.011	0.007	0.0576	0.0022	0.09	0.09
BRSW-36	9/23/2024	0.00398	0.00144	0.029	0.018	0.2138	0.0083	0.23	0.23
BRSW-38	4/30/2011	0.00310	0.00118	0.022	0.014	0.1544	0.0060	0.18	0.18
BRSW-38	6/13/2011	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-38	9/20/2011	0.00260	0.00102	0.019	0.012	0.1230	0.0048	0.16	0.16
BRSW-38	12/11/2011	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17
BRSW-38	3/27/2012	0.00246	0.00097	0.018	0.012	0.1140	0.0044	0.15	0.15
BRSW-38	5/7/2012	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
BRSW-38	10/2/2012	0.00273	0.00106	0.020	0.013	0.1310	0.0051	0.16	0.16
BRSW-38	12/10/2012	0.00358	0.00132	0.026	0.016	0.1861	0.0073	0.21	0.21
BRSW-38	3/25/2013	0.00316	0.00120	0.023	0.015	0.1580	0.0062	0.19	0.19
BRSW-38	5/23/2013	0.00181	0.00076	0.013	0.009	0.0765	0.0030	0.11	0.11
BRSW-38	9/12/2013	0.00251	0.00099	0.018	0.012	0.1174	0.0046	0.15	0.15
BRSW-38	12/13/2013	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17
BRSW-38	3/29/2014	0.00249	0.00099	0.018	0.012	0.1163	0.0045	0.15	0.15

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 7 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-38	5/27/2014	<0.003	0.00278	0.02	0.29	0.0192	0.292 J	0.48 J
BRSW-38	10/10/2014	<0.003	0.00389	0.012	0.35	0.0124	0.799	0.87
BRSW-38	12/20/2014	<0.003	0.00472	0.03	1.21	0.0199	1.21	1.11
BRSW-38	3/10/2015	<0.003	0.00619	0.03	0.77	0.0239	1.22	1.39
BRSW-38	5/19/2015	<0.003	0.00813	0.064	1.27	0.0254	1.01	1.54
BRSW-38	10/6/2015	<0.003	0.00837	0.053	2.62	0.0359	1.48	1.78
BRSW-38	12/15/2015	<0.003	0.00809	0.013	0.28	0.0126	0.613	1.94
BRSW-38	3/22/2016	<0.003	0.0098	0.022	0.56	0.0213	0.899	2.61
BRSW-38	5/12/2016	<0.003	0.00852	0.034	0.58	0.0268	1.09	1.67
BRSW-38	10/17/2016	<0.003	0.00743	0.024	0.9	0.0244	1.37	1.58
BRSW-38	12/20/2016	<0.003	0.00333	0.005	0.15	0.0049	0.343	0.8
BRSW-38	5/30/2019	<0.003	0.00032	0.002	0.07	0.0007	0.012	0.06
BRSW-38	10/1/2019	<0.003	0.00024	0.002	<0.03	0.0009	0.011	0.05
BRSW-38	5/26/2020	<0.003	0.00032	0.002	0.05	0.0005	0.006	0.06
BRSW-38	9/29/2020	<0.003	0.00021	0.001	<0.03	<0.0005	0.007	0.04
BRSW-38	5/24/2021	<0.003	0.0003	0.002	0.07	0.0007	0.006	0.06
BRSW-38	9/20/2021	<0.003	0.00025	0.001	0.04	0.0006	0.017	0.04
BRSW-38	5/16/2022	<0.003	0.00026	0.001	0.04	<0.0005	<0.005	0.06
BRSW-38	9/16/2022	<0.003	0.00017	0.001	0.04	0.0006	0.008	0.03
BRSW-39A	10/10/2007	<0.002	0.005	0.009	0.41	0.0063	2.12	1.06
BRSW-39	5/22/2018	<0.003	0.0054	0.03	0.3	0.0231	0.625	0.83
BRSW-44	10/10/2007	<0.002	0.0199	0.093	0.05	0.0257	0.596	3.08
BRSW-44	6/17/2008	<0.003	0.00622	0.085	0.09	0.0189	1.019	1.11
BRSW-48	4/30/2011	<0.003	0.0163	0.122	3.11	0.0317	3.04	3.51
BRSW-48	6/13/2011	<0.003	0.0029	0.04	0.2	0.0202	0.316	0.51
BRSW-48	9/20/2011	<0.003	0.00277	0.008	0.38	0.0131	0.779	0.58
BRSW-48	12/11/2011	<0.003	0.00296	0.009	0.8	0.0191	1.41	0.8
BRSW-48	3/27/2012	0.004	0.0103	0.12	6.77	0.0619	1.57	2.3
BRSW-48	5/7/2012	0.003	0.00381	0.034	0.93	0.0483	0.657	0.8
BRSW-48	10/2/2012	<0.003	0.00199	0.007	0.47	0.0229	0.874	0.41
BRSW-48	12/10/2012	<0.003	0.00627	0.044	3.35	0.0371	2.96	1.5
BRSW-48	3/25/2013	<0.003	0.008	0.138	4.81	0.0432	3.11	1.73
BRSW-48	5/23/2013	<0.003	0.00228	0.017	0.34	0.0097	0.453	0.43
BRSW-48	9/12/2013	<0.003	0.00208	0.008	0.59	0.0147	0.816	0.37
BRSW-48	12/14/2013	<0.003	0.00511	0.034	1.8	0.0303	2.04	1.22
BRSW-48	3/30/2014	<0.003	0.00652	0.047	2.04	0.0261	1.58	1.56
BRSW-48	5/27/2014	<0.003	0.00159	0.021	0.34	0.0252	0.285 J	0.27 J
BRSW-48	10/10/2014	<0.003	0.0026	0.021	1	0.0226	0.776	0.59
BRSW-48	12/20/2014	<0.003 J+	0.00427	0.047	2.25	0.0289	1.37	1.01
BRSW-48	3/10/2015	<0.003	0.00675	0.059	1.92	0.0439	1.73	1.55
BRSW-48	5/19/2015	<0.003	0.00372	0.04	1.06	0.0166	0.608	0.76
BRSW-48	10/6/2015	<0.003	0.00876	0.154	8.55	0.0933	3.09	1.64
BRSW-48	12/15/2015	<0.003	0.0218	0.2	5.51	0.354	7.56 J+	3.92
BRSW-48	3/22/2016	<0.003	0.0223	0.211	5.05	0.416	7.38	4.57
BRSW-48	5/12/2016	<0.003	0.019	0.168	4.12	0.236	6.24	3.36
BRSW-48	10/17/2016	<0.003	0.0344	0.34	15.2	0.563	12.6	6.39
BRSW-48	12/20/2016	<0.003	0.0255	0.125	9.41	0.373	10.2	4.95
BRSW-101	10/3/2007	<0.002	0.00015	<0.001	0.050	<0.0005	0.004	0.09
BRSW-101	6/16/2008	<0.003	0.0005	0.003	0.070	0.0006	0.015	0.24
BRSW-102	10/3/2007	<0.002	0.00107	0.003	0.070	0.0016	0.012	0.1
BRSW-102	6/16/2008	<0.003	0.00051	0.003	0.060	0.0006	0.016	0.22
BRSW-102	9/28/2020	<0.003	<0.00008	0.001	0.12	<0.0005	0.009	0.03

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-38	5/27/2014	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-38	10/10/2014	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-38	12/20/2014	0.00255	0.00100	0.019	0.012	0.1196	0.0047	0.15	0.15
BRSW-38	3/10/2015	0.00251	0.00099	0.018	0.012	0.1174	0.0046	0.15	0.15
BRSW-38	5/19/2015	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13
BRSW-38	10/6/2015	0.00294	0.00113	0.021	0.014	0.1438	0.0056	0.17	0.17
BRSW-38	12/15/2015	0.00259	0.00102	0.019	0.012	0.1219	0.0047	0.16	0.16
BRSW-38	3/22/2016	0.00273	0.00106	0.020	0.013	0.1310	0.0051	0.16	0.16
BRSW-38	5/12/2016	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-38	10/17/2016	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17
BRSW-38	12/20/2016	0.00236	0.00094	0.017	0.011	0.1085	0.0042	0.14	0.14
BRSW-38	5/30/2019	0.00158	0.00068	0.012	0.008	0.0644	0.0025	0.10	0.10
BRSW-38	10/1/2019	0.00240	0.00096	0.018	0.011	0.1107	0.0043	0.15	0.15
BRSW-38	5/26/2020	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-38	9/29/2020	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
BRSW-38	5/24/2021	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
BRSW-38	9/20/2021	0.00248	0.00098	0.018	0.012	0.1151	0.0045	0.15	0.15
BRSW-38	5/16/2022	0.00164	0.00070	0.012	0.008	0.0674	0.0026	0.11	0.11
BRSW-38	9/16/2022	0.00240	0.00096	0.018	0.011	0.1107	0.0043	0.15	0.15
BRSW-39A	10/10/2007	0.00325	0.00122	0.023	0.015	0.1640	0.0064	0.19	0.19
BRSW-39	5/22/2018	0.00177	0.00075	0.013	0.009	0.0744	0.0029	0.11	0.11
BRSW-44	10/10/2007	0.00371	0.00136	0.027	0.017	0.1948	0.0076	0.21	0.21
BRSW-44	6/17/2008	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
BRSW-48	4/30/2011	0.00297	0.00114	0.022	0.014	0.1462	0.0057	0.18	0.18
BRSW-48	6/13/2011	0.00158	0.00068	0.012	0.008	0.0644	0.0025	0.10	0.10
BRSW-48	9/20/2011	0.00262	0.00103	0.019	0.012	0.1242	0.0048	0.16	0.16
BRSW-48	12/11/2011	0.00284	0.00110	0.021	0.013	0.1380	0.0054	0.17	0.17
BRSW-48	3/27/2012	0.00246	0.00097	0.018	0.012	0.1140	0.0044	0.15	0.15
BRSW-48	5/7/2012	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-48	10/2/2012	0.00290	0.00112	0.021	0.013	0.1415	0.0055	0.17	0.17
BRSW-48	12/10/2012	0.00325	0.00122	0.023	0.015	0.1640	0.0064	0.19	0.19
BRSW-48	3/25/2013	0.00308	0.00117	0.022	0.014	0.1533	0.0060	0.18	0.18
BRSW-48	5/23/2013	0.00179	0.00075	0.013	0.009	0.0755	0.0029	0.11	0.11
BRSW-48	9/12/2013	0.00246	0.00097	0.018	0.012	0.1140	0.0044	0.15	0.15
BRSW-48	12/14/2013	0.00275	0.00107	0.020	0.013	0.1322	0.0052	0.17	0.17
BRSW-48	3/30/2014	0.00260	0.00102	0.019	0.012	0.1230	0.0048	0.16	0.16
BRSW-48	5/27/2014	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
BRSW-48	10/10/2014	0.00240	0.00096	0.018	0.011	0.1107	0.0043	0.15	0.15
BRSW-48	12/20/2014	0.00279	0.00108	0.020	0.013	0.1345	0.0052	0.17	0.17
BRSW-48	3/10/2015	0.00303	0.00116	0.022	0.014	0.1497	0.0058	0.18	0.18
BRSW-48	5/19/2015	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-48	10/6/2015	0.00375	0.00137	0.027	0.017	0.1973	0.0077	0.22	0.22
BRSW-48	12/15/2015	0.00488	0.00170	0.035	0.021	0.2782	0.0108	0.27	0.27
BRSW-48	3/22/2016	0.00488	0.00170	0.035	0.021	0.2782	0.0108	0.27	0.27
BRSW-48	5/12/2016	0.00424	0.00152	0.030	0.019	0.2318	0.0090	0.24	0.24
BRSW-48	10/17/2016	0.00738	0.00239	0.052	0.030	0.4768	0.0186	0.39	0.39
BRSW-48	12/20/2016	0.00564	0.00192	0.040	0.024	0.3362	0.0131	0.31	0.31
BRSW-101	10/3/2007	0.00225	0.00091	0.016	0.011	0.1019	0.0040	0.14	0.14
BRSW-101	6/16/2008	0.00138	0.00061	0.010	0.007	0.0537	0.0021	0.09	0.09
BRSW-102	10/3/2007	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-102	6/16/2008	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
BRSW-102	9/28/2020	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 8 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-103	10/3/2007	<0.002	<0.00008	0.002	0.88	0.0016	0.226	<0.01
BRSW-103	6/16/2008	<0.003	0.00011	0.004	0.78	0.0025	0.103	0.03
BRSW-104	10/3/2007	<0.002	<u>0.0012</u>	0.004	0.08	<0.0005	0.039	0.52
BRSW-104	6/16/2008	<0.003	0.00129	0.010	0.14	<u>0.0037</u>	0.05	0.38
BRSW-104	5/3/2017	<0.003	<u>0.00086</u>	<u>0.008</u>	0.15	0.0015	0.04	0.26
BRSW-104	10/12/2017	<0.003	<u>0.00087</u>	0.006	0.24	0.0008	0.094	0.33
BRSW-104	9/28/2020	<0.003	0.00037	0.005	0.26	0.0007	0.03	0.12
BRSW-104	5/24/2021	<0.003	0.00037	<u>0.007</u>	0.23	<u>0.0024</u>	0.053	0.12
BRSW-104	9/20/2021	<0.003	0.00031	0.003 J	0.11	<0.0005	0.01	0.11
BRSW-307	9/20/2021	<0.003	0.00033	0.005 J	0.11	<0.0005	0.01	0.11
BRSW-104	5/15/2022	<0.003	0.0003	0.006	0.16	0.0011 J+	0.032	0.1
BRSW-104	10/21/2022	<0.003	0.00035	0.004	0.14	<0.0005	0.033	0.14
BRSW-105	10/4/2007	<0.002	<u>0.00164</u>	0.006	0.17	<0.0005	0.139	0.72
BRSW-105	6/16/2008	<0.003	0.00139	0.013	0.13	<u>0.004</u>	0.051	0.36
BRSW-106	10/4/2007	<0.002	<u>0.00193</u>	<u>0.015</u>	0.82	0.0035	0.216	0.76
BRSW-106	6/16/2008	<0.003	0.00146	0.012	0.11	<u>0.0034</u>	0.059	0.39
BRSW-107	10/4/2007	<0.002	<u>0.00228</u>	0.027	0.81	0.0048	0.256	0.93
BRSW-107	6/16/2008	<0.003	0.00163	0.013	0.12	<u>0.0045</u>	0.063	0.42
BRSW-107	5/3/2017	<0.003	<u>0.00118</u>	<u>0.011</u>	0.18	0.002	0.067	0.32
BRSW-107	10/12/2017	<0.003	<u>0.00118</u>	0.015	0.54	0.0032	0.263	0.4
BRSW-107	9/28/2020	<0.003	0.00066	<u>0.015</u>	0.78	0.0017	0.326	0.2
BRSW-107	5/24/2021	<0.003	0.0004	<u>0.008</u>	0.27	<u>0.0028</u>	0.072	0.12
BRSW-107	9/20/2021	<0.003	0.00069	0.017 J	0.79	0.0022	0.342	0.2
BRSW-108	10/10/2007	<0.002	0.0011	0.159	0.01	<u>0.0012</u>	0.374	0.22
BRSW-108	6/17/2008	<0.003	<u>0.00042</u>	0.055	0.23	<u>0.001</u>	0.137	0.1
BRSW-108	10/6/2015	<0.003	0.00095	0.143	0.04	<u>0.0011</u>	0.306	0.2 J+
BRSW-108	5/12/2016	<0.003	<u>0.00062</u>	0.089	0.05	0.0009	0.177	0.14
BRSW-108	5/2/2017	<0.001	0.00079	0.111	0.1	<0.001	0.241	0.19
BRSW-108	10/13/2017	<0.003	0.00087	0.135	0.04	0.0008	0.286	0.2
BRSW-108	5/21/2018	<0.003	0.00026	0.033	0.26	<u>0.0011</u>	0.085	0.07
BRSW-108	10/11/2018	<0.003	0.00088	0.127	0.15	0.0008	0.287	0.20
BRSW-108	5/29/2019	<0.003	0.00024	0.029	0.14	<u>0.0009</u>	0.076	0.06
BRSW-108	10/2/2019	<0.003	0.00094	0.131	0.05	0.0008	0.286	0.21
BRSW-108	9/30/2020	<0.003	<u>0.00078</u>	0.124	0.1	0.0009	0.262	0.19
BRSW-109	10/9/2007	<0.002	0.00632	0.015	0.11	0.0019	1.13	2.6
BRSW-110	10/4/2007	<0.002	0.00316	<u>0.015</u>	3.18	<u>0.0156</u>	0.278	1.04
BRSW-110	5/3/2017	<0.003	0.00033	0.087	0.56	<0.0005	0.017	0.01
BRSW-110	10/12/2017	<0.003	<u>0.0013</u>	0.004	0.45	0.0017	0.22	0.42
BRSW-110	9/28/2020	<0.003	0.00403	0.043	1.65	<u>0.0429</u>	4.31	0.75
BRSW-110	5/24/2021	<0.003	0.0003	0.003	0.07	0.0005	0.032	0.09
BRSW-110	9/20/2021	<0.003	0.00087	0.008 J	1.28	<u>0.0113</u>	10.5	0.26
BRSW-201	11/3/2011	<0.003	<0.00008	<0.001	<0.050	<0.0005	<0.005	0.01
BRSW-201	9/28/2020	<0.003	<0.00008	<0.001	0.09	<0.0005	0.005	<0.01
BRSW-202	11/3/2011	<0.003	<0.00008	<0.001	<0.050	<0.0005	<0.005	0.02
BRSW-203	11/3/2011	<0.003	<0.00008	0.001	<0.050	<0.0005	0.008	0.01
BRSW-204	11/3/2011	<0.003	<0.00008	<0.001	<0.050	<0.0005	0.008	0.01
BRSW-204	9/28/2020	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-204	5/24/2021	<0.003	<0.00008	0.005	0.36	0.0006	0.028	0.03
BRSW-204	9/20/2021	<0.003	<0.00008	<0.001 UJ	0.03	<0.0005	<0.005	<0.01
BRSW-204	5/15/2022	<0.003	<0.00008	0.002	0.13	<0.0005	0.012	0.03
BRSW-204	9/15/2022	<0.003	<0.00008	<0.001	0.04	<0.0005	<0.005	<0.01
BRSW-205	11/3/2011	<0.003	<0.00008	<0.001	0.06	<0.0005	0.007	0.03

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-103	10/3/2007	0.00216	0.00088	0.016	0.010	0.0965	0.0038	0.13	0.13
BRSW-103	6/16/2008	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-104	10/3/2007	0.00253	0.00100	0.018	0.012	0.1185	0.0046	0.15	0.15
BRSW-104	6/16/2008	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
BRSW-104	5/3/2017	0.00127	0.00057	0.009	0.007	0.0481	0.0019	0.08	0.08
BRSW-104	10/12/2017	0.00205	0.00084	0.015	0.010	0.0900	0.0035	0.13	0.13
BRSW-104	9/28/2020	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-104	5/24/2021	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
BRSW-104	9/20/2021	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
BRSW-307	9/20/2021	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-104	5/15/2022	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
BRSW-104	10/21/2022	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-105	10/4/2007	0.00257	0.00101	0.019	0.012	0.1208	0.0047	0.16	0.16
BRSW-105	6/16/2008	0.00113	0.00052	0.009	0.006	0.0417	0.0016	0.08	0.08
BRSW-106	10/4/2007	0.00251	0.00099	0.018	0.012	0.1174	0.0046	0.15	0.15
BRSW-106	6/16/2008	0.00117	0.00053	0.009	0.006	0.0435	0.0017	0.08	0.08
BRSW-107	10/4/2007	0.00266	0.00104	0.019	0.013	0.1264	0.0049	0.16	0.16
BRSW-107	6/16/2008	0.00123	0.00055	0.009	0.006	0.0463	0.0018	0.08	0.08
BRSW-107	5/3/2017	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-107	10/12/2017	0.00196	0.00081	0.014	0.010	0.0848	0.0033	0.12	0.12
BRSW-107	9/28/2020	0.00205	0.00084	0.015	0.010	0.0900	0.0035	0.13	0.13
BRSW-107	5/24/2021	0.00128	0.00057	0.010	0.007	0.0490	0.0019	0.09	0.09
BRSW-107	9/20/2021	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-108	10/10/2007	0.00076	0.00037	0.006	0.004	0.0246	0.0010	0.05	0.05
BRSW-108	6/17/2008	0.00060	0.00031	0.005	0.003	0.0184	0.0007	0.04	0.04
BRSW-108	10/6/2015	0.00077	0.00038	0.006	0.004	0.0254	0.0010	0.06	0.06
BRSW-108	5/12/2016	0.00079	0.00039	0.006	0.004	0.0262	0.0010	0.06	0.06
BRSW-108	5/2/2017	0.00068	0.00034	0.005	0.004	0.0215	0.0008	0.05	0.05
BRSW-108	10/13/2017	0.00085	0.00041	0.006	0.005	0.0287	0.0011	0.06	0.06
BRSW-108	5/21/2018	0.00064	0.00033	0.005	0.004	0.0199	0.0008	0.05	0.05
BRSW-108	10/11/2018	0.00079	0.00039	0.006	0.004	0.0262	0.0010	0.06	0.06
BRSW-108	5/29/2019	0.00064	0.00033	0.005	0.004	0.0199	0.0008	0.05	0.05
BRSW-108	10/2/2019	0.00077	0.00038	0.006	0.004	0.0254	0.0010	0.06	0.06
BRSW-108	9/30/2020	0.00081	0.00040	0.006	0.004	0.0271	0.0011	0.06	0.06
BRSW-109	10/9/2007	0.00343	0.00128	0.025	0.016	0.1762	0.0069	0.20	0.20
BRSW-110	10/4/2007	0.00283	0.00109	0.021	0.013	0.1368	0.0053	0.17	0.17
BRSW-110	5/3/2017	0.00164	0.00070	0.012	0.008	0.0674	0.0026	0.11	0.11
BRSW-110	10/12/2017	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
BRSW-110	9/28/2020	0.00253	0.00100	0.018	0.012	0.1185	0.0046	0.15	0.15
BRSW-110	5/24/2021	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
BRSW-110	9/20/2021	0.00260	0.00102	0.019	0.012	0.1230	0.0048	0.16	0.16
BRSW-201	11/3/2011	0.00231	0.00093	0.017	0.011	0.1052	0.0041	0.14	0.14
BRSW-201	9/28/2020	0.00222	0.00090	0.016	0.011	0.0997	0.0039	0.14	0.14
BRSW-202	11/3/2011	0.00229	0.00092	0.017	0.011	0.1041	0.0041	0.14	0.14
BRSW-203	11/3/2011	0.00231	0.00093	0.017	0.011	0.1052	0.0041	0.14	0.14
BRSW-204	11/3/2011	0.00231	0.00093	0.017	0.011	0.1052	0.0041	0.14	0.14
BRSW-204	9/28/2020	0.00231	0.00093	0.017	0.011	0.1052	0.0041	0.14	0.14
BRSW-204	5/24/2021	0.00171	0.00073	0.013	0.009	0.0714	0.0028	0.11	0.11
BRSW-204	9/20/2021	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
BRSW-204	5/15/2022	0.00153	0.00066	0.011	0.008	0.0615	0.0024	0.10	0.10
BRSW-204	9/15/2022	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-205	11/3/2011	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 9 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-206	11/3/2011	<0.003	0.00017	<0.001	<0.050	<0.0005	0.013	0.12
BRSW-206	5/24/2021	<0.003	0.0002	0.005	0.14	<0.0005	0.034	0.09
BRSW-206	9/20/2021	<0.003	<0.00008	<0.001 UJ	0.09	<0.0005	<0.005	0.02
BRSW-206	5/15/2022	<0.003	0.00015	0.002	0.15	<0.0005	0.024	0.07
BRSW-206	9/15/2022	<0.003	<0.00008	<0.001	0.11	<0.0005	<0.005	0.02
BRSW-301	3/22/2016	<0.003	0.00557	0.037	0.11	0.0194	0.01	0.65
BRSW-301	5/12/2016	<0.003	0.0164	0.266	0.15	0.0202	0.526	2.43
BRSW-301	5/1/2017	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
BRSW-301	5/23/2018	<0.003	<0.00008	<0.001	0.04	<0.0005	<0.005	<0.01
BRSW-301	5/31/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-301	9/30/2020	<0.003	<0.00008	0.001	0.2	0.0016	0.018	<0.01
BRSW-301	5/25/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-301	9/21/2021	<0.003	<0.00008	<0.001	0.08	<0.0005	0.005	<0.01
BRSW-301	5/16/2022	<0.003	<0.00008	0.001	0.07	0.0006	<0.005	<0.01
BRSW-301	9/16/2022	<0.003	<0.00008	0.001	0.24	0.0012	0.015	<0.01
BRSW-301	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
BRSW-302	3/22/2016	<0.003	0.00227	0.005	0.04	0.0015	<0.005	0.26
BRSW-302	5/12/2016	<0.003	0.00091	0.012	<0.03	0.0013	0.025	0.12
BRSW-303	3/22/2016	<0.003	0.00211	0.009	<0.03	0.0026	<0.005	0.27
BRSW-303	5/12/2016	<0.003	0.001	0.012	<0.03	0.0015	0.024	0.13
BRSW-303	5/1/2017	<0.003	0.00167	0.011	0.07	0.0025	0.04	0.29
BRSW-303	10/14/2017	<0.003	0.00071	0.005	<0.03	0.0007	<0.005	0.1
BRSW-304	3/22/2016	<0.003	0.0108	0.16	<0.03	0.0099	0.196	1.77
BRSW-304	5/12/2016	<0.003	0.00252	0.058	<0.03	0.002	0.097	0.32
BRSW-304	5/1/2017	<0.003	0.0103	0.246	0.06	0.0057	0.41	1.49
BRSW-304	10/14/2017	<0.003	0.00209	0.036	<0.03	0.0017	0.034	0.28
BRSW-304	5/23/2018	<0.003	0.00121	0.019	0.04	0.0012	0.04	0.17
BRSW-304	5/31/2019	<0.003	0.0012	0.028	<0.03	0.0011	0.041	0.17
BRSW-304	10/2/2019	<0.003	0.00186	0.022	<0.03	0.0019	0.020	0.26
BRSW-304	5/28/2020	<0.003	0.00086	0.017	<0.03	0.0016	0.025	0.12
BRSW-304	9/30/2020	<0.003	0.0018	0.025	<0.03	0.0021	0.018	0.24
BRSW-304	9/24/2023	<0.003	0.00158	0.016	<0.03	0.0015	0.007	0.23
BRSW-304	5/20/2024	<0.003	0.00038	0.004	<0.03	0.0015	<0.005	0.06
BRSW-304	9/23/2024	<0.003	0.00109	0.010	<0.03	0.0024	0.01	0.16
BRSW-305	3/22/2016	<0.003	0.00321	0.009	<0.03	0.0006	<0.005	0.51
BRSW-305	5/12/2016	<0.003	0.00272	0.05	<0.03	0.0022	0.079	0.35
BRSW-305	5/23/2018	<0.003	0.00106	0.015	0.04	0.0011	0.028	0.15
BRSW-306	3/22/2016	<0.003	0.006	0.015	<0.03	0.0007	0.007	1.59
BRSW-306	5/12/2016	<0.003	0.00276	0.045	<0.03	0.0025	0.068	0.36
BRSW-003A	9/29/2020	<0.003	0.00033	0.001	<0.03	<0.0005	0.006	0.08
BRSW-003A	5/24/2021	<0.003	0.00014	0.001	0.04	<0.0005	<0.005	0.03
BRSW-003A	9/20/2021	<0.003	0.00026	<0.001	<0.03	<0.0005	0.012	0.06
BRSW-003A	5/16/2022	<0.003	0.00011	0.001	0.03	<0.0005	<0.005	0.03
BRSW-003A	9/16/2022	<0.003	0.00027	<0.001	<0.03	<0.0005	<0.005	0.06
BRSW-003A	6/22/2023	<0.003	0.00011	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	9/24/2023	<0.003	0.00019	0.0009	0.011	<0.0005	0.05	0.04
BRSW-003A	5/20/2024	<0.003	0.00010	<0.001	<0.03	<0.0005	<0.005	0.02
BRSW-003A	9/23/2024	<0.003	0.00023	<0.001	<0.03	<0.0005	<0.005	0.05
MHSW-101	7/16/2008	<0.003	0.00814	0.077	0.15	0.0252	0.091	1.04
MHSW-102	7/16/2008	<0.003	0.00081	0.001	<0.050	0.0058	<0.005	0.12
MHTDS-9	10/20/2016	<0.003	0.0153	0.012	<0.05	0.0039	0.211	2.6
BRSW-308 ¹	5/30/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01

Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-206	11/3/2011	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13
BRSW-206	5/24/2021	0.00147	0.00064	0.011	0.007	0.0585	0.0023	0.10	0.10
BRSW-206	9/20/2021	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-206	5/15/2022	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
BRSW-206	9/15/2022	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-301	3/22/2016	0.00259	0.00102	0.019	0.012	0.1219	0.0047	0.16	0.16
BRSW-301	5/12/2016	0.00184	0.00077	0.014	0.009	0.0785	0.0031	0.12	0.12
BRSW-301	5/1/2017	0.00181	0.00076	0.013	0.009	0.0765	0.0030	0.11	0.11
BRSW-301	5/23/2018	0.00149	0.00065	0.011	0.008	0.0595	0.0023	0.10	0.10
BRSW-301	5/31/2019	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
BRSW-301	9/30/2020	0.00235	0.00094	0.017	0.011	0.1074	0.0042	0.14	0.14
BRSW-301	5/25/2021	0.00179	0.00075	0.013	0.009	0.0755	0.0029	0.11	0.11
BRSW-301	9/21/2021	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-301	5/16/2022	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
BRSW-301	9/16/2022	0.00225	0.00091	0.016	0.011	0.1019	0.0040	0.14	0.14
BRSW-301	6/22/2023	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
BRSW-302	3/22/2016	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-302	5/12/2016	0.00179	0.00075	0.013	0.009	0.0755	0.0029	0.11	0.11
BRSW-303	3/22/2016	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
BRSW-303	5/12/2016	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
BRSW-303	5/1/2017	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
BRSW-303	10/14/2017	0.00242	0.00096	0.018	0.012	0.1118	0.0044	0.15	0.15
BRSW-304	3/22/2016	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
BRSW-304	5/12/2016	0.00181	0.00076	0.013	0.009	0.0765	0.0030	0.11	0.11
BRSW-304	5/1/2017	0.00223	0.00090	0.016	0.011	0.1008	0.0039	0.14	0.14
BRSW-304	10/14/2017	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-304	5/23/2018	0.00153	0.00066	0.011	0.008	0.0615	0.0024	0.10	0.10
BRSW-304	5/31/2019	0.00151	0.00065	0.011	0.008	0.0605	0.0024	0.10	0.10
BRSW-304	10/2/2019	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
BRSW-304	5/28/2020	0.00158	0.00068	0.012	0.008	0.0644	0.0025	0.10	0.10
BRSW-304	9/30/2020	0.00235	0.00094	0.017	0.011	0.1074	0.0042	0.14	0.14
BRSW-304	9/24/2023	0.00216	0.00088	0.016	0.010	0.0965	0.0038	0.13	0.13
BRSW-304	5/20/2024	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
BRSW-304	9/23/2024	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
BRSW-305	3/22/2016	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-305	5/12/2016	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
BRSW-305	5/23/2018	0.00151	0.00065	0.011	0.008	0.0605	0.0024	0.10	0.10
BRSW-306	3/22/2016	0.00367	0.00135	0.026	0.017	0.1923	0.0075	0.21	0.21
BRSW-306	5/12/2016	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
BRSW-003A	9/29/2020	0.00210	0.00086	0.015	0.010	0.0932	0.0036	0.13	0.13
BRSW-003A	5/24/2021	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10
BRSW-003A	9/20/2021	0.00539	0.00185	0.038	0.023	0.3166	0.0123	0.30	0.30
BRSW-003A	5/16/2022	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
BRSW-003A	9/16/2022	0.00479	0.00168	0.034	0.021	0.2715	0.0106	0.27	0.27
BRSW-003A	6/22/2023	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
BRSW-003A	9/24/2023	0.00376	0.00138	0.027	0.017	0.1986	0.0077	0.22	0.22
BRSW-003A	5/20/2024	0.00145	0.00063	0.011	0.007	0.0576	0.0022	0.09	0.09
BRSW-003A	9/23/2024	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
MHSW-101	7/16/2008	0.00235	0.00094	0.017	0.011	0.1074	0.0042	0.14	0.14
MHSW-102	7/16/2008	0.00229	0.00092	0.017	0.011	0.1041	0.0041	0.14	0.14
MHTDS-9	10/20/2016	0.00669	0.00221	0.047	0.028	0.4199	0.0164	0.36	0.36
BRSW-308 ¹	5/29/2019	---	---	---	---	---	---	---	---

Table 26. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 10 of 10

UBMC / Mike Horse Area Surface Water (total recoverable metals, mg/L) Aquatic Life Comparison									Hardness Adjusted Surface Water Quality Standards (mg/L) Aquatic Life Comparison									
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **	Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
	*Standard (acute/chronic)	0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart			Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-308 ¹	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	5/30/2019	---	---	---	---	---	---	---	---
BRSW-308 ¹	5/26/2020	<0.003	<0.00008	<0.001	<0.02	<0.0005	<0.005	<0.01	BRSW-308 ¹	5/26/2020	---	---	---	---	---	---	---	---
BRSW-308 ¹	9/29/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	9/29/2020	---	---	---	---	---	---	---	---
BRSW-308 ¹	5/27/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	5/27/2021	---	---	---	---	---	---	---	---
BRSW-308 ¹	9/20/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	9/20/2021	---	---	---	---	---	---	---	---
BRSW-308 ¹	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	5/16/2022	---	---	---	---	---	---	---	---
BRSW-308 ¹	9/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	9/16/2022	---	---	---	---	---	---	---	---
BRSW-308 ¹	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	6/22/2023	----	----	----	----	----	----	----	----
BRSW-308 ¹	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	9/24/2023	----	----	----	----	----	----	----	----
BRSW-308 ¹	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	5/20/2024	----	----	----	----	----	----	----	----
BRSW-308 ¹	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-308 ¹	9/23/2024	----	----	----	----	----	----	----	----
BRSW-309 ²	5/30/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	10/1/2019	---	---	---	---	---	---	---	---
BRSW-309 ²	10/1/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	5/30/2019	---	---	---	---	---	---	---	---
BRSW-309 ²	5/26/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	5/26/2020	---	---	---	---	---	---	---	---
BRSW-309 ²	9/28/2020	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	9/28/2020	---	---	---	---	---	---	---	---
BRSW-309 ²	5/25/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	5/25/2021	---	---	---	---	---	---	---	---
BRSW-309 ²	9/20/2021	<0.003	<0.00008	<0.001 UJ	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	9/20/2021	---	---	---	---	---	---	---	---
BRSW-309 ²	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	5/16/2022	---	---	---	---	---	---	---	---
BRSW-309 ²	9/15/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	9/15/2022	---	---	---	---	---	---	---	---
BRSW-309 ²	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	6/22/2023	----	----	----	----	----	----	----	----
BRSW-309 ²	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	9/24/2023	----	----	----	----	----	----	----	----
BRSW-309 ²	5/20/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	5/20/2024	----	----	----	----	----	----	----	----
BRSW-309 ²	9/23/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01	BRSW-309 ²	9/23/2024	----	----	----	----	----	----	----	----
BRSW-400	5/1/2017	<0.003	<u>0.00087</u>	0.005	<0.03	<0.0005	0.013	0.13	BRSW-400	5/1/2017	0.00123	0.00055	0.009	0.006	0.0463	0.0018	0.08	0.08
BRSW-400	9/29/2020	<0.003	<u>0.00134</u>	<u>0.012</u>	0.05	0.0013	0.03	0.18	BRSW-400	9/29/2020	0.00171	0.00073	0.013	0.009	0.0714	0.0028	0.11	0.11
SeepA	5/1/2017	0.007	0.357	15.6	0.83	<u>0.135</u>	22.3	53.4	SeepA	5/1/2017	0.01075	0.00324	0.074	0.042	0.7770	0.0303	0.54	0.54
Seep A	5/23/2018	<0.003	0.00281	0.038	0.05	0.0014	0.091	0.49	Seep A	5/23/2018	0.00158	0.00068	0.012	0.008	0.0644	0.0025	0.10	0.10
Seep A	5/31/2019	<0.003	<u>0.0011</u>	0.007	0.03	0.0006	0.014	0.21	Seep A	5/31/2019	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
Seep A	10/2/2019	<0.003	0.00069	0.002	<0.03	0.0007	0.013	0.12	Seep A	10/2/2019	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
Seep A	9/30/2020	<0.003	0.00061	0.001	<0.03	0.0006	0.018	0.1	Seep A	9/30/2020	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
Seep B	5/1/2017	<0.003	<u>0.00111</u>	0.015	0.48	<u>0.0123</u>	0.077	0.2	Seep B	5/1/2017	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13

Note: May 2022 - Data table updated to reflect standard exceedances based on current *Circular DEQ-7, Montana Numeric Water Quality Standards (DEQ-7)* , June 2019, aquatic life standards
< Indicates the concentration is less than the reporting limit
Exceeds acute standard
Exceeds chronic standard
*Circular DEQ-7, Montana Numeric Water Quality Standards (DEQ-7), June 2019, aquatic life standards
**Calculated per DEQ-7
---- No standard
Italics = Baseline data collected by Pioneer Technical Services, Inc., *Final Remedial Investigation Report, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana* , dated January 31, 2013
mg/L = milligrams per liter
J = validation flag denotes that the result is an estimate with high or low bias
J+ = validation flag denotes that the result is an estimate with high bias
U = validation flag denotes the reported result is a false positive/non-detect
1 = Field blank
2 = Equipment blank
3 = Sample not collected in the historic BRSW-18 (at Aspen Grove CG) location. Collected on Swamp Gulch downstream of BRSW-14.

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 1 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison		
Sample ID	Collection Date	Aluminum
	Standard (acute/chronic)*	0.75/0.087
AW-003A	10/9/2007	0.13
AW-003A	5/21/2018	0.06
AW-003A	10/2/2019	<0.03
BRSW-1	4/29/2011	12
BRSW-1	6/13/2011	<0.03
BRSW-1	9/19/2011	<0.03
BRSW-1	12/11/2011	<0.03
BRSW-1	3/26/2012	0.19
BRSW-1	5/7/2012	<0.03
BRSW-1	10/2/2012	<0.03
BRSW-1	12/10/2012	<0.03
BRSW-1	3/25/2013	<0.03
BRSW-1	5/24/2013	<0.03
BRSW-1	9/12/2013	<0.03
BRSW-1	12/13/2013	<0.03
BRSW-1	3/30/2014	<0.03
BRSW-1	5/27/2014	<0.03
BRSW-1	10/10/2014	<0.03
BRSW-1	12/20/2014	<0.03
BRSW-1	3/10/2015	<0.03
BRSW-1	5/19/2015	0.08
BRSW-1	10/6/2015	<0.03 UJ
BRSW-1	12/15/2015	<0.03
BRSW-1	3/22/2016	<0.03
BRSW-1	5/12/2016	<0.03
BRSW-1	10/17/2016	<0.03
BRSW-1	12/21/2016	<0.03
BRSW-1	5/31/2019	<0.03
BRSW-1	10/2/2019	<0.03
BRSW-1	9/29/2020	<0.03
BRSW-3A	4/30/2011	<0.03
BRSW-3A	6/14/2011	<0.03
BRSW-3A	9/20/2011	<0.03
BRSW-3A	12/11/2011	<0.03
BRSW-3A	3/27/2012	<0.03
BRSW-3A	5/7/2012	<0.03
BRSW-3A	10/2/2012	<0.03
BRSW-3A	12/10/2012	<0.03
BRSW-3A	3/25/2013	<0.03
BRSW-3A	5/23/2013	0.03
BRSW-3A	9/12/2013	<0.03
BRSW-3A	12/14/2013	<0.03
BRSW-3A	3/30/2014	<0.03
BRSW-3A	5/27/2014	<0.03
BRSW-3A	10/10/2014	<0.03
BRSW-3A	12/20/2014	<0.03
BRSW-3A	3/10/2015	<0.03
BRSW-3A	5/19/2015	0.09
BRSW-3B	3/27/2012	<0.03
BRSW-3B	5/7/2012	<0.03
BRSW-3B	10/2/2012	<0.03
BRSW-3B	12/10/2012	<0.03
BRSW-3B	3/25/2013	<0.03
BRSW-24	3/25/2013	<0.03
BRSW-3B	5/23/2013	<0.03
BRSW-24	5/23/2013	0.04
BRSW-3B	9/12/2013	<0.03
BRSW-24	9/12/2013	<0.03
BRSW-3B	12/14/2013	<0.03
BRSW-24	12/14/2013	<0.03
BRSW-3B	3/30/2014	<0.03
BRSW-24	3/30/2014	<0.03
BRSW-3B	5/27/2014	<0.03
BRSW-24	5/27/2014	<0.03
BRSW-3B	10/10/2014	<0.03
BRSW-24	10/10/2014	<0.03
BRSW-3B	12/20/2014	<0.03
BRSW-24	12/20/2014	<0.03
BRSW-3B	3/10/2015	<0.03
BRSW-24	3/10/2015	<0.03
BRSW-3B	5/19/2015	0.11
BRSW-24	5/19/2015	0.12
BRSW-3B	10/6/2015	0.17 J
BRSW-24	10/6/2015	0.21 J
BRSW-3B	12/15/2015	0.11

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 2 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison			
Sample ID	Collection Date	Aluminum	
	Standard (acute/chronic)*	0.75/0.087	
BRSW-24	12/15/2015	<0.03	
BRSW-3B	3/22/2016	<0.03	
BRSW-24	3/22/2016	<0.03	
BRSW-3B	5/12/2016	<0.03	
BRSW-24	5/12/2016	<0.03	
BRSW-3B	10/17/2016	<0.03	
BRSW-24	10/17/2016	<0.03	
BRSW-3B	12/21/2016	<0.03	
BRSW-24	12/21/2016	<0.03	
BRSW-3B	5/1/2017	<0.03	
BRSW-307	5/1/2017	<0.03	
BRSW-3B	10/14/2017	<0.03	
BRSW-307	10/14/2017	<0.03	
BRSW-3B	5/22/2018	<0.03	
BRSW-3B	10/11/2018	<0.03	
BRSW-3	5/30/2019	<0.03	
BRSW-3	10/1/2019	<0.03	
BRSW-307	10/1/2019	<0.03	
BRSW-3	5/28/2020	<0.03	
BRSW-307	5/28/2020	<0.03	
BRSW-3	9/29/2020	<0.03	
BRSW-307	9/29/2020	<0.03	
BRSW-3	5/25/2021	0.04	
BRSW-307	5/25/2021	0.04	
BRSW-3	9/21/2021	<0.03	
BRSW-3	5/16/2022	<0.03	
BRSW-307	5/16/2022	<0.03	
BRSW-3	9/16/2022	<0.03	
BRSW-4	10/10/2007	0.05	
BRSW-4A	6/17/2008	0.08	
BRSW-6	10/9/2007	>0.03	
BRSW-6	6/17/2008	0.03	
BRSW-6	5/30/2019	<0.03	
BRSW-6	10/1/2019	<0.03	
BRSW-6	9/29/2020	<0.03	
BRSW-9	10/9/2007	<0.03	
BRSW-10	5/26/2020	0.05	
BRSW-10	9/29/2020	<0.03	
BRSW-10	5/24/2021	<0.03	
BRSW-10	9/20/2021	<0.03	
BRSW-10	5/15/2022	<0.03	
BRSW-10	9/15/2022	<0.03	
BRSW-10	6/22/2023	<0.03	
BRSW-10	9/24/2023	<0.03	
BRSW-10	5/20/2024	<0.03	
BRSW-10	9/23/2024	<0.03	
BRSW-11	10/5/2007	<0.03	
BRSW-12	10/5/2007	<0.03	
BRSW-12	5/22/2018	0.04	
BRSW-307	5/22/2018	0.04	
BRSW-12	5/30/2019	0.04	
BRSW-307	5/30/2019	0.04	
BRSW-12	5/26/2020	<0.03	
BRSW-12	9/29/2020	<0.03	
BRSW-12	5/25/2021	<0.03	
BRSW-12	9/20/2021	<0.03	
BRSW-12	5/15/2022	<0.03	
BRSW-12	9/15/2022	<0.03	
BRSW-12	6/22/2023	<0.03	
BRSW-307	6/22/2023	<0.03	
BRSW-12	9/24/2023	<0.03	
BRSW-307	9/24/2023	<0.03	
BRSW-12	5/20/2024	<0.03	
BRSW-307	5/20/2024	<0.03	
BRSW-12	9/23/2024	<0.03	
BRSW-307	9/23/2024	<0.03	
BRSW-13	10/5/2007	1.7	pH: 3.6
BRSW-13	5/2/2017	0.55	pH: 4.2
BRSW-13	10/13/2017	1.89	pH: 3.8
BRSW-14	5/2/2017	0.11	
BRSW-14	10/13/2017	<0.03	
BRSW-15	5/2/2017	<0.03	
BRSW-15	10/13/2017	<0.03	
BRSW-16	10/4/2007	<0.03	
BRSW-16	6/17/2008	<0.03	

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 3 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison			
Sample ID	Collection Date	Aluminum	
	Standard (acute/chronic)*	0.75/0.087	
BRSW-16	9/28/2020	<0.03	
BRSW-16	5/24/2021	0.03	
BRSW-16	9/20/2021	<0.03	
BRSW-16	5/15/2022	0.04	
BRSW-16	9/15/2022	<0.03	
BRSW-17	10/3/2007	<0.03	
BRSW-17	6/16/2008	<0.03	
BRSW-17	9/28/2020	<0.03	
BRSW-17	5/24/2021	<0.03	
BRSW-17	9/20/2021	<0.03	
BRSW-17	5/15/2022	<0.03	
BRSW-17	10/21/2022	<0.03	
BRSW-18 ³	5/2/2017	0.04	
BRSW-18 ³	10/13/2017	<0.03	
BRSW-19	5/1/2017	<0.03	
BRSW-20	5/31/2019	<0.03	
BRSW-20	10/2/2019	<0.03	
BRSW-20	5/28/2020	<0.03	
BRSW-20	9/30/2020	<0.03	
BRSW-20	5/25/2021	NS	
BRSW-20	9/21/2021	<0.03	
BRSW-21	10/5/2007	1.42	pH: 3.6
BRSW-21	5/2/2017	0.43	
BRSW-21	10/13/2017	1.72	pH: 3.8
BRSW-22	4/30/2011	<0.03	
BRSW-22	5/23/2018	<0.03	
BRSW-22	10/11/2018	<0.03	
BRSW-24	4/30/2011	<0.03	
BRSW-22	6/13/2011	0.08	
BRSW-24	6/13/2011	0.09	
BRSW-22	9/19/2011	<0.03	
BRSW-24	9/19/2011	<0.03	
BRSW-22	12/11/2011	<0.03	
BRSW-24	12/11/2011	<0.03	
BRSW-22	3/26/2012	<0.03	
BRSW-24	3/26/2012	<0.03	
BRSW-22	5/7/2012	0.05	
BRSW-24	5/7/2012	0.05	
BRSW-22	10/2/2012	<0.03	
BRSW-24	10/2/2012	<0.03	
BRSW-22	12/10/2012	<0.03	
BRSW-24	12/10/2012	<0.03	
BRSW-22	3/25/2013	<0.03	
BRSW-22	5/24/2013	0.04	
BRSW-22	9/12/2013	0.03	
BRSW-22	12/13/2013	<0.03	
BRSW-22	3/29/2014	<0.03	
BRSW-22	5/27/2014	0.05	
BRSW-22	10/10/2014	<0.03	
BRSW-22	12/20/2014	<0.03	
BRSW-22	3/10/2015	<0.03	UJ
BRSW-22	5/19/2015	0.05	
BRSW-22	10/6/2015	<0.03	
BRSW-22	12/15/2015	<0.03	
BRSW-22	3/22/2016	<0.03	
BRSW-22	5/12/2016	0.05	
BRSW-22	5/1/2017	0.04	
BRSW-22	10/14/2017	<0.03	
BRSW-22	5/23/2018	<0.03	
BRSW-22	10/11/2018	<0.03	
BRSW-23	10/10/2007	<0.03	
BRSW-23	4/30/2011	0.15	
BRSW-23	6/14/2011	0.04	
BRSW-23	9/20/2011	<0.03	
BRSW-23	12/11/2011	<0.03	
BRSW-23	3/27/2012	0.13	
BRSW-23	5/7/2012	0.04	
BRSW-23	10/2/2012	<0.03	
BRSW-23	12/10/2012	<0.03	
BRSW-23	3/25/2013	<0.03	
BRSW-23	5/23/2013	0.04	
BRSW-23	9/12/2013	<0.03	

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 4 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison		
Sample ID	Collection Date	Aluminum
	Standard (acute/chronic)*	0.75/0.087
BRSW-23	12/14/2013	<0.03
BRSW-23	3/30/2014	0.03
BRSW-23	5/27/2014	0.03
BRSW-23	10/10/2014	<0.03
BRSW-23	12/20/2014	<0.03
BRSW-23	3/10/2015	0.04 UJ
BRSW-23	5/19/2015	0.07
BRSW-23	10/6/2015	<0.03
BRSW-23	12/15/2015	0.05
BRSW-23	3/22/2016	0.06
BRSW-23	5/12/2016	0.04
BRSW-23	10/17/2016	0.05
BRSW-23	5/1/2017	<0.03
BRSW-23	10/14/2017	<0.03
BRSW-23	5/22/2018	<0.03
BRSW-23	10/1/2019	<0.03
BRSW-23	5/30/2019	<0.03
BRSW-23	5/28/2020	<0.03
BRSW-23	9/29/2020	<0.03
BRSW-23	5/25/2021	0.04
BRSW-23	9/21/2021	<0.03
BRSW-23	5/16/2022	<0.03
BRSW-23	9/16/2022	<0.03
BRSW-26	5/21/2018	0.08
BRSW-26	5/29/2019	0.14
BRSW-26	9/30/2020	DRY
BRSW-29	10/9/2007	<0.03
BRSW-29	5/22/2018	<0.03
BRSW-29	5/30/2019	<0.03
BRSW-29	10/1/2019	<0.03
BRSW-29	5/26/2020	<0.03
BRSW-29	9/29/2020	<0.03
BRSW-29	5/24/2021	<0.03
BRSW-29	9/20/2021	<0.03
BRSW-29	5/16/2022	<0.03
BRSW-29	9/16/2022	<0.03
BRSW-29	6/22/2023	<0.03
BRSW-29	9/24/2023	<0.03
BRSW-29	5/20/2024	<0.03
BRSW-29	9/23/2024	<0.03
BRSW-31	10/4/2007	<0.03
BRSW-31	6/16/2008	<0.03
BRSW-31	5/3/2017	0.05
BRSW-31	10/12/2017	<0.03
BRSW-31	5/22/2018	0.04
BRSW-31	10/12/2018	<0.03
BRSW-307	10/12/2018	<0.03
BRSW-31	9/28/2020	0.04
BRSW-33	10/9/2007	<0.03
BRSW-33	5/26/2020	<0.03
BRSW-33	9/29/2020	<0.03
BRSW-33	5/26/2020	<0.03
BRSW-33	9/29/2020	<0.03
BRSW-33	5/24/2021	<0.03
BRSW-33	9/20/2021	<0.03
BRSW-33	5/15/2022	<0.03
BRSW-33	9/15/2022	<0.03
BRSW-33	6/22/2023	<0.03
BRSW-33	9/24/2023	<0.03
BRSW-33	5/20/2024	<0.03
BRSW-33	9/23/2024	<0.03
BRSW-35	5/30/2019	<0.03
BRSW-35	10/1/2019	<0.03
BRSW-35	9/29/2020	<0.03
BRSW-35	5/25/2021	0.04
BRSW-35	9/21/2021	<0.03
BRSW-36	10/9/2007	<0.03
BRSW-36	5/22/2018	0.04
BRSW-36	5/26/2020	<0.03
BRSW-36	9/29/2020	<0.03
BRSW-36	5/24/2021	<0.03
BRSW-36	9/20/2021	<0.03
BRSW-36	5/15/2022	<0.03
BRSW-36	9/15/2022	<0.03
BRSW-36	6/22/2023	<0.03

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 5 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison		
Sample ID	Collection Date	Aluminum
	Standard (acute/chronic)*	0.75/0.087
BRSW-36	9/24/2023	<0.03
BRSW-36	5/20/2024	<0.03
BRSW-36	9/23/2024	<0.03
BRSW-38	4/30/2011	0.12
BRSW-38	6/13/2011	0.05
BRSW-38	9/20/2011	<0.03
BRSW-38	12/11/2011	<0.03
BRSW-38	3/27/2012	<0.03
BRSW-38	5/7/2012	0.03
BRSW-38	10/2/2012	<0.03
BRSW-38	12/10/2012	<0.03
BRSW-38	3/25/2013	<0.03
BRSW-38	5/23/2013	0.06
BRSW-38	9/12/2013	<0.03
BRSW-38	12/13/2013	<0.03
BRSW-38	3/29/2014	<0.03
BRSW-38	5/27/2014	0.04
BRSW-38	10/10/2014	<0.03
BRSW-38	12/20/2014	<0.03
BRSW-38	3/10/2015	<0.03 J
BRSW-38	5/19/2015	0.11
BRSW-38	10/6/2015	0.06
BRSW-38	12/15/2015	<0.03
BRSW-38	3/22/2016	0.04
BRSW-38	5/12/2016	0.04
BRSW-38	10/17/2016	<0.03
BRSW-38	12/20/2016	<0.03
BRSW-38	5/30/2019	<0.03
BRSW-38	10/1/2019	<0.03
BRSW-38	5/26/2020	<0.03
BRSW-38	9/29/2020	<0.03
BRSW-38	5/24/2021	<0.03
BRSW-38	9/20/2021	<0.03
BRSW-38	5/16/2022	<0.03
BRSW-38	9/16/2022	<0.03
BRSW-39A	10/10/2007	<0.03
BRSW-39	5/22/2018	0.14
BRSW-44	10/10/2007	<0.03
BRSW-44	6/17/2008	<0.03
BRSW-48	4/30/2011	<0.03
BRSW-48	6/13/2011	0.05
BRSW-48	9/20/2011	<0.03
BRSW-48	12/11/2011	<0.03
BRSW-48	3/27/2012	<0.03
BRSW-48	5/7/2012	0.05
BRSW-48	10/2/2012	<0.03
BRSW-48	12/10/2012	<0.03
BRSW-48	3/25/2013	<0.03
BRSW-48	5/23/2013	0.08
BRSW-48	9/12/2013	0.08
BRSW-48	12/14/2013	<0.03
BRSW-48	3/30/2014	<0.03
BRSW-48	5/27/2014	0.04
BRSW-48	10/10/2014	<0.03
BRSW-48	12/20/2014	0.03
BRSW-48	3/10/2015	0.03 UJ
BRSW-48	5/19/2015	0.08
BRSW-48	10/6/2015	<0.03
BRSW-48	3/22/2016	0.22
BRSW-48	5/12/2016	<0.03
BRSW-48	10/17/2016	0.98
BRSW-48	12/20/2016	<0.03
BRSW-101	10/3/2007	<0.03
BRSW-101	6/16/2008	<0.03
BRSW-102	10/3/2007	<0.03
BRSW-102	6/16/2008	<0.03
BRSW-102	9/28/2020	<0.03
BRSW-103	10/3/2007	<0.03
BRSW-103	6/16/2008	<0.03
BRSW-104	10/3/2007	<0.03
BRSW-104	6/16/2008	<0.03
BRSW-104	5/3/2017	0.08
BRSW-104	10/12/2017	<0.03
BRSW-104	9/28/2020	<0.03

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 6 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison			
Sample ID	Collection Date	Aluminum	
	Standard (acute/chronic)*	0.75/0.087	
BRSW-104	5/24/2021	0.03	
BRSW-104	9/20/2021	<0.03	
BRSW-307	9/20/2021	<0.03	
BRSW-104	5/15/2022	0.04	
BRSW-104	10/21/2022	<0.03	
BRSW-105	10/4/2007	<0.03	
BRSW-105	6/16/2008	<0.03	
BRSW-106	10/4/2007	<0.03	
BRSW-106	6/16/2008	<0.03	
BRSW-107	10/4/2007	<0.03	
BRSW-107	6/16/2008	<0.03	
BRSW-107	5/3/2017	0.06	
BRSW-107	10/12/2017	<0.03	
BRSW-107	9/28/2020	<0.03	
BRSW-107	5/24/2021	0.04	
BRSW-107	9/20/2021	<0.03	
BRSW-108	10/10/2007	0.91	pH: 4.7
BRSW-108	6/17/2008	<0.03	
BRSW-108	5/12/2016	0.75	
BRSW-108	5/2/2017	1.11	pH: 4.7
BRSW-108	10/13/2017	1.11	pH: 4.8
BRSW-108	5/21/2018	0.09	
BRSW-108	10/11/2018	0.96	
BRSW-108	5/29/2019	0.04	
BRSW-108	10/2/2019	0.96	
BRSW-108	9/30/2020	0.95	pH: 4.8
BRSW-109	10/9/2007	<0.03	
BRSW-110	10/4/2007	<0.03	
BRSW-110	5/3/2017	<0.03	
BRSW-110	10/12/2017	<0.03	
BRSW-110	9/28/2020	<0.03	
BRSW-110	5/24/2021	<0.03	
BRSW-110	9/20/2021	<0.03	
BRSW-201	11/3/2011	<0.03	
BRSW-201	9/28/2020	<0.03	
BRSW-202	11/3/2011	<0.03	
BRSW-203	11/3/2011	<0.03	
BRSW-204	11/3/2011	<0.03	
BRSW-204	9/28/2020	<0.03	
BRSW-204	5/24/2021	0.03	
BRSW-204	9/20/2021	<0.03	
BRSW-204	5/15/2022	<0.03	
BRSW-204	9/15/2022	<0.03	
BRSW-205	11/3/2011	<0.03	
BRSW-206	11/3/2011	<0.03	
BRSW-206	5/24/2021	<0.03	
BRSW-206	9/20/2021	<0.03	
BRSW-206	5/15/2022	<0.03	
BRSW-206	9/15/2022	<0.03	
BRSW-301	3/22/2016	<0.03	
BRSW-301	5/12/2016	0.03	
BRSW-301	5/1/2017	<0.03	
BRSW-301	5/23/2018	<0.03	
BRSW-301	5/31/2019	<0.03	
BRSW-301	9/30/2020	<0.03	
BRSW-301	5/25/2021	<0.03	
BRSW-301	9/21/2021	<0.03	
BRSW-301	5/16/2022	<0.03	
BRSW-301	9/16/2022	<0.03	
BRSW-301	6/22/2023	<0.03	
BRSW-302	3/22/2016	<0.03	
BRSW-302	5/12/2016	<0.03	
BRSW-303	3/22/2016	<0.03	
BRSW-303	5/12/2016	<0.03	
BRSW-303	5/1/2017	0.03	
BRSW-303	10/14/2017	<0.03	
BRSW-304	3/22/2016	0.06	
BRSW-304	5/12/2016	0.07	

Table 27. UBMC Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 7 of 7

UBMC / Mike Horse Area Surface Water (dissolved metals, mg/L) Aquatic Life Comparison			
Sample ID	Collection Date	Aluminum	
	Standard (acute/chronic)*	0.75/0.087	
BRSW-304	5/1/2017	0.12	
BRSW-304	10/14/2017	<0.03	
BRSW-304	5/23/2018	<0.03	
BRSW-304	5/31/2019	<0.03	
BRSW-304	10/2/2019	<0.03	
BRSW-304	5/28/2020	<0.03	
BRSW-304	9/30/2020	<0.03	
BRSW-304	9/24/2023	<0.03	
BRSW-304	5/20/2024	<0.03	
BRSW-304	9/23/2024	<0.03	
BRSW-305	3/22/2016	<0.03	
BRSW-305	5/12/2016	0.06	
BRSW-305	5/23/2018	<0.03	
BRSW-306	3/22/2016	<0.03	
BRSW-306	5/12/2016	0.06	
BRSW-308 ¹	5/30/2019	<0.03	
BRSW-308 ¹	10/1/2019	<0.03	
BRSW-308 ¹	5/26/2020	<0.03	
BRSW-308 ¹	9/29/2020	<0.03	
BRSW-308 ¹	5/27/2021	<0.03	
BRSW-308 ¹	9/20/2021	<0.03	
BRSW-308 ¹	5/16/2022	<0.03	
BRSW-308 ¹	9/16/2022	<0.03	
BRSW-308 ¹	6/22/2023	<0.04	
BRSW-308 ¹	9/24/2023	<0.03	
BRSW-308 ¹	5/20/2024	<0.03	
BRSW-308 ¹	9/23/2024	<0.03	
BRSW-309 ²	5/30/2019	<0.03	
BRSW-309 ²	10/1/2019	<0.03	
BRSW-309 ²	5/26/2020	<0.03	
BRSW-309 ²	9/28/2020	<0.03	
BRSW-309 ²	5/25/2021	<0.03	
BRSW-309 ²	9/20/2021	<0.03	
BRSW-309 ²	5/16/2022	<0.03	
BRSW-309 ²	9/15/2022	<0.03	
BRSW-309 ²	6/22/2023	<0.03	
BRSW-309 ²	9/24/2023	<0.03	
BRSW-309 ²	5/20/2024	<0.03	
BRSW-309 ²	9/23/2024	<0.03	
BRSW-400	5/1/2017	0.05	
BRSW-400	9/29/2020	<0.03	
BRSW-003A	9/29/2020	<0.03	
BRSW-003A	5/24/2021	<0.03	
BRSW-003A	9/20/2021	<0.03	
BRSW-003A	5/16/2022	<0.03	
BRSW-003A	9/16/2022	<0.03	
BRSW-003A	6/22/2023	<0.03	
BRSW-003A	9/24/2023	<0.03	
BRSW-003A	5/20/2024	<0.03	
BRSW-003A	9/23/2024	<0.03	
MHSW-101	7/16/2008	<0.03	
MHSW-102	7/16/2008	<0.03	
MHTDS-9	10/20/2016	<0.03	
SeepA	5/1/2017	17.4	pH: 4.9
Seep A	5/23/2018	<0.03	
Seep A	5/31/2019	<0.03	
Seep A	10/2/2019	<0.03	
Seep A	9/30/2020	<0.03	
SeepB	5/1/2017	0.04	

Note: < Indicates the concentration is less than the reporting limit

Exceeds acute standard

Exceeds chronic standard

*Circular DEQ-7, Montana Numeric Water Quality Standards , June 2019, aquatic life standards

The aluminum standard is for dissolved metals only per DEQ-Circular 7

Dissolved aluminum standard is only applied when pH is between 6.5 and 9.0

---- No standard

Italics = Baseline data collected by Pioneer Technical Services, Inc., Final Remedial Investigation Report, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana , dated January 31, 2013

mg/L = milligrams per liter

J = validation flag denotes that the result is an estimate with high or low bias

UJ = validation flag denotes the data is non-detect, and the reported concentration is an estimate due to low MSD recovery

1 = Field blank

2 = Equipment blank

3 = Sample not collected in the historic BRSW-18 (at Aspen Grove CG) location. Collected on Swamp Gulch downstream of BRSW-14.

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Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 1 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																	
		Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)				
Sample ID	Collection Date	pH*	Conductivity,		Acidity	Total Susp. Solids,		Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium	
			umhos/cm	Hardness		mg/L	mg/L										
	Standard	6.5 - 9.0															
AW-003A	10/9/2007	5.9				5	2480	9	11	<4	1	1590	324	171	4	3	
AW-003A	5/21/2018	7.9		128	59	<10	80	52	63	<4	<1	8	16	5	<1	1	
AW-003A	10/2/2019	7.8	J-	172	78	<10	98	60	73	<4	<1	23	20	7	<1	2	
BRSW-1	4/29/2011	8.2		118	62	<10	70	74	<4	<1	3	62	12	8	<1	1	
BRSW-1	6/13/2011	8.2		148	78	<10	54	82	100	<4	<1	2	16	9	<1	<1	
BRSW-1	9/19/2011	8.3		187	103	<10	109	110	130	<4	<1	4	22	12	<1	1	
BRSW-1	12/11/2011	8.3		190	101	<10	110	110	130	<4	<1	5	21	12	<1	1	
BRSW-1	3/26/2012	7.7	J-	131	63	<10	62	65	79	<4	<1	2	13	7	<1	1	
BRSW-1	5/7/2012	7.7	J-	177	85	<10	85	93	110	<4	<1	3	17	10	<1	<1	
BRSW-1	10/2/2012	7.9	J-	218	115	<10	108	110	130	<4	<1	5	23	14	<1	1	
BRSW-1	12/10/2012	7.8	J-	204	105	<10	101	110	120	5	<1	UJ	21	13	<1	1	
BRSW-1	3/25/2013	7.8	J-	185	93	<10	72	92	110	<4	<1	5	18	11	<1	1	
BRSW-1	5/24/2013	7.9	J-	177	85	<10	99	94	110	<4	<1	3	17	10	<1	<1	
BRSW-1	9/12/2013	8.1	J-	212	111	14	113	120	130	<4	<1	6	22	13	<1	2	
BRSW-1	12/13/2013	8	J-	199	105	<10	97	J-	110	130	<4	<1	9	20	13	<1	1
BRSW-1	3/30/2014	7.9	J-	161	79	<10	92	87	100	<4	<1	4	16	10	<1	1	
BRSW-1	5/27/2014	8	J-	165	81	<10	87	80	97	<4	<1	2	16	10	<1	<1	
BRSW-1	10/10/2014	8.1	J-	211	104	<10	112	110	130	<4	<1	4	21	13	<1	1	
BRSW-1	12/20/2014	8.1	J-	204	102	<10	110	100	120	<4	<1	4	20	12	<1	1	
BRSW-1	3/10/2015	8.1	J-	181	93	<10	91	90	110	<4	<1	4	19	11	<1	1	
BRSW-1	5/19/2015	8		154	84	<10	86	75	91	<4	<1	3	17	10	<1	<1	
BRSW-1	10/6/2015	8.1	J-	215	116	<10	121	110	130	<4	2	J-	7	23	14	<1	1
BRSW-1	12/15/2015	8	J-	208	105	<10	111	100	130	<4	<1	4	21	13	<1	1	
BRSW-1	3/22/2016	8.1	J-	177	92	<10	98	89	110	<4	<1	6	18	11	<1	1	
BRSW-1	5/12/2016	8	J-	179	96	<10	102	91	110	<4	<1	4	20	11	<1	<1	
BRSW-1	10/17/2016	8.2	J-	215	109	<10	123	110	130	<4	<1	4	22	13	<1	1	
BRSW-1	12/21/2016	8	J-	215	113	<10	107	110	130	<4	<1	5.9	23	13	<1	1	
BRSW-1	5/31/2019	8.0	J-	162	74	<10	91	80	97	<4	<1	3	16	8	<1	<1	
BRSW-1	10/1/2019	8.1	J-	221	112	20	108	110	130	<4	<1	7	23	13	<1	1	
BRSW-1	9/29/2020	8.1		210	112	<10	108	110	130	<4	<1	6	J+	23	13	<1	1
BRSW-3A	4/30/2011	7.5		411	188	<10	278	44	54	<4	<1	170	38	23	<1	2	
BRSW-3A	6/14/2011	7.5		468	195	<10	296	44	53	<4	<1	170	37	25	<1	1	
BRSW-3A	9/20/2011	7.9		298	156	<10	178	96	120	<4	<1	60	32	18	<1	1	
BRSW-3A	12/11/2011	8		299	155	<10	204	110	130	<4	<1	55	34	17	<1	1	
BRSW-3A	3/27/2012	7.3	J-	448	210	<10	260	100	120	<4	<1	120	46	23	<1	2	
BRSW-3A	5/7/2012	7	J-	331	150	<10	207	72	88	<4	<1	86	29	19	<1	1	
BRSW-3A	10/2/2012	7.6	J-	271	136	<10	143	110	140	<4	<1	21	29	16	<1	1	
BRSW-3A	12/10/2012	7.4	J-	310	154	<10	177	110	120	5	<1	UJ	32	18	<1	1	
BRSW-3A	3/25/2013	7.6	J-	286	142	<10	146	95	120	<4	<1	48	29	17	<1	1	
BRSW-3A	5/23/2013	7.4	J-	257	107	<10	150	75	92	<4	<1	53	23	12	<1	1	
BRSW-3A	9/12/2013	7.6	J-	256	132	<10	134	110	130	<4	<1	42	28	15	<1	1	
BRSW-3A	12/14/2013	7.8	J-	254	126	<10	140	J-	99	120	<4	<1	38	25	15	<1	1
BRSW-3A	3/30/2014	7.6	J-	271	131	<10	173	93	110	<4	<1	50	27	15	<1	1	
BRSW-3A	5/27/2014	7.6	J-	199	89	<10	113	61	74	<4	<1	27	17	11	<1	<1	

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 2 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																	
		Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)				
Sample ID	Collection Date	pH*	Conductivity,		Hardness	Total Susp. Solids,		Total Diss. Solids,	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
			umhos/cm			mg/L	mg/L										
	Standard	6.5 - 9.0		----	----	----	----	----		----	----	----	----		----	----	----
BRSW-3A	10/10/2014	7.6	J-	272	134		<10	151	100	120	<4	<1	36	28	15	<1	1
BRSW-3A	12/20/2014	7.6	J-	305	142		<10	185	93	110	<4	<1	50	29	17	<1	1
BRSW-3A	3/10/2015	7.4	J-	384	185		<10	239	73	88	<4	<1	109	38	22	<1	1
BRSW-3A	5/19/2015	7.5		225	106		<10	135	63	76	<4	<1	37	22	12	<1	1
BRSW-3B	4/30/2011	4.3		1430	545		22	1490	NA	NA	NA	<1	1000	110	66	3	1
BRSW-3B	6/14/2011	7.4		401	118		22	242	44	54	<4	<1	150	23	15	<1	1
BRSW-3B	9/20/2011	7.8		333	175		<10	223	100	130	<4	<1	79	36	21	1	1
BRSW-3B	12/11/2011	7.9		301	150		<10	192	110	130	<4	<1	51	33	16	<1	1
BRSW-3B	3/27/2012	7	J-	526	240		62	324	110	130	<4	<1	160	54	28	<1	2
BRSW-3B	5/7/2012	7	J-	230	110		<10	139	73	89	<4	<1	39	22	13	<1	1
BRSW-3B	10/2/2012	7.8	J-	213	111		<10	108	110	130	<4	<1	6	23	13	<1	1
BRSW-3B	12/10/2012	7.9	J-	212	109		<10	109	100	120	5	<1	UJ	23	13	<1	1
BRSW-3B	3/25/2013	7.8	J-	201	109		<10	86	92	110	<4	<1	11	22	13	<1	1
BRSW-24	3/25/2013	7.7	J-	205	99		<10	88	92	110	<4	<1	11	20	12	<1	1
BRSW-3B	5/23/2013	7.7	J-	151	72		<10	83	76	91	<4	<1	4	15	8	<1	<1
BRSW-24	5/23/2013	7.7	J-	151	73		<10	83	77	93	<4	<1	4	15	8	<1	<1
BRSW-3B	9/12/2013	8	J-	214	120		<10	113	110	130	<4	<1	10	25	14	<1	1
BRSW-24	9/12/2013	7.9	J-	212	118		<10	104	110	130	<4	<1	10	25	13	<1	1
BRSW-3B	12/14/2013	8	J-	192	96		<10	93	100	120	<4	1	10	19	11	<1	1
BRSW-24	12/14/2013	8	J-	192	96		<10	96	99	120	<4	<1	9	19	12	<1	1
BRSW-3B	3/30/2014	8	J-	191	102		<10	102	90	110	<4	<1	15	21	12	<1	1
BRSW-24	3/30/2014	8	J-	191	99		<10	113	89	110	<4	<1	15	21	11	<1	1
BRSW-3B	5/27/2014	7.6	J-	158	74		<10	87	62	75	<4	<1	11	15	9	<1	<1
BRSW-24	5/27/2014	7.6	J-	164	73		<10	93	62	75	<4	<1	12	15	9	<1	<1
BRSW-3B	10/10/2014	8.1	J-	207	102		<10	103	100	120	<4	<1	7	22	12	<1	1
BRSW-24	10/10/2014	8.1	J-	208	102		<10	103	100	120	<4	<1	7	22	12	<1	1
BRSW-3B	12/20/2014	8	J-	205	98		<10	115	93	110	<4	<1	9	20	11	<1	1
BRSW-24	12/20/2014	8	J-	205	100		<10	114	92	110	<4	<1	9	21	12	<1	1
BRSW-3B	3/10/2015	7.9	J-	205	100		<10	112	76	92	<4	<1	21	21	12	<1	1
BRSW-24	3/10/2015	7.9	J-	203	99		<10	113	75	91	<4	<1	20	21	12	<1	1
BRSW-3B	5/19/2015	7.7		151	75		<10	88	64	77	<4	<1	8	16	9	<1	<1
BRSW-24	5/19/2015	7.7		150	75		<10	90	64	77	<4	<1	7	16	9	<1	1
BRSW-3B	10/6/2015	7.5	J-	619	313		107	428	94	110	<4	<1	UJ	213	63	38	2
BRSW-24	10/6/2015	7.5	J-	619	320		109	428	94	110	<4	<1	UJ	216	64	39	2
BRSW-3B	12/15/2015	7.7	J-	333	158		20	210	89	110	<4	<1	70	33	18	<1	2
BRSW-24	12/15/2015	7.8	J-	333	154		19	208	89	110	<4	<1	70	32	18	<1	2
BRSW-3B	3/22/2016	7.8	J-	274	138		<10	175	78	94	<4	<1	64	29	16	<1	1
BRSW-24	3/22/2016	7.8	J-	274	140		<10	176	77	94	<4	<1	64	29	16	<1	1
BRSW-3B	5/12/2016	7.7	J-	488	253		<10	332	67	81	<4	<1	181	53	29	<1	2
BRSW-24	5/12/2016	7.7	J-	488	250		<10	333	67	81	<4	<1	181	52	29	<1	1
BRSW-3B	10/17/2016	7.9	J-	296	149		<10	180	94	110	<4	<1	44	31	18	<1	1
BRSW-24	10/17/2016	7.9	J-	296	150		<10	182	94	110	<4	<1	44	31	18	<1	1
BRSW-3B	12/21/2016	7.9	J-	223	116		<10	117	96	120	<4	<1	16	25	13	<1	1
BRSW-24	12/21/2016	7.9	J-	224	115		<10	116	97	120	<4	<1	16	25	13	<1	1

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 3 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-3B	5/1/2017	8.2 J-	189	89		<10	106	67	81	<4	<1 UJ	26	19	10	<1	1
BRSW-307	5/1/2017	8.2 J-	188	90		<10	103	67	81	<4	<1 UJ	25	19	10	<1	1
BRSW-3B	10/14/2017	7.7 J-	296	147		<10	180	99	120	<4	<1	51	30	17	<1	1
BRSW-307	10/14/2017	7.7 J-	297	143		<10	178	100	120	<4	<1	51	30	17	<1	2
BRSW-3B	5/22/2018	8.2	155	77		<10	88	75	91	<4	<1	3	16	9	<1	<1
BRSW-3B	10/11/2018	8.1 J-	225	110		<10	117	100	120	<4	<1	15	23	13	<1	1
BRSW-3	5/30/2019	8.0 J-	159	78		<10	83	75	90	<4	<1	8	16	9	<1	<1
BRSW-3	10/1/2019	8.0 J-	261	126		<10	148	99	120	<4	<1	33	27	15	<1	1
BRSW-307	10/1/2019	8.0 J-	260	125		<10	143	100	120	<4	<1	32	27	14	<1	1
BRSW-3	5/28/2020	8.2	172	73		<10	87	82	100	<4	<1	6	17	9	<1	<1
BRSW-307	5/28/2020	8.2	173	82		<10	89	84	100	<4	<1	6	17	9	<1	<1
BRSW-3	9/29/2020	8.1	224	122		<10	125	100	120	<4	<1	19 J+	25	14	<1	1
BRSW-307	9/29/2020	8.1	222	121		<10	122	100	120	<4	<1	19	25	14	<1	1
BRSW-3	5/25/2021	8.1 J-	205	103		<10 UJ	118	77	93	<4	<1	25	21	12	<1	<1
BRSW-307	5/25/2021	8.1 J-	212	104		<10 UJ	119	77	94	<4	<1	25	22	12	<1	<1
BRSW-3	9/21/2021	8	224	113		<10	122	100	130	<4	<1	10	23	14	<1	1
BRSW-3	5/16/2022	8.2	173	82		<10	95	72	87	<4	<1	15	16	10	<1	1
BRSW-307	5/16/2022	8.2	172	82		<10	97	72	88	<4	<1	15	16	10	<1	1
BRSW-3	9/16/2022	8.1 J-	220 J+	118		<10	126 J	110	130	<4	<1	13	25	14	<1	1
BRSW-4	10/10/2007	7.5		170		10	228	85	100	<4	<1	87	37	19	<1	1
BRSW-4A	6/17/2008	7.9		98		<10	127	74	91	<4	<1	43	22	11	<1	<1
BRSW-6	10/9/2007	6.4		91		1	100	96	120	<4	<1	3	21	9	<1	2
BRSW-6	6/17/2008	7.8		59		<10	80	66	81	<4	<1	3	14	6	<1	<1
BRSW-6	5/30/2019	7.8 J-	118	54		<10	66	57	69	<4	<1	3	13	5	<1	<1
BRSW-6	10/1/2019	7.5 J-	199	97		<10	106	93	110	<4	<1	10	22	10	<1	2
BRSW-6	9/29/2020	7.8	187	100		<10	93	95	120	<4	<1	7	23	10	<1	2
BRSW-9	10/9/2007	7.8		202		<1	274	82	100	<4	1	121	44	23	<1	2
BRSW-10	5/26/2020	7.7	84	38		<10	59	39	48	<4	<1	2	9	4	<1	1
BRSW-10	9/29/2020	7.8	121	60		<10	75	59	71	<4	<1	4	14	6	<1	2
BRSW-10	5/24/2021	7.7	86	41		<10	47	40	48	<4	<1	2	10	4	<1	1
BRSW-10	9/20/2021	7.2 J	136	66		<10 UJ	75	64	77	<4	<1	4	16	6	<1	2
BRSW-10	5/15/2022	7.7 J-	76	34		<10	41	36	43	<4	<1	2	7	4	<1	1
BRSW-10	9/15/2022	7.2 J-	133	67		<10	81	66	80	<4	<1	4	16	7	<1	2
BRSW-10	6/22/2023	7.8 J-	100	48		<10	56	50	60	<4	<1	2	12	5	<1	1
BRSW-10	9/24/2023	7.7 J-	125	58		<10	74	62 J+	75 J+	<4	<1	4	13	6	<1	2
BRSW-10	5/20/2024	7.5 J-	87	39		<10	52	41	41	<4	<1	2	9	4	<1	1
BRSW-10	9/23/2024	7.2 J-	137	68		<10	76	63	77	<4	<1	4	16	7	<1	2
BRSW-11	10/5/2007	NS		82		<10	102	69	84	<4	10	11	19	8	1	3
BRSW-12	10/5/2007	7		156		<10	210	51	62	<4	<1	98	33	18	1	1
BRSW-12	5/22/2018	7.7	154	69		<10	93	52	63	<4	<1	19	15	7	<1	2
BRSW-307	5/22/2018	7.7	152	69		<10	92	52	63	<4	<1	19	15	7	<1	3
BRSW-12	5/30/2019	7.6 J-	125	58		<10	65	48	58	<4	<1	13	13	6	<1	1
BRSW-307	5/30/2019	7.6 J-	124	56		<10	71	48	58	<4	<1	13	13	6	<1	1
BRSW-12	5/26/2020	7.8	153	70		<10	97	57	70	<4	<1	17	16	7	<1	2

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 4 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-12	9/29/2020	7.7	277	133		<10	168	76	93	<4	<1	62	33	12	1	4
BRSW-12	5/25/2021	7.8 J	160	75		<10	94	55	67	<4	<1	20	17	8	<1	2
BRSW-12	9/20/2021	7.6	292	131		<10	176	75	91	<4	<1	63	31	13	1	4
BRSW-12	5/15/2022	7.8 J-	173	74		<10	94	50	61	<4	<1	32	16	8	1	3
BRSW-12	9/15/2022	7.9 J-	287	138		<10	187	79	96	<4	<1	66	33	14	2	5
BRSW-12	6/22/2023	7.9 J-	195	89		<10	110	67	82	<4	<1	31	21	9	<1	4
BRSW-307	6/22/2023	7.8 J-	196	87		<10	111	67	81	<4	<1	30	19	9	<1	4
BRSW-12	9/24/2023	7.7 J-	270	110		<10	163	75 J+	90 J+	<4	0.32	58	25	12	1	6
BRSW-307	9/24/2023	7.7 J-	267	113		<10	161	75 J+	91 J+	<4	0.32	58	26	12	1	6
BRSW-12	5/20/2024	7.7 J-	139	65		<10	79	57	69	<4	<1	10	14	7	<1	2
BRSW-307	5/20/2024	7.6 J-	139	65		<10	79	58	71	<4	<1	10	14	7	<1	2
BRSW-12	9/23/2024	7.8 J-	312	145		<10	192	77	93	<4	<1	75	33	15	1	6
BRSW-307	9/23/2024	7.7 J-	311	144		<10	187	77	93	<4	<1	71	33	15	1	6
BRSW-13	10/5/2007	2.6		28		<10	113	<4	<4	<4	<1	58	5	4	3	2
BRSW-13	5/2/2017	4.2	86	14	12	<10	49	<4	<4	<4	<1	21	3	2	<1	1
BRSW-13	10/13/2017	3.8 J-	187	27	30	<10	121	<4	<4	<4	<1	55	5	3	2	2
BRSW-14	5/2/2017	7.9	116	55		<10	67	54	65	<4	<1	3.7	13	5	<1	2
BRSW-14	10/13/2017	7.7 J-	138	61		<10	87	53	64	<4	<1	13	14	6	<1	3
BRSW-15	5/2/2017	7.4	148	68		<10	91	49	59	<4	<1	22	18	6	<1	3
BRSW-15	10/13/2017	7.2 J-	211	97		31	134	56	68	<4	<1	42	25	8	<1	4
BRSW-16	10/4/2007	6.5		135		<10	197	44	54	<4	2	87	29	15	1	2
BRSW-16	6/17/2008	7.7		63		<10	87	44	54	<4	1	26	14	7	<1	1
BRSW-16	9/28/2020	7.8	230	102		<10	145	62	75	<4	2 J+	50 J+	24	10	1	4
BRSW-16	5/24/2021	7.6	142	63		<10	81	49	60	<4	2	16	15	6	<1	2
BRSW-16	9/20/2021	7.7	241	107		<10	153	61	74	<4	2	53	25	11	1	4
BRSW-16	5/15/2022	7.6 J-	155	63		<10	83	43	52	<4	2	27	14	7	<1	3
BRSW-16	9/15/2022	7.8 J-	244	112		<10	158	67	81	<4	2	53	26	12	1	5
BRSW-17	10/3/2007	7.2		118		<10	161	75	91	<4	2	45	26	13	1	2
BRSW-17	6/16/2008	7.8		71		<10	97	59	72	<4	1	23	16	8	<1	1
BRSW-17	9/28/2020	7.9	219	102		<10	132	79	95	<4	2	31	24	10	<1	3
BRSW-17	5/24/2021	7.6	162	76		<10	94	64	78	<4	2	13	18	8	<1	2
BRSW-17	9/20/2021	7.8	225	106		<10	124	85	100	<4	2	23	24	11	<1	3
BRSW-17	5/15/2022	7.6 J-	174	77		<10	96	63	76	<4	2	21	17	9	<1	3
BRSW-17	10/21/2022	7.8 J-	219	104		<10	130	82	100	<4	2	30	23	11	<1	4
BRSW-18 ³	5/2/2017	7.4	105	47		<10	64	45	55	<4	<1	5.3	11	5	<1	2
BRSW-18 ³	10/13/2017	7.3 J-	143	61		<10	99	50	60	<4	<1	17	15	6	1	3
BRSW-19	5/1/2017	8.1 J-	193	98		<10	108	91	110	<4	<1 UJ	6.4	22	10	<1	<1
BRSW-20	5/31/2019	8.00 J-	163	78		<10	93	71	86	<4	<1	11	19	8	<1	<1
BRSW-20	10/2/2019	7.9 J-	293	140		<10	169	90	110	<4	<1	55	35	13	<1	1
BRSW-20	5/28/2020	8.1	168	80		<10	88	76	92	<4	<1	8	19	8	<1	<1
BRSW-20	9/30/2020	7.9	244	131		<10	141	100	120	<4	<1	28	33	12	<1	1
BRSW-20	9/21/2021	7.9	260	129		<10	151	100	120	<4	<1	28	31	12	<1	1
BRSW-21	10/5/2007	2.7		26		13	99	<4	<4	<4	1	51	5	3	3	2
BRSW-21	5/2/2017	4.4	69	12	10 U	<10	40	<4	<4	<4	<1	17	2	1	<1	1

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 5 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-21	10/13/2017	3.8 J-	182	25	28	<10	108	<4	<4	<4	<1	51	4	3	2	2
BRSW-22	4/30/2011	7.8	545	287		<10	400	62	76	<4	<1	240	72	26	1	2
BRSW-24	4/30/2011	7.8	544	281		<10	364	63	77	<4	<1	230	71	25	1	2
BRSW-22	6/13/2011	8	214	102		<10	98	69	84	<4	<1	32	25	10	<1	<1
BRSW-24	6/13/2011	8	206	101		<10	112	70	85	<4	<1	32	25	10	<1	<1
BRSW-24	9/19/2011	8.1	276	148		<10	194	89	110	<4	<1	65	37	13	<1	1
BRSW-24	9/19/2011	8.1	265	149		<10	188	89	110	<4	<1	66	37	13	<1	<1
BRSW-22	12/11/2011	7.9	400	199		<10	280	87	110	<4	<1	120	53	16	<1	1
BRSW-24	12/11/2011	7.9	402	200		<10	278	87	110	<4	<1	120	53	16	<1	1
BRSW-22	3/26/2012	7.3 J-	680	335		<10	420	95	120	<4	<1	260	91	26	1	2
BRSW-24	3/26/2012	7.3 J-	679	347		<10	442	95	120	<4	<1	260	95	27	1	2
BRSW-22	5/7/2012	7.6 J-	205	94		<10	119	81	99	<4	<1	22	22	10	<1	<1
BRSW-24	5/7/2012	7.6 J-	206	94		<10	118	81	99	<4	<1	22	22	10	<1	<1
BRSW-22	10/2/2012	7.5 J-	315	159		<10	189	98	120	<4	<1	57	40	14	<1	1
BRSW-24	10/2/2012	7.4 J-	313	158		<10	182	98	120	<4	<1	57	40	14	<1	1
BRSW-22	12/10/2012	7.3 J-	475	241		<10	309	100	120	5	<1 UJ	130	64	20	1	1
BRSW-24	12/10/2012	7.3 J-	474	241		<10	300	100	120	5	<1 UJ	130	64	20	<1	1
BRSW-22	3/25/2013	7.2 J-	578	289		<10	345	100	130	<4	<1	190	76	24	1	2
BRSW-22	5/24/2013	7.8 J-	193	91		<10	107	81	95	<4	<1	19	21	9	<1	<1
BRSW-22	9/12/2013	7.8 J-	281	140		<10	165	100	120	<4	<1	59	34	13	<1	1
BRSW-22	12/13/2013	7.5 J-	452	206		<10	299	97	120	<4	<1	140	62	19	1	2
BRSW-22	3/29/2014	7.3 J-	492	242		<10	339	91	110	<4	<1	170	65	19	1	2
BRSW-22	5/27/2014	7.9 J-	167	75		<10	92	69	84	<4	<1	9	17	8	<1	<1
BRSW-22	10/10/2014	7.8 J-	295	138		<10	177	89	110	<4	<1	54	34	13	<1	<1
BRSW-22	12/20/2014	7.6 J-	358	166		<10	226	79	96	<4	<1	85	43	14	<1	1
BRSW-22	3/10/2015	7.5 J-	345	166		<10	214	60	72	<4	<1	98	43	14	<1	1
BRSW-22	5/19/2015	7.9	223	110		<10	129	73	88	<4	<1	30	27	10	<1	<1
BRSW-22	10/6/2015	7.7 J-	320	161		<10	204	90	110	<4	<1 UJ	69	39	15	<1	1
BRSW-22	12/15/2015	7.5 J-	480	225		<10	325	85	100	<4	<1	157	60	18	1	2
BRSW-22	3/22/2016	7.6 J-	426	216		<10	291	72	87	<4	<1	152	57	18	<1	1
BRSW-22	5/12/2016	8 J-	207	107		<10	121	82	99	<4	<1	23	26	10	<1	<1
BRSW-22	5/1/2017	7.8 J-	223	102		<10	140	56	68	<4	<1 UJ	46	26	9	2	1
BRSW-22	10/14/2017	8 J-	358	175		<10	228	94	110	<4	<1	88	45	16	1	2
BRSW-22	5/23/2018	8.0 J-	158	78		<10	92	71	86	<4	<1	7	19	7	<1	<1
BRSW-22	10/11/2018	7.8 J-	266	125		<10	150	96	120	<4	<1	38	32	11	<1	1
BRSW-23	10/10/2007	7.4		161		4	201	96	120	<4	1	64	31	20	<1	1
BRSW-23	4/30/2011	8	223	128		19	133	60	73	<4	<1	50	26	16	<1	1
BRSW-23	6/14/2011	8.1	195	92		<10	80	74	90	<4	<1	21	19	11	<1	<1
BRSW-23	9/20/2011	8.2	258	136		<10	161	99	120	<4	<1	39	28	16	<1	1
BRSW-23	12/11/2011	8	291	141		<10	182	100	130	<4	<1	50	29	16	<1	1
BRSW-23	3/27/2012	7.4 J-	270	117		10	154	61	74	<4	<1	63	25	13	<1	1
BRSW-23	5/7/2012	7.3 J-	222	102		13	127	80	98	<4	<1	29	21	12	<1	<1
BRSW-23	10/2/2012	7.8 J-	301	159		<10	164	110	130	<4	<1	44	29	21	<1	1
BRSW-23	12/10/2012	7.5 J-	295	148		<10	165	100	120	5	<1 UJ	43	30	18	<1	1

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 6 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																			
		Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)						
Sample ID	Collection Date	pH*	Conductivity,		Hardness	Total Susp. Solids,		Total Diss. Solids,	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium		
			umhos/cm			mg/L	mg/L												
	Standard	6.5 - 9.0		----	----	----	----	----		----	----	----	----		----	----	----	----	
BRSW-23	3/25/2013	7.5	J-	287	139		<10	151		90	110	<4	<1	53	29	16	<1	1	
BRSW-23	5/23/2013	7.8	J-	195	94		<10	107		87	110	<4	<1	16	19	11	<1	<1	
BRSW-23	9/12/2013	8.1	J-	236	127		<10	122		110	130	<4	<1	28	25	16	<1	1	
BRSW-23	12/14/2013	7.7	J-	274	135		<10	152	J-	98	120	<4	<1	50	26	17	<1	1	
BRSW-23	3/30/2014	7.6	J-	269	126		<10	169		82	100	<4	<1	57	27	15	<1	1	
BRSW-23	5/27/2014	7.8	J-	174	81		<10	95		74	89	<4	<1	9	16	10	<1	<1	
BRSW-23	10/10/2014	7.9	J-	256	126		<10	139		100	120	<4	<1	26	26	15	<1	1	
BRSW-23	12/20/2014	7.8	J-	296	139		<10	173		93	110	<4	<1	45	28	17	<1	1	
BRSW-23	3/10/2015	7.6	J-	323	157		<10	195		78	95	<4	<1	74	31	19	<1	1	
BRSW-23	5/19/2015	7.8		212	105		<10	123		72	88	<4	<1	26	22	12	<1	<1	
BRSW-23	10/6/2015	7.8	J-	293	148		<10	183		100	120	<4	<1	UJ	45	30	18	<1	1
BRSW-23	12/15/2015	6.9	J-	534	245		10	368		71	86	<4	3	199	50	29	<1	2	
BRSW-23	5/12/2016	7.2	J-	397	197		<10	262		71	86	<4	1	129	39	24	<1	1	
BRSW-23	10/17/2016	6.6	J-	893	443		17	671		47	56	<4	5	421	83	57	1	2	
BRSW-23	3/22/2016	6.9	J-	617	323		<10	446		58	70	<4	4	268	64	40	<1	2	
BRSW-23	5/1/2017	7.9	J-	220	97		<10	143		43	52	<4	1.2	J+	57	23	9	1	1
BRSW-23	10/14/2017	8	J-	279	144		<10	165		99	120	<4	<1	43	30	17	<1	1	
BRSW-23	5/22/2018	8.1		162	81		<10	91		73	88	<4	<1	7	17	9	<1	<1	
BRSW-23	5/30/2019	8.0	J-	163	81		<10	82		72	87	<4	<1	11	17	9	<1	<1	
BRSW-23	10/1/2019	8.0	J-	269	129		<10	148		97	120	<4	<1	39	28	14	<1	1	
BRSW-23	5/28/2020	8.1		174	83		<10	90		80	97	<4	<1	8	18	9	<1	<1	
BRSW-23	9/29/2020	8.1		226	125		<10	124		100	120	<4	<1	21	J+	27	14	<1	1
BRSW-23	5/25/2021	8.1	J-	210	105		<10	UJ	121	72	87	<4	<1	29	22	12	<1	<1	
BRSW-23	9/21/2021	8		239	121		<10	134		110	130	<4	<1	19	25	14	<1	1	
BRSW-23	5/16/2022	8.1		175	86		<10	98		69	83	<4	<1	19	18	10	<1	1	
BRSW-23	9/16/2022	8.1	J-	229	J+	121	<10	174	J	110	130	<4	<1	18	26	14	<1	1	
BRSW-26	5/21/2018	6.0		85	27		19	65		5	5	<4	<1	26	7	2	1	2	
BRSW-26	5/29/2019	5.6	J-	91	31		<10	60		<4	<4	<4	<1	36	8	3	1	<1	
BRSW-26	9/30/2020	DRY		DRY	DRY		DRY	DRY		DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	
BRSW-29	10/9/2007	7.3			130		1	172		90	110	<4	<1	45	28	15	<1	1	
BRSW-29	5/22/2018	7.8		142	70		<10	81		62	75	<4	<1	8	16	7	<1	1	
BRSW-29	5/30/2019	7.8	J-	142	71		<10	70		64	78	<4	<1	8	16	8	<1	<1	
BRSW-29	10/1/2019	7.4	J-	234	113		<10	126		91	110	<4	<1	26	26	12	<1	1	
BRSW-29	5/26/2020	8		157	77		<10	95		73	88	<4	<1	7	17	8	<1	<1	
BRSW-29	9/29/2020	7.8		205	107		<10	117		95	120	<4	<1	15	24	11	<1	1	
BRSW-29	5/24/2021	8		175	88		<10	102		68	82	<4	<1	17	19	10	<1	<1	
BRSW-29	9/20/2021	7.6	J	238	119		<10	UJ	134	100	120	<4	<1	22	27	12	<1	2	
BRSW-29	5/16/2022	7.9		142	69		<10	76		62	75	<4	<1	9	15	8	<1	1	
BRSW-29	9/16/2022	7.6	J-	220	J+	114	<10	117	J	100	120	<4	<1	16	25	12	<1	2	
BRSW-29	6/22/2023	8.2	J-	172	85		<10	88		83	100	<4	<1	7	18	10	<1	1	
BRSW-29	9/24/2023	7.7	J-	227	105		<10	117		96	120	<4	<1	20	23	11	<1	2	
BRSW-29	5/20/2024	8.0	J-	157	75		<10	88		70	85	<4	<1	8	16	9	<1	1	
BRSW-29	9/23/2024	7.8	J-	233	120		<10	128		100	120	<4	<1	17	26	13	<1	2	
BRSW-31	10/4/2007	7.2			136		<10	205		43	53	<4	2	90	29	16	1	2	

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 7 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																			
		Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)						
Sample ID	Collection Date	pH*	Conductivity,		Hardness	Total Susp. Solids,		Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium			
			umhos/cm			mg/L	mg/L												
	Standard	6.5 - 9.0		----	----	----	----	----	----	----	----	----	----	----	----	----	----		
BRSW-31	6/16/2008	7.8			61		<10	90	43	53	<4	<1	26		14	6	<1	1	
BRSW-31	5/3/2017	7.6		147	68		<10	92	40	48	<4	2.5	22		15	7	<1	3	
BRSW-31	10/12/2017	7.5	J-	263	106		<10	152	51	62	<4	3	65	J+	23	12	<1	5	
BRSW-31	5/22/2018	7.5		141	51		<10	87	47	56	<4	1	17		11	5	<1	2	
BRSW-31	10/12/2018	7.3	J-	262	106		<10	163	48	58	<4	4	70		23	11	1	4	
BRSW-307	10/12/2018	7.3	J-	262	108		<10	163	49	59	<4	4	70		23	11	1	4	
BRSW-31	9/28/2020	7.7		236	107		<10	145	63	76	<4	2	J+	52	J+	26	10	1	4
BRSW-33	10/9/2007	6.6			160		<1	225	53	65	<4	<1	107		35	18	<1	2	
BRSW-33	5/26/2020	7.8		146	67		<10	93	57	69	<4	<1	15		15	7	<1	2	
BRSW-33	9/29/2020	7.6		288	144		<10	182	81	98	<4	<1	64		36	13	1	4	
BRSW-33	5/24/2021	7.8		170	88		<10	94	60	72	<4	<1	22		20	9	<1	2	
BRSW-33	9/20/2021	7.5	J	312	147		<10	UJ	82	99	<4	<1	66		36	14	1	5	
BRSW-33	5/15/2022	7.8	J-	186	81		<10	102	54	65	<4	<1	36		17	9	1	3	
BRSW-33	9/15/2022	7.5	J-	301	146		<10	196	85	100	<4	<1	67		35	14	1	5	
BRSW-33	6/22/2023	7.8	J-	197	89		<10	112	68	83	<4	<1	31		21	9	<1	4	
BRSW-33	9/24/2023	7.5	J-	269	113		<10	163	81	J+	98	J+	<4	<1	56	25	12	1	6
BRSW-33	5/20/2024	7.7	J-	140	65		<10	85	59	59	<4	<1	9		14	7	<1	1	
BRSW-33	9/23/2024	7.6	J-	335	156		<10	202	80	97	<4	<1	83		36	16	1	7	
BRSW-35	5/30/2019	7.9	J-	168	80		<10	96	65	78	<4	<1	20		19	8	<1	<1	
BRSW-35	10/1/2019	8.0	J-	281	135		<10	162	87	110	<4	<1	52		33	13	<1	1	
BRSW-35	9/29/2020	8.0		243	132		<10	148	98	120	<4	<1	32		32	13	<1	<1	
BRSW-35	5/25/2021	7.9	J-	204	98		<10	UJ	63	76	<4	<1	34		24	9	<1	<1	
BRSW-35	9/21/2021	8		260	129		<10	154	100	120	<4	<1	30		30	13	<1	1	
BRSW-36	10/9/2007	6.9			221		<1	306	68	83	<4	1	145		48	25	<1	2	
BRSW-36	5/22/2018	7.9		178	82		<10	104	63	76	<4	<1	23		18	9	<1	2	
BRSW-36	5/26/2020	7.9		180	83		<10	112	68	82	<4	<1	22		19	8	<1	2	
BRSW-36	9/29/2020	7.6		353	173		<10	226	89	110	<4	<1	87		43	16	1	5	
BRSW-36	5/24/2021	7.9		206	98		<10	112	69	83	<4	<1	30		22	10	<1	2	
BRSW-36	9/20/2021	7.4	J	373	175		<10	UJ	92	110	<4	<1	87		43	16	2	6	
BRSW-36	5/15/2022	8	J-	222	96		<10	126	60	72	<4	<1	48		21	11	2	4	
BRSW-36	9/15/2022	7.5	J-	367	178		<10	244	95	120	<4	<1	93		42	18	2	6	
BRSW-36	6/22/2023	8	J-	246	111		<10	136	79	96	<4	<1	45		26	11	<1	5	
BRSW-36	9/24/2023	7.5	J-	332	137		<10	200	94	J+	110	J+	<4	<1	77	31	14	1	8
BRSW-36	5/20/2024	7.8	J-	164	76		<10	96	69	84	<4	<1	12		16	9	<1	1	
BRSW-36	9/23/2024	7.5	J-	448	213		<10	288	88	110	<4	<1	134		49	22	1	10	
BRSW-38	4/30/2011	7.7		343	165		<10	238	43	52	<4	<1	130		33	20	<1	1	
BRSW-38	6/13/2011	8		159	78		<10	88	65	79	<4	<1	15		17	9	<1	<1	
BRSW-38	9/20/2011	7.9		264	138		<10	176	86	110	<4	2	30		29	16	<1	1	
BRSW-38	12/11/2011	7.8		317	150		<10	206	82	100	<4	<1	79		32	17	<1	1	
BRSW-38	3/27/2012	7.2	J-	306	130		24	172	51	63	<4	<1	91		28	14	<1	1	
BRSW-38	5/7/2012	6.2	J-	227	101		<10	130	71	86	<4	<1	39		21	12	<1	<1	
BRSW-38	10/2/2012	7.3	J-	298	145		<10	166	93	110	<4	<1	54		30	17	<1	1	
BRSW-38	12/10/2012	7.1	J-	396	191		<10	264	80	97	<4	<1	UJ	110		39	23	<1	2
BRSW-38	3/25/2013	7.1	J-	360	168		10	199	70	85	<4	<1	100		35	20	<1	2	

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 8 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-38	5/23/2013	5.3 J-	221	95		<10	112	79	96	<4	<1	27	20	11	<1	<1
BRSW-38	9/12/2013	7.4 J-	271	133		<10	148	94	110	<4	<1	58	27	16	<1	1
BRSW-38	12/13/2013	7.3 J-	313	150		<10	191	76	93	<4	<1	84	30	18	<1	2
BRSW-38	3/29/2014	7.5 J-	283	132		<10	183	67	81	<4	<1	76	27	15	<1	1
BRSW-38	5/27/2014	7.6 J-	173	75		<10	96	70	84	<4	<1	12	16	9	<1	<1
BRSW-38	10/10/2014	7.6 J-	274	126		<10	163	86	100	<4	<1	48	26	15	<1	2
BRSW-38	12/20/2014	7.5 J-	297	135		<10	187	76	93	<4	<1	60	28	16	<1	1
BRSW-38	3/10/2015	7.5 J-	291	133		<10	176	67	81	<4	<1	67	28	16	<1	1
BRSW-38	5/19/2015	7.4	245	113		<10	153	59	71	<4	2	50	24	13	<1	1
BRSW-38	10/6/2015	7.4 J-	337	156		<10	226	73	88	<4	3 J-	88	33	18	<1	2
BRSW-38	12/15/2015	7.3 J-	314	137		<10	190	69	83	<4	3	73	29	16	<1	2
BRSW-38	3/22/2016	7.3 J-	323	145		<10	204	67	81	<4	3	95	31	17	<1	2
BRSW-38	5/12/2016	7.5 J-	226	110		<10	143	64	77	<4	1	46	24	12	<1	1
BRSW-38	10/17/2016	7.4 J-	329	150		<10	212	73	89	<4	6	66	31	18	<1	2
BRSW-38	12/20/2016	7.5 J-	238	125		<10	133	79	95	<4	1.5	35	24	13	<1	2
BRSW-38	5/30/2019	7.9 J-	165	83		<10	84	71	86	<4	<1	13	18	9	<1	<1
BRSW-38	10/1/2019	7.3 J-	271	127		<10	159	90	110	<4	<1	45	29	13	<1	1
BRSW-38	5/26/2020	8.1	170	82		<10	103	75	91	<4	<1	11	18	9	<1	<1
BRSW-38	9/29/2020	7.8	237	129		<10	140	97	120	<4	<1	31	29	14	<1	1
BRSW-38	5/24/2021	8.1	204	101		<10	120	71	86	<4	<1	28	22	11	<1	<1
BRSW-38	9/20/2021	7.4 J	262	131		<10	143	99	120	<4	<1	31	30	14	<1	1
BRSW-38	5/16/2022	8	176	86		<10	98	68	82	<4	<1	21	18	10	<1	1
BRSW-38	9/16/2022	7.6 J-	241	J+	127	<10	127	110	130	<4	<1	24	28	14	<1	1
BRSW-39A	10/10/2007	7.5		173		3	216	97	120	<4	1	75	35	21	<1	1
BRSW-39	5/22/2018	7.5	168	93		<10	103	56	67	<4	<1	23	20	10	<1	1
BRSW-44	10/10/2007	7.8		198		10	276	80	98	<4	<1	122	46	20	<1	1
BRSW-44	6/17/2008	8		96		<10	123	76	93	<4	<1	31	19	12	<1	<1
BRSW-48	4/30/2011	7.6	339	158		16	227	45	55	<4	<1	120	32	19	<1	1
BRSW-48	6/13/2011	8.1	178	83		<10	88	72	88	<4	<1	13	18	10	<1	<1
BRSW-48	9/20/2011	8.1	264	139		<10	166	97	120	<4	<1	45	29	16	<1	1
BRSW-48	12/11/2011	8	301	151		<10	202	98	120	<4	<1	64	31	18	<1	1
BRSW-48	3/27/2012	6.7 J-	301	130		30	166	43	52	<4	<1	94	28	15	<1	1
BRSW-48	5/7/2012	7.1 J-	226	104		12	127	79	97	<4	<1	32	21	13	<1	<1
BRSW-48	10/2/2012	7.6 J-	300	154		<10	164	100	130	<4	<1	47	29	20	<1	1
BRSW-48	12/10/2012	7 J-	358	173		<10	224	92	110	<4	<1	82	35	21	<1	1
BRSW-48	3/25/2013	6.9 J-	353	164		14	195	72	87	<4	<1	98	33	20	<1	1
BRSW-48	5/23/2013	7.7 J-	199	94		<10	113	86	100	<4	<1	20	20	11	<1	<1
BRSW-48	9/12/2013	7.9 J-	256	130		<10	132	110	130	<4	<1	45	27	15	<1	1
BRSW-48	12/14/2013	7.4 J-	308	146		<10	188	90	110	<4	<1	72	30	18	<1	1
BRSW-48	3/30/2014	7.4 J-	293	138		<10	188	74	90	<4	<1	76	28	17	<1	1
BRSW-48	5/27/2014	7.8 J-	173	82		<10	93	74	90	<4	<1	9	17	10	<1	<1
BRSW-48	10/10/2014	7.8 J-	271	127		<10	152	99	120	<4	<1	35	26	15	<1	1
BRSW-48	12/20/2014	7.5 J-	322	148		<10	199	85	100	<4	<1	65	30	18	<1	1
BRSW-48	3/10/2015	7.5 J-	340	161		<10	210	73	88	<4	<1	87	32	20	<1	1

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 9 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																			
		Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)						
Sample ID	Collection Date	pH*	Conductivity,		Hardness	Total Susp. Solids,		Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium			
			umhos/cm			mg/L	mg/L												
	Standard	6.5 - 9.0		----	----	----	----	----	----	----	----	----	----	----	----	----	----		
BRSW-48	5/19/2015	7.6		219	104		<10	132	69	84	<4	<1	31	21	12	<1	<1		
BRSW-48	10/6/2015	7	J-	411	200		23	278	67	81	<4	1	J-	136	41	24	<1	1	
BRSW-48	12/15/2015	6.1	J-	593	262		14	426	12	14	<4	3		281	57	29	<1	2	
BRSW-48	3/22/2016	6.2	J-	554	262		10	410	11	13	<4	3		274	56	30	<1	2	
BRSW-48	5/12/2016	6.7	J-	467	227		11	318	32	39	<4	2		196	48	26	<1	1	
BRSW-48	10/17/2016	5.1	J-	875	402		21	685	<4	<4	<4	10		439	81	49	<1	2	
BRSW-48	12/20/2016	6.4	J-	636	304		19	454	20	24	<4	1.9		290	64	35	<1	2	
BRSW-101	10/3/2007	7.1			119		<10	158	73	89	<4	3		46	26	13	1	2	
BRSW-101	6/16/2008	7.9			72		<10	100	58	71	<4	1		22	16	7	<1	1	
BRSW-102	10/3/2007	7.7			118		<10	156	73	89	<4	3		46	26	13	1	2	
BRSW-102	6/16/2008	8			71		<10	97	58	71	<4	1		22	16	7	<1	1	
BRSW-102	9/28/2020	8		222	102		<10	137	80	97	<4	2		31	24	10	<1	3	
BRSW-103	10/3/2007	6.7			114		14	134	120	140	<4	2		5	25	12	<1	2	
BRSW-103	6/16/2008	7.8			105		<10	117	100	120	<4	2		7	25	10	<1	1	
BRSW-104	10/3/2007	7.3			134		<10	192	43	53	<4	2		83	29	15	1	2	
BRSW-104	6/16/2008	7.8			60		<10	83	42	51	<4	1		25	13	6	<1	1	
BRSW-104	5/3/2017	7.7		153	66		<10	94	42	51	<4	3.2		21	14	7	<1	3	
BRSW-104	10/12/2017	7.8	J-	273	108		<10	158	52	63	<4	4		70	J+	24	12	1	5
BRSW-104	9/28/2020	7.9		232	102		<10	148	63	76	<4	2		50	24	10	1	4	
BRSW-104	5/24/2021	7.6		142	63		<10	81	47	57	<4	2		16	15	6	<1	2	
BRSW-104	9/20/2021	7.8		240	105		<10	UJ	59	71	<4	2		51	24	11	1	4	
BRSW-307	9/20/2021	7.8		241	106		<10	UJ	61	73	<4	2		51	25	11	1	4	
BRSW-104	5/15/2022	7.6	J-	154	63		<10	84	43	52	<4	2		27	14	7	<1	3	
BRSW-104	10/21/2022	7.8	J-	234	106		<10	147	59	71	<4	3		58	24	11	1	5	
BRSW-105	10/4/2007	7.1			136		<10	202	44	54	<4	3		88	29	15	1	2	
BRSW-105	6/16/2008	7.8			59		<10	87	46	56	<4	1		25	13	6	<1	1	
BRSW-106	10/4/2007	7.2			133		<10	198	44	54	<4	2		88	28	15	1	2	
BRSW-106	6/16/2008	7.3			61		<10	88	42	51	<4	1		25	14	6	<1	1	
BRSW-107	10/4/2007	7.3			141		<10	210	44	54	<4	2		92	30	16	1	2	
BRSW-107	6/16/2008	7.7			64		<10	88	47	58	<4	1		27	15	7	<1	1	
BRSW-107	5/3/2017	7.5		172	75		<10	110	43	52	<4	2.9		29	16	8	<1	3	
BRSW-107	10/12/2017	7.4	J-	262	103		<10	153	55	66	<4	3		64	J+	23	11	1	5
BRSW-107	9/28/2020	7.6		238	108		<10	152	64	77	<4	2	J+	54	J+	26	11	1	4
BRSW-107	5/24/2021	7.5		150	67		<10	86	48	59	<4	2		19	16	7	<1	3	
BRSW-107	9/20/2021	7.5		251	110		<10	UJ	61	74	<4	2		55	26	11	2	5	
BRSW-108	10/10/2007	3.7			39		<1	109	<4	<4	<4	1		43	9	4	2	2	
BRSW-108	6/17/2008	7			31		<10	69	<4	<4	<4	<1		35	8	3	1	<1	
BRSW-108	10/6/2015	4.6	J-	135	40		<10	114	<4	<4	<4	<1	UJ	59	9	4	2	2	
BRSW-108	5/12/2016	5		119	41		<10	89	<4	<4	<4	<1		48	10	4	1	1	
BRSW-108	5/2/2017	4.7	J-	122	35		<10	81	<4	<4	<4	<1		40	8	4	2	1	
BRSW-108	10/13/2017	4.8	J-	146	44		<10	112	<4	<4	<4	<1		56	10	5	2	2	
BRSW-108	5/21/2018	6.7		89	33		<10	64	7	8	<4	<1		27	8	3	1	1	
BRSW-108	10/11/2018	4.7	J-	140	41		<10	101	<4	<4	<4	<1		54	9	5	2	2	
BRSW-108	5/29/2019	6.9	J-	94	33		<10	62	8	9	<4	<1		32	8	3	<1	<1	

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 10 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-108	10/2/2019	4.8	J-	140	40	<10	99	<4	<4	<4	<1	53	9	5	2	2
BRSW-108	9/30/2020	4.8		132	42	<10	98	<4	<4	<4	<1	50	9	5	2	2
BRSW-109	10/9/2007	7.6			183	<1	241	75	92	<4	<1	96	39	21	<1	2
BRSW-110	10/4/2007	7.1			150	12	217	51	62	<4	2	91	32	17	1	2
BRSW-110	5/3/2017	7.5		192	86	<10	118	44	53	<4	1.4	38	19	9	<1	3
BRSW-110	10/12/2017	7.4	J-	286	115	<10	166	59	72	<4	3	71	25	13	<1	6
BRSW-110	9/28/2020	7.5		276	134	46	160	130	150	<4	6	J+	32	13	2	4
BRSW-110	5/24/2021	7.6		164	75	<10	91	57	69	<4	<1	21	17	8	<1	2
BRSW-110	9/20/2021	7.3		310	138	<10	UJ	140	170	<4	3	21	33	14	1	4
BRSW-201	11/3/2011	6.3			122	<10	146	120	140	<4	1	10	28	12	<1	3
BRSW-201	9/28/2020	8.1		234	117	<10	132	110	140	<4	1	10	29	11	<1	4
BRSW-202	11/3/2011	8.3			121	<10	139	120	150	<4	1	10	28	12	<1	3
BRSW-203	11/3/2011	7.6			122	<10	143	120	150	<4	1	9	29	12	<1	3
BRSW-204	11/3/2011	8.3			122	<10	146	120	150	<4	1	9	28	13	<1	3
BRSW-204	9/28/2020	8		247	122	<10	132	120	140	<4	2	12	29	12	<1	3
BRSW-204	5/24/2021	7.8		183	90	18	102	84	100	<4	1	7	22	9	<1	2
BRSW-204	9/20/2021	7.9		259	129	<10	UJ	120	150	<4	2	10	31	13	<1	3
BRSW-204	5/15/2022	7.9	J-	174	80	<10	98	77	94	<4	1	10	18	8	<1	2
BRSW-204	9/15/2022	8.1	J-	245	126	<10	144	120	150	<4	2	9	30	13	<1	3
BRSW-205	11/3/2011	8.1			105	<10	148	89	110	<4	2	20	23	11	<1	3
BRSW-206	11/3/2011	8.1			109	<10	146	75	91	<4	2	36	24	12	<1	3
BRSW-206	5/24/2021	7.8		163	77	<10	93	65	78	<4	2	13	18	8	<1	2
BRSW-206	9/20/2021	8		221	104	<10	UJ	88	110	<4	2	20	24	11	<1	3
BRSW-206	5/15/2022	7.9	J-	158	71	<10	85	58	70	<4	2	17	15	8	<1	3
BRSW-206	9/15/2022	8.1	J-	212	104	<10	131	88	110	<4	2	19	24	11	<1	3
BRSW-301	3/22/2016	7.6		273	137	<10	172	87	110	<4	<1	56	32	14	<1	<1
BRSW-301	5/12/2016	7.5		206	97	<10	129	59	71	<4	<1	43	23	10	<1	<1
BRSW-301	5/1/2017	7.7	J-	190	95	<10	104	88	110	<4	<1	UJ	24	9	1	<1
BRSW-301	5/23/2018	8.1	J-	154	78	<10	87	75	91	<4	<1	2	18	8	<1	<1
BRSW-301	5/31/2019	8.1	J-	162	73	<10	95	79	96	<4	<1	4	17	7	<1	<1
BRSW-301	9/30/2020	7.6		226	124	13	114	110	140	<4	<1	10	29	13	<1	<1
BRSW-301	5/25/2021	8.1	J-	179	94	<10	UJ	85	100	<4	<1	5	22	10	<1	<1
BRSW-301	9/21/2021	7.5		231	118	<10	127	110	140	<4	<1	10	26	13	<1	<1
BRSW-301	5/16/2022	8		169	81	<10	95	82	99	<4	<1	6	17	9	<1	<1
BRSW-301	9/16/2022	7.6	J-	221	J+	119	187	J	140	<4	<1	9	27	13	<1	<1
BRSW-301	6/22/2023	8.2	J-	194	96	<10	99	97	120	<4	<1	6	22	10	<1	<1
BRSW-302	3/22/2016	7.9		200	102	<10	115	87	110	<4	<1	18	23	11	<1	<1
BRSW-302	5/12/2016	8		179	94	<10	101	87	110	<4	<1	7	22	9	<1	<1
BRSW-303	3/22/2016	7.9		197	99	<10	112	84	100	<4	<1	19	22	11	<1	<1
BRSW-303	5/12/2016	8		180	92	<10	100	86	100	<4	<1	7	22	9	<1	<1
BRSW-303	5/1/2017	7.6	J-	216	104	<10	125	80	97	<4	<1	UJ	27	9	1	<1
BRSW-303	10/14/2017	7.8	J-	254	128	<10	142	120	U	140	<4	<1	30	13	<1	<1
BRSW-304	3/22/2016	7.6		244	115	<10	154	66	80	<4	<1	59	27	12	<1	<1
BRSW-304	5/12/2016	8		185	95	<10	104	86	100	<4	<1	10	22	10	<1	<1

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 11 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-304	5/1/2017	7.5 J-	254	118		<10	156	77	93	<4	<1 UJ	46	30	10	1	1
BRSW-304	10/14/2017	7.8 J-	261	126		<10	148	110	130	<4	<1	26	30	13	<1	<1
BRSW-304	5/23/2018	8.0 J-	159	80		<10	93	74	89	<4	<1	5	19	8	<1	<1
BRSW-304	5/31/2019	8.0 J-	166	79		<10	92	77	94	<4	<1	8	19	8	<1	<1
BRSW-304	10/2/2019	7.8 J-	247	120		<10	133	110	130	<4	<1	21	28	12	<1	<1
BRSW-304	5/28/2020	8.1	171	83		<10	85	79	96	<4	<1	7	20	8	<1	<1
BRSW-304	9/30/2020	7.9	229	124		<10	123	110	130	<4	<1	17	30	12	<1	<1
BRSW-304	9/24/2023	7.8 J-	240	114		<10	124	100	130	<4	<1	19	27	11	<1	<1
BRSW-304	5/20/2024	7.9 J-	187	92		<10	99	85	100	<4	<1	8	20	10	<1	<1
BRSW-304	9/23/2024	8.0 J-	245	126		<10	128	110	130	<4	<1	15	29	13	<1	<1
BRSW-305	3/22/2016	7.6 J-	231	110		<10	148	59	71	<4	<1	58	26	11	<1	<1
BRSW-305	5/12/2016	8.1	183	98		<10	104	85	100	<4	<1	11	23	10	<1	<1
BRSW-305	5/23/2018	8.1 J-	158	79		<10	94	73	89	<4	<1	5	19	8	<1	<1
BRSW-306	3/22/2016	7.4 J-	390	196		<10	265	72	88	<4	<1	132	51	17	<1	1
BRSW-306	5/12/2016	8	186	99		<10	107	85	100	<4	<1	13	23	10	<1	<1
BRSW-003A	9/29/2020	7.9	209	111		<10	116	96	120	<4	<1	16	26	11	<1	1
BRSW-003A	5/24/2021	8	171	85		<10	97	68	82	<4	<1	15	19	9	<1	1
BRSW-003A	9/20/2021	7.8 J	802	290		<10 UJ	556	88	110	<4	2	304	62	33	9	19
BRSW-003A	5/16/2022	7.9	147	69		<10	80	62	75	<4	<1	12	14	8	<1	1
BRSW-003A	9/16/2022	7.8 J-	644 J+	257		<10	412 J	94	110	<4	23	200	55	29	9	32
BRSW-003A	6/22/2023	8.1 J-	230	106		<10	127	80	97	<4	<1	37	25	11	<1	5
BRSW-003A	9/24/2023	7.8 J-	638	201		<10	423	83	100	<4	<1	244	49	26	<1	39
BRSW-003A	5/20/2024	7.8 J-	156	76		<10	91	700	85	<4	<1	8	16	9	<1	1
BRSW-003A	9/23/2024	8.0 J-	233	115		<10	118	98	120	<4	<1	13	26	12	<1	2
MHSW-101	7/16/2008	5.7		124		<10	132	83	100	<4	<1	NS	29	12	<1	<1
MHSW-102	7/16/2008	5.1		121		<10	121	90	110	<4	<1	8	29	12	<1	<1
MHTDS-9	10/20/2016	7.1 J-	795	362		19	569	68	82	<4	26	183	92	32	2	5
BRSW-308 ¹	5/30/2019	5.8 J-	5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	10/1/2019	5.4 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	5/26/2020	5.9	6	2		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	9/29/2020	5.9	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	5/27/2021	5.8 J	<5	<1		<10 UJ	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	9/20/2021	5.8 J	<5	<1		<10 UJ	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	5/16/2022	5.7	<5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	9/16/2022	6.2 J-	5 J+	<1		<10	<20 UJ	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	6/22/2023	6.2 J-	6	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	9/24/2023	5.9 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	5/20/2024	6.4 J-	5 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-308 ¹	9/23/2024	5.7 J-	6 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	5/30/2019	5.8 J-	5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	10/1/2019	5.9 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	5/26/2020	5.9	5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1

Table 28. UBMC Surface Water Physiochemical, Anions, and Cations; Historical Compilation
Page 12 of 12

UBMC / Mike Horse Area Surface Water Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions(mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BRSW-309 ²	9/28/2020	5.9	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	5/25/2021	5.8 J	<5	<1		<10 UJ	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	9/20/2021	5.8	<5	<1		<10 UJ	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	5/16/2022	5.9	<5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	9/15/2022	5.9 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	6/22/2023	6.4 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	9/24/2023	5.9 J-	<5	<1		<10	<20	74 J+	90 J+	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	5/20/2024	6.4 J-	5 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-309 ²	9/23/2024	6.3 J-	5 J+	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
BRSW-400	5/1/2017	8 J-	137	64		<10	82	57	68	<4	<1 UJ	11	16	5	<1	1
BRSW-400	9/29/2020	7.9	178	90		<10	110	67	81	<4	<1	25	23	8	<1	2
SeepA	5/1/2017	4.9	1200	587		60	1060	4 U	5	<4	1.7 J+	670	130	63	6	2
Seep A	5/23/2018	7.3 J-	178	83		<10	110	69	84	<4	<1	16	22	7	<1	<1
Seep A	5/31/2019	7.5 J-	179	82		<10	105	75	91	<4	<1	14	21	7	<1	<1
Seep A	10/2/2019	7.4 J-	256	129		<10	136	120	140	<4	<1	15	31	13	<1	<1
Seep A	9/30/2020	7.6	233	126		<10	118	110	140	<4	<1	12	30	12	<1	<1
SeepB	5/1/2017	7.2	233	110		12	144	80	97	<4	<1	30	29	9	<1	1

Note: < Indicates the concentration is less than the reporting limit
Outside of acceptable range
*B-1 Classification Standards ARM 17.30.623(2)(c)
---- No standard
Italics = Baseline data collected by Pioneer Technical Services, Inc., Final Remedial Investigation Report, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana , dated January 31, 2013
U = validation flag denotes the reported result is a false positive/non-detect
J+ = validation flag denotes that the result is an estimate with high bias
J- = validation flag denotes that the result is an estimate with low bias
UJ = validation flag denotes the data is non-detect, and the reported concentration is an estimate due to low MSD recovery
mg/L = milligrams per liter
umhos/cm = micromhos/centimeter
1 = Field blank
2 = Equipment blank
3 = Sample not collected in the historic BRSW-18 (at Aspen Grove CG) location. Collected on Swamp Gulch downstream of BRSW-14.

Table 29. Repository Area Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 1 of 3

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
S35-SW-01	4/29/2011	<0.003	<0.00008	0.003	0.2	<0.0005	0.007	<0.01
S35-SW-01	6/14/2011	<0.003	<0.00008	0.002	0.11	<0.0005	0.011	<0.01
S35-SW-01	9/19/2011	<0.003	<0.00008	<0.001	0.14	<0.0005	0.007	<0.01
S35-SW-01	12/10/2011	<0.003	<0.00008	<0.001	0.06	<0.0005	<0.005	<0.01
S35-SW-01	3/26/2012	<0.003	<0.00008	<0.001	0.31	<0.0005	<0.005	<0.01
S35-SW-01	5/8/2012	<0.003	<0.00008	0.002	0.09	<0.0005	0.008	<0.01
S35-SW-01	10/3/2012	<0.003	<0.00008	0.002	0.15	<0.0005	0.013	<0.01
S35-SW-01	12/11/2012	<0.003	<0.00008	<0.001	0.15	<0.0005	<0.005	<0.01
S35-SW-01	3/26/2013	<0.003	<0.00008	<0.001	0.13	<0.0005	<0.005	<0.01
S35-SW-01	5/24/2013	<0.003	<0.00008	0.002 U	0.09	<0.0005	0.012	<0.01
S35-SW-01	9/13/2013	<0.003	<0.00008	<0.001	0.08	<0.0005	<0.005	<0.01
S35-SW-01	5/27/2014	<0.003	<0.00008	0.002	0.05	<0.0005	<0.005	<0.01
S35-SW-01	10/10/2014	<0.003	0.00051	0.001 U	0.07	<0.0005	<0.005	<0.01
S35-SW-01	3/10/2015	<0.003	<0.00008	<0.001	0.1	<0.0005	<0.005	<0.01
S35-SW-01	5/18/2015	<0.003	<0.00008	0.002 U	0.13	<0.0005	0.013	<0.01
S35-SW-01	10/6/2015	<0.003	<0.00008	<0.001	0.08	<0.0005	0.008	<0.01
S35-SW-01	5/11/2016	<0.003	<0.00008	0.001	0.06	<0.0005	0.007	<0.01
S35-SW-01	10/18/2016	<0.003	<0.00008	<0.001	0.09	<0.0005	<0.005	<0.01
S35-SW-01	5/4/2017	<0.003	<0.00008	0.001	0.06	<0.0005	<0.005	<0.01
S35-SW-01	10/11/2017	<0.003	<0.00008	0.001	0.26	<0.0005	0.035	<0.01
S35-SW-01	5/23/2018	<0.003	<0.00008	0.009	0.11	<0.0005	0.008	<0.01
S35-SW-01	10/12/2018	<0.003	<0.00008	<0.001	0.18	<0.0005	0.010	<0.01
S35-SW-01	5/29/2019	<0.003	<0.00008	0.002	0.07	<0.0005	0.007	<0.01
S35-SW-01	10/2/2019	<0.003	<0.00008	0.001	0.19	<0.0005	0.015	<0.01
S35-SW-01	9/30/2020	<0.003	<0.00008	<0.001	0.13	<0.0005	<0.005	<0.01
S35-SW-02	4/29/2011	<0.003	<0.00008	0.004	0.25	<0.0005	0.006	<0.01
S35-SW-02	6/14/2011	<0.003	<0.00008	0.003	0.08	<0.0005	<0.005	<0.01
S35-SW-02	9/19/2011	<0.003	<0.00008	0.001	0.14	<0.0005	0.022	<0.01
S35-SW-02	12/10/2011	<0.003	<0.00008	0.001	0.07	<0.0005	0.009	<0.01
S35-SW-02	3/26/2012	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-02	5/8/2012	<0.003	<0.00008	0.002	0.06	<0.0005	<0.005	<0.01
S35-SW-02	10/3/2012	<0.003	<0.00008	0.002	0.09	<0.0005	0.011	<0.01
S35-SW-02	12/11/2012	<0.003	<0.00008	0.001	0.07	<0.0005	<0.005	<0.01
S35-SW-02	3/26/2013	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-02	5/24/2013	<0.003	<0.00008	0.002 U	0.04	<0.0005	<0.005	<0.01
S35-SW-02	9/13/2013	<0.003	<0.00008	0.005	0.22	<0.0005	0.045	<0.01
S35-SW-02	12/15/2013	<0.003	<0.00008	0.001 U	0.07	<0.0005	0.006	<0.01
S35-SW-02	3/29/2014	<0.003	0.00018	0.001	0.05	<0.0005	<0.005	<0.01
S35-SW-02	5/28/2014	<0.003	<0.00008	0.002	0.05	<0.0005	<0.005	<0.01
S35-SW-02	10/10/2014	<0.003	<0.00008	0.002 U	0.08	<0.0005	0.009	<0.01
S35-SW-02	12/20/2014	<0.003	<0.00008	0.002	0.16	<0.0005	0.008	<0.01
S35-SW-02	3/10/2015	<0.003	<0.00008	0.001	0.03	<0.0005	<0.005	<0.01
S35-SW-02	5/18/2015	<0.003	<0.00008	0.003 U	0.09	<0.0005	<0.005	<0.01
S35-SW-02	10/6/2015	<0.003	<0.00008	0.001 U	0.12	<0.0005	0.009	<0.01
S35-SW-02	12/16/2015	<0.003	<0.00008	0.001	0.16	<0.0005	0.005	<0.01
S35-SW-02	3/21/2016	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-02	5/11/2016	<0.003	<0.00008	0.002	0.04	<0.0005	<0.005	<0.01
S35-SW-02	10/18/2016	<0.003	<0.00008	0.003	0.33	<0.0005	0.018	<0.01
S35-SW-02	12/19/2016	<0.003	<0.00008	0.001	0.17	<0.0005	0.01	<0.01
S35-SW-02	5/4/2017	<0.003	<0.00008	0.002	0.04	<0.0005	<0.005	<0.01
S35-SW-02	10/11/2017	<0.003	<0.00008	0.001	0.16	<0.0005	0.006	<0.01
S35-SW-02	5/23/2018	<0.003	<0.00008	0.003	0.06	<0.0005	<0.005	<0.01
S35-SW-02	10/12/2018	<0.003	0.00022	0.002	0.22	<0.0005	0.045	<0.01
S35-SW-03	4/29/2011	<0.003	0.00034	0.003	0.31	0.0006	0.068	0.18
S35-SW-03	6/14/2011	<0.003	0.00046	0.004	0.08	0.0009	0.016	0.17
S35-SW-03	9/19/2011	<0.003	0.00017	0.001	0.06	<0.0005	0.006	0.06
S35-SW-03	12/10/2011	<0.003	0.00019	<0.001	0.06	<0.0005	0.013	0.15
S35-SW-03	3/26/2012	<0.003	0.00017	0.002	0.2	<0.0005	0.024	0.12
S35-SW-03	5/8/2012	<0.003	0.00039	0.002	0.08	<0.0005	0.02	0.2
S35-SW-03	10/3/2012	<0.003	0.00011	0.001	0.05	<0.0005	<0.005	0.05
S35-SW-03	12/11/2012	<0.003	0.00029	<0.001	0.08	<0.0005	0.034	0.21
S35-SW-03	3/26/2013	<0.003	0.00016	0.001	0.11	<0.0005	0.013	0.11
S35-SW-03	5/24/2013	<0.003	0.00047	0.003	0.1	0.0008	0.03	0.2
S35-SW-03	9/13/2013	<0.003	0.00016	0.001 U	0.05	<0.0005	<0.005	0.05
S35-SW-03	12/15/2013	<0.003	0.00029	0.002	0.13	<0.0005	0.051	0.19
S35-SW-03	3/29/2014	<0.003	0.00031	0.003	0.28	0.0007	0.09	0.17
S35-SW-03	5/28/2014	<0.003	0.00045	0.003	0.08	0.0006	0.02	0.2
S35-SW-03	10/10/2014	<0.003	0.00015	0.002 U	0.08	<0.0005	0.011	0.08
S35-SW-03	12/20/2014	<0.003	0.00023	0.002	0.11	<0.0005	0.032	0.16
S35-SW-03	3/10/2015	<0.003	0.00042	0.009	0.28	0.0008	0.091	0.19
S35-SW-03	5/18/2015	<0.003	0.00057	0.007	0.34	0.0021	0.078	0.21
S35-SW-03	10/6/2015	<0.003	0.00016	0.001 U	0.08	<0.0005	0.01	0.06
S35-SW-03	12/16/2015	<0.003	0.00022	0.001	0.1	<0.0005	0.032	0.12
S35-SW-03	3/21/2016	<0.003	0.00015	0.002	0.17	<0.0005	0.02	0.09
S35-SW-03	5/11/2016	<0.003	0.00034	0.002	0.09	<0.0005	0.034	0.14
S35-SW-03	10/18/2016	<0.003	0.00019	0.002	0.11	<0.0005	0.015	0.09
S35-SW-03	12/20/2016	<0.003	0.00023	0.001	0.08	<0.0005	0.023	0.17

Table 29. Repository Area Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 2 of 3

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
S35-SW-04	4/29/2011	<0.003	0.00029	0.003	0.27	0.0006	0.055	0.17
S35-SW-04	6/14/2011	<0.003	0.00047	0.003	0.08	0.0008	0.017	0.17
S35-SW-04	9/19/2011	<0.003	0.00016	0.001	0.05	<0.0005	<0.005	0.06
S35-SW-04	12/10/2011	<0.003	0.00018	<0.001	0.06	<0.0005	0.01	0.14
S35-SW-04	3/26/2012	<0.003	0.00018	0.002	0.19	<0.0005	0.015	0.11
S35-SW-04	5/8/2012	<0.003	0.00037	0.002	0.08	<0.0005	0.018	0.2
S35-SW-04	10/3/2012	<0.003	0.00012	0.001	0.05	<0.0005	<0.005	0.05
S35-SW-04	12/11/2012	<0.003	0.00029	0.001	0.07	<0.0005	0.028	0.2
S35-SW-04	3/26/2013	<0.003	0.00017	0.001	0.11	<0.0005	0.01	0.11
S35-SW-04	5/24/2013	<0.003	0.00046	0.003	0.1	0.0007	0.03	0.2
S35-SW-04	9/13/2013	<0.003	0.00014	0.002 U	0.04	<0.0005	<0.005	0.05
S35-SW-04	12/15/2013	<0.003	0.00029	0.002	0.12	<0.0005	0.043	0.18
S35-SW-04	3/29/2014	<0.003	0.00031	0.002	0.26	<0.0005	0.071	0.16
S35-SW-04	5/28/2014	<0.003	0.00046	0.003	0.08	0.0006	0.02	0.2
S35-SW-04	10/10/2014	<0.003	0.00015	0.003	0.07	<0.0005	0.01	0.08
S35-SW-04	12/20/2014	<0.003	0.00021	0.002	0.1	<0.0005	0.026	0.16
S35-SW-04	3/10/2015	<0.003	0.00038	0.003	0.26	<0.0005	0.076	0.19
S35-SW-04	5/18/2015	<0.003	0.00053	0.007	0.36	0.0021	0.078	0.21
S35-SW-04	10/6/2015	<0.003	0.00018	0.001 U	0.08	<0.0005	0.009	0.06
S35-SW-04	12/16/2015	<0.003	0.0002	0.001	0.12	<0.0005	0.022	0.11
S35-SW-04	3/21/2016	<0.003	0.00012	0.002	0.16	0.0006	0.013	0.08
S35-SW-04	5/11/2016	<0.003	0.00034	0.002	0.09	<0.0005	0.028	0.14
S35-SW-04	10/18/2016	<0.003	0.00016	0.002	0.1	<0.0005	0.012	0.09
S35-SW-04	12/20/2016	<0.003	0.00023	0.001	0.08	<0.0005	0.018	0.17
BRSW-101	5/3/2017	<0.003	0.00035	0.003	0.08	<0.0005	0.025	0.15
BRSW-101	10/12/2017	<0.003	0.00023	0.002	0.1	0.0024	0.024	0.13
S35-SW-05	4/28/2011	<0.003	<0.00008	0.003	0.54	<0.0005	0.011	<0.01
S35-SW-05	6/14/2011	<0.003	<0.00008	0.002	0.13	<0.0005	0.008	<0.01
S35-SW-05	9/19/2011	<0.003	<0.00008	0.001	0.14	<0.0005	0.015	<0.01
S35-SW-05	12/10/2011	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-05	3/26/2012	<0.003	<0.00008	0.003	0.36	<0.0005	0.023	<0.01
S35-SW-05	5/8/2012	<0.003	<0.00008	0.002	0.14	<0.0005	0.012	<0.01
S35-SW-05	10/3/2012	<0.003	<0.00008	<0.001	0.06	<0.0005	0.008	<0.01
S35-SW-05	12/11/2012	<0.003	<0.00008	<0.001	0.07	<0.0005	<0.005	<0.01
S35-SW-05	3/26/2013	<0.003	<0.00008	0.002	0.19	<0.0005	0.008	<0.01
S35-SW-05	5/24/2013	<0.003	<0.00008	0.001 U	<0.03	<0.0005	<0.005	<0.01
S35-SW-05	9/13/2013	<0.003	<0.00008	0.001 U	0.12	<0.0005	0.017	<0.01
S35-SW-05	12/15/2013	<0.003	<0.00008	0.002	0.2	<0.0005	0.027	<0.01
S35-SW-05	3/29/2014	<0.003	<0.00008	0.002	0.15	<0.0005	0.015	<0.01
S35-SW-05	5/27/2014	<0.003	<0.00008	0.002	0.09	<0.0005	0.008	<0.01
S35-SW-05	10/10/2014	<0.003	<0.00008	0.001 U	0.1	<0.0005	0.011	<0.01
S35-SW-05	12/20/2014	<0.003	<0.00008	<0.001	0.08	<0.0005	0.007	<0.01
S35-SW-05	3/10/2015	<0.003	<0.00008	0.002	0.42	<0.0005	0.018	<0.01
S35-SW-05	5/18/2015	<0.003	<0.00008	0.002 U	0.21	<0.0005	0.02	<0.01
S35-SW-05	10/6/2015	<0.003	<0.00008	<0.001	0.11	<0.0005	0.017	<0.01
S35-SW-05	12/15/2015	<0.003	<0.00008	<0.001	0.14	<0.0005	0.016	<0.01
S35-SW-05	3/21/2016	<0.003	<0.00008	0.001	0.23	<0.0005	0.006	<0.01
S35-SW-05	5/11/2016	<0.003	<0.00008	0.001	0.13	<0.0005	0.019	<0.01
S35-SW-05	10/18/2016	<0.003	<0.00008	<0.001	0.09	<0.0005	0.008	<0.01
S35-SW-05	12/19/2016	<0.003	<0.00008	<0.001	0.07	<0.0005	0.009	<0.01
S35-SW-05	5/4/2017	<0.003	<0.00008	0.001	0.09	<0.0005	0.008	<0.01
S35-SW-05	10/11/2017	<0.003	<0.00008	<0.001	0.09	<0.0005	0.011	<0.01
S35-SW-05	5/23/2018	<0.003	<0.00008	0.002	0.12	<0.0005	0.01	<0.01
S35-SW-05	10/12/2018	<0.003	<0.00008	0.001	0.16	<0.0005	0.016	<0.01
S35-SW-06	8/17/2014	<0.003	<0.00008	<0.001	0.03	<0.0005	<0.005	<0.01
S35-SW-06	10/12/2014	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	12/23/2014	<0.003	0.0001	0.002	<0.03	0.0006	0.058	0.01
S35-SW-06	3/10/2015	0.012	0.0002	0.047	23.3	0.0384	0.602	0.11
S35-SW-06	3/13/2015	<0.003	<0.00008	0.004	0.82	0.0102	0.083	0.01
S35-SW-06	3/27/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.072	<0.01
S35-SW-06	4/29/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/18/2015	<0.003	0.00148	0.003 U	<0.03	<0.0005	3.88	0.06
S35-SW-06	5/27/2015	0.003	0.00176	0.004	0.8	0.0016	3.22	0.1
S35-SW-06	6/30/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	7/28/2015	0.003	0.00026	0.007	0.5	0.0351	0.147	0.04
S35-SW-06	8/31/2015	0.003	<0.00008	0.006	1.75	0.0198	0.038	0.02
S35-SW-06	10/9/2015	<0.003	<0.00008	0.002 U	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	12/16/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/21/2018	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.013	<0.01
S35-SW-06	10/12/2018	<0.003	<0.00008	0.001	0.05	0.0010	<0.005	<0.01
S35-SW-06	5/29/2019	<0.003	<0.00008	0.004	0.13	0.0074	0.018	0.02
S35-SW-06	10/2/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/22/2020	<0.003	0.00019	0.006	0.55	0.0143	0.075	0.04
S35-SW-06	9/30/2020	<0.003	<0.00008	<0.001	0.07	0.0022	0.006	<0.01
S35-SW-06	5/25/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	9/21/2021	<0.003	0.00013	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01

Table 29. Repository Area Surface Water Human Health Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 3 of 3

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	0.01	0.005	1.3	----/14**	0.015	----/0.43**	7.4
S35-SW-06	9/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.003
S35-SW-06	5/20/2024	<0.003	<0.00008	<0.001	0.03	0.001	<0.005	<0.01
S35-SW-06	9/24/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-07	3/10/2015	0.004	0.00055	0.012	2.8	0.0405	1.26	0.05
S35-SW-07	3/13/2015	0.018	0.00116	0.066	8.4	0.32	1.77	0.2
S35-SW-07	5/18/2015	<0.003	0.00239	0.006	0.05	0.0012	6.01	0.06
S35-SW-07	5/27/2015	<0.003	0.00043	0.011	0.9	0.0077	0.676	0.02
S35-SW-07	7/28/2015	0.006	0.0118	0.035	1.22	0.116	9.32	0.72
S35-SW-07	3/21/2016	0.07	0.0206	0.548	12.6	3.54	4.73	2.91
S35-SW-07	5/21/2018	<0.003	0.0541	0.008	0.97	0.0083	60.3	8
S35-SW-07	10/12/2018	<0.003	0.0228	0.003	8.04	0.0249	111	12.0
S35-SW-07	5/29/2019	<0.003	0.0799	0.020	1.51	0.0193	71.7	14.8
S35-SW-08	5/18/2015	<0.003	<0.00008	0.002 U	0.05	<0.0005	<0.005	<0.01
S35-SW-08	10/6/2015	<0.003	<0.00008	<0.001	0.32	<0.0005	0.026	<0.01
S35-SW-08	12/16/2015	<0.003	<0.00008	<0.001	0.22	<0.0005	0.022	<0.01
S35-SW-08	3/21/2016	<0.003	<0.00008	<0.001	0.06	<0.0005	0.006	<0.01
S35-SW-08	5/11/2016	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-08	10/18/2016	<0.003	<0.00008	0.001	0.57	<0.0005	0.037	<0.01
S35-SW-08	12/19/2016	<0.003	<0.00008	<0.001	0.12	<0.0005	0.079	<0.01
S35-SW-08	5/4/2017	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-08	10/11/2017	<0.003	<0.00008	<0.001	0.14	<0.0005	0.015	<0.01
S35-SW-08	5/23/2018	<0.003	<0.00008	0.001	0.05	<0.0005	<0.005	<0.01
S35-SW-08	10/12/2018	<0.003	<0.00008	<0.001	0.19	<0.0005	0.024	<0.01
S35-SW-08	5/29/2019	<0.003	<0.00008	0.001	0.03	<0.0005	<0.005	<0.01
S35-SW-08	10/2/2019	<0.003	<0.00008	<0.001	0.13	<0.0005	0.016	<0.01
S35-SW-08	9/30/2020	<0.003	<0.00008	<0.001	0.73	<0.0005	0.111	<0.01
S35-SW-08	5/25/2021	<0.003	<0.00008	0.001	0.06	<0.0005	<0.005	<0.01
S35-SW-08	9/21/2021	<0.003	<0.00008	<0.001	0.74	<0.0005	0.164	<0.01
S35-SW-08	5/16/2022	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-08	9/16/2022	<0.003	<0.00008	<0.001	0.51	<0.0005	0.066	<0.01
BRSW-307	9/16/2022	<0.003	<0.00008	<0.001	0.58	<0.0005	0.07	<0.01
S35-SW-08	6/22/2023	<0.003	<0.00008	0.001 J+	0.11	<0.0005	0.011	<0.01
S35-SW-08	9/24/2023	<0.003	<0.00008	<0.001	0.4	<0.0005	0.029	<0.01
S35-SW-08	5/20/2024	<0.003	<0.00008	<0.001	0.18	<0.0005	0.015	<0.01
S35-SW-08	9/24/2024	<0.003	<0.00008	<0.001	0.47	<0.0005	0.051	<0.01
BRSW-102	5/3/2017	<0.003	0.00039	0.003	0.09	<0.0005	0.026	0.15
BRSW-102	10/12/2017	<0.003	0.00032	0.002	0.11	<0.0005	0.033	0.14
BRSW-102	9/28/2020	<0.003	<0.00008	0.001	0.12	<0.0005	0.009	0.03
BRSW-206	5/3/2017	<0.003	0.00037	0.003	0.1	<0.0005	0.034	0.16
BRSW-206	10/12/2017	<0.003	0.00026	0.002	0.1	<0.0005	0.023	0.13

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*Circular DEQ-7, Montana Numeric Water Quality Standards , June 2019 (DEQ-7), human health standard

---- No Circular DEQ-7 human health standard for iron and manganese

** SSCL, Final Baseline Human Health Risk Assessment, Section 10, Page 10-1

mg/L = milligrams per liter

J = validation flag denotes the reported results are estimates with high or low bias

J- = validation flag denotes the reported results are estimates with a low bias

J+ = validation flag denotes that the result is an estimate with high bias

UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery

U = validation flag denotes the reported result is a false positive/non-detect

S35-SW-04 and BRSW-101 represent the same sample collection location

Duplicate sample

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Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 1 of 5

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
Standard (acute/chronic)*		0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
S35-SW-01	4/29/2011	<0.003	<0.00008	0.003	0.2	<0.0005	0.007	<0.01
S35-SW-01	6/14/2011	<0.003	<0.00008	0.002	0.11	<0.0005	0.011	<0.01
S35-SW-01	9/19/2011	<0.003	<0.00008	<0.001	0.14	<0.0005	0.007	<0.01
S35-SW-01	12/10/2011	<0.003	<0.00008	<0.001	0.06	<0.0005	<0.005	<0.01
S35-SW-01	3/26/2012	<0.003	<0.00008	<0.001	0.31	<0.0005	<0.005	<0.01
S35-SW-01	5/8/2012	<0.003	<0.00008	0.002	0.09	<0.0005	0.008	<0.01
S35-SW-01	10/3/2012	<0.003	<0.00008	0.002	0.15	<0.0005	0.013	<0.01
S35-SW-01	12/11/2012	<0.003	<0.00008	<0.001	0.15	<0.0005	<0.005	<0.01
S35-SW-01	3/26/2013	<0.003	<0.00008	<0.001	0.13	<0.0005	<0.005	<0.01
S35-SW-01	5/24/2013	<0.003	<0.00008	0.002 U	0.09	<0.0005	0.012	<0.01
S35-SW-01	9/13/2013	<0.003	<0.00008	<0.001	0.08	<0.0005	<0.005	<0.01
S35-SW-01	5/27/2014	<0.003	<0.00008	0.002	0.05	<0.0005	<0.005	<0.01
S35-SW-01	10/10/2014	<0.003	0.00051	0.001 U	0.07	<0.0005	<0.005	<0.01
S35-SW-01	3/10/2015	<0.003	<0.00008	<0.001	0.1	<0.0005	<0.005	<0.01
S35-SW-01	5/18/2015	<0.003	<0.00008	0.002 U	0.13	<0.0005	0.013	<0.01
S35-SW-01	10/6/2015	<0.003	<0.00008	<0.001	0.08	<0.0005	0.008	<0.01
S35-SW-01	5/11/2016	<0.003	<0.00008	0.001	0.06	<0.0005	0.007	<0.01
S35-SW-01	10/18/2016	<0.003	<0.00008	<0.001	0.09	<0.0005	<0.005	<0.01
S35-SW-01	5/4/2017	<0.003	<0.00008	0.001	0.06	<0.0005	<0.005	<0.01
S35-SW-01	10/11/2017	<0.003	<0.00008	0.001	0.26	<0.0005	0.035	<0.01
S35-SW-01	5/23/2018	<0.003	<0.00008	0.009	0.11	<0.0005	0.008	<0.01
S35-SW-01	10/12/2018	<0.003	<0.00008	<0.001	0.18	<0.0005	0.010	<0.01
S35-SW-01	5/29/2019	<0.003	<0.00008	0.002	0.07	<0.0005	0.007	<0.01
S35-SW-01	10/2/2019	<0.003	<0.00008	0.001	0.19	<0.0005	0.015	<0.01
S35-SW-01	5/22/2020	NS	NS	NS	NS	NS	NS	NS
S35-SW-01	9/30/2020	<0.003	<0.00008	<0.001	0.13	<0.0005	<0.005	<0.01
S35-SW-02	4/29/2011	<0.003	<0.00008	0.004	0.25	<0.0005	0.006	<0.01
S35-SW-02	6/14/2011	<0.003	<0.00008	0.003	0.08	<0.0005	<0.005	<0.01
S35-SW-02	9/19/2011	<0.003	<0.00008	0.001	0.14	<0.0005	0.022	<0.01
S35-SW-02	12/10/2011	<0.003	<0.00008	0.001	0.07	<0.0005	0.009	<0.01
S35-SW-02	3/26/2012	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-02	5/8/2012	<0.003	<0.00008	0.002	0.06	<0.0005	<0.005	<0.01
S35-SW-02	10/3/2012	<0.003	<0.00008	0.002	0.09	<0.0005	0.011	<0.01
S35-SW-02	12/11/2012	<0.003	<0.00008	0.001	0.07	<0.0005	<0.005	<0.01
S35-SW-02	3/26/2013	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-02	5/24/2013	<0.003	<0.00008	0.002 U	0.04	<0.0005	<0.005	<0.01
S35-SW-02	9/13/2013	<0.003	<0.00008	0.005	0.22	<0.0005	0.045	<0.01
S35-SW-02	12/15/2013	<0.003	<0.00008	0.001 U	0.07	<0.0005	0.006	<0.01
S35-SW-02	3/29/2014	<0.003	0.00018	0.001	0.05	<0.0005	<0.005	<0.01
S35-SW-02	5/28/2014	<0.003	<0.00008	0.002	0.05	<0.0005	<0.005	<0.01
S35-SW-02	10/10/2014	<0.003	<0.00008	0.002 U	0.08	<0.0005	0.009	<0.01
S35-SW-02	12/20/2014	<0.003	<0.00008	0.002	0.16	<0.0005	0.008	<0.01
S35-SW-02	3/10/2015	<0.003	<0.00008	0.001	0.03	<0.0005	<0.005	<0.01
S35-SW-02	5/18/2015	<0.003	<0.00008	0.003 U	0.09	<0.0005	<0.005	<0.01
S35-SW-02	10/6/2015	<0.003	<0.00008	0.001 U	0.12	<0.0005	0.009	<0.01
S35-SW-02	12/16/2015	<0.003	<0.00008	0.001	0.16	<0.0005	0.005	<0.01

Hardness Adjusted Surface Water Quality Standards (mg/L)									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
S35-SW-01	4/29/2011	0.00096	0.00045	0.007	0.005	0.0338	0.0013	0.07	0.07
S35-SW-01	6/14/2011	0.00100	0.00047	0.008	0.005	0.0355	0.0014	0.07	0.07
S35-SW-01	9/19/2011	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
S35-SW-01	12/10/2011	0.00181	0.00076	0.013	0.009	0.0765	0.0030	0.11	0.11
S35-SW-01	3/26/2012	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
S35-SW-01	5/8/2012	0.00111	0.00051	0.008	0.006	0.0408	0.0016	0.08	0.08
S35-SW-01	10/3/2012	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
S35-SW-01	12/11/2012	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10
S35-SW-01	3/26/2013	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
S35-SW-01	5/24/2013	0.00117	0.00053	0.009	0.006	0.0435	0.0017	0.08	0.08
S35-SW-01	9/13/2013	0.00222	0.00090	0.016	0.011	0.0997	0.0039	0.14	0.14
S35-SW-01	5/27/2014	0.00113	0.00052	0.009	0.006	0.0417	0.0016	0.08	0.08
S35-SW-01	10/10/2014	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
S35-SW-01	3/10/2015	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
S35-SW-01	5/18/2015	0.00119	0.00054	0.009	0.006	0.0444	0.0017	0.08	0.08
S35-SW-01	10/6/2015	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
S35-SW-01	5/11/2016	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-01	10/18/2016	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
S35-SW-01	5/4/2017	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
S35-SW-01	10/11/2017	0.00160	0.00069	0.012	0.008	0.0654	0.0025	0.10	0.10
S35-SW-01	5/23/2018	0.00110	0.00050	0.008	0.006	0.0399	0.0016	0.07	0.07
S35-SW-01	10/12/2018	0.00153	0.00066	0.011	0.008	0.0615	0.0024	0.10	0.10
S35-SW-01	5/29/2019	0.00098	0.00046	0.007	0.005	0.0346	0.0014	0.07	0.07
S35-SW-01	10/2/2019	0.00151	0.00065	0.011	0.008	0.0605	0.0024	0.10	0.10
S35-SW-01	5/22/2020	NS	NS	NS	NS	NS	NS	NS	NS
S35-SW-01	9/30/2020	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
S35-SW-02	4/29/2011	0.00096	0.00045	0.007	0.005	0.0338	0.0013	0.07	0.07
S35-SW-02	6/14/2011	0.00096	0.00045	0.007	0.005	0.0338	0.0013	0.07	0.07
S35-SW-02	9/19/2011	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-02	12/10/2011	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
S35-SW-02	3/26/2012	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-02	5/8/2012	0.00108	0.00050	0.008	0.006	0.0390	0.0015	0.07	0.07
S35-SW-02	10/3/2012	0.00134	0.00059	0.010	0.007	0.0518	0.0020	0.09	0.09
S35-SW-02	12/11/2012	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
S35-SW-02	3/26/2013	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
S35-SW-02	5/24/2013	0.00111	0.00051	0.008	0.006	0.0408	0.0016	0.08	0.08
S35-SW-02	9/13/2013	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
S35-SW-02	12/15/2013	0.00127	0.00057	0.009	0.007	0.0481	0.0019	0.08	0.08
S35-SW-02	3/29/2014	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
S35-SW-02	5/28/2014	0.00113	0.00052	0.009	0.006	0.0417	0.0016	0.08	0.08
S35-SW-02	10/10/2014	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-02	12/20/2014	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
S35-SW-02	3/10/2015	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-02	5/18/2015	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
S35-SW-02	10/6/2015	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-02	12/16/2015	0.00128	0.00057	0.010	0.007	0.0490	0.0019	0.09	0.09

Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 2 of 5

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
Standard (acute/chronic)*		0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
S35-SW-02	3/21/2016	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-02	5/11/2016	<0.003	<0.00008	0.002	0.04	<0.0005	<0.005	<0.01
S35-SW-02	10/18/2016	<0.003	<0.00008	0.003	0.33	<0.0005	0.018	<0.01
S35-SW-02	12/19/2016	<0.003	<0.00008	0.001	0.17	<0.0005	0.01	<0.01
S35-SW-02	5/4/2017	<0.003	<0.00008	0.002	0.04	<0.0005	<0.005	<0.01
S35-SW-02	10/11/2017	<0.003	<0.00008	0.001	0.16	<0.0005	0.006	<0.01
S35-SW-02	5/23/2018	<0.003	<0.00008	0.003	0.06	<0.0005	<0.005	<0.01
S35-SW-02	10/12/2018	<0.003	0.00022	0.002	0.22	<0.0005	0.045	<0.01
S35-SW-03	4/29/2011	<0.003	0.00034	0.003	0.31	0.0006	0.068	0.18
S35-SW-03	6/14/2011	<0.003	0.00046	0.004	0.08	0.0009	0.016	0.17
S35-SW-03	9/19/2011	<0.003	0.00017	0.001	0.06	<0.0005	0.006	0.06
S35-SW-03	12/10/2011	<0.003	0.00019	<0.001	0.06	<0.0005	0.013	0.15
S35-SW-03	3/26/2012	<0.003	0.00017	0.002	0.2	<0.0005	0.024	0.12
S35-SW-03	5/8/2012	<0.003	0.00039	0.002	0.08	<0.0005	0.02	0.20
S35-SW-03	10/3/2012	<0.003	0.00011	0.001	0.05	<0.0005	<0.005	0.05
S35-SW-03	12/11/2012	<0.003	0.00029	<0.001	0.08	<0.0005	0.034	0.21
S35-SW-03	3/26/2013	<0.003	0.00016	0.001	0.11	<0.0005	0.013	0.11
S35-SW-03	5/24/2013	<0.003	0.00047	0.003	0.1	0.0008	0.03	0.20
S35-SW-03	9/13/2013	<0.003	0.00016	0.001 U	0.05	<0.0005	<0.005	0.05
S35-SW-03	12/15/2013	<0.003	0.00029	0.002	0.13	<0.0005	0.051	0.19
S35-SW-03	3/29/2014	<0.003	0.00031	0.003	0.28	0.0007	0.09	0.17
S35-SW-03	5/28/2014	<0.003	0.00045	0.003	0.08	0.0006	0.02	0.20
S35-SW-03	10/10/2014	<0.003	0.00015	0.002 U	0.08	<0.0005	0.011	0.08
S35-SW-03	12/20/2014	<0.003	0.00023	0.002	0.11	<0.0005	0.032	0.16
S35-SW-03	3/10/2015	<0.003	0.00042	0.009	0.28	0.0008	0.091	0.19
S35-SW-03	5/18/2015	<0.003	0.00057	0.007	0.34	0.0021	0.078	0.21
S35-SW-03	10/6/2015	<0.003	0.00016	0.001 U	0.08	<0.0005	0.01	0.06
S35-SW-03	12/16/2015	<0.003	0.00022	0.001	0.1	<0.0005	0.032	0.12
S35-SW-03	3/21/2016	<0.003	0.00015	0.002	0.17	<0.0005	0.02	0.09
S35-SW-03	5/11/2016	<0.003	0.00034	0.002	0.09	<0.0005	0.034	0.14
S35-SW-03	10/18/2016	<0.003	0.00019	0.002	0.11	<0.0005	0.015	0.09
S35-SW-03	12/20/2016	<0.003	0.00023	0.001	0.08	<0.0005	0.023	0.17
S35-SW-04	4/29/2011	<0.003	0.00029	0.003	0.27	0.0006	0.055	0.17
S35-SW-04	6/14/2011	<0.003	0.00047	0.003	0.08	0.0008	0.017	0.17
S35-SW-04	9/19/2011	<0.003	0.00016	0.001	0.05	<0.0005	<0.005	0.06
S35-SW-04	12/10/2011	<0.003	0.00018	<0.001	0.06	<0.0005	0.01	0.14
S35-SW-04	3/26/2012	<0.003	0.00018	0.002	0.19	<0.0005	0.015	0.11
S35-SW-04	5/8/2012	<0.003	0.00037	0.002	0.08	<0.0005	0.018	0.20
S35-SW-04	10/3/2012	<0.003	0.00012	0.001	0.05	<0.0005	<0.005	0.05
S35-SW-04	12/11/2012	<0.003	0.00029	0.001	0.07	<0.0005	0.028	0.20
S35-SW-04	3/26/2013	<0.003	0.00017	0.001	0.11	<0.0005	0.01	0.11
S35-SW-04	5/24/2013	<0.003	0.00046	0.003	0.1	0.0007	0.03	0.20
S35-SW-04	9/13/2013	<0.003	0.00014	0.002 U	0.04	<0.0005	<0.005	0.05
S35-SW-04	12/15/2013	<0.003	0.00029	0.002	0.12	<0.0005	0.043	0.18
S35-SW-04	3/29/2014	<0.003	0.00031	0.002	0.26	<0.0005	0.071	0.16
S35-SW-04	5/28/2014	<0.003	0.00046	0.003	0.08	0.0006	0.02	0.20

Hardness Adjusted Surface Water Quality Standards (mg/L)									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
S35-SW-02	3/21/2016	0.00134	0.00059	0.010	0.007	0.0518	0.0020	0.09	0.09
S35-SW-02	5/11/2016	0.00123	0.00055	0.009	0.006	0.0463	0.0018	0.08	0.08
S35-SW-02	10/18/2016	0.00138	0.00061	0.010	0.007	0.0537	0.0021	0.09	0.09
S35-SW-02	12/19/2016	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
S35-SW-02	5/4/2017	0.00113	0.00052	0.009	0.006	0.0417	0.0016	0.08	0.08
S35-SW-02	10/11/2017	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
S35-SW-02	5/23/2018	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
S35-SW-02	10/12/2018	0.00128	0.00057	0.010	0.007	0.0490	0.0019	0.09	0.09
S35-SW-03	4/29/2011	0.00166	0.00071	0.012	0.008	0.0684	0.0027	0.11	0.11
S35-SW-03	6/14/2011	0.00130	0.00058	0.010	0.007	0.0500	0.0019	0.09	0.09
S35-SW-03	9/19/2011	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
S35-SW-03	12/10/2011	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
S35-SW-03	3/26/2012	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
S35-SW-03	5/8/2012	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10
S35-SW-03	10/3/2012	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13
S35-SW-03	12/11/2012	0.00216	0.00088	0.016	0.010	0.0965	0.0038	0.13	0.13
S35-SW-03	3/26/2013	0.00225	0.00091	0.016	0.011	0.1019	0.0040	0.14	0.14
S35-SW-03	5/24/2013	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
S35-SW-03	9/13/2013	0.00218	0.00088	0.016	0.011	0.0975	0.0038	0.13	0.13
S35-SW-03	12/15/2013	0.00214	0.00087	0.016	0.010	0.0954	0.0037	0.13	0.13
S35-SW-03	3/29/2014	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
S35-SW-03	5/28/2014	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
S35-SW-03	10/10/2014	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
S35-SW-03	12/20/2014	0.00190	0.00079	0.014	0.009	0.0816	0.0032	0.12	0.12
S35-SW-03	3/10/2015	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
S35-SW-03	5/18/2015	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
S35-SW-03	10/6/2015	0.00220	0.00089	0.016	0.011	0.0986	0.0038	0.14	0.14
S35-SW-03	12/16/2015	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
S35-SW-03	3/21/2016	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
S35-SW-03	5/11/2016	0.00164	0.00070	0.012	0.008	0.0674	0.0026	0.11	0.11
S35-SW-03	10/18/2016	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
S35-SW-03	12/20/2016	0.00210	0.00086	0.015	0.010	0.0932	0.0036	0.13	0.13
S35-SW-04	4/29/2011	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
S35-SW-04	6/14/2011	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-04	9/19/2011	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
S35-SW-04	12/10/2011	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
S35-SW-04	3/26/2012	0.00188	0.00078	0.014	0.009	0.0806	0.0031	0.12	0.12
S35-SW-04	5/8/2012	0.00164	0.00070	0.012	0.008	0.0674	0.0026	0.11	0.11
S35-SW-04	10/3/2012	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
S35-SW-04	12/11/2012	0.00216	0.00088	0.016	0.010	0.0965	0.0038	0.13	0.13
S35-SW-04	3/26/2013	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
S35-SW-04	5/24/2013	0.00171	0.00073	0.013	0.009	0.0714	0.0028	0.11	0.11
S35-SW-04	9/13/2013	0.00216	0.00088	0.016	0.010	0.0965	0.0038	0.13	0.13
S35-SW-04	12/15/2013	0.00212	0.00086	0.016	0.010	0.0943	0.0037	0.13	0.13
S35-SW-04	3/29/2014	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
S35-SW-04	5/28/2014	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09

Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 3 of 5

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
Standard (acute/chronic)*		0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
S35-SW-04	10/10/2014	<0.003	0.00015	0.003	0.07	<0.0005	0.01	0.08
S35-SW-04	12/20/2014	<0.003	0.00021	0.002	0.1	<0.0005	0.026	0.16
S35-SW-04	3/10/2015	<0.003	0.00038	0.003	0.26	<0.0005	0.076	0.19
S35-SW-04	5/18/2015	<0.003	0.00053	0.007	0.36	0.0021	0.078	0.21
S35-SW-04	10/6/2015	<0.003	0.00018	0.001 U	0.08	<0.0005	0.009	0.06
S35-SW-04	12/16/2015	<0.003	0.0002	0.001	0.12	<0.0005	0.022	0.11
S35-SW-04	3/21/2016	<0.003	0.00012	0.002	0.16	0.0006	0.013	0.08
S35-SW-04	5/11/2016	<0.003	0.00034	0.002	0.09	<0.0005	0.028	0.14
S35-SW-04	10/18/2016	<0.003	0.00016	0.002	0.1	<0.0005	0.012	0.09
S35-SW-04	12/20/2016	<0.003	0.00023	0.001	0.08	<0.0005	0.018	0.17
BRSW-101	5/3/2017	<0.003	0.00035	0.003	0.08	<0.0005	0.025	0.15
BRSW-101	10/12/2017	<0.003	0.00023	0.002	0.1	0.0024	0.024	0.13
S35-SW-05	4/28/2011	<0.003	<0.00008	0.003	0.54	<0.0005	0.011	<0.01
S35-SW-05	6/14/2011	<0.003	<0.00008	0.002	0.13	<0.0005	0.008	<0.01
S35-SW-05	9/19/2011	<0.003	<0.00008	0.001	0.14	<0.0005	0.015	<0.01
S35-SW-05	12/10/2011	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-05	3/26/2012	<0.003	<0.00008	0.003	0.36	<0.0005	0.023	<0.01
S35-SW-05	5/8/2012	<0.003	<0.00008	0.002	0.14	<0.0005	0.012	<0.01
S35-SW-05	10/3/2012	<0.003	<0.00008	<0.001	0.06	<0.0005	0.008	<0.01
S35-SW-05	12/11/2012	<0.003	<0.00008	<0.001	0.07	<0.0005	<0.005	<0.01
S35-SW-05	3/26/2013	<0.003	<0.00008	0.002	0.19	<0.0005	0.008	<0.01
S35-SW-05	5/24/2013	<0.003	<0.00008	0.001 U	<0.03	<0.0005	<0.005	<0.01
S35-SW-05	9/13/2013	<0.003	<0.00008	0.001 U	0.12	<0.0005	0.017	<0.01
S35-SW-05	12/15/2013	<0.003	<0.00008	0.002	0.2	<0.0005	0.027	<0.01
S35-SW-05	3/29/2014	<0.003	<0.00008	0.002	0.15	<0.0005	0.015	<0.01
S35-SW-05	5/27/2014	<0.003	<0.00008	0.002	0.09	<0.0005	0.008	<0.01
S35-SW-05	10/10/2014	<0.003	<0.00008	0.001 U	0.1	<0.0005	0.011	<0.01
S35-SW-05	12/20/2014	<0.003	<0.00008	<0.001	0.08	<0.0005	0.007	<0.01
S35-SW-05	3/10/2015	<0.003	<0.00008	0.002	0.42	<0.0005	0.018	<0.01
S35-SW-05	5/18/2015	<0.003	<0.00008	0.002 U	0.21	<0.0005	0.02	<0.01
S35-SW-05	10/6/2015	<0.003	<0.00008	<0.001	0.11	<0.0005	0.017	<0.01
S35-SW-05	12/15/2015	<0.003	<0.00008	<0.001	0.14	<0.0005	0.016	<0.01
S35-SW-05	3/21/2016	<0.003	<0.00008	0.001	0.23	<0.0005	0.006	<0.01
S35-SW-05	5/11/2016	<0.003	<0.00008	0.001	0.13	<0.0005	0.019	<0.01
S35-SW-05	10/18/2016	<0.003	<0.00008	<0.001	0.09	<0.0005	0.008	<0.01
S35-SW-05	12/19/2016	<0.003	<0.00008	<0.001	0.07	<0.0005	0.009	<0.01
S35-SW-05	5/4/2017	<0.003	<0.00008	0.001	0.09	<0.0005	0.008	<0.01
S35-SW-05	10/11/2017	<0.003	<0.00008	<0.001	0.09	<0.0005	0.011	<0.01
S35-SW-05	5/23/2018	<0.003	<0.00008	0.002	0.12	<0.0005	0.01	<0.01
S35-SW-05	10/12/2018	<0.003	<0.00008	0.001	0.16	<0.0005	0.016	<0.01
S35-SW-06	3/10/2015	0.012	0.0002	0.047	23.3	0.0384	0.602	0.11 U
S35-SW-06	3/13/2015	<0.003	<0.00008	0.004	0.82	0.0102	0.083	0.01
S35-SW-06	3/27/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.072	<0.01
S35-SW-06	4/29/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/18/2015	<0.003	0.00148	0.003 U	<0.03	<0.0005	3.88	0.06
S35-SW-06	5/27/2015	0.003	0.00176	0.004	0.8	0.0016	3.22	0.1

Hardness Adjusted Surface Water Quality Standards (mg/L)									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
S35-SW-04	10/10/2014	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
S35-SW-04	12/20/2014	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
S35-SW-04	3/10/2015	0.00190	0.00079	0.014	0.009	0.0816	0.0032	0.12	0.12
S35-SW-04	5/18/2015	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
S35-SW-04	10/6/2015	0.00227	0.00091	0.017	0.011	0.1030	0.0040	0.14	0.14
S35-SW-04	12/16/2015	0.00205	0.00084	0.015	0.010	0.0900	0.0035	0.13	0.13
S35-SW-04	3/21/2016	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
S35-SW-04	5/11/2016	0.00164	0.00070	0.012	0.008	0.0674	0.0026	0.11	0.11
S35-SW-04	10/18/2016	0.00199	0.00082	0.015	0.010	0.0869	0.0034	0.12	0.12
S35-SW-04	12/20/2016	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-101	5/3/2017	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
BRSW-101	10/12/2017	0.00220	0.00089	0.016	0.011	0.0986	0.0038	0.14	0.14
S35-SW-05	4/28/2011	0.00106	0.00049	0.008	0.006	0.0381	0.0015	0.07	0.07
S35-SW-05	6/14/2011	0.00100	0.00047	0.008	0.005	0.0355	0.0014	0.07	0.07
S35-SW-05	9/19/2011	0.00184	0.00077	0.014	0.009	0.0785	0.0031	0.12	0.12
S35-SW-05	12/10/2011	0.00166	0.00071	0.012	0.008	0.0684	0.0027	0.11	0.11
S35-SW-05	3/26/2012	0.00125	0.00056	0.009	0.006	0.0472	0.0018	0.08	0.08
S35-SW-05	5/8/2012	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
S35-SW-05	10/3/2012	0.00201	0.00083	0.015	0.010	0.0879	0.0034	0.13	0.13
S35-SW-05	12/11/2012	0.00166	0.00071	0.012	0.008	0.0684	0.0027	0.11	0.11
S35-SW-05	3/26/2013	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
S35-SW-05	5/24/2013	0.00127	0.00057	0.009	0.007	0.0481	0.0019	0.08	0.08
S35-SW-05	9/13/2013	0.00196	0.00081	0.014	0.010	0.0848	0.0033	0.12	0.12
S35-SW-05	12/15/2013	0.00162	0.00069	0.012	0.008	0.0664	0.0026	0.10	0.10
S35-SW-05	3/29/2014	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
S35-SW-05	5/27/2014	0.00110	0.00050	0.008	0.006	0.0399	0.0016	0.07	0.07
S35-SW-05	10/10/2014	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
S35-SW-05	12/20/2014	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
S35-SW-05	3/10/2015	0.00142	0.00062	0.011	0.007	0.0556	0.0022	0.09	0.09
S35-SW-05	5/18/2015	0.00138	0.00061	0.010	0.007	0.0537	0.0021	0.09	0.09
S35-SW-05	10/6/2015	0.00210	0.00086	0.015	0.010	0.0932	0.0036	0.13	0.13
S35-SW-05	12/15/2015	0.00175	0.00074	0.013	0.009	0.0734	0.0029	0.11	0.11
S35-SW-05	3/21/2016	0.00156	0.00067	0.012	0.008	0.0634	0.0025	0.10	0.10
S35-SW-05	5/11/2016	0.00143	0.00063	0.011	0.007	0.0566	0.0022	0.09	0.09
S35-SW-05	10/18/2016	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
S35-SW-05	12/19/2016	0.00183	0.00076	0.013	0.009	0.0775	0.0030	0.12	0.12
S35-SW-05	5/4/2017	0.00115	0.00053	0.009	0.006	0.0426	0.0017	0.08	0.08
S35-SW-05	10/11/2017	0.00192	0.00080	0.014	0.009	0.0827	0.0032	0.12	0.12
S35-SW-05	5/23/2018	0.00111	0.00051	0.008	0.006	0.0408	0.0016	0.08	0.08
S35-SW-05	10/12/2018	0.00186	0.00078	0.014	0.009	0.0796	0.0031	0.12	0.12
S35-SW-06	3/10/2015	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
S35-SW-06	3/13/2015	0.00246	0.00097	0.018	0.012	0.1140	0.0044	0.15	0.15
S35-SW-06	3/27/2015	0.00367	0.00135	0.026	0.017	0.1923	0.0075	0.21	0.21
S35-SW-06	4/29/2015	0.00310	0.00118	0.022	0.014	0.1544	0.0060	0.18	0.18
S35-SW-06	5/18/2015	0.00929	0.00288	0.064	0.037	0.6432	0.0251	0.47	0.47
S35-SW-06	5/27/2015	0.00648	0.00215	0.046	0.027	0.4023	0.0157	0.35	0.35

Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 4 of 5

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
Standard (acute/chronic)*		0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
S35-SW-06	6/30/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	7/28/2015	0.003	0.00026	0.007	0.5	0.0351	0.147	0.04
S35-SW-06	8/31/2015	0.003	<0.00008	0.006	1.75	0.0198	0.038	0.02
S35-SW-06	10/9/2015	<0.003	<0.00008	0.002 U	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	12/16/2015	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/21/2018	<0.003	<0.00008	<0.001	<0.03	<0.0005	0.013	<0.01
S35-SW-06	10/12/2018	<0.003	<0.00008	0.001	0.05	0.0010	<0.005	<0.01
S35-SW-06	5/29/2019	<0.003	<0.00008	0.004	0.13	0.0074	0.018	0.02
S35-SW-06	10/2/2019	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/22/2020	<0.003	0.00019	0.006	0.55	0.0143	0.075	0.04
S35-SW-06	9/30/2020	<0.003	<0.00008	<0.001	0.07	0.0022	0.006	<0.01
S35-SW-06	5/25/2021	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	9/21/2021	<0.003	0.00013	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	5/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	9/16/2022	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	6/22/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-06	9/24/2023	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	0.003
S35-SW-06	5/20/2024	<0.003	<0.00008	<0.001	0.03	0.001	<0.005	<0.01
S35-SW-06	9/24/2024	<0.003	<0.00008	<0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-07	3/10/2015	0.004	0.00055	0.012	2.8	0.0405	1.26	0.05
S35-SW-07	3/13/2015	0.018	0.00116	0.066	8.4	0.32	1.77	0.2
S35-SW-07	5/18/2015	<0.003	0.00239	0.006	0.05	0.0012	6.01	0.06
S35-SW-07	5/27/2015	<0.003	0.00043	0.011	0.9	0.0077	0.676	0.02
S35-SW-07	7/28/2015	0.006	0.0118	0.035	1.22	0.116	9.32	0.72
S35-SW-07	3/21/2016	0.07	0.0206	0.548	12.6	3.54	4.73	2.91
S35-SW-07	5/21/2018	<0.003	0.0541	0.008	0.97	0.0083	60.3	8.0
S35-SW-07	10/12/2018	<0.003	0.0228	0.003	8.04	0.0249	111	12.0
S35-SW-07	5/29/2019	<0.003	0.0799	0.02	1.51	0.0193	71.7	14.8
S35-SW-08	5/18/2015	<0.003	<0.00008	0.002 U	0.05	<0.0005	<0.005	<0.01
S35-SW-08	10/6/2015	<0.003	<0.00008	<0.001	0.32	<0.0005	0.026	<0.01
S35-SW-08	12/16/2015	<0.003	<0.00008	<0.001	0.22	<0.0005	0.022	<0.01
S35-SW-08	3/21/2016	<0.003	<0.00008	<0.001	0.06	<0.0005	0.006	<0.01
S35-SW-08	5/11/2016	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-08	10/18/2016	<0.003	<0.00008	0.001	0.57	<0.0005	0.037	<0.01
S35-SW-08	12/19/2016	<0.003	<0.00008	<0.001	0.12	<0.0005	0.079	<0.01
S35-SW-08	5/4/2017	<0.003	<0.00008	0.001	<0.03	<0.0005	<0.005	<0.01
S35-SW-08	10/11/2017	<0.003	<0.00008	<0.001	0.14	<0.0005	0.015	<0.01
S35-SW-08	5/23/2018	<0.003	<0.00008	0.001	0.05	<0.0005	<0.005	<0.01
S35-SW-08	10/12/2018	<0.003	<0.00008	<0.001	0.19	<0.0005	0.024	<0.01
S35-SW-08	5/29/2019	<0.003	<0.00008	0.001	0.03	<0.0005	<0.005	<0.01
S35-SW-08	10/2/2019	<0.003	<0.00008	<0.001	0.13	<0.0005	0.016	<0.01
S35-SW-08	9/30/2020	<0.003	<0.00008	<0.001	0.73	<0.0005	0.111	<0.01
S35-SW-08	5/25/2021	<0.003	<0.00008	0.001	0.06	<0.0005	<0.005	<0.01
S35-SW-08	9/21/2021	<0.003	<0.00008	<0.001	0.74	<0.0005	0.164	<0.01
S35-SW-08	5/16/2022	<0.003	<0.00008	0.001	0.04	<0.0005	<0.005	<0.01
S35-SW-08	9/16/2022	<0.003	<0.00008	<0.001	0.51	<0.0005	0.066	<0.01

Hardness Adjusted Surface Water Quality Standards (mg/L)									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
S35-SW-06	6/30/2015	0.00386	0.00141	0.028	0.017	0.2049	0.0080	0.22	0.22
S35-SW-06	7/28/2015	0.00450	0.00159	0.032	0.020	0.2502	0.0097	0.25	0.25
S35-SW-06	8/31/2015	0.00395	0.00143	0.028	0.018	0.2112	0.0082	0.23	0.23
S35-SW-06	10/9/2015	0.00389	0.00142	0.028	0.017	0.2074	0.0081	0.22	0.22
S35-SW-06	12/16/2015	0.00353	0.00131	0.025	0.016	0.1824	0.0071	0.20	0.20
S35-SW-06	5/21/2018	0.00442	0.00157	0.032	0.020	0.2449	0.0095	0.25	0.25
S35-SW-06	10/12/2018	0.00582	0.00197	0.041	0.025	0.3504	0.0137	0.32	0.32
S35-SW-06	5/29/2019	0.00460	0.00163	0.033	0.020	0.2581	0.0101	0.26	0.26
S35-SW-06	10/2/2019	0.00493	0.00172	0.035	0.021	0.2823	0.0110	0.27	0.27
S35-SW-06	5/22/2020	0.00646	0.00214	0.045	0.027	0.4008	0.0156	0.35	0.35
S35-SW-06	9/30/2020	0.00640	0.00213	0.045	0.027	0.3964	0.0154	0.34	0.34
S35-SW-06	5/25/2021	0.00546	0.00187	0.039	0.023	0.3222	0.0126	0.30	0.30
S35-SW-06	9/21/2021	0.00519	0.00179	0.037	0.022	0.3014	0.0117	0.29	0.29
S35-SW-06	5/16/2022	0.00504	0.00175	0.036	0.022	0.2905	0.0113	0.28	0.28
S35-SW-06	9/16/2022	0.00539	0.00185	0.038	0.023	0.3166	0.0123	0.30	0.30
S35-SW-06	6/22/2023	0.00697	0.00228	0.0489	0.0290	0.4422	0.0172	0.369	0.369
S35-SW-06	9/24/2023	0.00553	0.00189	0.0392	0.0237	0.3278	0.0128	0.302	0.302
S35-SW-06	5/20/2024	0.00526	0.00181	0.0373	0.0227	0.3069	0.0120	0.289	0.289
S35-SW-06	9/24/2024	0.00582	0.00197	0.0411	0.0248	0.3504	0.0137	0.316	0.316
S35-SW-07	3/10/2015	0.00470	0.00165	0.033	0.021	0.2648	0.0103	0.26	0.26
S35-SW-07	3/13/2015	0.00448	0.00159	0.032	0.020	0.2489	0.0097	0.25	0.25
S35-SW-07	5/18/2015	0.02622	0.00671	0.175	0.092	2.4783	0.0966	1.16	1.16
S35-SW-07	5/27/2015	0.00819	0.00260	0.057	0.033	0.5461	0.0213	0.42	0.42
S35-SW-07	7/28/2015	0.02622	0.00671	0.175	0.092	2.4783	0.0966	1.16	1.16
S35-SW-07	3/21/2016	0.00568	0.00193	0.040	0.024	0.3390	0.0132	0.31	0.31
S35-SW-07	5/21/2018	0.05393	0.01207	0.350	0.173	6.3306	0.2467	2.17	2.17
S35-SW-07	10/12/2018	0.09262	0.01876	0.590	0.277	12.7918	0.4985	3.46	3.46
S35-SW-07	5/29/2019	0.05202	0.01172	0.339	0.168	6.0414	0.2354	2.10	2.10
S35-SW-08	5/18/2015	0.00138	0.00061	0.010	0.007	0.0537	0.0021	0.09	0.09
S35-SW-08	10/6/2015	0.00238	0.00095	0.017	0.011	0.1096	0.0043	0.15	0.15
S35-SW-08	12/16/2015	0.00244	0.00097	0.018	0.012	0.1129	0.0044	0.15	0.15
S35-SW-08	3/21/2016	0.00251	0.00099	0.018	0.012	0.1174	0.0046	0.15	0.15
S35-SW-08	5/11/2016	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
S35-SW-08	10/18/2016	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
S35-SW-08	12/19/2016	0.00231	0.00093	0.017	0.011	0.1052	0.0041	0.14	0.14
S35-SW-08	5/4/2017	0.00132	0.00059	0.010	0.007	0.0509	0.0020	0.09	0.09
S35-SW-08	10/11/2017	0.00203	0.00083	0.015	0.010	0.0890	0.0035	0.13	0.13
S35-SW-08	5/23/2018	0.00140	0.00061	0.010	0.007	0.0547	0.0021	0.09	0.09
S35-SW-08	10/12/2018	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13
S35-SW-08	5/29/2019	0.00121	0.00055	0.009	0.006	0.0453	0.0018	0.08	0.08
S35-SW-08	10/2/2019	0.00197	0.00082	0.015	0.010	0.0858	0.0033	0.12	0.12
S35-SW-08	9/30/2020	0.00249	0.00099	0.018	0.012	0.1163	0.0045	0.15	0.15
S35-SW-08	5/25/2021	0.00155	0.00067	0.011	0.008	0.0624	0.0024	0.10	0.10
S35-SW-08	9/21/2021	0.00246	0.00097	0.018	0.012	0.1140	0.0044	0.15	0.15
S35-SW-08	5/16/2022	0.00136	0.00060	0.010	0.007	0.0528	0.0021	0.09	0.09
S35-SW-08	9/16/2022	0.00248	0.00098	0.018	0.012	0.1151	0.0045	0.15	0.15

Table 30. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (total recoverable metals, mg/L)
Page 5 of 5

Section 35 Surface Water (total recoverable metals, mg/L)								
Sample ID	Collection Date	Arsenic	Cadmium **	Copper **	Iron	Lead **	Manganese	Zinc **
Standard (acute/chronic)*		0.34/0.15	See Chart	See Chart	----/1.0	See Chart	----	See Chart
BRSW-307	9/16/2022	<0.003	<0.00008	<0.001	0.58	<0.0005	0.07	<0.01
S35-SW-08	6/22/2023	<0.003	<0.00008	0.001 J+	0.11	<0.0005	0.011	<0.01
S35-SW-08	9/24/2023	<0.003	<0.00008	<0.001	0.4	<0.0005	0.029	<0.01
S35-SW-08	5/20/2024	<0.003	<0.00008	<0.001	0.18	<0.0005	0.015	<0.01
S35-SW-08	9/24/2024	<0.003	<0.00008	<0.001	0.47	<0.0005	0.051	<0.01
BRSW-102	5/3/2017	<0.003	0.00039	0.003	0.09	<0.0005	0.026	0.15
BRSW-102	10/12/2017	<0.003	0.00032	0.002	0.11	<0.0005	0.033	0.14
BRSW-102	9/28/2020	<0.003	<0.00008	0.001	0.12	<0.0005	0.009	0.03
BRSW-206	5/3/2017	<0.003	0.00037	0.003	0.1	<0.0005	0.034	0.16
BRSW-206	10/12/2017	<0.003	0.00026	0.002	0.1	<0.0005	0.023	0.13

Note: < Indicates the concentration is less than the reporting limit

Exceeds acute standard

Exceeds chronic standard

*Circular DEQ-7, Montana Numeric Water Quality Standards (DEQ-7) , June 2019, aquatic life standards

** Calculated per Circular DEQ-7

---- No standard

mg/L = milligrams per liter

J = validation flag denotes the reported results are estimates with high or low bias

J- = validation flag denotes the reported results are estimates with a low bias

J+ = validation flag denotes that the result is an estimate with high bias

UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery

U = validation flag denotes the reported result is a false positive/non-detect

S35-SW-04 and BRSW-101 represent the same sample collection location

Duplicate sample

Hardness Adjusted Surface Water Quality Standards (mg/L)									
Sample ID	Collection Date	Cadmium		Copper		Lead		Zinc	
		Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
BRSW-307	9/16/2022	0.00249	0.00099	0.018	0.012	0.1163	0.0045	0.15	0.15
S35-SW-08	6/22/2023	0.00143	0.00063	0.0107	0.0073	0.0566	0.0022	0.094	0.094
S35-SW-08	9/24/2023	0.00188	0.00078	0.0139	0.0092	0.0806	0.0031	0.119	0.119
S35-SW-08	5/20/2024	0.00173	0.00073	0.0128	0.0086	0.0724	0.0028	0.111	0.111
S35-SW-08	9/24/2024	0.00227	0.00091	0.0166	0.0109	0.1030	0.0040	0.140	0.140
BRSW-102	5/3/2017	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
BRSW-102	10/12/2017	0.00209	0.00085	0.015	0.010	0.0922	0.0036	0.13	0.13
BRSW-102	9/28/2020	0.00194	0.00080	0.014	0.009	0.0837	0.0033	0.12	0.12
BRSW-206	5/3/2017	0.00168	0.00071	0.012	0.008	0.0694	0.0027	0.11	0.11
BRSW-206	10/12/2017	0.00207	0.00085	0.015	0.010	0.0911	0.0036	0.13	0.13

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Table 31. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 1 of 3

Section 35 Surface Water (dissolved metals,		
Sample ID	Collection Date	Aluminum
	Standard (acute/chronic)*	0.75/0.087
S35-SW-01	4/29/2011	<u>0.19</u>
S35-SW-01	6/14/2011	<0.03
S35-SW-01	9/19/2011	<0.03
S35-SW-01	12/10/2011	<0.03
S35-SW-01	3/26/2012	<0.03
S35-SW-01	5/8/2012	<0.03
S35-SW-01	10/3/2012	0.07
S35-SW-01	12/11/2012	<0.03
S35-SW-01	3/26/2013	<0.03
S35-SW-01	5/24/2013	0.08 J
S35-SW-01	9/13/2013	<0.03
S35-SW-01	5/27/2014	<0.03
S35-SW-01	10/10/2014	<0.03
S35-SW-01	3/10/2015	<0.03
S35-SW-01	5/18/2015	<0.03
S35-SW-01	10/6/2015	<0.03
S35-SW-01	5/11/2016	<0.03
S35-SW-01	10/18/2016	<0.03
S35-SW-01	5/4/2017	<0.03
S35-SW-01	10/11/2017	<0.03
S35-SW-01	5/23/2018	<0.03
S35-SW-01	10/12/2018	<0.03
S35-SW-01	5/29/2019	<0.03
S35-SW-01	10/2/2019	<0.03
S35-SW-01	5/22/2020	NS
S35-SW-01	9/30/2020	<0.03
S35-SW-02	4/29/2011	<u>0.14</u>
S35-SW-02	6/14/2011	0.05
S35-SW-02	9/19/2011	<0.03
S35-SW-02	12/10/2011	<0.03
S35-SW-02	3/26/2012	<0.03
S35-SW-02	5/8/2012	0.04
S35-SW-02	10/3/2012	<0.03
S35-SW-02	12/11/2012	<0.03
S35-SW-02	3/26/2013	<0.03
S35-SW-02	5/24/2013	<0.03
S35-SW-02	9/13/2013	<0.03
S35-SW-02	12/15/2013	<0.03
S35-SW-02	3/29/2014	<0.03
S35-SW-02	5/28/2014	<0.03
S35-SW-02	10/10/2014	<0.03
S35-SW-02	12/20/2014	<0.03
S35-SW-02	3/10/2015	<0.03
S35-SW-02	5/18/2015	0.07
S35-SW-02	10/6/2015	<0.03
S35-SW-02	12/16/2015	<0.03
S35-SW-02	3/21/2016	<0.03
S35-SW-02	5/11/2016	<0.03
S35-SW-02	10/18/2016	<0.03
S35-SW-02	12/19/2016	<0.03
S35-SW-02	5/4/2017	<0.03
S35-SW-02	10/11/2017	<0.03
S35-SW-02	5/23/2018	<0.03
S35-SW-02	10/12/2018	<0.03
S35-SW-03	4/29/2011	<u>0.1</u>
S35-SW-03	6/14/2011	<0.03
S35-SW-03	9/19/2011	<0.03
S35-SW-03	12/10/2011	<0.03
S35-SW-03	3/26/2012	<0.03
S35-SW-03	5/8/2012	<0.03
S35-SW-03	10/3/2012	<0.03
S35-SW-03	12/11/2012	<0.03
S35-SW-03	3/26/2013	<0.03
S35-SW-03	5/24/2013	<0.03
S35-SW-03	9/13/2013	<0.03
S35-SW-03	12/15/2013	<0.03
S35-SW-03	3/29/2014	<0.03
S35-SW-03	5/28/2014	<0.03
S35-SW-03	10/10/2014	<0.03
S35-SW-03	12/20/2014	<0.03
S35-SW-03	3/10/2015	<0.03
S35-SW-03	5/18/2015	0.05
S35-SW-03	10/6/2015	<0.03
S35-SW-03	12/16/2015	<0.03
S35-SW-03	3/21/2016	<0.03

Table 31. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 2 of 3

Section 35 Surface Water (dissolved metals,		
Sample ID	Collection Date	Aluminum
	Standard (acute/chronic)*	0.75/0.087
S35-SW-03	5/11/2016	<0.03
S35-SW-03	10/18/2016	<0.03
S35-SW-03	12/20/2016	<0.03
S35-SW-04	4/29/2011	<u>0.1</u>
S35-SW-04	6/14/2011	<0.03
S35-SW-04	9/19/2011	<0.03
S35-SW-04	12/10/2011	<0.03
S35-SW-04	3/26/2012	<0.03
S35-SW-04	5/8/2012	<0.03
S35-SW-04	10/3/2012	<0.03
S35-SW-04	12/11/2012	<0.03
S35-SW-04	3/26/2013	<0.03
S35-SW-04	5/24/2013	<0.03
S35-SW-04	9/13/2013	<0.03
S35-SW-04	12/15/2013	<0.03
S35-SW-04	3/29/2014	<0.03
S35-SW-04	5/28/2014	<0.03
S35-SW-04	10/10/2014	<0.03
S35-SW-04	12/20/2014	<0.03
S35-SW-04	3/10/2015	<0.03
S35-SW-04	5/18/2015	0.06
S35-SW-04	10/6/2015	<0.03
S35-SW-04	12/16/2015	<0.03
S35-SW-04	3/21/2016	<0.03
S35-SW-04	5/11/2016	<0.03
S35-SW-04	10/18/2016	<0.03
S35-SW-04	12/20/2016	<0.03
BRSW-101	5/3/2017	<0.03
BRSW-101	10/12/2017	<0.03
S35-SW-05	4/28/2011	0.89
S35-SW-05	6/14/2011	0.08
S35-SW-05	9/19/2011	<0.03
S35-SW-05	12/10/2011	<0.03
S35-SW-05	3/26/2012	<u>0.21</u>
S35-SW-05	5/8/2012	0.06
S35-SW-05	10/3/2012	<0.03
S35-SW-05	12/11/2012	0.04
S35-SW-05	3/26/2013	<u>0.19</u>
S35-SW-05	5/24/2013	0.07
S35-SW-05	9/13/2013	<0.03
S35-SW-05	12/15/2013	0.03
S35-SW-05	3/29/2014	<u>0.09</u>
S35-SW-05	5/27/2014	<0.03
S35-SW-05	10/10/2014	<0.03
S35-SW-05	12/20/2014	<0.03
S35-SW-05	3/10/2015	<u>0.37</u>
S35-SW-05	5/18/2015	0.07
S35-SW-05	10/6/2015	<0.03
S35-SW-05	12/15/2015	0.03
S35-SW-05	3/21/2016	<u>0.19</u>
S35-SW-05	5/11/2016	<0.03
S35-SW-05	10/18/2016	<0.03
S35-SW-05	12/19/2016	<0.03
S35-SW-05	5/4/2017	0.04
S35-SW-05	10/11/2017	<0.03
S35-SW-05	5/23/2018	<0.03
S35-SW-05	10/12/2018	<0.03
S35-SW-06	3/10/2015	3.62 J+
S35-SW-06	3/13/2015	<u>0.22</u>
S35-SW-06	3/27/2015	<0.03
S35-SW-06	4/29/2015	<0.03
S35-SW-06	5/18/2015	<0.03
S35-SW-06	5/27/2015	0.03
S35-SW-06	7/28/2015	<0.03
S35-SW-06	6/30/2015	<0.03
S35-SW-06	8/31/2015	1.94
S35-SW-06	10/9/2015	<0.03
S35-SW-06	12/16/2015	<0.03
S35-SW-06	5/21/2018	<0.03
S35-SW-06	10/12/2018	<0.03
S35-SW-06	5/29/2019	<0.03
S35-SW-06	10/2/2019	<0.03
S35-SW-06	5/22/2020	<0.03
S35-SW-06	9/30/2020	<0.03
S35-SW-06	5/25/2021	<0.03

Table 31. Repository Area Surface Water Aquatic Life Comparison, Historical Compilation (dissolved metals, mg/L)
Page 3 of 3

Section 35 Surface Water (dissolved metals,		
Sample ID	Collection Date	Aluminum
	Standard (acute/chronic)*	0.75/0.087
S35-SW-06	9/21/2021	<0.03
S35-SW-06	5/16/2022	<0.03
S35-SW-06	9/16/2022	<0.03
S35-SW-06	6/22/2023	<0.03
S35-SW-06	9/24/2023	<0.03
S35-SW-06	5/20/2024	<0.03
S35-SW-06	9/24/2024	<0.03
S35-SW-07	3/10/2015	0.26
S35-SW-07	3/13/2015	0.09 J+
S35-SW-07	5/18/2015	<0.03
S35-SW-07	5/27/2015	0.52
S35-SW-07	7/28/2015	<0.03
S35-SW-07	3/21/2016	1.85
S35-SW-07	5/21/2018	<0.03
S35-SW-07	10/12/2018	<0.03
S35-SW-07	5/29/2019	<0.03
S35-SW-08	5/18/2015	<0.03
S35-SW-08	10/6/2015	<0.03
S35-SW-08	12/16/2015	<0.03
S35-SW-08	3/21/2016	<0.03
S35-SW-08	5/11/2016	<0.03
S35-SW-08	10/18/2016	<0.03
S35-SW-08	12/19/2016	<0.03
S35-SW-08	5/4/2017	<0.03
S35-SW-08	10/11/2017	<0.03
S35-SW-08	5/23/2018	<0.03
S35-SW-08	10/12/2018	<0.03
S35-SW-08	5/29/2019	<0.03
S35-SW-08	10/2/2019	<0.03
S35-SW-08	9/30/2020	<0.03
S35-SW-08	5/25/2021	0.09
S35-SW-08	9/21/2021	<0.03
S35-SW-08	5/16/2022	<0.03
S35-SW-08	9/16/2022	<0.03
BRSW-307	9/16/2022	<0.03
S35-SW-08	6/22/2023	<0.03
S35-SW-08	9/24/2023	<0.03
S35-SW-08	5/20/2024	<0.03
S35-SW-08	9/24/2024	<0.03
BRSW-102	5/3/2017	<0.03
BRSW-102	10/12/2017	<0.03
BRSW-102	9/28/2020	<0.03
BRSW-206	5/3/2017	<0.03
BRSW-206	10/12/2017	<0.03

Note: < Indicates the concentration is less than the reporting limit

Exceeds acute standard

Exceeds chronic standard

*Circular DEQ-7, Montana Numeric Water Quality Standards , June 2019, aquatic life standards

*The aluminum standard is for dissolved metals only per Circular 7

*Dissolved aluminum is only analyzed when pH is between 6.5 and 9.0

mg/L = milligrams per liter

J = validation flag denotes the reported results are estimates with high or low bias

J- = validation flag denotes the reported results are estimates with a low bias

J+ = validation flag denotes that the result is an estimate with high bias

UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery

U = validation flag denotes the reported result is a false positive/non-detect

S35-SW-04 and BRSW-101 represent the same sample collection location

Duplicate sample

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Table 32. Repository Area Physiochemical, Anions, and Catioins; Historical Compilation
Page 1 of 5

Section 35 Surface Water (physiochemical, anions, and cations)															
		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Collection Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/l	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
Standard		6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-SW-01	4/29/2011	8	94	50	<10	57	49	59	<4	<1	3	12	5	<1	2
S35-SW-01	6/14/2011	8	116	52	<10	52	57	69	<4	<1	2	12	5	<1	2
S35-SW-01	9/19/2011	8.3	181	102	<10	140	110	140	<4	<1	<1	27	9	<1	2
S35-SW-01	12/10/2011	8.2	195	95	<10	136	110	130	<4	<1	1	25	8	<1	2
S35-SW-01	3/26/2012	7.4 J-	154	73	<10	88	77	94	<4	<1 UJ	2 J-	19	7	<1	2
S35-SW-01	5/8/2012	7.4 J-	122	58	<10	80	64	78	<4	<1	3	14	6	<1	2
S35-SW-01	10/3/2012	7.8 J-	255	120	<10	157	120	150	<4	5 UJ	2	32	10	7	2
S35-SW-01	12/11/2012	7.7 J-	168	85	<10	100	91	110	<4	<1	2	22	8	<1	2
S35-SW-01	3/26/2013	7.7 J-	203	101	<10	114	100	120	<4	<1	5	26	9	<1	2
S35-SW-01	5/24/2013	7.6 J-	125	61	<10	84	63	77	<4	<1	3	14	6	<1	2
S35-SW-01	9/13/2013	8.1 J-	233	117	<10	133	130	150	<4	<1	1	30	10	<1	2
S35-SW-01	5/27/2014	7.8 J-	129	59	<10	82	62	75	<4	<1	2	14	6	<1	2
S35-SW-01	10/10/2014	8.1 J-	211	107	<10	129	110	130	<4	<1	<1	28	9	<1	2
S35-SW-01	3/10/2015	7.8	137	65	<10	101	67	81	<4	<1	3	16	6	<1	2
S35-SW-01	5/18/2015	7.9 J-	129	62	<10	91	64	77	<4	<1	2	15	6	<1	2
S35-SW-01	10/6/2015	8.4 J-	218	110	<10	147	110	140	<4	<1	2	29 J+	9 J+	1	2
S35-SW-01	5/11/2016	7.9	134	69	<10	84	66	80	<4	<1	3	17	6	<1	2
S35-SW-01	10/18/2016	7.8 J-	173	81	<10	113	83	100	<4	<1	2	21	7	<1	2
S35-SW-01	5/4/2017	7.8 J-	125	60	<10	72	61	74	<4	<1	2.7	14	6	<1	2
S35-SW-01	10/11/2017	8.1 J-	175	84	<10	112	85	100	<4	<1	2	21	7	<1	2
S35-SW-01	5/23/2018	7.8	121	57	<10	79	58	70	<4	<1	2	14	5	<1	2
S35-SW-01	10/12/2018	8.0 J-	180	80	<10	112	91	110	<4	<1	1	20	7	<1	2
S35-SW-01	5/29/2019	7.7 J-	112	51	<10	73	53	64	<4	<1	3	12	5	<1	2
S35-SW-01	10/2/2019	8.1 J-	166	79	<10	96	83	100	<4	<1	1	20	7	1	2
S35-SW-01	5/22/2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S35-SW-01	9/30/2020	8.2	193	102	<10	114	100	130	<4	<1	<1	27	9	<1	2
S35-SW-02	4/29/2011	7.8	100	50	<10	70	51	63	<4	<1	3	11	5	<1	2
S35-SW-02	6/14/2011	7.9	110	50	<10	50	56	68	<4	<1	2	12	5	<1	2
S35-SW-02	9/19/2011	7.6	128	69	<10	97	77	94	<4	<1	1	17	7	<1	2
S35-SW-02	12/10/2011	7.7	134	63	<10	94	71	86	<4	<1	2	16	6	<1	2
S35-SW-02	3/26/2012	6.8 J-	148	69	<10	74	69	85	<4	<1 UJ	4 J-	17	7	<1	2
S35-SW-02	5/8/2012	6.9	122	56	<10	81	62	76	<4	<1	3	13	6	<1	2
S35-SW-02	10/3/2012	6.8	150	70	<10	89	74	90	<4	<1 UJ	2	17	7	<1	2
S35-SW-02	12/11/2012	6.7 J-	134	68	<10	86	69	84	<4	<1	3	16	7	<1	2
S35-SW-02	3/26/2013	6.8	144	71	<10	75	69	84	<4	<1	5	17	7	<1	2
S35-SW-02	5/24/2013	7 J-	127	58	<10	83	71	87	<4	<1	4	14	6	<1	2
S35-SW-02	9/13/2013	7 J-	156	74	<10	89	84	100	<4	<1	2	18	7	<1	2
S35-SW-02	12/15/2013	7.1 J-	136	66	<10	82 J-	71	87	<4	<1	4	15	7	<1	2
S35-SW-02	3/29/2014	7 J-	150	73	<10	87	78	96	<4	<1	4	18	7	<1	2
S35-SW-02	5/28/2014	7.3 J-	131	59	<10	78	62	75	<4	<1	2	14	6	<1	2
S35-SW-02	10/10/2014	7.1 J-	143	69	<10	86	72	88	<4	<1	2	17	7	<1	2
S35-SW-02	12/20/2014	7.3 J-	149	68	<10	88	73	88	<4	<1	2	16	7	<1	2
S35-SW-02	3/10/2015	7.4	144	69	<10	90	72	87	<4	<1	4	17	7	<1	2

Table 32. Repository Area Physiochemical, Anions, and Catioins; Historical Compilation
Page 2 of 5

Section 35 Surface Water (physiochemical, anions, and cations)															
		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Collection Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/l	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-SW-02	5/18/2015	7.2 J-	126	60	<10	84	63	77	<4	<1	2	14	6	<1	2
S35-SW-02	10/6/2015	7.1 J-	145	69	<10	108	72	87	<4	<1	3	17 J+	6 J+	<1	2
S35-SW-02	12/16/2015	7.2 J-	140	67	<10	87	71	86	<4	<1	2	16	6	<1	2
S35-SW-02	3/21/2016	7 J-	142	70	<10	94	65	78	<4	<1	8	17	7	<1	2
S35-SW-02	5/11/2016	7.2	136	64	<10	81	63	77	<4	<1	4	15	6	<1	2
S35-SW-02	10/18/2016	7.2 J-	150	72	<10	97	72	87	<4	<1	2	17	7	<1	2
S35-SW-02	12/19/2016	7.2 J-	150	71	<10	94	74	89	<4	<1	3	17	7	<1	2
S35-SW-02	5/4/2017	7.3 J-	123	59	<10	68	58	70	<4	<1	3	14	6	<1	2
S35-SW-02	10/11/2017	7	149	73	<10	98	70	85	<4	<1	2	18	7	<1	2
S35-SW-02	5/23/2018	7.3	124	60	<10	82	58	70	<4	<1	2	15	6	<1	2
S35-SW-02	10/12/2018	7.0 J-	154	67	<10	99	74	90	<4	<1	3	16	6	<1	2
S35-SW-03	4/29/2011	8.1	182	87	<10	126	56	69	<4	4	27	19	10	<1	3
S35-SW-03	6/14/2011	8	155	68	<10	54	60	73	<4	<1	13	15	7	<1	2
S35-SW-03	9/19/2011	8.2	209	107	<10	142	80	97	<4	2	31	25	12	<1	3
S35-SW-03	12/10/2011	8.1	227	106	<10	142	76	92	<4	2	34	24	11	<1	3
S35-SW-03	3/26/2012	7.6 J-	217	96	<10	110	70	85	<4	4 UJ	26 UJ	22	10	<1	3
S35-SW-03	5/8/2012	7.3 J-	190	85	<10	113	66	80	<4	3	26	19	9	<1	2
S35-SW-03	10/3/2012	7.7 J-	227	109	<10	129	86	100	<4	2 J-	23	24	12	<1	3
S35-SW-03	12/11/2012	7.5 J-	246	114	<10	146	70	86	<4	2	37	25	12	<1	3
S35-SW-03	3/26/2013	7.6 J-	263	119	<10	140	69	84	<4	5	51	26	13	<1	4
S35-SW-03	5/24/2013	7.7 J-	190	88	<10	115	65	79	<4	3	27	20	9	<1	2
S35-SW-03	9/13/2013	8 J-	241	115	<10	129	94	120	<4	3	41	25	12	<1	3
S35-SW-03	12/15/2013	7.5 J-	246	113	<10	140 J-	81	98	<4	4	44	24	13	1	3
S35-SW-03	3/29/2014	7.6 J-	243	105	<10	140	66	81	<4	9	43	23	11	<1	5
S35-SW-03	5/28/2014	7.7 J-	166	74	<10	93	61	74	<4	1	13	16	8	<1	2
S35-SW-03	10/10/2014	7.9 J-	233	104	<10	140	70	85	<4	4	34	23	11	<1	4
S35-SW-03	12/20/2014	7.6 J-	237	100	<10	142	60	73	<4	3	39	22	11	<1	4
S35-SW-03	3/10/2015	7.8	226	99	<10	131	60	72	<4	4	34	22	11	<1	4
S35-SW-03	5/18/2015	7.7	169	75	<10	100	51	61	<4	2	21	16	8	<1	2
S35-SW-03	10/6/2015	8.1 J-	254	116	<10	165	74	90	<4	3	42	26 J+	13 J+	1	4
S35-SW-03	12/16/2015	7.6 J-	243	110	<10	146	74	90	<4	4	32	24	12	<1	4
S35-SW-03	3/21/2016	7.9 J-	219	99	<10	136	56	67	<4	5	45	22	11	<1	4
S35-SW-03	5/11/2016	7.9	187	86	<10	105	67	81	<4	3	22	19	9	<1	2
S35-SW-03	10/18/2016	8 J-	240	105	<10	146	67	82	<4	5	30	23	11	<1	3
S35-SW-03	12/20/2016	7.5 J-	247	111	<10	150	77	93	<4	4.5	37	25	12	<1	3
S35-SW-04	4/29/2011	8.1	181	88	<10	114	56	68	<4	4	27	19	10	<1	3
S35-SW-04	6/14/2011	8	155	69	<10	34	60	74	<4	<1	13	15	7	<1	2
S35-SW-04	9/19/2011	8.2	209	107	<10	140	79	97	<4	2	31	25	12	<1	3
S35-SW-04	12/10/2011	8.1	224	105	<10	154	75	92	<4	2	34	24	11	<1	3
S35-SW-04	3/26/2012	7.6 J-	217	99	<10	116	70	86	<4	4 UJ	26 UJ	23	10	<1	3
S35-SW-04	5/8/2012	7.3 J-	192	86	<10	117	64	79	<4	3	26	19	9	<1	2
S35-SW-04	10/3/2012	7.7 J-	228	110	<10	125	86	110	<4	2 J-	23	25	12	<1	3
S35-SW-04	12/11/2012	7.5 J-	242	114	<10	141	70	86	<4	2	37	25	12	<1	3

Table 32. Repository Area Physiochemical, Anions, and Catioins; Historical Compilation
Page 3 of 5

Section 35 Surface Water (physiochemical, anions, and cations)															
		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Collection Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/l	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
Standard		6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-SW-04	3/26/2013	7.6 J-	291	120	<10	147	71	86	<4	5	50	26	13	<1	4
S35-SW-04	5/24/2013	7.7 J-	190	90	<10	118	67	82	<4	3	27	20	10	<1	2
S35-SW-04	9/13/2013	8 J-	243	114	<10	131	94	110	<4	3	41	26	12	<1	3
S35-SW-04	12/15/2013	7.5 J-	246	112	<10	140 J-	81	98	<4	4	43	26	13	1	3
S35-SW-04	3/29/2014	7.6 J-	242	105	<10	140	66	80	<4	9	44	23	11	<1	5
S35-SW-04	5/28/2014	7.7 J-	166	73	<10	94	62	75	<4	<1	13	16	8	<1	2
S35-SW-04	10/10/2014	7.9 J-	233	104	<10	137	71	86	<4	4	34	23	11	<1	4
S35-SW-04	12/20/2014	7.7 J-	237	101	<10	142	60	73	<4	3	38	22	11	<1	4
S35-SW-04	3/10/2015	7.8	226	100	<10	133	60	73	<4	4	35	22	11	<1	4
S35-SW-04	5/18/2015	7.7	169	75	<10	101	51	61	<4	2	21	16	8	<1	2
S35-SW-04	10/6/2015	8.1 J-	256	120	<10	171	74	90	<4	3	44	27 J+	13 J+	1	4
S35-SW-04	12/16/2015	7.7 J-	243	108	<10	146	77	94	<4	4	32	24	12	<1	4
S35-SW-04	3/21/2016	7.9 J-	220	98	<10	141	54	66	<4	5	48	22	11	<1	4
S35-SW-04	5/11/2016	7.9	188	86	<10	108	66	80	<4	3	22	19	9	<1	2
S35-SW-04	10/18/2016	8 J-	241	105	<10	143	68	82	<4	5	30	23	11	<1	3
S35-SW-04	12/20/2016	7.6 J-	250	110	<10	148	76	92	<4	4.5	37	25	12	<1	3
BRSW-101	5/3/2017	7.9	188	88	<10	107	68	82	<4	2.5	17	19	9	<1	2
BRSW-101	10/12/2017	8	267	116	<10	154	65	79	<4	4	54 J+	26	13	<1	5
S35-SW-05	4/28/2011	8.1	108	55	<10	81	52	63	<4	<1	3	13	5	1	2
S35-SW-05	6/14/2011	8.1	123	52	<10	80	58	71	<4	<1	2	13	5	<1	2
S35-SW-05	9/19/2011	8.2	177	97	<10	116	110	130	<4	<1	3	24	11	<1	2
S35-SW-05	12/10/2011	8.2	179	87	<10	128	93	110	<4	<1	5	20	9	<1	2
S35-SW-05	3/26/2012	7.3 J-	146	65	<10	98	65	79	<4	2 J-	4 J-	16	6	1	2
S35-SW-05	5/8/2012	6.9	129	60	<10	76	64	78	<4	<1	3	14	6	<1	2
S35-SW-05	10/3/2012	7.8	212	106	<10	124	110	130	<4	1 UJ	3	24	11	2	2
S35-SW-05	12/11/2012	7.6 J-	171	87	<10	99	85	100	<4	<1	5	20	9	<1	2
S35-SW-05	3/26/2013	7.6	167	82	<10	99	76	91	<4	1	8	19	9	<1	2
S35-SW-05	5/24/2013	7.8 J-	139	66	<10	92	70	86	<4	<1	4	16	6	<1	2
S35-SW-05	9/13/2013	8.1 J-	210	103	<10	118	110	130	<4	<1	4	24	11	<1	2
S35-SW-05	12/15/2013	7.3 J-	173	85	<10	102 J-	87	110	<4	1	8	19	9	<1	2
S35-SW-05	3/29/2014	7.4 J-	156	74	<10	89	80	98	<4	<1	5	17	7	<1	2
S35-SW-05	5/27/2014	7.8 J-	176	57	<10	82	59	72	<4	<1	2	13	6	<1	2
S35-SW-05	10/10/2014	8.1 J-	201	101	<10	116	100	130	<4	<1	3	24	10	<1	2
S35-SW-05	12/20/2014	7.8 J-	195	92	<10	118	95	110	<4	<1	4	21	10	<1	2
S35-SW-05	3/10/2015	7.9	152	74	<10	102	74	89	<4	<1	4	17	7	1	2
S35-SW-05	5/18/2015	8 J-	147	72	<10	101	73	88	<4	2	5	17	7	<1	2
S35-SW-05	10/6/2015	8.1 J-	208	111	<10	139	100	130	<4	<1	5	26 J+	11 J+	<1	2
S35-SW-05	12/15/2015	7.9 J-	192	92	<10	115	93	110	<4	<1	5	21	10	<1	2
S35-SW-05	3/21/2016	8.1 J-	163	82	<10	109	77	93	<4	<1	7	19	8	<1	2
S35-SW-05	5/11/2016	8 J-	147	75	<10	90	73	89	<4	<1	4	18	7	<1	2
S35-SW-05	10/18/2016	8.1 J-	199	101	<10	124	94	110	<4	<1	5	23	10	<1	2
S35-SW-05	12/19/2016	7.8 J-	199	96	<10	123	95	110	<4	<1	6.3	22	10	<1	2
S35-SW-05	5/4/2017	7.8 J-	124	60	<10	71	60	72	<4	<1	3.2	14	6	<1	2

Table 32. Repository Area Physiochemical, Anions, and Catioins; Historical Compilation
Page 4 of 5

Section 35 Surface Water (physiochemical, anions, and cations)															
Sample ID	Collection Date	Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/l	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-SW-05	10/11/2017	8.1 J-	206	101	<10	130	100	120	<4	<1	6	24	10	<1	2
S35-SW-05	5/23/2018	7.9	121	58	<10	78	57	69	<4	<1	2	14	5	<1	2
S35-SW-05	10/12/2018	8.1 J-	202	98	<10	120	97	120	<4	<1	6	22	10	<1	2
S35-SW-06	3/10/2015	7.9 J-	145	71	1160	108	62	75	<4	<1	8	20	5	2	1 U
S35-SW-06	3/13/2015	7.8 J-	281	130	19	183	96	120	<4	<1	35	39	8	1	2
S35-SW-06	3/27/2015	8	423	196	<10	274	140	170	<4	1 J-	64	58	13	1	4
S35-SW-06	4/29/2015	8 J	350	165	<10	197	170	210	<4	<1	6	48	11	1	4
S35-SW-06	5/18/2015	7.9	954	506	<10	714	160	190	<4	3	364	141	37	3	5
S35-SW-06	5/27/2015	7.4 J-	707	350	27	495	140	170	<4	3	221	97	26	2	5
S35-SW-06	6/30/2015	7.5 J-	424	206	<10	260	180	220	<4	<1	30	59	14	2	5
S35-SW-06	7/28/2015	8.2 J-	489	241	26	313	180	220	<4	2	62	70	16	2	5
S35-SW-06	8/31/2015	8.2 J-	415	211	34	278	180	220	<4	<1	29	62	14	3	5
S35-SW-06	10/9/2015	8.2 J-	417	208	<10	263	190	230	<4	<1	33	60	14	2	5
S35-SW-06	12/16/2015	8.1	374	188	<10	238	180	220	<4	<1	15	55	13	2	5
S35-SW-06	5/21/2018	7.4	509	237	<10	320	170	210	<4	9	70	69	16	2	6
S35-SW-06	10/12/2018	7.6 J-	605	314	15	403	200	240	<4	3	119	87	23	2	6
S35-SW-06	5/29/2019	7.4 J-	490	247	<10	306	190	240	<4	3	65	71	17	2	5
S35-SW-06	10/2/2019	8.2 J-	540	265	<10	347	190	230	<4	4	85	75	19	2	6
S35-SW-06	5/22/2020	7.4	797	349	61	510	170	210	<4	14	190	99	25	2	7
S35-SW-06	9/30/2020	7.5	623	346	<10	426	200	240	<4	5	130	99	24	2	6
S35-SW-06	5/25/2021	8.1 J-	565	294	<10 UJ	367	190	230	<4	4	90	85	20	2	6
S35-SW-06	9/21/2021	7.3	562	279	<10	370	190	240	<4	4	87	79	20	2	6
S35-SW-06	5/16/2022	7.4	574	271	<10	386	200	240	<4	5	96	75	20	2	6
S35-SW-06	9/16/2022	7.4 J-	542 J+	290	<10	364 J	200	240	<4	5	96	83	20	2	6
S35-SW-06	6/22/2023	7.4 J-	715	377	<10	491	210	250	<4	7	167	108	26	2	6
S35-SW-06	9/24/2023	7.3 J-	630	298	<10	413	190	240	<4	5	134	83	22	2	7
S35-SW-06	5/20/2024	8.0 J-	589	283	<10	376	190	230	<4	5	112	78	21	2	6
S35-SW-06	9/24/2024	7.6 J-	592	314	<10	388	190	230	<4	5	106	89	22	2	6
S35-SW-07	3/10/2015	7.7 J-	519	252	94	363	46	55	<4	<1	205	76	15	2	1
S35-SW-07	3/13/2015	7.7 J-	506	240	240	351	51	62	<4	1	185	72	15	2	1
S35-SW-07	5/18/2015	7.8	2330	1460	<10	2160	86	100	<4	10	1380	413	105	7	6
S35-SW-07	5/27/2015	7.7	862	445	22	651	42	51	<4	6	395	134	27	4	3
S35-SW-07	7/28/2015	7.7 J-	2310	1460	24	2150	58	70	<4	11	1350	379	124	11	4
S35-SW-07	3/21/2016	7.6 J-	600	306	380	444	42	51	<4	3	274	82	25	3	2
S35-SW-07	5/21/2018	7.7	3970	3050	10	4500	140	170	<4	23	2800	466	458	10	6
S35-SW-07	10/12/2018	7.3 J-	6190	5300	30	7270	210	260	<4	65	4720	435	1020	17	10
S35-SW-07	5/29/2019	7.6 J-	3990	2940	10	4220	160	190	<4	69	2760	499	411	9	6
S35-SW-08	5/18/2015	7.7	150	72	<10	94	71	86	<4	<1	4	17	7	<1	2
S35-SW-08	10/6/2015	7.7 J-	250	126	<10	161	120	150	<4	1	5	30 J+	13 J+	<1	3
S35-SW-08	12/16/2015	7.5 J-	251	129	<10	151	120	150	<4	2	4	31	12	1	3
S35-SW-08	3/21/2016	7.6 J-	268	133	<10	168	97	120	<4	8	28	32	13	1	2
S35-SW-08	5/11/2016	7.6 J-	161	81	<10	94	76	92	<4	<1	5	20	7	<1	2
S35-SW-08	10/18/2016	7.8 J-	230	104	<10	147	86	100	<4	3	16	25	10	<1	3

Table 32. Repository Area Physiochemical, Anions, and Catioins; Historical Compilation
Page 5 of 5

Section 35 Surface Water (physiochemical, anions, and cations)															
		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Collection Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/l	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 9.0	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-SW-08	12/19/2016	7.3 J-	256	122	<10	160	110	140	<4	<1	<1	29	12	1	3
S35-SW-08	5/4/2017	7.6 J-	142	69	<10	79	62	75	<4	<1	5.6	17	7	<1	2
S35-SW-08	10/11/2017	7.6 J-	211	107	<10	128	100	120	<4	<1	4	26	10	<1	3
S35-SW-08	5/23/2018	7.6	152	73	<10	98	66	80	<4	<1	7	18	7	<1	2
S35-SW-08	10/12/2018	7.6 J-	220	109	<10	132	110	130	<4	<1	5	26	11	1	2
S35-SW-08	5/29/2019	7.6 J-	133	63	<10	84	59	71	<4	<1	7	15	6	<1	2
S35-SW-08	10/2/2019	7.6 J-	215	104	<10	126	110	230	<4	<1	2	24	11	1	3
S35-SW-08	9/30/2020	7.8	242	132	10	145	130	160	<4	<1	1	32	13	1	3
S35-SW-08	5/25/2021	7.5 J-	171	81	<10 UJ	112	65	79	<4	<1	17	20	8	<1	2
S35-SW-08	9/21/2021	7.3	260	130	<10	167	130	160	<4	<1	2	30	13	1	3
S35-SW-08	5/16/2022	7.6	154	71	<10	102	68	82	<4	<1	10	17	7	<1	2
S35-SW-08	9/16/2022	7.6 J-	251 J+	131	<10	237 J	130	160	<4	<1	5	30	14	1	3
BRSW-307	9/16/2022	7.6 J-	251 J+	132		<10 J	154	130	160	<4	<1	5	30	14	1
S35-SW-08	6/22/2023	7.4 J-	153	75	<10	96	74	90	<4	<1	5	18	7	<1	2
S35-SW-08	9/24/2023	7.3 J-	209	99	<10	129	110	130	<4	<1	2	24	10	<1	2
S35-SW-08	5/20/2024	7.5 J-	196	91	<10	118	74	90	<4	<1	21	21	9	<1	2
S35-SW-08	9/24/2024	7.4 J-	236	120	79	139	110	140	<4	<1	7	27	13	1	3
BRSW-102	5/3/2017	7.9	187	88	<10	107	68	82	<4	2.5	17	20	10	<1	2
BRSW-102	10/12/2017	8	266	110	<10	152	64	78	<4	4	55 J+	24	12	<1	5
BRSW-102	9/28/2020	8	222	102	<10	137	80	97	<4	2	31	24	10	<1	3
BRSW-206	5/3/2017	7.9	188	88	<10	113	68	82	<4	2.5	18	20	10	<1	3
BRSW-206	10/12/2017	7.9	267	109	<10	151	65	78	<4	4	54 J+	24	12	<1	5

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*B-1 Classification Standards ARM 17.30.623(2)(c)

---- No standard

mg/L = milligrams per liter

umhos = micromhos

J = validation flag denotes the reported results are estimates with high or low bias

J- = validation flag denotes the reported results are estimates with a low bias

J+ = validation flag denotes that the result is an estimate with high bias

UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery

U = validation flag denotes the reported result is a false positive/non-detect

S35-SW-04 and BRSW-101 represent the same sample collection location

Duplicate sample

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Appendix F-2: Sediment Compilation Data Tables

Table 33. UBMC Sediments vs. SSCLs, Historical Compilation (total recoverable metals, mg/Kg)

Table 34. Repository Area Sediments, Blackfoot River; Historical Compilation (total recoverable metals, mg/Kg)

Table 35. Repository Area Sediments, Nora Creek; Historical Compilation (total recoverable metals, mg/Kg)

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Table 33. UBMC Sediments vs. SSCLs, Historical Compilation (total recoverable metals, mgKg)
Page 1 of 4

UBMC / Mike Horse Area Sediments (total recoverable metals, mg/Kg)									
Sediment SSCL Comparison									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
*Site-Specific Cleanup Level		8980**	17*	3.53*	197*	35800**	91*	578**	315*
AWSD-003A	5/21/2018	8060 J	23	13	439	35900 J	258	3190 J	1620
BRSD-1	4/29/2011	4460	11	<1	12	8210	16	269	92
BRSD-1	6/13/2011	6270	20	<1	21	21700	39	462	153
BRSD-1	9/19/2011	5640	18	<1	13	13500	68	279	120
BRSD-1	12/11/2011	6890	11	<1	11	14100	19	257	69
BRSD-1	3/26/2012	6110	10	<1	13 J	13500	19 J	349 J	92 J
BRSD-1	5/7/2012	5480	38	1	23	10900	53	386	225
BRSD-1	10/2/2012	6120	16 J-	<1	15	12800	29 J-	309 J-	97 J-
BRSD-1	12/10/2012	4990	20 J-	<1	14	11200	21	254 J+	75
BRSD-1	3/25/2013	7650	<5	<1	14	13600	24	314 J+	74 J
BRSD-1	5/24/2013	5530	9	<1	21 J	10300	21	441 J	95 J
BRSD-1	9/12/2013	6610	9	<1	20	13000	22	432 J-	106
BRSD-1	12/13/2013	7550	9	<1	16	13400	21 J	307 J	95 J
BRSD-1	3/30/2014	6640	12	0.29	15	11800	28	395 J	116 J
BRSD-1	5/27/2014	6650	12	0.23	14	11900	20	290	101
BRSD-1	10/10/2014	6370	11	0.4	20	14500	21	339	95 J
BRSD-1	12/20/2014	5970	26 J	0.2	13	11600	22	308 J	100
BRSD-1	3/10/2015	6240	16	0.2	10 J	11600	20	299 J	104
BRSD-1	5/19/2015	7660	22 J	0.29	38 J	17800	23 J	252	131
BRSD-1	10/6/2015	5790	14	2.6	60 J	14200	113	1920 J	615
BRSD-1	12/15/2015	6690	11	0.4	31	14800 J	34	552 J	128 J
BRSD-1	3/22/2016	5420	17	0.2	12	13300	26 J	288 J	90
BRSD-1	5/12/2016	9430	29	0.27	35	24100	32	603 J	129
BRSD-1	10/17/2016	8530	15	0.5	30	15500	40 J	459 J	160 J
BRSD-1	12/21/2016	6600	5	0.16	18	12900	20	315 J	82
BRSD-1	10/1/2019	5750	19 J+	0.13	14	16500	23	206 J+	103
BRSD-1	9/29/2020	5970	10 J+	0.2	16 J+	12900 J	20 J+	392 J-	85
BRSD-3A	4/30/2011	2020	18	20	296	13400	251	6210	2960
BRSD-3A	6/14/2011	3060	28	31	553	14200	217	17700	5290
BRSD-3A	9/20/2011	4490	41	2	137	38200	109	154	288
BRSD-3A	12/11/2011	4150	33	40	471	15600	400	10900	2880
BRSD-3A	3/27/2012	3760	34	19	588 J	15000	286 J	20400 J	4010 J
BRSD-3A	5/7/2012	7740	75	15	276	28800	733	7890	2840
BRSD-3A	10/2/2012	4030	68 J-	17	386	25800	609 J-	9160 J-	3500 J-
BRSD-3A	12/10/2012	4110	59 J-	21	442	23700	34	371 J+	4420
BRSD-3A	3/25/2013	4990	27	25	641	12900	217	21300 J+	4240 J
BRSD-3A	5/23/2013	7070	97	15	299	29200	786 J	8100 J	3230 J
BRSD-3A	9/12/2013	2560	22	37	471	27100	131	26100 J+	6830
BRSD-3A	12/14/2013	2870	28	48	532	31500	267	31000 J	9850 J
BRSD-3A	3/30/2014	2660	26	44.7	450	20000	129	30700 J	7490 J
BRSD-3A	5/27/2014	2330	22	19.7	409	29400	95	11600	3450
BRSD-3A	10/10/2014	2370	31	43.1	416	24600	189	29300	8140 J
BRSD-3A	12/20/2014	2360	28 J	31.2	365	26400	123	21900 J	5420
BRSD-3A	3/10/2015	2190	33	17.9	196 J	13500	451	12200 J	3460
BRSD-3A	5/19/2015	4370	27 J	36.7	427 J	17400	239 J	25500	7720
BRSD-3B	4/30/2011	6580	28	12	522	16300	168	13200	1940
BRSD-3B	6/14/2011	3570	27	30	534	17900	229	13700	4130
BRSD-3B	9/20/2011	6930	30	29	793	20300	368	46200	4840
BRSD-3B	12/11/2011	4830	65	7	244	36500	333	5300	1380
BRSD-3B	3/27/2012	4440	5	<1	31 J	8970	22 J	555 J	101 J
BRSD-3B	5/7/2012	4790	<5	<1	26	10400	25	454	98
BRSD-3B	10/2/2012	4400	6 J-	1	117	31000	82 J-	1680 J-	275 J-
BRSD-3B	12/10/2012	2940	5 J-	<1	50	19000	34	371 J+	114
BRSD-3B	3/25/2013	5100	13	2	65	13500	173	1330 J+	668 J
BRSD-24	3/25/2013	5460	14	3	91	15100	154	1610 J+	963 J
BRSD-3B	5/23/2013	3540	6	<1	40 J	10100	35 J	572 J	229 J
BRSD-24	5/23/2013	3980	13	1	59 J	10400	66 J	966 J	350 J
BRSD-3B	9/12/2013	4030	<5	<1	60	15700	23 J	517 J+	170
BRSD-24	9/12/2013	5160	<5	<1	66	16500	42 J	740 J+	239
BRSD-3B	12/14/2013	4150	5	1	23	10500	20	731 J	320 J
BRSD-24	12/14/2013	4550	<5	<1	27	9940	26	557 J	232
BRSD-3B	3/30/2014	5620	12	3.3 U	64	14200	62	2420 J	776 J
BRSD-24	3/30/2014	4300	12	4.84 U	72	13700	77	2800 J	891 J
BRSD-3B	5/27/2014	3600 J	7	0.77	78	15500	33	569	210
BRSD-24	5/27/2014	5730 J	6	1.05	75	18200	35	1170	272
BRSD-3B	10/10/2014	3670	6	1.18 J	46	18200	33 J	1450	369 J
BRSD-24	10/10/2014	4100	5	1.93 J	56	12900	64 J	1380	494 J
BRSD-3B	12/20/2014	3540	17 J	3.62	58 J	14200	82 J	3990 J	738
BRSD-24	12/20/2014	4150	18 J	3.96	100 J	19500	121 J	4000 J	805
BRSD-3B	3/10/2015	4190	9 J	2.6	57 J	12200	62 J	2060 J	533
BRSD-24	3/10/2015	4730	14 J	2.8	66 J	12500	91 J	2160 J	521

Table 33. UBMC Sediments vs. SSCLs, Historical Compilation (total recoverable metals, mgKg)
Page 2 of 4

UBMC / Mike Horse Area Sediments (total recoverable metals, mg/Kg)									
Sediment SSCL Comparison									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
*Site-Specific Cleanup Level		8980**	17*	3.53*	197*	35800**	91*	578**	315*
BRSD-3B	5/19/2015	4580	10 J	3.62	61 J	14300	72 J	3070	880
BRSD-24	5/19/2015	5220	17 J	5.11	78 J	15000	102 J	4240	1160
BRSD-3B	10/6/2015	6320	12	2.3 J	47 J	15500 J	100 J	1250 J	516 J
BRSD-24	10/6/2015	6020	11	0.2 J	11 J	9820 J	23 J	259 J	86 J
BRSD-3B	12/15/2015	5680	40	16.7 J	169	22600 J	1310 J	2890 J	2640 J
BRSD-24	12/15/2015	7400	43	3.4 J	133	24800 J	959 J	1420 J	1830 J
BRSD-3B	3/22/2016	4590 J-	216 J-	3.6 J-	3340 J-	91500 J-	55200 J-	2930 J	766 J-
BRSD-24	3/22/2016	7640 J-	41 J-	6.3 J-	292 J-	25200 J-	1480 J-	7130 J	1460 J-
BRSD-3B	5/12/2016	5920	60	8.3	261	30700	2220	1940 J	2290
BRSD-24	5/12/2016	6960	59	7.4	352	29100	1650	2310 J	2240
BRSD-3B	10/17/2016	5970	25	0.8	33 J	11100	136 J	504 J	261 J
BRSD-24	10/17/2016	6390	33	1.4	75 J	22100	190 J	838 J	315 J
BRSD-3B	12/21/2016	9400	11	2	68	14400	307	480 J	333
BRSD-24	12/21/2016	10200	11	1.6	51	14700	209	532 J	290
BRSD-3B	5/1/2017	9710	10 J	1.24 J	45 J	13000	136 J	469	271 J
BRSD-307	5/1/2017	8480	11 J	1.84 J	58 J	13000	194 J	561	357 J
BRSD-3B	10/14/2017	6060	54	3.35	207	15600	451	1580	486
BRSD-307	10/14/2017	6610	51	3.58	222	16000	508	1640	574
BRSD-3	10/1/2019	7720	18 J+	0.9	65	18400	124	857 J+	193
BRSD-307	10/1/2019	6300	16 J+	0.6	55	14900	113	813 J+	174
BRSD-3	9/29/2020	7080	9 J+	0.9	31 J+	11800 J	67 J+	605 J-	291
BRSD-307	9/29/2020	6300	9 J+	1.2	31 J+	10600 J	41 J+	858 J-	256
BRSD-6	9/29/2020	5470	10	0.3	21	15000	45 J+	534	79
BRSD-12	5/22/2018	6360 J	129	11.9	468	39700 J	1670	2660 J	1680
BRSD-307	5/22/2018	7590 J	126	18.4	526	38700 J	1880	5500 J	2420
BRSD-12	9/29/2020	6510	15	6	146	17600	310 J+	1580	1170
BRSD-12	9/20/2021	7980	17	6.82	168	17800	409	2130	1290 J-
BRSD-12	9/15/2022	8640	29	13.8	304 J+	26100	725	6770 J+	2490
BRSD-12	9/24/2023	7120	10 J	5.76	202 J	16300	458 J	2190 J+	1210 J
BRSD-307	9/24/2023	6160	32 J	4.68	121 J	14000	278 J	1760 J+	993 J
BRSD-12	9/23/2024	9330	20	7.24	220	22800	559	2620 J+	1480 J+
BRSD-307	9/23/2024	8340	24	7.7	233	22300	563	2490 J+	1440 J+
BRSD-13	5/2/2017	8380	144 J	0.18	193 J	110000	85 J	118	56 J
BRSD-13	10/13/2017	2830	223	<0.05	99	103000	52	7	9
BRSD-14	5/2/2017	10200	17	0.57	131	35600	68	271	187
BRSD-14	10/13/2017	5720	3	0.72	40	6190	33	371	79
BRSD-15	5/2/2017	5300	5 J	3.26	149 J	35900	69 J	187	371 J
BRSD-15	10/13/2017	5700	6	2.39	100	21200	38	368	184
BRSD-16	9/28/2020	10000	17	5.0	244	35500	419 J+	1670	1030
BRSD-16	9/20/2021	8560	13	6.54	253	43600	143	1920	1440 J-
BRSD-16	9/15/2022	9330	9	5	162 J+	24200	123	1620 J+	1160
BRSD-17	9/28/2020	5980	11	4.1	90	22200	93 J+	2590	845
BRSD-17	9/20/2021	6530	9	4.26	48	14200	39	2760	853 J-
BRSD-17	10/21/2022	5600	6	3.5	35	12000	29 J	2730 J	799 J
BRSD-18	5/2/2017	9380	10 J	1.09	93 J	61300	48 J	34500	360 J
BRSD-18	10/13/2017	7350	8	1.11	83	37700	43	21700	258
BRSD-21	5/2/2017	2160	53 J	<0.05	19 J	113000	39 J	12	9 UJ
BRSD-21	10/13/2017	1100	9	<0.05	7	94000	10	4	6
BRSD-22	4/30/2011	4280	25	10	818	10800	954	1540	3790
BRSD-24	4/30/2011	4050	24	12	909	10400	1040	2020	4050
BRSD-22	6/13/2011	7080	56	73	2030	42500	2610	17200	9960
BRSD-24	6/13/2011	7880	232	56	2010	38000	2980	10400	8400
BRSD-22	9/19/2011	9410	57	68	3370	34500	2770	14800	9640
BRSD-24	9/19/2011	9810	59	60	3940	37100	4420	17000	10700
BRSD-22	12/11/2011	9130	49	31	905	32800	2320	9280	4420
BRSD-24	12/11/2011	8800	27	26	642	22800	1480	8390	3390
BRSD-22	3/26/2012	8620	58	53	1550 J	29100	5480 J	13200 J	6420 J
BRSD-24	3/26/2012	6980	66	64	1690 J	28600	5970 J	15000 J	7400 J
BRSD-22	5/7/2012	9910	57	21	1380	31000	1390	3860	3600
BRSD-24	5/7/2012	7810	53	19	1550	27100	1060	5560	3220
BRSD-22	10/2/2012	8690	47 J-	20	1600	22400	1680 J-	6860 J-	3050 J-
BRSD-24	10/2/2012	8220	36 J-	14	1120	23100	1040 J-	4270 J-	2250 J-
BRSD-22	12/10/2012	7620	40 J-	14	1070	23500	1300	3630 J+	2070
BRSD-24	12/10/2012	6700	53 J-	10	971	23300	969	3340 J+	1710
BRSD-22	3/25/2013	10100	47	37	2690	26100	2780	7080 J+	6840 J
BRSD-22	5/24/2013	7290	28	18	1370	17700	933	4620 J	2860 J
BRSD-22	9/12/2013	8060	30	21	1520	22900	1030	4080 J+	3600
BRSD-22	12/13/2013	8110	54	19	1370	22600	1020	3540 J	3810 J
BRSD-22	3/29/2014	6830	49	23.1	1390	18500	954	5300 J	3670 J
BRSD-22	5/27/2014	11100	74	56.4	3710	36200	2480	12000	7220
BRSD-22	10/10/2014	10200	40	14.2	1290	29800	1310	3320	2630 J
BRSD-22	12/20/2014	8250	44 J	20.1	1820	19900	1350	5520 J	3190
BRSD-22	3/10/2015	10400	62	45.5	2610 J	36000	2410	10700 J	6130
BRSD-22	5/19/2015	9890	40 J	23.3	2280 J	26000	1800 J	4980	5090
BRSD-22	10/6/2015	12700	41	28.7	2020	24200	1470	6770	4880

Table 33. UBMC Sediments vs. SSCLs, Historical Compilation (total recoverable metals, mgKg)
Page 3 of 4

UBMC / Mike Horse Area Sediments (total recoverable metals, mg/Kg)									
Sediment SSCL Comparison									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
*Site-Specific Cleanup Level		8980**	17*	3.53*	197*	35800**	91*	578**	315*
BRSD-22	12/15/2015	8550	44	26.4	1710	24700 J	1880 J	4970 J	3830 J
BRSD-22	3/22/2016	10600	37	25	1900	23100	1180	5220 J	4680
BRSD-22	5/12/2016	10000	49	31.9	1710	20800	1260	6330 J	4650
BRSD-23	4/30/2011	2260	37	8	221	12000	561	1140	1890
BRSD-23	6/14/2011	6550	111	45	1570	45900	4580	10000	6630
BRSD-23	9/20/2011	5740	66	66	961	107000	8040	3630	4130
BRSD-23	12/11/2011	6760	52	16	2430	41400	2890	6200	3300
BRSD-23	3/27/2012	2130	26	4	190 J	8660	380 J	394 J	1120 J
BRSD-23	5/7/2012	3500	81	12	421	33400	1180	6220	1930
BRSD-23	10/2/2012	3160	83 J-	11	333	35600	923 J-	5690 J-	2050 J-
BRSD-23	12/10/2012	4840	48 J-	16	297	25000	1970	4460 J+	3180
BRSD-23	3/25/2013	5890	76	24	456	36400	4000	6640 J+	4060 J
BRSD-23	5/23/2013	4110	140	17	464	48500	1010	8090 J	2610 J
BRSD-23	9/12/2013	2230	21	3	97	9460	174	1200 J+	751
BRSD-23	12/14/2013	4730	57	10	285	27000	1060	2590 J	2150 J
BRSD-23	3/30/2014	6110	112	16.7	487	47700	1780	5810 J	3200 J
BRSD-23	5/27/2014	5100	114	16.9	565	42000	1720	6880	3960
BRSD-23	10/10/2014	5810	156	31.4	763	43600	4230	5480	4930 J
BRSD-23	12/20/2014	5950	133 J	20.1	640	59700	5350	4880 J	3690
BRSD-23	3/10/2015	5240	48	28.5	354 J	30600	3010	5850 J	4750
BRSD-23	5/19/2015	6260	76 J	9.12	402 J	31200	1500 J	2580	2330
BRSD-23	10/6/2015	6730	57	17.4	898 J	26500	2490	2990 J	3790
BRSD-23	12/15/2015	4730	74	31	747	27400 J	3690 J	6290 J	5040 J
BRSD-23	3/22/2016	5150	63	15.9	427	24800	1630	3800 J	2630
BRSD-23	5/12/2016	5960	62	20.1	450	26300	1310	4580 J	2650
BRSD-23	10/17/2016	4230	22	10.7	236	14500	376 J	1170 J	1120 J
BRSD-23	5/1/2017	9920	29 J	4 J	98 J	18500	361 J	863	1080 J
BRSD-23	10/14/2017	5950	6	0.33	22	11000	29	282	99
BRSD-26	5/21/2018	28700 J	31	4.74	1020	40400 J	149	4440 J	743
BRSD-31	5/3/2017	7560	17	12.5	389	19900	528	2300	1790
BRSD-31	10/12/2017	9120	12	9.17	261 J	23200	328 J	3470 J	1790
BRSD-31	5/22/2018	10400 J	13	8.91	213	25700 J	161	2840 J	1250
BRSD-31	10/12/2018	7790	8 J	4.81 J	129 J	16800 J	205 J	1870 J	1070 J
BRSD-307	10/12/2018	8920	16 J	8.19 J	240 J	33400 J	219 J	2770 J	1600 J
BRSD-31	9/28/2020	8640	9	8.0	248	21100	219 J+	3100	1360
BRSD-33	9/29/2020	6460	8	0.5	31	13900	65 J+	517	126
BRSD-36	5/22/2018	8750 J	39	15.4	305	24900 J	737	3460 J	2710
BRSD-38	9/20/2011	6560	89	15	354	35700	4020	3770	2690
BRSD-38	12/11/2011	6830	32	10	258	25200	950	1930	2050
BRSD-38	3/27/2012	6690	52	22	512 J	33000	1780 J	4230 J	3860 J
BRSD-38	5/7/2012	6160	68	22	463	26100	3920	5190	3510
BRSD-38	10/2/2012	4020	36 J-	11	248	18000	758 J-	2820 J-	1960 J-
BRSD-38	12/10/2012	4420	29 J-	17	242	16800	593	3820 J+	2780
BRSD-38	3/25/2013	3550	25	17	217	15400	673	4010 J+	2880 J
BRSD-38	5/23/2013	7060	66	7	158 J	26800	697 J	440 J	1220 J
BRSD-38	9/12/2013	6080	59	31	315	32100	2450	4070 J-	2540
BRSD-38	12/13/2013	5780	30	15	271	22600	634	5530 J	2510 J
BRSD-38	3/29/2014	6650	59	33	444	30200	3000	6180 J	5290 J
BRSD-38	5/27/2014	4760	119	5.07	314	59500	775	123	1120
BRSD-38	10/10/2014	7090	55	27.1	406	31200	1620	6080	4630 J
BRSD-38	12/20/2014	6580	69 J	19.7	392	32600	2370	3780 J	3430
BRSD-38	3/10/2015	7050	41	15.3	307 J	26800	2410	4700 J	2450
BRSD-38	5/19/2015	6200	39 J	8.44	171 J	26200	1200 J	2590	1540
BRSD-38	10/6/2015	6420	38	31.6	1540 J	25400	2060	2230 J	5310
BRSD-38	12/15/2015	8030	28	10.3	148	18600 J	1570 J	3060 J	1570 J
BRSD-38	3/22/2016	7010	36	30.6	415	29800	5940	3570 J	4820
BRSD-38	5/12/2016	8380	40	19.2	379	23800	1220	6070 J	2900
BRSD-38	10/17/2016	6070	35	6.99	173	21800	717 J	2650 J	1120 J
BRSD-38	12/20/2016	6160	36 J	23.2	311 J	22000 J	863	5220	2540 J
BRSD-48	4/30/2011	3480	62	34	536	29800	1640	13000	4860
BRSD-48	6/13/2011	4520	165	23	663	64100	1810	6560	3900
BRSD-48	9/20/2011	5760	62	26	768	41900	5030	5250	5130
BRSD-48	12/11/2011	7140	115	52	2850	65800	15200	4190	9060
BRSD-48	3/27/2012	6530	84	35	692 J	44500	9090 J	4810 J	6260 J
BRSD-48	5/7/2012	6410	55	20	629	35000	4610	4480	3550
BRSD-48	10/2/2012	4620	40 J-	17	352	23900	1610 J-	2270 J-	3090 J-
BRSD-48	12/10/2012	5810	48 J-	34	612	28800	4490	5110 J+	5500
BRSD-48	3/25/2013	5770	39	23	525	22800	2810	5300 J+	4270 J
BRSD-48	5/23/2013	4780	140	21	663	50100	1750	8640 J	3510 J
BRSD-48	9/12/2013	7000	47	41	678	28900	2620	5510 J+	6290
BRSD-48	12/14/2013	7360	86	49	399	37900	9370	4060 J	7870
BRSD-48	3/30/2014	6110	131	51.4	1150	51800	9510	4960 J	8720 J
BRSD-48	5/27/2014	7430	61	2.9	269	27000	989	1330	666

Table 33. UBMC Sediments vs. SSCLs, Historical Compilation (total recoverable metals, mgKg)
Page 4 of 4

UBMC / Mike Horse Area Sediments (total recoverable metals, mg/Kg)									
Sediment SSCL Comparison									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
*Site-Specific Cleanup Level		8980**	17*	3.53*	197*	35800**	91*	578**	315*
BRSD-48	10/10/2014	6490	81	26.3	579	37100	2750	6520	4840 J
BRSD-48	12/20/2014	5710	76 J	24.9	606	40300	4430	5650 J	4200
BRSD-48	3/10/2015	5780	61	39	588 J	30000	4540	5350 J	5990
BRSD-48	5/19/2015	4250	69 J	15.5	532 J	31000	1400 J	5030	3450
BRSD-48	10/6/2015	3320	51	9.93	274 J	22100	925	1020 J	1980
BRSD-48	12/15/2015	6820	130	16.9	565	21900 J	4610 J	5300 J	2700 J
BRSD-48	3/22/2016	6310	81	48.8	2720	39200	6610	16500 J	8040
BRSD-48	5/12/2016	6670	62	20	608	35600	1670	2100 J	3700
BRSD-48	10/17/2016	6130	47	3.58	213	21600	834 J	1440 J	763 J
BRSD-48	12/20/2016	8290	63	27.2	789	35400	8240	3150 J	4810
BRSD-102	9/28/2020	4740	6	2	38	14400	21 J+	1110	535
BRSD-104	6/16/2008	22800	17	18.2	2630	35400	59.6	10100	2370
BRSD-104	5/3/2017	8600	10	8.82	256	19800	146	3470	2200
BRSD-104	10/12/2017	12100	15	12.9	351 J	28700	111 J	5660 J	2610
BRSD-104	9/28/2020	10400	19	8.2	318	34600	106 J+	3000	1550
BRSD-104	9/20/2021	10000	24 J	6.03	261	34600	134	2210	1440 J-
BRSD-307	9/20/2021	9690	13 J	6	204	27600	112	2980	1340 J-
BRSD-104	10/21/2022	5960	11	3.9	108	19900	62 J	1360 J	898 J
BRSD-105	6/16/2008	8740	14	8.1	234	NS	161	2060	2010
BRSD-106	10/4/2007	NS	9.5	5.19	193	NS	177	1390	1180
BRSD-106	6/16/2008	NS	15	3.51	214	28500	131	1270	878
BRSD-107	10/4/2007	10200	21	10.5	620	NS	716	2580	2350
BRSD-107	6/16/2008	NS	20	1.93	372	29600	409	555	782
BRSD-107	5/3/2017	11100	14	3.39	235	26900	260	852	916
BRSD-107	10/12/2017	10700	12	4.77	244 J	27800	221 J	1550 J	1180
BRSD-107	9/28/2020	10200	11	8.6	225	22700	210 J+	2950	1530
BRSD-107	9/20/2021	10200	16	7.24	247	24200	160	2040	1560 J-
BRSD-108	10/10/2007	NS	59	0.627 J	283	NS	395	336	194
BRSD-108	5/12/2016	13100	65	0.83	432	71600	270	581 J	256
BRSD-108	5/2/2017	9770	61 J	0.44	361 J	64100	282 J	416	184 J
BRSD-108	10/13/2017	8810	49	0.57	278	46300	312	142	121
BRSD-108	5/21/2018	9510 J	69	0.51	309	45100 J	325	270 J	162
BRSD-108	10/11/2018	9790	125	0.35	361	54400	310	277 J+	209
BRSD-108	10/1/2019	5560	33 J+	0.4	140	30900	167	336 J+	88
BRSD-108	9/30/2020	9290	35 J+	0.2	237 J+	39300 J	134 J+	134 J-	68
BRSD-109	10/9/2007	NS	31	10.5	262	NS	1330	3450	3240
BRSD-110	10/4/2007	NS	13	4.35	127	NS	351	979	865
BRSD-110	5/3/2017	8400	11	14.6	174	16400	277	5630	2480
BRSD-110	10/12/2017	8230	16	2.53	163 J	31900	429 J	451 J	674
BRSD-110	9/28/2020	7530	20	10.6	202	15300	413 J+	2900	1670
BRSD-110	9/20/2021	6800	18	8.66	212	15200	549	3030	1250 J-
BRSD-201	11/9/2011	4710	4	<0.5	39.5	16300	13	311	150
BRSD-201	9/28/2020	6190	5	0.3	60	19900	12 J+	430	159
BRSD-202	11/9/2011	4230	3.6	<0.5	35.1	14600	11	218	146
BRSD-203	11/9/2011	4840	5.3	<0.5	41.2	14400	14	247	126
BRSD-204	11/9/2011	4570	4.4	<0.5	29.8	11800	11	259	125
BRSD-204	9/28/2020	4720	4	0.2	25	13400	8 J+	212	97
BRSD-204	9/20/2021	4790	12	0.61	185	31300	11	502	236 J-
BRSD-204	9/15/2022	4840	6	0.29	27 J+	13400	17	290 J+	116
BRSD-205	11/9/2011	5070	8	<0.5	30	13100	21	396	202
BRSD-400	9/29/2020	6800	6	2.9	84	16800	55 J+	506	597

Note: Exceeds site-specific cleanup level
Italics = Baseline data collected by Pioneer Technical Services, Inc., *Final Remedial Investigation Report, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana*, dated January 31, 2013
*Aquatic life based SSCL, Table 5B, EU 13 Streambed Sediment, *Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex*, Lewis and Clark County, Montana, March 2016 (ROD)
**SSCL based on background, Table 5B EU 13 Streambed Sediment, ROD
mg/Kg = milligrams per kilogram
J = validation flag denotes the reported results are estimates with high or low bias
J- = validation flag denotes that the result is an estimate with low bias
J+ = validation flag denotes the reported results are estimates with high bias

Table 34. Repository Area Sediments, Blackfoot River; Historical Compilation (total recoverable metals, mg/Kg)
Page 1 of 1

Section 35, Blackfoot River Sediments (total recoverable metals, mg/Kg)									
Collection									
Sample ID	Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Site-Specific Cleanup Level*		8980 **	17	4	197	35800 **	91	578 **	315
S35-SD-03	3/26/2012	5640	10	1	33 J	15300	57 J	888 J	375 J
S35-SD-03	5/8/2012	7350	<5	2	30	13800	35 J	1110 J	719
S35-SD-03	10/3/2012	5440	7 J-	1	27	12400	21 J-	882 J-	401 J-
S35-SD-03	12/11/2012	5430	5	<1	26	11300	20	686 J	263 J+
S35-SD-03	3/26/2013	5260	<5	1	26	10300	20	1040	499 J-
S35-SD-03	5/24/2013	4520	7	2	24 J	9750	16	887 J	520 J
S35-SD-03	9/13/2013	5720	7	<1	39	11300	29	769	480 J+
S35-SD-03	12/15/2013	6370	7	1	28	12800	15	806 J	570 J
S35-SD-03	3/29/2014	5410	7	1.34	70	16800	26	908 J	380 J
S35-SD-03	5/28/2014	4840	6	1.12	27	10400	31	766	395
S35-SD-03	10/10/2014	4650	6	1.58	29	10900	18	1060 J	475 J
S35-SD-03	12/20/2014	6270	5	1.3	25	11400	18	813 J	381 J
S35-SD-03	3/10/2015	6320	8	1.1	33	14200	26	687	335
S35-SD-03	5/18/2015	5340	5	1.72	49	13400	20	1170	729
S35-SD-03	10/6/2015	6070	9	1.7	21 J	12800	13	934 J	502
S35-SD-03	12/16/2015	4840	14	1.8	31	11900 J	18	793 J	480 J
S35-SD-03	3/21/2016	5190	5	1.5	26	10900	17	881	378
S35-SD-03	5/11/2016	6380	7	2.06	20	11700	16 J	996 J	543
S35-SD-03	10/18/2016	5690	11	1.8	26	12900	16 J	1040 J	526 J
S35-SD-03	12/20/2016	5280	5	1.6	21	11300	15	755	455
S35-SD-04	3/26/2012	4430	7	1	25 J	13700	20 J	877 J	555 J
S35-SD-04	5/8/2012	6080	<5	2	24	11200	21 J	936 J	793
S35-SD-04	10/3/2012	4970	5 J-	2	32	13000	19 J-	909 J-	609 J-
S35-SD-04	12/11/2012	5600	9	2	44	15700	26	1720 J	766 J+
S35-SD-04	3/26/2013	6240	6	1	34	11900	16	899	683 J-
S35-SD-04	5/24/2013	4690	6	2	24 J	10000	13	746 J	490 J
S35-SD-04	9/13/2013	5150	6	2	34	12500	20	951	598 J+
S35-SD-04	12/15/2013	5690	7	1	36	14100	22	744 J	547 J
S35-SD-04	3/29/2014	6130	6	1.97	33	13800	24	1080 J	768 J
S35-SD-04	5/28/2014	5470	6	1.72	33	10200	32	779	538
S35-SD-04	10/10/2014	5440	11	1.98	58	17900	69	1310 J	784 J
S35-SD-04	12/20/2014	4730	8	1.6	29	10800	12	1620 J	561 J
S35-SD-04	3/10/2015	5790	6	2.1	34	14700	23	1330	751
S35-SD-04	5/18/2015	5620	9	1.8	52	17000	66	1160	802
S35-SD-04	10/6/2015	7470	6	1.7	26 J	12500	26	920 J	601
S35-SD-04	12/16/2015	6490	5	2.3	44	11700 J	23	1150 J	699 J
S35-SD-04	3/21/2016	6830	6	2.1	37	13200	37 J	937 J	682
S35-SD-04	5/11/2016	5610	6	3.26	31	12100	22	1540	928
S35-SD-04	10/18/2016	6810	5	2.3	38	14600	26 J	1160 J	777 J
S35-SD-04	12/20/2016	5550	3	2	32	10300	16	1050	717
BRSD-101	5/3/2017	4850	5	2.12	31	9440	20	1080	612
BRSD-101	10/12/2017	5770	6	1.99	35 J	14900	23 J	915 J	712
BRSD-102	5/3/2017	6590	7	2.84	34 J	11600	15 J	1460 J	985
BRSD-102	10/12/2017	5360	8	2.52	28	13500	16	1230	730
BRSD-206	11/9/2011	5360	5.7	1.3	38.6	12500	18	749	534
BRSD-206	5/3/2017	4910	4	1.55	31	10300	16	844	645
BRSD-206	10/12/2017	4760	4	1.58	18 J	10200	11 J	940 J	672

Note: Exceeds site-specific cleanup level

Italics = Baseline data collected by Pioneer Technical Services, Inc., *Final Remedial Investigation Report, Upper Blackfoot Mining Complex, Lewis and Clark County, Montana*, dated January 31, 2013

*Draft Final Feasibility Study Report, Pioneer, 2015

**SSCL based on background

mg/Kg = milligrams per kilogram

J = validation flag denotes the reported results are estimates with high or low bias

J- = validation flag denotes the reported results are estimates with a low bias

J+ = validation flag denotes that the result is an estimate with high bias

UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery

U = validation flag denotes the reported result is a false positive/non-detect

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Table 35. Repository Area Sediments, Nora Creek; Historical Compilation (total recoverable metals, mg/Kg)
Page 1 of 2

Section 35, Nora Creek and Unnamed Stream Sediments (total recoverable metals, mg/Kg)										
Collection										
Sample ID	Creek/River	Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Nora Creek Background Reference*			3376	2	0.4	33	2387	4	21	15
S35-SD-01	Nora	3/26/2012	11300	14	<1	48 J	17600	14 J	2550 J	68 J
S35-SD-01	Nora	5/8/2012	6970	10	<1	27	18500	13 J	811 J	59
S35-SD-01	Nora	10/3/2012	13900	8 J-	<1	51	14400	15 J-	788 J-	61 J-
S35-SD-01	Nora	12/11/2012	13900	9	<1	55	15600	13	1450 J	67 J+
S35-SD-01	Nora	3/26/2013	14600	8	<1	54	15100	15	1310	65 J-
S35-SD-01	Nora	5/24/2013	15100	13	<1	72 J	16400	14	1800 J	90 J
S35-SD-01	Nora	9/13/2013	18200	12	<1	73	18300	14	2080	83 J+
S35-SD-01	Nora	12/15/2013	15200	9	<1	59	15600	11	1040 J	59 J
S35-SD-01	Nora	3/29/2014	9630	8	0.22 U	51	15900	13	1200 J	64 J
S35-SD-01	Nora	5/27/2014	8990	11	0.16 U	36	17000	16	1660	62
S35-SD-01	Nora	10/10/2014	15300	11	0.14	56	16600	12	796 J	70 J
S35-SD-01	Nora	3/10/2015	14700	12	0.2	54	16700	12	830	92
S35-SD-01	Nora	5/18/2015	21200	13	0.15	84	19900	13	1360	90
S35-SD-01	Nora	10/6/2015	7150	8	0.11	21 J	14200	9	1070 J	54
S35-SD-01	Nora	5/11/2016	10900	9	0.18	37	13900	11	1400	56
S35-SD-01	Nora	10/18/2016	18400	9	0.15	62	15600	13 J	950 J	74 J
S35-SD-01	Nora	5/4/2017	7780	10	0.14	30	16800	10	1570	60
S35-SD-01	Nora	10/11/2017	8510	12	0.15	30	15700	12	1550	61
S35-SD-01	Nora	5/23/2018	16400 J	17	0.3	57	20700 J	15	2530 J	87
S35-SD-01	Nora	10/12/2018	10700	10	0.1	28	14000 J	10 J	1020 J	57 J
S35-SD-01	Nora	10/2/2019	5790	5 J+	0.06	29	10200	5	513 J+	37
S35-SD-01	Nora	9/30/2020	5440	8 J+	0.14	25 J+	9830 J	7 J+	888 J-	37
S35-SD-02	Nora	3/26/2012	4790	<5	<1	63 J	2980	8 J	21 J	19 J
S35-SD-02	Nora	5/8/2012	3740	<5	<1	39	1780	5 J	13 J	14
S35-SD-02	Nora	10/3/2012	2610	<5 UJ	<1	27	1800	<5 UJ	14 J-	11 J-
S35-SD-02	Nora	12/11/2012	3640	<5	<1	36	2370	<5	21 J	17 J+
S35-SD-02	Nora	3/26/2013	3870	<5	<1	37	2410	<5	16	20 J-
S35-SD-02	Nora	5/24/2013	4610	<5	<1	35 J	2080	<5	13 J	19 J
S35-SD-02	Nora	9/13/2013	3620	<5	<1	37	2370	<6	18	20 J+
S35-SD-02	Nora	12/15/2013	3500	<5	<1	34	2480	<5	28 J	16 J
S35-SD-02	Nora	3/29/2014	2900	1	0.08 U	31	2420	3	13 J	14 J
S35-SD-02	Nora	5/28/2014	2800	1	0.07 U	31	2390	3	16	13
S35-SD-02	Nora	10/10/2014	2840	1 U	0.09	28	1840	2	17 J	13 J
S35-SD-02	Nora	12/20/2014	3950	2	0.15 U	37	3020	3	31	17
S35-SD-02	Nora	3/10/2015	2400	1	0.07	24	2520	2	31	13
S35-SD-02	Nora	5/18/2015	4320	2	0.07	41	2760	3	20	26
S35-SD-02	Nora	10/6/2015	2390	1	0.07	25 J	1940	2	18 J	11
S35-SD-02	Nora	12/16/2015	2960	1	0.08	33	4160 J	3	48 J	14 J
S35-SD-02	Nora	3/21/2016	3480	<1	0.09	31	2490	3 J	12 J	14
S35-SD-02	Nora	5/11/2016	2970	1	0.07	26	2330	2	14	13
S35-SD-02	Nora	10/18/2016	3270	<1	0.08	31	1870	2 J	12 J	14 J
S35-SD-02	Nora	12/19/2016	2920	<1	<0.2	26	2250	2	13	14
S35-SD-02	Nora	5/4/2017	3640	<1	0.1	37	2110	3	11	14
S35-SD-02	Nora	10/11/2017	3290	2	0.09	37	2230	3	14	16
S35-SD-02	Nora	5/23/2018	3330 J	<1	0.09	32	1620 J	2	9 J	14
S35-SD-02	Nora	10/12/2018	3190	1	0.08	25	3060 J	3 J	71 J	15 J
S35-SD-08	Nora	3/21/2016	12500	2	<0.05	25	11400	12 J	106 J	43
S35-SD-08	Nora	5/11/2016	9840	2	<0.05	20	9430	8	114	40
S35-SD-08	Nora	10/18/2016	9830	2	<0.05	22	8100	11 J	83 J	35 J
S35-SD-08	Nora	12/19/2016	4570	1	<0.2	12	6800	3	71	21
S35-SD-08	Nora	5/4/2017	10200	2	0.06	25	9170	10	65	36
S35-SD-08	Nora	10/11/2017	5400	2	<0.05	10	8520	5	152	29
S35-SD-08	Nora	5/23/2018	11400 J	2	<0.05	27	10700 J	12	78 J	41
S35-SD-08	Nora	10/12/2018	10200	2	<0.05	23	10700 J	9 J	112 J	40 J
S35-SD-08	Nora	10/2/2019	11000	2 J+	<0.05	37	9720	12	78 J+	40
S35-SD-08	Nora	9/30/2020	5470	4 J+	0.05	8 J+	11400 J	3 J+	140 J-	40
S35-SD-08	Nora	9/21/2021	5630	6	0.08	21	12900	4	328	23 J-
S35-SD-08	Nora	9/16/2022	5220 J	5	<0.09	9 J+	11100	7	140 J+	28
BRSD-307	Nora	9/16/2022	7470 J	4	<0.05	10 J+	13000	6	164 J+	34
S35-SD-08	Nora	9/24/2023	4640	3	0.03	8	9480	3	124 J+	26 J
S35-SD-08	Nora	9/24/2024	3550	3	<0.05	7	9390	4	137 J+	21 J+
S35-SD-05	Unnamed	3/26/2012	4660	6	<1	68 J	24600	5 J	401 J	35 J
S35-SD-05	Unnamed	5/8/2012	7650	9	<1	29	28700	10 J	462 J	44
S35-SD-05	Unnamed	10/3/2012	6030	6 J-	<1	29	16600	7 J-	266 J-	39 J-
S35-SD-05	Unnamed	12/11/2012	6230	6	<1	24	13100	9	202 J	38 J+
S35-SD-05	Unnamed	3/26/2013	5780	<5	<1	24	19300	7	117	37 J-
S35-SD-05	Unnamed	5/24/2013	8310	7	<1	43 J	11600	12	375 J	55 J
S35-SD-05	Unnamed	9/13/2013	4910	<5	<1	23	14500	7	149	33 J+
S35-SD-05	Unnamed	12/15/2013	8790	6	<1	30	16400	11 J	252 J	48 J
S35-SD-05	Unnamed	3/29/2014	6280	6	0.06 U	39	21700	9	289 J	48 J
S35-SD-05	Unnamed	5/27/2014	6680	11	<0.05	36	21400	13	233	40
S35-SD-05	Unnamed	10/10/2014	5290	4	0.1	27	10700	7	119 J	38 J
S35-SD-05	Unnamed	12/20/2014	9500	11	<0.05	47	23600	7	389 J	40 J
S35-SD-05	Unnamed	3/10/2015	5790	5	<0.05	41	21600	8	180	44
S35-SD-05	Unnamed	5/18/2015	6550	6	0.06	33	16400	6	310	55
S35-SD-05	Unnamed	10/6/2015	6210	7	<0.05	25 J	13900	6	446 J	40
S35-SD-05	Unnamed	12/15/2015	5940	4	<0.05	35	16500 J	6	318 J	38 J
S35-SD-05	Unnamed	3/21/2016	6410	5	0.2	25	11200	7 J	153 J	46

Table 35. Repository Area Sediments, Nora Creek; Historical Compilation (total recoverable metals, mg/Kg)
Page 2 of 2

Section 35, Nora Creek and Unnamed Stream Sediments (total recoverable metals, mg/Kg) Collection										
Sample ID	Creek/River	Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Nora Creek Background Reference*			3376	2	0.4	33	2387	4	21	15
S35-SD-05	Unnamed	5/11/2016	7040	6	0.07	44	18100	7	496	44
S35-SD-05	Unnamed	10/18/2016	4090	2	0.06	14	6030	3 J	310 J	24 J
S35-SD-05	Unnamed	12/19/2016	3590	1	<0.2	13	4690	3	177	22
S35-SD-05	Unnamed	5/4/2017	18300	8	0.31	72	14800	14	409	85
S35-SD-05	Unnamed	10/11/2017	3720	5	0.05	88	19800	3	531	37
S35-SD-05	Unnamed	5/23/2018	6690 J	7	<0.05	13	12300 J	6	745 J	47
S35-SD-05	Unnamed	10/12/2018	4640	5	<0.05	18	11900 J	5 J	404 J	27 J

Note: Exceeds Nora Creek background average concentration
Method detection limit is greater than the average background concentration
*Average of S35-SW-02 background data (2012-2018)
mg/Kg = milligrams per kilogram
J = validation flag denotes the reported results are estimates with high or low bias
J- = validation flag denotes the reported results are estimates with a low bias
J+ = validation flag denotes that the result is an estimate with high bias
UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery
U = validation flag denotes the reported result is a false positive/non-detect
Duplicate sample

Appendix F-3: Groundwater Compilation Data Tables

Table 36. UBMC Groundwater, Historical Compilation (dissolved metals, mg/L)

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation

Table 38. Repository Area Groundwater, Historical Compilation (dissolved metals, mg/L)

Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation

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Table 36. UBMC Groundwater, Historical Compilation (dissolved metals, mg/L)
Page 1 of 3

UBMC / Mike Horse Area Groundwater (dissolved metals, mg/L)									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard	20 ^{**}	0.01 [*]	0.005 ⁺	1.3 ⁺	14 ^{**}	0.015 ⁺	0.94 ^{**}	2 ⁺
	Standards (Edit Mine Area)	20 ^{**}	0.01 [*]	0.005 ⁺	1.3 ⁺	27.8 ^{***}	0.015 ⁺	3.03 ^{***}	2 ⁺
EDP-1 ¹	6/8/2018	1.02	<0.003	0.00128	0.417	13.0	0.001	0.902	0.6
EDP-1 ¹	10/9/2018	0.88	<0.003	0.00124	0.351	13.0	<0.0005	1.02	0.54
EDP-1 ¹	5/13/2019	0.46	<0.003	0.00125	0.252	10.3	0.0160	1.03	0.58
EDP-1 ¹	10/7/2019	0.27	<0.003	0.00102	0.134	7.10	<0.0005	1.07	0.44
EDP-1 ¹	5/21/2020	0.34	<0.003	0.00121	0.172	9.24	0.0011	1.08	0.53
EDP-1 ¹	10/3/2020	0.41	<0.003	0.00107	0.176	9.07	<0.0005	1.08	0.51
EDP-2 ¹	5/31/2018	5.31	<0.003	0.00121	0.121	27.5	<0.0005	1.74	0.64
EDP-2 ¹	10/9/2018	5.48	<0.003	0.00143	0.153	27.8	<0.0005	1.76	0.65
EDP-2 ¹	5/13/2019	5.07	<0.003	0.00130	0.132	26.0	<0.0005	1.65	0.67
EDP-2 ¹	10/7/2019	4.86	<0.003	0.0012	0.129	26.3	<0.0005	1.71	0.64
EDP-2 ¹	5/21/2020	5.74	<0.003	0.00135	0.144	27	0.0005	14	0.66
EDP-2 ¹	10/2/2020	5.49	<0.003	0.00126	0.132	27.5	<0.0005	1.79	0.67
EDMW-2 ¹	5/13/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.039	0.01
EDMW-2 ¹	10/11/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.049	0.01
EDMW-2 ¹	6/2/2020	<0.03	<0.003	<0.00008	<0.001	0.25	<0.0005	0.049	0.01
EDMW-2 ¹	10/3/2020	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.018	0.01
EDGW-105 ¹	5/13/2019	3.15	<0.003	0.00073	0.562	9.38	0.0009	0.471	0.24
EDGW-105 ¹	10/10/2019	3.54	<0.003	0.00063	0.576	8.57	0.0008	0.467	0.24
EDGW-105 ¹	6/2/2020	3.46	<0.003	0.00061	0.574	8.49	0.0009	0.476	0.24
EDGW-105 ¹	10/3/2020	3.43	<0.003	0.0006	0.556	8.56	0.0009	0.463	0.22
LCMW-1	5/4/2017	<0.03	<0.003	0.00191	0.017	0.36	<0.0005	0.041	0.1
LCMW-1	10/5/2017	<0.03	<0.003	0.00176	0.015	0.37	<0.0005	0.029	0.09 J+
LCMW-1	5/31/2018	<0.03	<0.003	0.00159	0.015	0.15	<0.0005	0.029	0.08
LCMW-1	10/8/2018	<0.03	<0.003	0.00176	0.015	0.41	<0.0005	0.025	0.09
LCMW-1	6/3/2019	<0.03	<0.003	0.00162	0.015	0.14	<0.0005	0.030	0.09
LCMW-1	10/11/2019	<0.03	<0.003	0.00181	0.018	0.17	<0.0005	0.028	0.09
MHMW-9	10/11/2019	<0.03	<0.003	0.00185	0.017	0.17	<0.0005	0.028	0.09
LCMW-1	10/3/2020	<0.03	<0.003	0.00152	0.014	0.15	<0.0005	0.024	0.08
MHMW-9	10/3/2020	<0.03	<0.003	0.00151	0.014	0.15	<0.0005	0.024	0.08
LCMW-1	5/28/2021	<0.03	<0.003	0.00142	0.014	0.18	<0.0005	0.031	0.08
MHMW-9	5/28/2021	<0.03	<0.003	0.00142	0.014	0.18	<0.0005	0.03	0.08
LCMW-1	9/24/2021	<0.03	<0.003	0.00167	0.016	0.13	<0.0005	0.026	0.09
MHMW-9	9/24/2021	<0.03	<0.003	0.00166	0.016	0.14	<0.0005	0.024	0.08
LCMW-1	5/25/2022	<0.03	<0.003	0.00149	0.015	0.17	<0.0005	0.029	0.09
MHMW-9	5/25/2022	<0.03	<0.003	0.0015	0.015	0.17	<0.0005	0.029	0.08
LCMW-1	9/27/2022	<0.03	<0.003	0.0017	0.02	0.18	<0.0005	0.027	0.09
MHMW-9	9/27/2022	<0.03	<0.003	0.00184	0.02	0.18	<0.0005	0.027	0.09
LCMW-1	6/23/2023	<0.03	<0.003	0.00152	0.014	0.21	<0.0005	0.038	0.08
MHMW-9	6/23/2023	<0.03	<0.003	0.00153	0.014	0.21	<0.0005	0.038	0.08
LCMW-1	9/25/2023	<0.03	<0.003	0.00169	0.016	0.18	<0.0005	0.03	0.08
MHMW-9	9/25/2023	<0.03	<0.003	0.0017	0.016	0.18	<0.0005	0.029	0.08
LCMW-1	5/22/2024	<0.03	<0.003	0.00140	0.014	0.19	<0.0005	0.031	0.08
MHMW-9	5/22/2024	<0.03	<0.003	0.00137	0.014	0.19	<0.0005	0.031	0.08
LCMW-1	10/1/2024	<0.03	<0.003	0.00164	0.016	0.18	<0.0005	0.032	0.09
MHMW-9	10/1/2024	<0.03	<0.003	0.00161	0.016	0.19	<0.0005	0.031	0.09
LCMW-5	5/4/2017	2.98	<0.003	0.145	1.1	6.54	0.0374	12.1	5.92
LCMW-5	10/5/2017	2.07	<0.003	0.147	1.03	10.8	0.0461	12.9	5.34 J+
LCMW-5	5/31/2018	2.78	<0.003	0.125	1.01	4.37	0.0358	9.61	5.46
LCMW-5	10/9/2018	0.74	<0.003	0.0892	0.218	14.1	0.0186	11.3	2.82
LCMW-5	6/3/2019	2.03	<0.003	0.127	0.92	4.85	0.0327	9.39	5.24
LCMW-5	10/12/2019	1.38	<0.003	0.134	0.835	9.57	0.0310	11.5	4.51
LCMW-5	10/3/2020	0.5	<0.003	0.0299	0.089	13.4	0.0125	6.67	1.25
LCMW-5	5/28/2021	2.7	<0.003	0.134	1.04	6.15	0.0379	10.5	5.71
LCMW-5	9/24/2021	0.14	<0.003	0.0306	0.026	14.1	0.0052	7.06	1.13
LCMW-5	5/25/2022	1.72	<0.003	0.127	0.879	4.6	0.0269	9.5	4.56
LCMW-5	9/26/2022	0.07	<0.003	0.0158	0.035	15	0.002	6.58	0.73
LCMW-5	6/23/2023	2.12	<0.003	0.122	0.883	3.60	0.0339	8.89	4.83
LCMW-5	9/25/2023	0.24	<0.003	0.0713	0.116	9.16	0.0066	9.1	2.42
LCMW-5	5/22/2024	1.47	<0.003	0.133	1.02	6.76	0.0099	11.4	5.15
LCMW-5	10/1/2024	<0.03	<0.003	0.012	0.021	16.1	0.0005	6.29	0.64
MHMW-8	3/13/2015	<0.03	<0.003	0.0303	0.016	<0.05	<0.0005	<0.005	8.53
MHMW-8	4/25/2017	<0.03	<0.003	0.00252	0.002	<0.05	<0.0005	<0.005	0.76 J+
MHMW-9	4/25/2017	<0.03	<0.003	0.00252	0.002	<0.05	<0.0005	<0.005	0.74 J+
MHMW-8	10/4/2017	<0.03	<0.003	0.00223	0.002	<0.05	<0.0005	<0.005	0.53
MHMW-9	10/4/2017	<0.03	<0.003	0.00223	0.002	<0.05	<0.0005	<0.005	0.53
MHMW-8	5/30/2018	<0.03	<0.003	0.00119	0.001	<0.05	<0.0005	<0.005	0.3
MHMW-9	5/30/2018	<0.03	<0.003	0.00121	0.001	<0.05	<0.0005	<0.005	0.31
MHMW-8	10/8/2018	<0.03	<0.003	0.00144	0.001	<0.05	<0.0005	<0.005	0.33
MHMW-9	10/8/2018	<0.03	<0.003	0.00146	0.002	<0.05	<0.0005	<0.005	0.35
MHMW-8	6/2/2019	<0.03	<0.003	0.00095	0.001	<0.05	<0.0005	<0.005	0.26 J+
MHMW-9	6/2/2019	<0.03	<0.003	0.00099	<0.001	<0.05	<0.0005	<0.005	0.26 J+
MHMW-8	10/3/2019	<0.03	<0.003	0.00159	0.001	<0.05	<0.0005	<0.005	0.41
MHMW-8	10/2/2020	<0.03	<0.003	0.00113	<0.001	<0.05	<0.0005	<0.005	0.26
MHMW-8	5/27/2021	<0.03	<0.003	0.0008	<0.001	<0.05	<0.0005	<0.005	0.2
MHMW-8	9/23/2021	<0.03	<0.003	0.001	<0.001	<0.05	<0.0005	<0.005	0.23
MHMW-10 ^f	4/25/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ^f	10/4/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	5/30/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	10/8/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	10/2/2020	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	5/27/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	9/23/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	5/24/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	9/27/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	6/23/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	9/25/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	5/22/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-10 ²	9/26/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	4/25/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	10/4/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	5/30/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	10/8/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	10/2/2020	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	5/26/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	9/23/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	5/24/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	9/26/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	6/23/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	9/25/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	5/21/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MHMW-11 ³	9/26/2024	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01</

Table 36. UBMC Groundwater, Historical Compilation (dissolved metals, mg/L)
Page 2 of 3

UBMC / Mike Horse Area Groundwater (dissolved metals, mg/L)									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard	20**	0.01*	0.005*	1.3*	14**	0.015*	0.94**	2*
	Standards (Edit Mine Area)	20**	0.01*	0.005*	1.3*	27.8***	0.015*	3.03***	2*
TDMW-1	10/8/2014	<0.03	<0.003	0.00351	<0.001	<0.05	<0.0005	<0.005	1.81
TDMW-1	12/18/2014	<0.03	<0.003	0.00466	<0.001	<0.05	<0.0005	<0.005	2.04
TDMW-6	12/18/2014	<0.03	<0.003	0.00472	<0.001	<0.05	<0.0005	<0.005	2.05
TDMW-1	3/12/2015	<0.03	<0.003	0.0092	0.001	<0.05	<0.0005	2.98	2.7
TDMW-6	3/12/2015	<0.03	<0.003	0.00908	0.001	<0.05	<0.0005	2.99	2.7
TDMW-1	5/21/2015	<0.03	<0.003	0.00048	<0.001	<0.05	<0.0005	0.007	0.49 J+
TDMW-6	5/21/2015	<0.03	<0.003	0.00048	<0.001	<0.05	<0.0005	0.007	0.49 J+
TDMW-1	10/8/2015	<0.03	<0.003	0.00722	<0.001	<0.05 UJ	<0.0005	0.023 J	4.09
TDMW-6	10/8/2015	<0.03	<0.003	0.00724	<0.001	<0.05 UJ	<0.0005	0.017 J	4.14
TDMW-1	12/17/2015	<0.03	<0.003	0.0219	0.004	<0.05	<0.0005	0.35	9.17
TDMW-6	12/17/2015	<0.03	<0.003	0.0228	0.004	<0.05	<0.0005	0.331	9.12
TDMW-1	3/24/2016	<0.03	<0.003	0.0398	0.004	<0.05	<0.0005	0.439	16.6
TDMW-6	3/24/2016	<0.03	<0.003	0.0396	0.004	<0.05	<0.0005	0.451	16.5
TDMW-1	5/17/2016	<0.03	<0.003	0.0196	0.003	<0.05	<0.0005	0.475	6.89
TDMW-6	5/17/2016	<0.03	<0.003	0.0192	0.003	<0.05	<0.0005	0.476	6.84
TDMW-2S	5/5/2011	<0.03	<0.003	0.00048	<0.001	<0.05	0.0005	1.42	0.51
TDMW-2S	6/16/2011	<0.03	<0.003	0.00088	<0.001	<0.05	<0.0005	1.21	0.62
TDMW-2S	9/22/2011	<0.03	<0.003	0.00208	<0.001	<0.05	<0.0005	2.66	1.33
TDMW-2S	12/14/2011	<0.03	<0.003	0.00943	0.001	<0.05	<0.0005	16	7.42
TDMW-2S	3/29/2012	<0.03	<0.003	0.0135	<0.001	<0.05	<0.0005	27.7	9.47
TDMW-2S	5/9/2012	<0.03	<0.003	0.0207	0.002	0.12	0.0007	58.6	11.4
TDMW-2S	10/4/2012	<0.03 UJ	<0.003	0.0234	0.002	0.05	<0.0005	42.9	10.6
TDMW-2S	12/13/2012	<0.03	<0.003	0.0271	0.002	0.14	<0.0005	60	12.7
TDMW-2S	3/28/2013	<0.03	<0.003	0.0225	0.002	0.22	<0.0005	56.4	11.5
TDMW-2S	5/25/2013	0.04	<0.003	0.00531	<0.001	<0.05	<0.0005	9.67	2.77
TDMW-2S	9/14/2013	<0.03	<0.003	0.0197	0.001	<0.05	<0.0005	29.7	6.44
TDMW-2S	12/16/2013	<0.03	<0.003	0.0163	<0.001	0.24	<0.0005	35.1	7.74
TDMW-2S	3/28/2014	<0.03	<0.003	0.00402	<0.001	<0.05	<0.0005	11.2	2.15
TDMW-2S	5/20/2014	<0.03	<0.003	0.00174	<0.001	<0.05	<0.0005	3.8	0.6
TDMW-2S	10/8/2014	<0.03	<0.003	0.00182	<0.001	<0.05	<0.0005	4.46	0.52
TDMW-2S	12/18/2014	<0.03	<0.003	0.00117	<0.001	<0.05	<0.0005	3.51	0.27
TDMW-2S	3/12/2015	<0.03	<0.003	0.00186	<0.001	<0.05	<0.0005	4.3	0.66
TDMW-2S	5/21/2015	<0.03	<0.003	0.00111	<0.001	0.09	<0.0005	3.4	0.26 J+
TDMW-2S	10/8/2015	<0.03	<0.003	0.00331	<0.001	0.21 J-	<0.0005	8.34 J	0.88
TDMW-2S	12/17/2015	<0.03	<0.003	0.00337	<0.001	0.28	<0.0005	11.7	1.15
TDMW-2S	3/24/2016	<0.03	<0.003	0.00795	0.001	0.18	<0.0005	19.3	3.14
TDMW-2S	5/17/2016	<0.03	<0.003	0.046	0.006	<0.05	<0.0005	47.9	12.1
TDMW-2D	5/5/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	6/16/2011	<0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	9/22/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	12/14/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	3/29/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	5/9/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	10/4/2012	<0.03 UJ	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	12/13/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	3/28/2013	<0.03	<0.003	0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	5/25/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	9/14/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	12/16/2013	<0.03	<0.003	<0.00008	0.003	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	3/28/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	5/20/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	0.01
TDMW-2D	10/8/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-6	10/8/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	12/18/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	3/12/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	0.01
TDMW-2D	5/21/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-2D	10/8/2015	<0.03	<0.003	<0.00008	<0.001	<0.05 UJ	<0.0005	<0.005 UJ	<0.01
TDMW-2D	12/17/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	0.02
TDMW-2D	3/24/2016	<0.03	<0.003	0.00008	<0.001	<0.05	<0.0005	0.007	0.02
TDMW-2D	5/17/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.008	0.02 J
TDMW-3D	5/5/2011	<0.03	<0.003	0.00013	<0.001	<0.05	<0.0005	0.005	0.03
TDMW-3D	6/16/2011	<0.03	<0.003	0.00012	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	9/22/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	0.0005	0.006	<0.01
TDMW-3D	12/14/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-3D	3/29/2012	<0.03	<0.003	0.00011	<0.001	<0.05	<0.0005	<0.005	0.02
TDMW-3D	5/9/2012	<0.03	<0.003	0.00015	<0.001	<0.05	0.0015	0.011	0.05
TDMW-6	5/9/2012	<0.03	<0.003	0.00017	<0.001	<0.05	0.0025	0.021	0.05
TDMW-3D	10/4/2012	<0.03 UJ	<0.003	0.00016	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	12/12/2012	<0.03	<0.003	0.0002	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	3/27/2013	<0.03	<0.003	0.00022	<0.001	<0.05	<0.0005	<0.005	0.06
TDMW-3D	5/25/2013	<0.03	<0.003	0.0001	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	9/14/2013	<0.03	<0.003	0.00013	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	12/16/2013	<0.03	<0.003	0.00027	<0.001	<0.05	<0.0005	<0.005	0.06
TDMW-3D	3/28/2014	<0.03	<0.003	0.00018	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	5/20/2014	<0.03	<0.003	0.00009	<0.001	<0.05	<0.0005	<0.005	0.02
TDMW-3D	10/8/2014	<0.03	<0.003	0.00016	<0.001	<0.05	<0.0005	<0.005	0.04 J+
TDMW-3D	12/18/2014	<0.03	<0.003	0.0002	<0.001	<0.05	<0.0005	<0.005	0.05
TDMW-3D	3/12/2015	<0.03	<0.003	0.00012	<0.001	<0.05	<0.0005	<0.005	0.03
TDMW-3D	5/21/2015	<0.03	<0.003	0.00013	<0.001	<0.05	<0.0005	<0.005	0.04 J+
TDMW-3D	10/7/2015	<0.03	<0.003	0.00017	<0.001	<0.05 UJ	<0.0005	<0.005 UJ	0.03 J+
TDMW-3D	12/17/2015	<0.03	<0.003	0.00011	<0.001	<0.05	<0.0005	<0.005	0.02
TDMW-3D	3/23/2016	<0.03	<0.003	0.00021	<0.001	<0.05	<0.0005	<0.005	0.06
TDMW-3D	5/17/2016	<0.03	<0.003	0.0004	<0.001	<0.05	<0.0005	<0.005	0.12 J
TDMW-4D	5/4/2011	0.04	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-6	5/4/2011	0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	6/16/2011	0.04	<0.003	<0.00008	0.001	<0.05	<0.0005	0.005	<0.01
TDMW-6	6/16/2011	0.05	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	9/22/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.012	<0.01
TDMW-6	9/22/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.009	<0.01
TDMW-4D	12/14/2011	0.83	<0.003	0.00031	0.042	1.15	0.0097	0.253	0.02
TDMW-6	12/14/2011	0.83	<0.003	0.00029	0.042	1.25	0.0097	0.27	0.02
TDMW-4D	3/29/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-6	3/29/2012	<0.03 UJ	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	5/9/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	10/4/2012	0.03 J	<0.003	0.00013	<0.001	<0.05	<0.0005	0.045	<0.01
TDMW-6	10/4/2012	0.04 J	<0.003	0.00013	<0.001	<0.05	<0.0005	0.045	<0.01
TDMW-4D	12/12/2012	0.03	<0.003	<0.00008	0.013	<0.05	<0.0005	<0.005	<0.01
TDMW-6	12/12/2012	0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	3/27/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	5/25/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-4D	9/14/2013	<0.03	<0.0						

Table 36. UBMC Groundwater, Historical Compilation (dissolved metals, mg/L)
Page 3 of 3

UBMC / Mike Horse Area Groundwater (dissolved metals, mg/L)									
Sample ID	Collection Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard	20 ^{**}	0.01 [*]	0.005 ⁺	1.3 ⁺	14 ^{**}	0.015 ⁺	0.94 ^{**}	2 ⁺
	Standards (Edit Mine Area)	20 ^{**}	0.01 [*]	0.005 ⁺	1.3 ⁺	27.8 ^{***}	0.015 ⁺	3.03 ^{***}	2 ⁺
TDMW-5	3/12/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-5	5/21/2015	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	0.01 J+
TDMW-5	10/7/2015	<0.03	<0.003	<0.00008	<0.001	<0.05 UJ	<0.0005	<0.005 UJ	<0.01
TDMW-5	12/17/2015	0.03	<0.003	<0.00008	<0.001	0.08	<0.0005	0.006	<0.01
TDMW-5	3/23/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-5	5/17/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01 UJ
TP-2	3/27/2015	<0.03	<0.003	<0.00008	0.003 UJ	<0.05	<0.0005	<0.005	0.01
TP-2	5/22/2015	<0.03	<0.003	<0.00008	0.001	<0.05	0.0005	<0.005	<0.01
TP-4	3/27/2015	4.47	<0.003	0.208	12.6 UJ	<0.05	0.714	6.44	32.7
TP-4	5/22/2015	0.45	<0.003	0.0865	3.63	<0.05	0.247	2.17	16
UMHMMW-2S	4/26/2017	43.8	0.003	0.368	21.5	<0.05	1.12	25.8	44.3
UMHMMW-2D	4/26/2017	<0.03	0.004	0.126	0.02	5.82	0.0026	16.3	29.3
UMHMMW-3	4/26/2017	0.21	<0.003	<0.00008	0.002	0.1	0.0007	<0.005	0.01
UMHMMW-3	5/31/2018	0.18	<0.003	<0.00008	0.002	<0.05	<0.0005	<0.005	<0.01
UMHMMW-3	6/2/2019	0.22	<0.003	0.00009	0.003	0.10	0.0009	<0.005	0.02 J+
UMHMMW-3	10/3/2019	<0.03	<0.003	0.00010	<0.001	<0.05	<0.0005	<0.005	0.02
UMHMMW-3	10/2/2020	<0.03	<0.003	0.00012	<0.001	<0.05	<0.0005	<0.005	0.03
MW-2018-01	6/5/2019	<0.03	<0.003	0.0202	0.004	<0.05	<0.0005	0.717	5.10
MW-2018-01	10/7/2019	<0.03	<0.003	0.00304	0.001	<0.05	<0.0005	<0.005	0.95
MW-2018-01	10/2/2020	<0.03	<0.003	0.00351	0.001	<0.05	<0.0005	<0.005	1.11
MW-2018-01	5/27/2021	<0.03	<0.003	0.0139	0.004	<0.05	<0.0005	0.078	4.84
MW-2018-01	9/23/2021	<0.03	<0.003	0.0031	0.001	<0.05	<0.0005	<0.005	0.92
MW-2018-01	5/24/2022	<0.03	<0.003	0.00358	<0.001	<0.05	<0.0005	<0.005	1.09
MW-2018-01	9/26/2022	<0.03	<0.003	0.00418	0.001	<0.05	<0.0005	<0.005	1.29
MW-2018-01	6/23/2023	<0.03	<0.003	0.00417	0.001	<0.05	<0.0005	<0.005	1.49
MW-2018-01	9/25/2023	<0.03	<0.003	0.00353	0.001	<0.05	<0.0005	<0.005	1.04
MW-2018-01	5/21/2024	<0.03	<0.003	0.00403	0.001	<0.05	<0.0005	<0.005	1.55
MW-2018-01	9/26/2024	<0.03	<0.003	0.00249	<0.001	<0.05	<0.0005	<0.005	0.75
MW-2018-03	6/5/2019	<0.03	<0.003	0.00032	0.003	<0.05	<0.0005	<0.005	0.06
MW-2018-03	10/7/2019	<0.03	<0.003	0.00042	0.001	<0.05	<0.0005	<0.005	0.08
MW-2018-03	10/2/2020	<0.03	<0.003	0.00035	<0.001	<0.05	<0.0005	<0.005	0.05
MW-2018-03	5/27/2021	<0.03	<0.003	0.00062	0.002	<0.05	<0.0005	<0.005	0.11
MW-2018-03	9/23/2021	<0.03	<0.003	0.0004	<0.001	<0.05	<0.0005	<0.005	0.06
MW-2018-03	5/24/2022	<0.03	<0.003	0.00027	<0.001	<0.05	<0.0005	<0.005	0.05
MW-2018-03	9/26/2022	<0.03	<0.003	0.00048	<0.001	<0.05	<0.0005	<0.005	0.06
MW-2018-03	6/23/2023	<0.03	<0.003	0.00036	0.001	<0.05	<0.0005	<0.005	0.06
MW-2018-03	9/25/2023	<0.03	<0.003	0.00046	0.001	<0.05	<0.0005	<0.005	0.07
MW-2018-03	5/21/2024	<0.03	<0.003	0.00029	0.002	<0.05	<0.0005	<0.005	0.05
MW-2018-03	9/26/2024	<0.03	<0.003	0.00032	<0.001	<0.05	<0.0005	<0.005	0.05
MW-2019-03	5/27/2021	0.09	<0.003	<0.00008	0.005	0.07	<0.0005	<0.005	<0.01
MW-2019-03	9/23/2021	<0.03	<0.003	0.00038	0.001	<0.05	<0.0005	<0.005	0.07
MW-2019-03	5/24/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MW-2019-03	9/26/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MW-2019-04	5/27/2021	<0.03	<0.003	0.00029	0.002	<0.05	<0.0005	<0.005	0.06
MW-2019-04	9/23/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
MW-2019-04	5/24/2022	<0.03	<0.003	0.0002	0.001	<0.05	<0.0005	<0.005	0.04
MW-2019-04	9/26/2022	<0.03	<0.003	0.00031	0.001	<0.05	<0.0005	<0.005	0.05
MW-2019-04	6/23/2023	<0.03	<0.003	0.00019	0.001	<0.05	<0.0005	<0.005	0.03
MW-2019-04	9/25/2023	<0.03	<0.003	0.00024	0.001	<0.05	<0.0005	<0.005	0.04
MW-2019-04	5/21/2024	<0.03	<0.003	0.00015	0.001	<0.05	<0.0005	<0.005	0.03
MW-2019-04	9/27/2024	<0.03	<0.003	0.00025	0.001 J+	<0.05	<0.0005	<0.005	0.04
MW-2019-05	5/27/2021	<0.03	<0.003	0.00063	0.002	<0.05	<0.0005	<0.005	0.12
MW-2019-05	9/23/2021	<0.03	<0.003	0.0011	0.001	<0.05	<0.0005	<0.005	0.16
MW-2019-05	5/25/2022	<0.03	<0.003	0.00038	0.001	<0.05	<0.0005	<0.005	0.07
MW-2019-05	9/26/2022	<0.03	<0.003	0.00109	0.001	<0.05	<0.0005	<0.005	0.14
MW-2019-05	6/23/2023	<0.03	<0.003	0.00056	0.001	<0.05	<0.0005	<0.005	0.09
MW-2019-05	9/25/2023	<0.03	<0.003	0.00079	0.001	<0.05	<0.0005	<0.005	0.11
MW-2019-05	5/21/2024	<0.03	<0.003	0.00039	0.002	<0.05	<0.0005	<0.005	0.07
MW-2019-05	9/27/2024	<0.03	<0.003	0.0011	0.001 J+	<0.05	<0.0005	<0.005	0.14

Note: < Indicates the concentration is less than the reporting limit
Exceeds standard
Groundwater standards are for dissolved metals only
*Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019, human health standard
**SSCL, Table 4A, Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex State Superfund Facility, Lewis and Clark County, Montanc, March 2016 (ROD)
***Edith (EU 5) SSCL based on background, Table 4A & Table 9, ROD
1 = Edith Mine Area grounwater monitoring well
2 = Field blank
3 = Equipment blank
---- = No standard
Duplicate sample
mg/L = milligrams per liter
J = validation flag denotes that the result is an estimate with high or low bias
J- = validation flag denotes that the result is an estimate with low bias
J+ = validation flag denotes the reported results are estimates with high bias
UJ = validation flag denotes the data is non-detect, and the reported concentration is an estimate due to low MSD recovery

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Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 1 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)				
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
EDP-1 ¹	6/8/2018	5.2 J-	278	70		<10	228	<4	<4	<4	<1	103	15	8	4	4
EDP-1 ¹	10/9/2018	5.3	276	80		<10	228	<4	<4	<4	<1	116	17	9	4	4
EDP-1 ¹	5/13/2019	5.4	276	78		<10	225	4	4	<4	<1	117	17	9	4	4
EDP-1 ¹	10/7/2019	5.7	273	92		<10	220	7	8	<4	<1	106	20	10	4	4
EDP-1 ¹	5/21/2020	4.3	278	80	26	92	220	<4	<4	<4	<1	114	17	9	4	4
EDP-1 ¹	10/3/2020	5.2 J-	267	83		<10	221	<4	<4	<4	<1	105	18	9	4	4
EDP-2 ¹	5/31/2018	4.2	469	118	91	<10	373	<4	<4	<4	<1	205	23	14	6	7
EDP-2 ¹	10/9/2018	4.3	474	115	95	<10	366	<4	<4	<4	<1	203	21	15	6	7
EDP-2 ¹	5/13/2019	4.2	475	113	91	<10	366	<4	<4	<4	<1	225	22	14	6	7
EDP-2 ¹	10/7/2019	4.2	483	114	93	<10	380	<4	<4	<4	<1	206	22	14	6	7
EDP-2 ¹	5/21/2020	4.2	481	115	89	<10	384	<4	<4	<4	<1	227	22	14	6	8
EDP-2 ¹	10/2/2020	4.3 J-	473	117	90	<10	378	<4	<4	<4	<1	207	23	15	6	7
LCMW-1	5/4/2017	6.9 J-	235	100		20	132	43	52	<4	6.7	59	22	11	<1	4
LCMW-1	10/5/2017	7 J-	269	114		98	154	49	59	<4	4	72	25	12	1	5
LCMW-1	5/31/2018	6.9	213	91		<10	140	43	52	<4	3	48	20	10	<1	4
LCMW-1	10/8/2018	6.9 J-	243	101		232	172	50	60	<4	2	62	22	11	1	5
LCMW-1	6/3/2019	6.8 J-	215	92		<10	134	41	49	<4	3	54	20	10	<1	4
LCMW-1	10/11/2019	6.9 J-	248	99		<10	142	49	60	<4	3	60	22	11	1	5
LCMW-1	10/3/2020	7 J-	217	94		<10	132	53	64	<4	2	49	20	10	1	4
MHMW-9	10/3/2020	7.1 J-	219	93		<10	134	54	65	<4	2	49	20	10	1	4
LCMW-1	5/28/2021	6.9 J-	210	90		<10	134	44	53	<4	2	52	19	10	<1	3
MHMW-9	5/28/2021	6.9 J-	211	90		<10	136	44	53	<4	2	50	19	10	<1	3
LCMW-1	9/24/2021	6.8 J-	235	98		<10	143	54	65	<4	2	50	22	11	1	4
MHMW-9	9/24/2021	6.8 J-	235	98		<10	137	52	63	<4	2	49	22	10	1	4
LCMW-1	5/25/2022	6.8 J-	214	88		<10	129	45	54	<4	2	54	20	9	<1	3
MHMW-9	5/25/2022	6.9 J-	214	89		<10	126	45	55	<4	2	54	20	10	<1	4
LCMW-1	9/27/2022	6.9 J-	228	102		<10	UJ	55	67	<4	2	59	23	11	1	4
MHMW-9	9/27/2022	6.9 J-	226	109		<10	UJ	57	68	<4	2	58	25	11	1	4
LCMW-1	6/23/2023	6.8 J-	217	93		<10	141	49	59	<4	2	51	20	10	1	4
MHMW-9	6/23/2023	7.0 J-	216	92		<10	133	49	59	<4	2	52	20	11	1	4
LCMW-1	9/25/2023	6.8 J-	235	95		<10	146	55	67	<4	1	60	21	11	1	5
MHMW-9	9/25/2023	6.8 J-	234	95		<10	144	55	66	<4	1	59	21	11	1	5
LCMW-1	5/22/2024	6.7 J-	217	89		<10	131	46	56	<4	2	53	19	10	<1	4
MHMW-9	5/22/2024	6.8 J-	217	89		<10	130	46	56	<4	2	53	19	10	<1	4
LCMW-1	10/1/2024	6.8 J-	302	97		<10	157	55	67	<4	1	53	21	10	1	4
MHMW-9	10/1/2024	6.8 J-	232	100		<10	147	56	67	<4	1	52	22	11	1	5
LCMW-5	5/4/2017	4.8 J-	776	328		<10	617	<4	<4	<4	5.6	400	88	26	2	10
LCMW-5	10/5/2017	4.6 J-	775	299		<10	601	<4	<4	<4	5	380	80	24	2	8
LCMW-5	5/31/2018	4.7	707	286		<10	558	<4	<4	<4	5	328	78	23	2	10
LCMW-5	10/9/2018	5.2 J-	779	333		<10	619	5	6	<4	2	370	88	27	3	8
LCMW-5	6/3/2019	4.7 J-	729	291		<10	547	<4	<4	<4	6	326	79	23	2	9
LCMW-5	10/12/2019	4.8 J-	723	281		<10	570	<4	<4	<4	4	322	75	22	3	9
LCMW-5	10/3/2020	4.8 J-	642	279		<10	525	<4	<4	<4	<1	306	73	23	2	6

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 2 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
LCMW-5	5/28/2021	4.3 J-	754	313	47	<10	587	<4	<4	<4	3	354	82	26	2	9
LCMW-5	9/24/2021	5.4 J-	704	297		<10	532	<4	4	<4	<1	302	79	24	2	7
LCMW-5	5/25/2022	4.7 J-	684	275		<10	533	<4	<4	<4	4	343	75	22	2	7
LCMW-5	9/26/2022	5.8 J-	641 J+	315		<10	518	8	9	<4	<1	326	84	26	2	6
LCMW-5	6/23/2023	4.6 J-	676	277	46	<10	522	<4	<4	<4	2	324	73	23	2	8
LCMW-5	9/25/2023	5.4 J-	711	282		<10	576	8	9	<4	1	367	74	24	2	8
LCMW-5	5/22/2024	5.0 J-	762	321		<10	610	<4	<4	<4	3	376	85	26	2	8
LCMW-5	10/1/2024	6.0 J-	710	306		11	541	14	17	<4	<1	325	80	26	3	6
MHMW-8	3/13/2015	6.2 J-	412	224		<10	341	37	45	<4	<1	197	57	20	1	3
MHMW-8	4/25/2017	7.3 J-	286	139		<10	170	84	100	<4	<1	56	39	10	<1	2
MHMW-9	4/25/2017	7.3 J-	286	138		<10	173	85	100	<4	<1	57	39	10	<1	2
MHMW-8	10/4/2017	7.3 J-	297	141		<10	193	88	110	<4	<1	57	40	10	<1	2
MHMW-9	10/4/2017	7.3 J-	297	143		<10	195	88	110	<4	<1	58	40	10	<1	2
MHMW-8	5/30/2018	7.6 J-	267	125		<10	158	84	100	<4	<1	41	36	9	<1	2
MHMW-9	5/30/2018	7.6 J-	266	124		<10	155	84	100	<4	<1	41	36	9	<1	2
MHMW-8	10/8/2018	7.6 J-	287	133		<10	180	86	100	<4	<1	52	38	9	<1	2
MHMW-9	10/8/2018	7.6 J-	289	135		<10	183	87	110	<4	<1	53	39	9	<1	2
MHMW-8	6/2/2019	7.5 J-	266	121		<10	164	83	100	<4	<1	49	35	8	<1	2
MHMW-9	6/2/2019	7.6 J-	266	121		<10	163	84	100	<4	<1	49	35	8	<1	2
MHMW-8	10/3/2019	7.3	289	131		<10	178	80	96	<4	<1	59	37	9	<1	2
MHMW-9	10/11/2019	6.9 J-	247	99		<10	145	50	60	<4	3	59	22	11	1	5
MHMW-8	10/2/2020	7.5 J-	269	123		<10	158	79	96	<4	<1	50 J-	35	9	<1	2
MHMW-8	5/27/2021	7.6 J-	256	128		<10	154	77	93	<4	<1	45	37	9	<1	2
MHMW-8	9/23/2021	7.5 J-	272	123		<10	162	82	100	<4	<1	45	35	8	<1	2
MHMW-10 ²	4/25/2017	5.7 J-	5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	10/4/2017	5.8 J-	3	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	5/30/2018	5.7 J-	4	1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	10/8/2018	5.6 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	6/2/2019	5.6 J-	5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	10/3/2019	5.5 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	10/2/2020	5.7 J-	4	<1		<10	<10	<4	<4	<4	<1	<1 UJ	<1	<1	<1	<1
MHMW-10 ²	5/27/2021	5.9 J	<5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	9/23/2021	5.6 J	<5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	5/24/2022	5.9 J-	<5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	9/27/2022	5.7 J-	7	<1		<10	<20	5	5	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	6/23/2023	5.9 J-	<5	<1	<20	<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	9/25/2023	6.4 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	5/22/2024	6.2 J-	5	<1		<20	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-10 ²	9/26/2024	6.0 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-11 ³	4/25/2017	5.6 J-	5	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-11 ³	10/4/2017	5.8 J-	3	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1
MHMW-11 ³	5/30/2018	5.6 J-	4	1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 3 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																	
Sample ID	Collection Date	Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)					
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium	
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MHMW-11 ³	10/8/2018	5.8 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1	
MHMW-11 ³	6/2/2019	5.6 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1	
MHMW-11 ³	10/3/2019	5.6 J-	6	<1		<10	<10	<4	<4	<4	<1	<1	<1	<1	<1	<1	
MHMW-11 ³	10/2/2020	5.7 J-	4	<1		<10	<10	<4	<4	<4	<1	<1	J-	<1	<1	<1	
MHMW-11 ³	5/26/2021	5.8 J	<5	<1		<10	<10	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	9/23/2021	6 J	<5	<1		<10	<10	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	5/24/2022	5.6 J-	<5	<1		<10	<10	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	9/26/2022	5.5 J-	7 J+	<1		<10	UJ	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	6/23/2023	6.1 J-	<5	<1	<20	<10	<20	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	9/25/2023	5.8 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	5/21/2024	6.9 J-	5	<1		<10	<20	<4	<4	<4	<1	<1		<1	<1	<1	
MHMW-11 ³	9/26/2024	6.0 J-	<5	<1		<10	<20	<4	<4	<4	<1	<1		<1	<1	<1	
MH300-WellB	4/26/2017	7.1 J-	162	66		<10	94	42	50	<4	<1	32	18	6	1	2	
MH300-WellB	10/4/2017	7.1 J-	384	188		<10	251	94	110	<4	<1	98	48	17	1	2	
MIGW-01	4/26/2017	7.8 J-	168	73		33	95	68	83	<4	<1	16	21	7	<1	1	
MIGW-01	10/4/2017	7.6 J-	170	81		<10	103	70	84	<4	<1	16	21	7	<1	1	
MIGW-01	5/30/2018	7.9 J-	168	77		<10	91	67	81	<4	<1	14	20	7	<1	1	
MIGW-01	10/8/2018	7.7 J-	176	79		62	114	71	86	<4	<1	16	20	7	<1	2	
TDMW-1	5/5/2011	6.8	482	247		<10	350	NA	NA	NA	<1	180	45	33	<1	2	
TDMW-1	6/16/2011	7.4	418	206		<10	286	NA	NA	NA	<1	170	38	27	<1	1	
TDMW-1	9/22/2011	7.5	717	438		<10	588	NA	NA	NA	<1	370	71	63	2	2	
TDMW-1	12/14/2011	6.9	640	320		<10	428	NA	NA	NA	<1	240	61	41	1	2	
TDMW-1	3/29/2012	6.5 J-	886 J	453		<10	602	67	82	<4	<1	380	80	62	1	2	
TDMW-1	5/9/2012	6.1 J-	576	263		<10	379	61	75	<4	<1	220	50	38	<1	1	
TDMW-1	10/4/2012	6.5 J-	550	276		<10	352	70	86	<4	<1	220	53	35	1	2	
TDMW-1	12/13/2012	6.4 J-	777	395		<10	580	62	76	<4	<1	350	74	51	1	2	
TDMW-1	3/28/2013	6.6 J-	719	359		<10	465	87	110	<4	<1	290	J+	66	47	1	2
TDMW-6	3/28/2013	6.6 J-	719	349		<10	470	87	110	<4	<1	290	J+	68	45	1	2
TDMW-1	5/25/2013	6.5 J-	668	350		<10	486	73	89	<4	<1	290		64	46	1	2
TDMW-6	5/25/2013	6.5 J-	671	366		<10	470	71	87	<4	<1	290		65	50	1	2
TDMW-1	9/14/2013	6.5 J-	654	328		<10	449	65	80	<4	<1	290		61	43	1	2
TDMW-6	9/14/2013	6.6 J-	652	327		<10	448	66	81	<4	<1	280		60	43	1	2
TDMW-1	12/16/2013	6.6 J-	675	336		<10	480	J-	93	<4	<1	300		68	49	1	2
TDMW-6	12/16/2013	6.7 J-	677	339		<10	476	J-	93	<4	<1	300		66	47	1	2
TDMW-1	3/28/2014	6.7 J-	758	412		<10	540	80	98	<4	<1	330		76	54	1	2
TDMW-6	3/28/2014	6.7 J-	759	412		<10	544	80	98	<4	<1	330		76	54	1	2
TDMW-1	5/20/2014	6.6 J-	353	157		<10	223	31	37	<4	<1	140	J+	26	22	<1	1
TDMW-6	5/20/2014	6.6 J-	354	157		<10	223	30	36	<4	<1	140	J+	26	23	<1	1
TDMW-1	10/8/2014	6.6 J-	867	461		<10	629	66	80	<4	2	420		83	61	1	2
TDMW-1	12/18/2014	6.6 J-	895	467		<10	663	63	76	<4	1	410		83	63	2	2
TDMW-6	12/18/2014	6.6 J-	895	462		<10	658	63	76	<4	1	410		82	62	2	2
TDMW-1	3/12/2015	6.6 J-	1030	557		<10	781	66	80	<4	<1	493		93	79	2	2
TDMW-6	3/12/2015	6.5 J-	1030	559		<10	787	67	81	<4	<1	495		93	79	2	2

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 4 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)				
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TDMW-1	5/21/2015	6.5 J-	600	306		<10	413	48	58	<4	<1	256	55	41	1	2
TDMW-6	5/21/2015	6.5 J-	601	310		<10	412	48	58	<4	<1	254	56	41	1	2
TDMW-1	10/8/2015	6.4 J-	780	401		<10	571	40	48	<4	11	347	73	53	1	2
TDMW-6	10/8/2015	6.4 J-	782	402		<10	568	40	48	<4	11	346	74	53	1	2
TDMW-1	12/17/2015	6.2 J-	793	410		<10	613	30	36	<4	16	364	75	54	1	2
TDMW-6	12/17/2015	6.2 J-	792	404		<10	611	31	37	<4	16	367	74	53	1	2
TDMW-1	3/24/2016	6 J-	1180	633		<10	1020	18	22	<4	14	620	116	83	1	2
TDMW-6	3/24/2016	6 J-	1190	626		<10	992	19	22	<4	15	624	115	82	1	2
TDMW-1	5/17/2016	5.9 J-	933	491		<10	756	16	19	<4	6	471	94	62	1	2
TDMW-6	5/17/2016	6 J-	932	491		<10	793	17	20	<4	6	473	94	62	1	2
TDMW-2S	5/5/2011	7.3	258	132		286	180	NA	NA	NA	<1	55	27	16	<1	1
TDMW-2S	6/16/2011	7.8	255	124		<10	148	NA	NA	NA	<1	53	25	15	<1	1
TDMW-2S	9/22/2011	7.8	406	238		<10	286	NA	NA	NA	<1	140	43	32	<1	2
TDMW-2S	12/14/2011	7.2	1060	681		12	1080	NA	NA	NA	1	1400	119	93	1	2
TDMW-2S	3/29/2012	6.5 J-	1400 J	732		42	1040	120	150	<4	<1	670	128	108	2	2
TDMW-2S	5/9/2012	6 J-	2610	1480		<10	2400	130	160	<4	<1	1500	243	230	2	2
TDMW-2S	10/4/2012	6.2 J-	1400	752		<10	1120	120	150	<4	<1	790	133	102	3	2
TDMW-2S	12/13/2012	6.3 J-	1800	977		14	1540	150	180	<4	<1	1000	192	143	3	2
TDMW-2S	3/28/2013	6.4 J-	1580	819		<10	1250	130	160	<4	<1	800 J+	153	109	3	2
TDMW-2S	5/25/2013	6.7 J-	610	306		<10	419	110	140	<4	<1	220	56	40	2	2
TDMW-2S	9/14/2013	6.4 J-	1000	541		12	778	110	140	<4	<1	480	98	59	2	2
TDMW-2S	12/16/2013	6.6 J-	887	395		<10	656 J-	100	130	<4	<1	420	84	54	2	2
TDMW-2S	3/28/2014	6.8 J-	504	249		<10	320	120	140	<4	<1	150	48	31	1	2
TDMW-2S	5/20/2014	7 J-	424	197		<10	257	100	130	<4	<1	110 J+	35	26	<1	2
TDMW-2S	10/8/2014	7.2 J-	460	221		<10	275	120	140	<4	<1	120	44	27	<1	2
TDMW-2S	12/18/2014	7.3 J-	435	207		<10	267	130	160	<4	<1	83	41	25	<1	2
TDMW-2S	3/12/2015	7.2 J-	452	212		<10	283	100	120	<4	<1	118	43	26	<1	2
TDMW-2S	5/21/2015	7.3 J-	425	215		<10	258	100	120	<4	<1	109	43	26	<1	2
TDMW-2S	10/8/2015	7.1 J-	849	453		<10	606	120	150	<4	<1	343	92	54	1	2
TDMW-2S	12/17/2015	7 J-	1640	1040		<10	1450	100	120	<4	2	931	201	130	1	3
TDMW-2S	3/24/2016	6.7 J-	2750	1890		<10	2890	77	93	<4	2	1920	375	230	2	3
TDMW-2S	5/17/2016	6.3 J-	1760	1010		<10	1610	74	89	<4	2	1010	150	155	3	2
TDMW-2D	5/5/2011	7.4	224	110		<10	141	NA	NA	NA	<1	33	23	13	<1	1
TDMW-2D	6/16/2011	8	209	106		<10	118	NA	NA	NA	<1	28	22	13	<1	1
TDMW-2D	9/22/2011	8	206	119		<10	124	NA	NA	NA	<1	23	23	15	<1	2
TDMW-2D	12/14/2011	7.4	260	128		<10	154	NA	NA	NA	<1	29	27	15	<1	1
TDMW-2D	3/29/2012	7.2 J-	261 J	126		<10	128	100	120	<4	<1	22	26	15	<1	1
TDMW-2D	5/9/2012	6.8 J-	280	126		<10	159	110	130	<4	<1	36	28	14	<1	1
TDMW-2D	10/4/2012	7 J-	255	125		<10	130	85	100	<4	<1	39	26	15	<1	1
TDMW-2D	12/13/2012	7 J-	348	167		<10	203	110	130	<4	<1	76	33	20	<1	2
TDMW-2D	3/28/2013	7.1 J-	312	149		<10	168	100	130	<4	<1	58 J+	29	19	<1	2
TDMW-2D	5/25/2013	7.1 J-	373	196		<10	237	91	110	<4	<1	100	39	24	<1	2
TDMW-2D	9/14/2013	7.2 J-	308	154		<10	182	100	120	<4	<1	70	36	18	<1	2
TDMW-2D	12/16/2013	7.3 J-	314	158		<10	189 J-	110	130	<4	<1	62	32	19	<1	2

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 5 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
		Physiochemical						Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Collection Date	pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TDMW-2D	3/28/2014	7.3 J-	298	154		<10	170	100	120	<4	<1	53	31	19	<1	2
TDMW-2D	5/20/2014	7.1 J-	415	193		<10	257	75	91	<4	<1	130 J+	36	25	<1	2
TDMW-2D	10/8/2014	7.3 J-	340	166		<10	199	94	110	<4	<1	73	34	19	<1	2
TDMW-6	10/8/2014	7.3 J-	341	163		<10	196	94	110	<4	<1	72	34	19	<1	2
TDMW-2D	12/18/2014	7.3 J-	346	168		<10	209	94	110	<4	<1	67	34	20	<1	2
TDMW-2D	3/12/2015	7.2 J-	441	235		<10	284	81	98	<4	<1	127	48	28	<1	2
TDMW-2D	5/21/2015	7.3 J-	377	194		<10	229	78	95	<4	<1	102	40	23	<1	2
TDMW-2D	10/8/2015	7.3 J-	321	161		<10	190	95	120	<4	<1	69	33	19	<1	1
TDMW-2D	12/17/2015	7.4 J-	313	279		<10	196	95	120	<4	<1	55	55	35	<1	2
TDMW-2D	3/24/2016	7.2 J-	404	201		<10	269	93	110	<4	<1	121	40	25	<1	1
TDMW-2D	5/17/2016	7.1 J-	490	249		<10	332	93	110	<4	<1	164	49	31	<1	2
TDMW-3D	5/5/2011	7.4	540	275		12	434	NA	NA	NA	<1	250	64	28	<1	2
TDMW-3D	6/16/2011	7.8	325	154		<10	218	NA	NA	NA	<1	110	36	16	<1	1
TDMW-3D	9/22/2011	7.9	230	116		<10	146	NA	NA	NA	<1	59	26	12	<1	2
TDMW-3D	12/14/2011	7.6	420	196		<10	256	NA	NA	NA	<1	140	47	19	<1	2
TDMW-3D	3/29/2012	7.4 J-	669 J	335		<10	430	58	71	<4	<1	260	80	33	<1	2
TDMW-3D	5/9/2012	5.8 J-	470	209		<10	316	45	54	<4	<1	180	52	22	<1	2
TDMW-6	5/9/2012	6.6 J-	471	212		<10	308	44	54	<4	<1	180	52	22	<1	2
TDMW-3D	10/4/2012	7.2 J-	586	294		<10	403	61	74	<4	<1	250	69	30	<1	2
TDMW-3D	12/12/2012	7.1 J-	717	360		<10	494	51	62	<4	<1	310	84	36	<1	2
TDMW-3D	3/27/2013	7 J-	891	451		<10	612	60	73	<4	<1	420 J+	108	47	<1	3
TDMW-3D	5/25/2013	7.1 J-	313	145		<10	199	42	52	<4	<1	110	35	14	<1	2
TDMW-3D	9/14/2013	7.3 J-	681	343		<10	452	61	75	<4	<1	300	79	36	<1	2
TDMW-3D	12/16/2013	7 J-	790	432		<10	583	51	63	<4	<1	390	102	43	1	2
TDMW-3D	3/28/2014	7.3 J-	576	291		<10	405	59	72	<4	<1	240	69	29	<1	2
TDMW-3D	5/20/2014	7.1 J-	260	109		<10	159	34	41	<4	<1	81 J+	23	12	<1	1
TDMW-3D	10/8/2014	7.3 J-	765	403		<10	538	48	58	<4	<1	370	96	39	<1	2
TDMW-3D	12/18/2014	7.2 J-	690	343		<10	501	44	53	<4	<1	300	81	34	<1	2
TDMW-3D	3/12/2015	7.3 J-	436	205		<10	286	44	53	<4	<1	153	49	20	<1	2
TDMW-3D	5/21/2015	7.3 J-	387	189		<10	252	38	46	<4	<1	143	45	19	<1	2
TDMW-3D	10/7/2015	7.4 J-	761	396		<10	554	54	65	<4	<1	342	93	40	<1	2
TDMW-3D	12/17/2015	7.6 J-	921	512		<10	722	64	77	<4	<1	447	121	51	<1	3
TDMW-3D	3/23/2016	7.3 J-	927	492		<10	737	52	63	<4	<1	456	118	48	<1	3
TDMW-3D	5/17/2016	7.1 J-	720	372		<10	609	42	51	<4	<1	332	87	38	<1	2
TDMW-4D	5/4/2011	7.5	221	101		32	139	NA	NA	NA	<1	37	21	12	<1	2
TDMW-4D	5/4/2011	7.6	214	102		30	149	NA	NA	NA	<1	37	21	12	<1	2
TDMW-4D	6/16/2011	8.2	249	87		60	152	NA	NA	NA	<1	27	17	11	<1	5
TDMW-4D	6/16/2011	8.2	244	86		60	156	NA	NA	NA	<1	26	17	11	<1	5
TDMW-4D	9/22/2011	8.3	289	143		58	174	NA	NA	NA	<1	26	25	19	<1	14
TDMW-4D	9/22/2011	8.3	290	138		40	166	NA	NA	NA	<1	27	24	19	<1	13
TDMW-4D	12/14/2011	8	320	135		56	172	NA	NA	NA	<1	26	25	17	<1	11
TDMW-4D	12/14/2011	8	320	135		56	184	NA	NA	NA	<1	26	25	17	<1	11
TDMW-4D	3/29/2012	7.4 J-	248 J	116		22	122	97	120	<4	<1	15	25	13	<1	2
TDMW-6	3/29/2012	7.4 J-	246 J	113		18	130	99	120	<4	<1	16	24	13	<1	2

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 6 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
		Physiochemical						Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Collection Date	pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TDMW-4D	5/9/2012	7.1 J-	192	76		<10	116	62	75	<4	<1	31	17	8	<1	3
TDMW-4D	10/4/2012	7.6 J-	333	141		169	171	150	180	<4	<1	27	25	19	<1	15
TDMW-6	10/4/2012	7.8 J-	331	142		154	170	150	180	<4	<1	27	26	19	<1	15
TDMW-4D	12/12/2012	7.7 J-	336	143		148	174	160	180	5	<1	33	26	19	<1	13
TDMW-6	12/12/2012	7.8 J-	336	147		151	179	150	180	5	<1	33	26	20	<1	14
TDMW-4D	3/27/2013	7.9 J-	359	154		73	171	160	180	<4	<1	37 J+	28	21	<1	15
TDMW-4D	5/25/2013	7.4 J-	176	80		<10	109	50	62	<4	<1	36	18	8	<1	2
TDMW-4D	9/14/2013	7.9 J-	342	147		67	172	160	180	<4	<1	45	28	20	<1	14
TDMW-4D	12/16/2013	7.9 J-	322	147		118	168 J-	150	180	<4	<1	35	26	20	<1	13
TDMW-4D	3/28/2014	7.9 J-	312	142		34	169	140	170	<4	<1	33	26	19	<1	14
TDMW-4D	5/20/2014	7.3 J-	101	42		<10	58	32	39	<4	<1	12 J+	9	5	<1	1
TDMW-4D	10/8/2014	8 J-	346	146		111	185	150	180	<4	<1	33	26	20	<1	15
TDMW-4D	12/18/2014	8 J-	343	142		18	195	140	170	<4	<1	30	26	19	<1	14
TDMW-4D	3/12/2015	7.6 J-	191	84		<10	111	43	52	<4	<1	37	19	9	<1	2
TDMW-4D	5/21/2015	7.4 J-	137	60		<10	81	29	35	<4	<1	28	14	6	<1	2
TDMW-4D	10/7/2015	7.9 J-	277	120		<10	156	110	130	<4	<1	34	23	15	<1	7
TDMW-4D	12/17/2015	7.8 J-	280	124		<10	173	120	140	<4	<1	24	25	15	<1	6
TDMW-4D	3/23/2016	8 J-	328	132		31	193	140	170	<4	<1	37	24	19	<1	12
TDMW-4D	5/17/2016	7.4 J-	152	72		<10	98	56	68	<4	<1	18	16	8	<1	1
TDMW-5	5/5/2011	8.2	247	120		18	163	NA	NA	NA	<1	47	26	14	<1	2
TDMW-5	6/16/2011	7.7	208	95		14	132	NA	NA	NA	<1	65	24	9	<1	2
TDMW-5	9/22/2011	8.2	285	155		<10	182	NA	NA	NA	<1	46	35	17	<1	3
TDMW-5	12/14/2011	8	280	132		14	158	NA	NA	NA	<1	46	29	14	<1	2
TDMW-5	3/29/2012	8 J-	289 J	137		<10	146	90	110	<4	<1	33	29	16	<1	2
TDMW-5	5/9/2012	7.6 J-	183	74		<10	114	40	49	<4	<1	43	20	6	<1	1
TDMW-5	10/4/2012	7.7 J-	307	154		18	168	130	150	<4	<1	44	35	16	<1	2
TDMW-5	12/12/2012	7.8 J-	273	131		<10	144	97	110	<4	<1	48	29	14	<1	2
TDMW-5	3/27/2013	7.9 J-	281	134		<10	139	95	110	<4	<1	51 J+	28	15	<1	2
TDMW-5	5/25/2013	7.8 J-	217	99		35	136	51	62	<4	<1	53	25	9	<1	2
TDMW-5	9/14/2013	7.9 J-	316	149		<10	175	100	120	<4	<1	70	38	15	<1	3
TDMW-5	12/15/2013	8 J-	285	143		<10	161 J-	100	130	<4	<1	49	33	15	<1	2
TDMW-5	3/28/2014	8 J-	258	128		<10	136	99	120	<4	<1	40	27	14	<1	2
TDMW-5	5/20/2014	7.3 J-	115	45		37	69	25	29	<4	<1	23 J+	11	4	<1	1
TDMW-5	10/8/2014	7.9 J-	292	137		<10	172	83	100	<4	<1	57	33	13	<1	2
TDMW-5	12/18/2014	8 J-	300	143		<10	186	94	110	<4	<1	47	32	15	<1	2
TDMW-5	3/12/2015	8.2 J-	241	108		16	147	45	54	<4	<1	57	26	10	<1	2
TDMW-5	5/21/2015	7.4 J-	196	86		13	119	27	33	<4	<1	55	22	8	<1	2
TDMW-5	10/7/2015	8 J-	309	151		10	183	100	130	<4	<1	54	35	15	<1	2
TDMW-5	12/17/2015	8 J-	315	157		15	196	110	130	<4	<1	43	36	16	<1	2
TDMW-5	3/23/2016	8 J-	256	123		<10	152	87	110	<4	<1	44	27	14	<1	2
TDMW-5	5/17/2016	7.8 J-	199	89		14	140	39	47	<4	<1	56	22	8	<1	2
TP-2	3/27/2015	7.5 J-	181	85		<10	96	81	99	<4	<1 UJ	8	20	9	<1	<1
TP-2	5/22/2015	7.5 J-	166	88		<10	92	77	94	<4	<1	6	20	9	<1	<1
TP-4	3/27/2015	5.1 J-	833	367		<10	678	<4	<4	<4	<1 UJ	447	93	35	2	1

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 7 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)				
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TP-4	5/22/2015	6.7 J-	507	233		<10	341	39	47	<4	<1	208	58	21	<1	1
UMHMW-2S	4/26/2017	4.1 J-	1490	546		<10	1500	<4	<4	<4	<1	930	136	61	2	2
UMHMW-2D	4/26/2017	6.6 J-	1310	673		11	1110	64	77	<4	1.1	690	161	66	2	3
UMHMW-3	4/26/2017	7.8 J-	228	101		15	139	83	100	<4	<1	28	32	5	<1	4
UMHMW-3	5/31/2018	7.6	153	63		<10	109	50	60	<4	<1	19	20	3	<1	2
UMHMW-3	6/2/2019	7.6 J-	123	44		<10	90	39	47	<4	<1	17	14	2	<1	2
UMHMW-3	10/3/2019	7.1	159	68		<10	101	54	65	<4	<1	22	21	4	1	3
UMHMW-3	10/2/2020	7.2 J-	165	70		<10	105	56	68	<4	<1	23 J-	22	4	1	3
EDMW-2 ¹	5/13/2019	6.5	167	63		<10	110	27	32	<4	<1	47	14	7	<1	3
EDMW-2 ¹	10/11/2019	6.6 J-	197	79		<10	115	32	39	<4	1	51	18	8	<1	3
EDMW-2 ¹	6/2/2020	6.4	174			<10	101	31	37	<4	<1	47	16	7	<1	2
EDMW-2 ¹	10/3/2020	6.6 J-	174	72		<10	109	38	46	<4	<1	43 J-	16	8	<1	3
EDGW-105 ¹	5/13/2019	4.1	262	49	51	66	195	<4	<4	<4	<1	105	10	6	4	3
EDGW-105 ¹	10/10/2019	4 J-	264	49	51	12	179	<4	<4	<4	<1	102	10	6	4	3
EDGW-105 ¹	6/2/2020	4	257	49	48	<10	186	<4	<4	<4	<1	97	10	6	4	4
EDGW-105 ¹	10/3/2020	4 J-	261	49	46	<10	187	<4	<4	<4	<1	93 J-	9	6	4	3
MW-2018-01	6/5/2019	6.3	854	479		<10	649	18	22	<4	1	423	90	62	1	2
MW-2018-01	10/7/2019	6.4	775	397		<10	575	37	44	<4	1	333	77	50	1	2
MW-2018-01	10/2/2020	6.6 J-	686	346		<10	498	27	32	<4	<1	300 J-	65	45	1	2
MW-2018-01	5/27/2021	6.5 J-	916	532		<10	712	17	20	<4	<1	452	102	67	1	2
MW-2018-01	9/23/2021	6.4 J-	684	341		<10	487	31	37	<4	<1	275	65	43	1	2
MW-2018-01	5/24/2022	6.7 J-	778	403		<10	578	33	40	<4	<1	376	80	49	1	2
MW-2018-01	9/26/2022	6.4 J-	676 J+	378		<10	505	28	33	<4	<1	336	73	47	1	2
MW-2018-01	6/23/2023	6.6 J-	832	431		<10	614	26	31	<4	<1	404	84	54	1	2
MW-2018-01	9/25/2023	6.4 J-	698	338		<10	504	29	34	<4	<1	343	63	44	1	2
MW-2018-01	5/21/2024	6.6 J-	744	379		<10	548	21	25	<4	<1	361	73	48	1	2
MW-2018-01	9/26/2024	6.6 J-	626	327		<10	453	37	45	<4	<1	271	63	41	<1	2
MW-2018-03	6/5/2019	7.1	249	119		<10	149	71	86	<4	<1	50	25	13	1	2
MW-2018-03	10/7/2019	7.2	357	170		<10	223	85	100	<4	<1	87	36	19	1	2
MW-2018-03	10/2/2020	7.5 J-	263	126		<10	152	96	120	<4	<1	37 J-	26	15	<1	1
MW-2018-03	5/27/2021	7.2 J-	406	196		<10	264	42	51	<4	<1	150	40	23	<1	2
MW-2018-03	9/23/2021	7.2 J-	283	135		<10	159	100	120	<4	<1	37	29	15	<1	1
MW-2018-03	5/24/2022	7.3 J-	236	110		<10	131	73	89	<4	<1	47	23	13	<1	1
MW-2018-03	9/26/2022	7.3 J-	297 J+	156		<10	181	100	120	<4	<1	57	33	18	<1	2
MW-2018-03	6/23/2023	7.2 J-	249	119		<10	138	82	100	<4	<1	43	25	14	<1	1
MW-2018-03	9/25/2023	7.1 J-	320	141		<10	192	96	120	<4	<1	68	29	17	<1	2
MW-2018-03	5/21/2024	7.2 J-	242	116		12	145	74	90	<4	<1	45	24	14	<1	1
MW-2018-03	9/26/2024	7.4 J-	268	135		<10	158	110	130	<4	<1	32	28	16	<1	1
MW-2019-03	5/27/2021	7.6 J-	152	68		<10	109	44	53	<4	5	19	15	8	<1	1
MW-2019-03	9/23/2021	7.3 J-	261	124		<10	153	100	120	<4	<1	28	29	13	<1	1
MW-2019-03	5/24/2022	7.8 J-	181	87		<10	107	78	95	<4	<1	15	19	10	<1	1
MW-2019-03	9/26/2022	7.7 J-	239 J+	128		<10	131	100	130	<4	<1	25	28	14	<1	1
MW-2019-04	5/27/2021	7.3 J-	188	89		<10	110	61	74	<4	2	27	20	10	<1	1

Table 37. UBMC Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 8 of 8

UBMC / Mike Horse Area Groundwater Physiochemical, Anions, and Cations																
Sample ID	Collection Date	Physiochemical						Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
		pH*	Conductivity, umhos/cm	Hardness	Acidity	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MW-2019-04	9/23/2021	7.6 J-	255	123		<10	148	100	130	<4	<1	21	27	13	<1	1
MW-2019-04	5/24/2022	7.5 J-	167	80		<10	92	68	82	<4	<1	16	18	9	<1	1
MW-2019-04	9/26/2022	7.4 J-	232 J+	125		<10	UJ	98	120	<4	<1	26	28	13	<1	1
MW-2019-04	6/23/2023	7.4 J-	188	90		<10	104	80	97	<4	<1	15	20	10	<1	1
MW-2019-04	9/25/2023	7.3 J-	237	109		<10	129	90	110	<4	<1	25	24	12	<1	2
MW-2019-04	5/21/2024	7.4 J-	178	85		<10	107	71	86	<4	<1	16	18	9	<1	1
MW-2019-04	9/27/2024	7.4 J-	246	127		<10	141	100	130	<4	<1	23	28	14	<1	2
MW-2019-05	5/27/2021	7.5 J-	186	85		<10	108	64	78	<4	<1	27	19	9	1	2
MW-2019-05	9/23/2021	7.4 J-	365	160		<10	235	94	110	<4	<1	78	37	16	2	7
MW-2019-05	5/25/2022	7.6 J-	171	78		<10	96	67	81	<4	<1	19	18	8	1	2
MW-2019-05	9/26/2022	7.5 J-	362 J+	159		<10	UJ	97	120	<4	5	72	37	16	2	8
MW-2019-05	6/23/2023	7.5 J-	239	108		<10	138	78	94	<4	<1	41	24	12	1	4
MW-2019-05	9/25/2023	7.4 J-	320	135		<10	189	89	110	<4	<1	72	30	15	1	9
MW-2019-05	5/21/2024	7.5 J-	180	83		13	112	69	83	<4	<1	20	18	9	<1	2
MW-2019-05	9/27/2024	7.4 J-	418	191		<10	267	96	120	<4	<1	113	42	21	1	11

Note: < Indicates the concentration is less than the reporting limit
Exceeds standard
*B-1 Classification Standards ARM 17.30.623(2)(c)
---- No standard
Duplicate Sample
mg/L = milligrams per liter
umhos/cm = micromhos/centimeter
J = validation flag denotes that the result is an estimate with high or low bias
J- = validation flag denotes that the result is an estimate with low bias
J+ = validation flag denotes the reported results are estimates with high bias
UJ = validation flag denotes the data is non-detect, and the reported concentration is an estimate due to low MSD recovery
1 = Edith Mine Area grounwater monitoring well
2 = Field blank
3 = Equipment blank

Table 38. Repository Area Groundwater, Historical Compilation (dissolved metals, mg/L)
Page 1 of 3

Section 35 Groundwater (dissolved metals, mg/L)									
Collection		Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
Sample ID	Date								
	Standard*	----/20**	0.01	0.005	1.3	----/14**	0.015	----/0.94**	2
S35-MW-01	5/1/2011	<0.03	<0.003	<0.00009	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	6/16/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	9/21/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	12/12/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	3/30/2012	0.04	<0.003	<0.00008	0.002	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	5/10/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	10/5/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	12/13/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	3/28/2013	1.31	<0.003	<0.00008	0.002	0.84	0.0008	0.015	<0.01
S35-MW-01	5/26/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	9/15/2013	0.09	J	<0.003	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	12/17/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	3/28/2014	4.14	<0.003	<0.00008	0.005	2.66	0.0018	0.03	0.02
S35-MW-01	5/20/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	10/9/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	12/19/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	3/11/2015	6.21	<0.003	<0.00008	0.006	3.52	0.0019	0.032	0.02
S35-MW-01	5/20/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	10/9/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	12/18/2015	0.03	J+	<0.003	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	4/24/2017	0.1		<0.003	<0.001	0.06	<0.0005	<0.005	<0.01
S35-MW-01	10/6/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	6/8/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	10/13/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	6/4/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	10/13/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	10/5/2020	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	5/26/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	9/25/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	5/23/2022	5.07	<0.003	<0.00008	0.005	2.29	0.0017	0.02	<0.01
S35-MW-01	9/27/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	6/24/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	9/26/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-01	6/14/2024	0.16	<0.003	<0.00008	0.002	0.1	<0.0005	0.007	<0.01
S35-MW-01	9/24/2024	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-02	4/30/2011	<0.03	<0.003	<0.00008	0.003	<0.05	<0.0005	<0.005	0.02
S35-MW-02	6/17/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-02	9/21/2011	0.03	<0.003	0.00055	0.008	0.06	<0.0005	0.022	<0.01
S35-MW-02	5/10/2012	<0.03	<0.003	0.00046	0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-02	10/5/2012	<0.03	<0.003	0.00015	0.001	<0.05	<0.0005	0.009	<0.01
S35-MW-02	5/21/2014	0.11	<0.003	0.00024	<0.001	<0.05	<0.0005	0.007	<0.01
S35-MW-03	5/1/2011	<0.03	<0.003	<0.00009	0.001	<0.05	<0.0005	0.188	<0.01
S35-MW-03	6/16/2011	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.066	<0.01
S35-MW-03	9/21/2011	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.014	<0.01
S35-MW-03	12/12/2011	0.07	<0.003	<0.00008	<0.001	0.05	<0.0005	0.007	<0.01
S35-MW-03	3/28/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/10/2012	0.1	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/5/2012	0.06	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/13/2012	0.05	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	3/28/2013	0.12	<0.003	<0.00008	<0.001	0.08	<0.0005	<0.005	<0.01
S35-MW-03	5/26/2013	<0.03	<0.003	0.00012	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	9/15/2013	0.09	<0.003	0.00016	<0.001	<0.05	<0.0005	0.035	<0.01
S35-MW-03	12/16/2013	0.12	<0.003	<0.00008	<0.001	0.08	<0.0005	0.013	<0.01
S35-MW-03	3/28/2014	0.11	<0.003	<0.00008	<0.001	0.06	<0.0005	0.008	<0.01
S35-MW-03	5/20/2014	0.13	<0.003	0.00009	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/9/2014	0.07	<0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/19/2014	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	3/12/2015	6.1	0.005	0.0001	0.009	5.07	0.005	0.159	0.03
S35-MW-03	5/20/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/8/2015	0.51	0.003	U	0.001	U	<0.0005	0.011	<0.01
S35-MW-03	12/18/2015	0.2	<0.003	<0.00008	<0.001	0.12	<0.0005	0.006	<0.01
S35-MW-03	3/24/2016	0.1	0.003	<0.00008	<0.001	0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/18/2016	0.04	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/19/2016	0.09	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-6	10/19/2016	0.08	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/23/2016	0.03	J+	0.003	<0.001	<0.05	<0.0005	<0.005	<0.01
TDMW-6	12/23/2016	0.03	J+	0.003	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	3/23/2017	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	4/24/2017	0.06	0.004	0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/6/2017	0.05	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/18/2017	<0.03	0.003	0.00013	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	4/19/2018	0.15	0.004	<0.00008	<0.001	0.06	<0.0005	0.009	<0.01
S35-MW-03	6/8/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/9/2018	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/28/2018	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/6/2019	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	6/3/2019	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/13/2019	0.26	0.003	<0.00008	<0.001	<0.05	<0.0005	0.006	<0.01
S35-MW-03	12/20/2019	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/22/2020	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	10/6/2020	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/18/2020	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	4/21/2021	0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/26/2021	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	9/25/2021	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01

Table 38. Repository Area Groundwater, Historical Compilation (dissolved metals, mg/L)
Page 2 of 3

Section 35 Groundwater (dissolved metals, mg/L)									
Collection									
Sample ID	Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	----/20**	0.01	0.005	1.3	----/14**	0.015	----/0.94**	2
S35-MW-03	12/21/2021	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	4/28/2022	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/23/2022	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	9/27/2022	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/29/2022	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	6/24/2023	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	9/26/2023	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/14/2023	<0.03	0.004	<0.00008	0.006	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	4/9/2024	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	5/21/2024	<0.03	0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	9/24/2024	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-03	12/18/2024	<0.03	0.004	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/1/2011	0.11	<0.003	<0.00009	0.001	0.11	<0.0005	0.059	<0.01
S35-MW-04	6/16/2011	0.07	<0.003	<0.00008	0.001	0.05	<0.0005	0.023	<0.01
S35-MW-04	9/21/2011	0.24	<0.003	0.00022	<0.001	0.27	0.0006	0.05	<0.01
S35-MW-04	12/13/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.009	<0.01
S35-MW-04	3/28/2012	0.05	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/10/2012	<0.03	<0.003	<0.00008	0.002	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	10/5/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	12/13/2012	0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/26/2013	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	9/15/2013	0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/21/2014	<0.03	<0.003	0.0001	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	10/9/2014	0.08	<0.003	0.00048	<0.001	<0.05	<0.0005	0.005	<0.01
S35-MW-04	12/19/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	3/11/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/20/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	10/8/2015	7.47	0.005	0.00015	U 0.007	5.94	0.0049	0.153	0.03
S35-MW-04	12/18/2015	1.9	<0.003	<0.00008	J+ 0.002	1.69	0.0013	0.034	<0.01
S35-MW-04	5/18/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	4/24/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	10/6/2017	0.17	<0.003	0.00015	<0.001	0.13	<0.0005	0.008	<0.01
S35-MW-04	6/8/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	10/10/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	6/4/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	10/5/2020	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/26/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	9/25/2021	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.033	<0.01
S35-MW-04	5/24/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	9/27/2022	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.02	<0.01
S35-MW-04	6/24/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	9/26/2023	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-04	5/21/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
S35-MW-04	9/24/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
S35-MW-05	6/17/2011	1.16	<0.003	0.00012	0.004	0.59	0.0012	0.039	0.01
S35-MW-06	5/1/2011	<0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	6/17/2011	<0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	0.005	<0.01
S35-MW-06	9/21/2011	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	12/13/2011	<0.03	<0.003	<0.00008	0.002	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	3/28/2012	<0.03	<0.003	<0.00008	0.002	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	5/10/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/5/2012	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	12/14/2012	<0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	3/28/2013	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.156	<0.01
S35-MW-06	5/26/2013	<0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	9/15/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.048	<0.01
S35-MW-06	12/17/2013	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	0.008	<0.01
S35-MW-06	3/29/2014	0.18	<0.003	<0.00008	0.001	0.19	<0.0005	0.025	<0.01
S35-MW-06	5/21/2014	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/9/2014	0.04	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	12/19/2014	<0.03	<0.003	<0.00008	0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	3/11/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	5/21/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/8/2015	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	12/18/2015	0.16	<0.003	<0.00008	0.001	0.22	<0.0005	0.01	<0.01
S35-MW-06	3/25/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	5/18/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/20/2016	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S25-MW-06	4/24/2017	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/6/2017	0.07	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	6/8/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/10/2018	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	6/4/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/13/2019	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01
S35-MW-06	10/5/2020	<0.03	<0.003	<0.00008	<0.001	<0.05	<0.0005	<0.005	<0.01

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019, human health standard

---- = No Circular DEQ-7 human health standard for aluminum, iron, and manganese

**SSCL, Table 4A, Record of Decision, Final Cleanup for the Upper Blackfoot Mining Complex State Superfund Facility, Lewis and Clark County, Montana, March 2016 (ROD)

Groundwater standards are for dissolved metals only

mg/L = milligrams per liter

J- = validation flag denotes the reported results are estimates with a low bias

Table 38. Repository Area Groundwater, Historical Compilation (dissolved metals, mg/L)
Page 3 of 3

Section 35 Groundwater (dissolved metals, mg/L)									
Collection									
Sample ID	Date	Aluminum	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	Standard*	----/20**	0.01	0.005	1.3	----/14**	0.015	----/0.94**	2

J+ = validation flag denotes that the result is an estimate with high bias
UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery
U = validation flag denotes the reported result is a false positive/non-detect

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Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 1 of 5

Section 35 Groundwater (physiochemical, anions, and cations)															
Collection		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
Standard		6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-MW-01	5/1/2011	8.1	282	153	12	122	150	190	<4	<1	7	33	17	2	3
S35-MW-01	6/16/2011	8.2	271	151	<10	150	150	190	<4	<1	6	32	17	1	2
S35-MW-01	9/21/2011	8.1	256	140	<10	158	160	200	<4	<1	6	30	16	1	2
S35-MW-01	12/12/2011	8.2	279	147	<10	164	150	180	<4	<1	6	31	17	1	2
S35-MW-01	3/30/2012	7.4 J-	296 J	159	64	174	150	190	<4	<1	5	34	<0.005	1	2
S35-MW-01	5/10/2012	7.2 J-	302	148	<10	168	160	200	<4	<1	7	33	18	1	2
S35-MW-01	10/5/2012	7.5 J-	294	153	<10	157	160	190	<4	<1	6	32	18	1	2
S35-MW-01	12/13/2012	7.4 J-	295	148	<10	141	160	190	<4	<1	8	32	17	1	2
S35-MW-01	3/28/2013	7 J-	153	76	18	215	72	88	<4	<1	3	17	8	1	1
S35-MW-01	5/26/2013	7.6 J-	292	150	<10	162	150	190	<4	<1	8	30	18	1	2
S35-MW-01	9/15/2013	7.7 J-	301	149	<10	157	160	190	<4	<1	8	31	17	1	2
S35-MW-01	12/17/2013	7.7 J-	296	154	<10	160	160	200	<4	1	9	32	18	1	3
S35-MW-01	3/28/2014	6.9 J-	104	55	25	189	53	65	<4	<1	1	13	5	2	1
S35-MW-01	5/20/2014	7.7 J-	312	152	<10	165	150	190	<4	<1	7	30	19	1	3
S35-MW-01	10/9/2014	7.7 J-	297	146	<10	166	150	180	<4	<1	6	32	16	1	3
S35-MW-01	12/19/2014	7.7 J-	302	147	<10	167	150	180	<4	<1	6	32	17	1	2
S35-MW-01	3/11/2015	7.2	140	71	16	272	67	81	<4	<1	2	15	8	2	1
S35-MW-01	5/20/2015	7.8 J-	307	164	<10	168	160	190	<4	<1	6	35	19	1	3
S35-MW-01	10/9/2015	7.8 J-	306	149	<10	170	150	180	<4	<1	9	32	17	1	2
S35-MW-01	12/18/2015	7.7 J-	300	153	<10	166	160	190	<4	<1	6	32	17	1	2
S35-MW-01	4/24/2017	7.4	195	95	<10	125	94	110	<4	<1	4.4	22	10	1	2
S35-MW-01	10/6/2017	7.7 J-	299	152	<10	173	150	180	<4	<1	8	33	17	1	2
S35-MW-01	6/8/2018	7.8 J-	302	137	<10	165	150	180	<4	<1	7	29	15	1	2
S35-MW-01	10/13/2018	7.7 J-	299	137	<10	161	150	180	<4	<1	8	29	16	1	2
S35-MW-01	6/4/2019	7.7 J-	301	156	<10	165	150	180	<4	<1	8	34	17	1	2
S35-MW-01	10/13/2019	7.7	301	153	<10	152	150	190	<4	<1	8	33	17	1	2
S35-MW-01	10/5/2020	7.8 J-	293	150	<10	167	150	190	<4	<1	8 J-	31	17	1	2
S35-MW-01	5/26/2021	7.6 J-	272	141	<10	155	130	160	<4	<1	7	31	16	1	2
S35-MW-01	9/25/2021	7.7	305	155	<10	175	150	180	<4	<1	7	33	17	1	2
S35-MW-01	5/23/2022	6.8 J-	82	43	<10	260	37	44	<4	<1	1	9	5	2	1
S35-MW-01	9/27/2022	7.6 J-	270	149	<10 UJ	153	140	170	<4	<1	8	33	16	1	2
S35-MW-01	6/24/2023	7.7 J-	304	155	<10	168	150	180	<4	<1	9	34	17	1	2
S35-MW-01	9/26/2023	7.7 J-	293	135	<10	162	150	180	<4	<1	8	29	15	1	3
S35-MW-01	6/14/2024	7 J-	102	45	<10	198	49	60	<4	<1	2	10	5	1	2
S35-MW-01	9/24/2024	7.6 J-	235	121	<10	134	120	140	<4	<1	5	27	13	1	2
S35-MW-02	4/30/2011	8.1	423	226	44	264	240	290	<4	1	7	66	15	2	4
S35-MW-02	6/17/2011	8.2	444	221	58	254	240	300	<4	2	6	64	15	2	4
S35-MW-02	9/21/2011	8.3	306	224	280	206	190	230	<4	1	5	64	15	2	5
S35-MW-02	5/10/2012	7.2 J-	439	224	22	264	250	300	<4	2	7	69	15	1	4
S35-MW-02	10/5/2012	7.5 J-	369	190	64	208	200	240	<4	1	7	53	14	1	4
S35-MW-02	5/21/2014	7.6	464	220	14	266	230	280	<4	1	7	62	16	1	4
S35-MW-03	5/1/2011	8.3	319	136	16	184	180	220	<4	<1	5	39	9	2	20

Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 2 of 5

Section 35 Groundwater (physiochemical, anions, and cations)															
Collection		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
Standard		6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-MW-03	6/16/2011	8.3	310	151	60	162	170	210	<4	<1	4	43	10	2	11
S35-MW-03	9/21/2011	8.3	299	140	40	198	170	210	<4	<1	4	40	10	2	11
S35-MW-03	12/12/2011	8.2	319	154	216	192	170	210	<4	<1	4	45	10	2	11
S35-MW-03	3/28/2012	7.7 J-	356 J	154	136	208	180	220	<4	1	4	44	10	2	11
S35-MW-03	5/10/2012	7.5 J-	336	150	86	208	190	230	<4	<1	5	45	11	2	11
S35-MW-03	10/5/2012	7.7 J-	324	151	89	187	170	210	<4	<1	4	43	10	2	11
S35-MW-03	12/13/2012	7.6 J-	329	149	70	190	180	210	<4	<1	6	43	10	2	10
S35-MW-03	3/28/2014	7.8 J-	357	152	160	212	200	240	<4	<1	5	44	10	2	19
S35-MW-03	3/28/2013	7.7 J-	343	154	111	188	180	210	<4	1	7	44	11	2	9
S35-MW-03	5/26/2013	7.7 J-	332	152	60	189	180	210	<4	<1	6	44	10	1	10
S35-MW-03	9/15/2013	7.9 J-	334	152	292	164	180	210	4	1	6	44	11	2	11
S35-MW-03	12/16/2013	7.8 J-	345	147	504	205 J-	190	230	<4	1	6	42	10	2	13
S35-MW-03	5/20/2014	7.8 J-	367	150	175	227	190	230	<4	<1	4	41	11	2	14
S35-MW-03	10/9/2014	7.8	332	150	91	203	170	210	<4	<1	4	44	10	2	10
S35-MW-03	12/19/2014	7.9 J-	355	157	111	205	180	220	<4	<1	4	45	10	2	11
S35-MW-03	3/12/2015	7.8	370	174	2380	224	210	250	<4	<1	3	50	14	3	15
S35-MW-03	5/20/2015	7.8 J-	361	175	146	228	180	220	<4	<1	4	51	12	2	11
S35-MW-03	10/8/2015	7.8 J-	360	170	160	218	180	230	<4	<1	6	50	11	2	12
S35-MW-03	12/18/2015	8 J-	357	165	104	254	190	230	<4	<1	3	48	11	2	11
S35-MW-03	3/24/2016	7.9 J-	371	184	107	241	190	240	<4	<1	6	55	12	2	13
S35-MW-03	5/18/2016	8 J-	385	181	179	243	200	240	<4	<1	6	53	12	2	13
S35-MW-03	10/19/2016	7.8 J-	382	182	114	253	200	240	<4	<1	3	53	12	2	12
TDMW-6	10/19/2016	7.8 J-	383	181	113	255	200	250	<4	<1	3	52	12	2	12
S35-MW-03	12/23/2016	7.8 J-	387	184	33	238	200	250	<4	<1	4.8	54	12	2	12
TDMW-6	12/23/2016	7.8 J-	387	184	34	244	200	250	<4	<1	4.8	54	12	2	12
S35-MW-03	3/23/2017	7.9	409	191	57	248	210	260	<4	<1	4.8	57	12	2	12
S35-MW-03	4/24/2017	8	412	191	119	258	210	260	<4	<1	4.2	56	12	2	12
S35-MW-03	3/23/2017	7.9	409	191	57	248	210	260	<4	<1	4.8 J+	57	12	2	12
S35-MW-03	4/24/2017	8 J-	412	191	119	258	210	260	<4	<1	4.2	56	12	2	12
S35-MW-03	10/6/2017	7.9	370	177	262	240	190	230	<4	1	5	52	12	2	9
S35-MW-03	12/18/2017	7.9	384	161	94	231	190	230	<4	1	5	47	11	2	10
S35-MW-03	4/19/2018	7.8 J-	410	185	71	268	200	250	<4	3	5	54	12	2	12
S35-MW-03	6/8/2018	7.9 J-	360	155	64	221	180	210	<4	1	4	45	10	2	9
S35-MW-03	10/9/2018	7.7	382	181	373	225	190	240	<4	3	7	53	12	2	11
S35-MW-03	12/28/2018	7.9 J-	380	172	160	230	190	230	<4	3	5	50	11	2	10
S35-MW-03	5/6/2019	7.8 J-	420	188	199	239	200	240	<4	6	6	55	12	2	12
S35-MW-03	6/3/2019	7.8 J-	399	197	53	240	200	240	<4	4	6	58	13	2	10
S35-MW-03	10/13/2019	7.8 J-	384	176	1200	227	200	250	<4	3	6	51	11	2	11
S35-MW-03	12/20/2019	7.8 J-	397	188	114	235	200	240	<4	5	6	54	13	2	12
S35-MW-03	5/22/2020	7.8	415	181	131	247	190	240	<4	9	7	53	12	2	12

Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 3 of 5

Section 35 Groundwater (physiochemical, anions, and cations)															
Collection		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
Standard		6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-MW-03	10/6/2020	7.9 J-	408	186	50	250	200	240	<4	10	6 J-	54	12	2	11
S35-MW-03	12/18/2020	7.8	419	196	29	263	200	240	<4	11	6	57	13	2	12
S35-MW-03	4/21/2021	7.8	461	202	42	278	210	250	<4	19	6	58	14	2	12
S35-MW-03	5/26/2021	7.8 J-	479	231	55	301	210	250	<4	20	6	68	15	2	12
S35-MW-03	9/25/2021	7.8	463	215	33	268	200	250	<4	16	5	63	14	2	11
S35-MW-03	12/21/2021	7.8	463	206	38	273	200	240	<4	20	6	60	14	2	12
S35-MW-03	4/28/2022	7.8	480	222	20	290	210	260	<4	24	7	65	15	2	12
S35-MW-03	5/23/2022	7.8 J-	498	221	21	291	210	260	<4	27	7	64	15	2	13
S35-MW-03	9/27/2022	7.8 J-	487	235	24 J	301	210	260	<4	31	7	69	15	2	11
S35-MW-03	12/29/2022	7.9	496	249	46	320	210	260	<4	31	8	72	16	2	13
S35-MW-03	6/24/2023	7.8 J-	535	247	22	313	220	270	<4	30	8	70	17	3	12
S35-MW-03	9/26/2023	7.7 J-	539	224	16	323	230	270	<4	33	9	64	15	2	13
S35-MW-03	12/14/2023	7.7	550	231	14	330	220	270	<4	32	9	66	16	2	13
S35-MW-03	4/9/2024	7.8 J-	558	231	15	335	230	280	<4	28	9	67	16	2	12
S35-MW-03	5/21/2024	7.6 J-	554	252	14	327	240	290	<4	29	10	73	17	2	12
S35-MW-03	9/24/2024	7.9 J-	548	266	14	326	230	280	<4	25	10	77	18	2	12
S35-MW-03	12/18/2024	7.7	583	268	11	327	240	300	<4	26	10	78	18	2	12
S35-MW-04	5/1/2011	8.2	230	111	474	144	120	150	<4	<1	2	33	7	3	2
S35-MW-04	6/16/2011	8.1	216	113	154	170	120	140	<4	<1	<1	34	7	2	2
S35-MW-04	9/21/2011	8.2	298	150	400	192	180	220	<4	<1	2	44	10	3	2
S35-MW-04	12/13/2011	8.2	323	166	78	186	180	220	<4	<1	2	49	11	4	2
S35-MW-04	3/28/2012	7.6 J-	357 J	167	470	198	180	220	<4	<1	1	50	10	3	2
S35-MW-04	5/10/2012	7.4 J-	328	159	138	200	190	230	<4	<1	2	49	11	2	2
S35-MW-04	10/5/2012	7.5 J-	333	171	30	192	180	220	<4	<1	2	51	11	3	2
S35-MW-04	12/13/2012	7.6 J-	354	174	185	203	200	240	<4	<1	3	55	12	3	3
S35-MW-04	5/26/2013	7.7 J-	334	155	25	196	180	210	<4	<1	2	45	10	3	2
S35-MW-04	9/15/2013	7.9 J-	367	180	352	124	210	240	4	<1	2	54	12	3	3
S35-MW-04	5/21/2014	7.6	324	149	11	179	160	200	<4	<1	2	44	10	2	3
S35-MW-04	10/9/2014	7.7	332	164	67	203	170	210	<4	<1	2	50	10	2	2
S35-MW-04	12/19/2014	7.8 J-	328	167	516	193	170	210	<4	<1	2	50	10	3	2
S35-MW-04	3/11/2015	7.7	363	178	10	213	170	210	<4	7	3	54	10	2	2
S35-MW-04	5/20/2015	7.8 J-	357	184	<10	208	160	200	<4	6	6	56	11	2	2
S35-MW-04	10/8/2015	7.8 J-	354	177	54	222	180	220	<4	2	3	52	11	4	3
S35-MW-04	12/18/2015	8 J-	341	171	13	218	170	210	<4	4	2	51	11	3	2
S35-MW-04	5/18/2016	7.9 J-	372	189	<10	229	170	210	<4	10	4	57	11	2	2
S35-MW-04	4/24/2017	7.8	516	244	<10	347	150	180	<4	55	18	75	14	2	3
S35-MW-04	10/6/2017	7.8 J-	393	200	63	255	190	240	<4	7	4	60	12	2	3
S35-MW-04	6/8/2018	7.6 J-	537	229	<10	338	140	180	<4	51	28	70	13	2	3
S35-MW-04	10/10/2018	7.8	473	224	<10	269	180	220	<4	28	13	68	13	2	3
S35-MW-04	6/4/2019	7.7 J-	447	219	<10	263	170	210	<4	26	14	67	13	2	3
S35-MW-04	10/5/2020	7.8 J-	441	219	11	280	180	220	<4	26	18 J-	66	13	2	3
S35-MW-04	5/26/2021	7.8 J-	477	243	<10	295	170	200	<4	27	26	74	14	2	2
S35-MW-04	9/25/2021	7.6	436	215	21	254	180	220	<4	13	9	64	13	2	3

Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 4 of 5

Section 35 Groundwater (physiochemical, anions, and cations)															
Collection		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
Standard		6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----
S35-MW-04	5/24/2022	7.8 J-	447	216	107	255	180	220	<4	21	25	65	13	2	2
S35-MW-04	9/27/2022	7.8 J-	396	222	120 J	243	190	230	<4	13	11	67	13	3	3
S35-MW-04	6/24/2023	7.7 J-	404	197	<10	248	180	220	<4	11	15	58	13	2	3
S35-MW-04	9/26/2023	7.6 J-	424	188	15	261	190	230	<4	16	9	56	12	2	3
S35-MW-04	5/21/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
S35-MW-04	9/24/2024	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
S35-MW-05	6/17/2011	7.2	58	27	184	136	28	34	<4	<1	<1	8	2	1	2
S35-MW-06	5/1/2011	8.1	329	183	48	197	180	220	<4	<1	1	51	13	1	5
S35-MW-06	6/17/2011	8.1	306	161	14	162	170	210	<4	<1	<1	45	12	<1	4
S35-MW-06	9/21/2011	8.2	350	198	20	228	210	250	<4	<1	1	54	15	1	4
S35-MW-06	12/13/2011	8.2	354	196	68	206	200	240	<4	<1	1	54	15	1	4
S35-MW-06	3/28/2012	7.5 J-	401 J	193	332	216	200	250	<4	<1	1	51	16	1	5
S35-MW-06	5/10/2012	7.1 J-	354	170	202	212	200	240	<4	<1	1	49	14	<1	5
S35-MW-06	10/5/2012	7.4 J-	368	186	422	189	200	250	<4	<1	<1	49	16	2	5
S35-MW-06	12/14/2012	7.4 J-	371	181	166	195	210	260	<4	<1	2	56	16	1	4
S35-MW-06	3/28/2013	7.5 J-	389	195	483	182	210	250	<4	<1	2	50	17	2	5
S35-MW-06	5/26/2013	7.5 J-	356	175	355	214	200	250	<4	<1	1	43	17	2	5
S35-MW-06	9/15/2013	7.6 J-	366	176	1400	199	210	250	<4	<1	1	44	16	1	5
S35-MW-06	12/17/2013	7.6 J-	362	179	123	198	210	250	<4	1	2	49	16	2	4
S35-MW-06	3/29/2014	7.7 J-	363	178	1100	192	210	260	<4	<1	1	43	17	2	6
S35-MW-06	5/21/2014	7.4	368	166	50	201	180	220	<4	<1	1	43	14	<1	5
S35-MW-06	10/9/2014	7.6	374	182	1230	212	200	250	<4	<1	1	48	15	1	5
S35-MW-06	12/19/2014	7.6 J-	382	183	904	210	200	240	<4	<1	<1	47	16	2	5
S35-MW-06	3/11/2015	7.7	381	189	281	215	200	250	<4	<1	<1	49	16	1	5
S35-MW-06	5/21/2015	7.6 J-	383	198	29	211	200	240	<4	<1	1	53	16	1	4
S35-MW-06	10/8/2015	7.6 J-	378	176	29	217	200	240	<4	<1	2	48	14	1	4
S35-MW-06	12/18/2015	7.6 J-	375	187	56	224	200	240	<4	<1	<1	49	16	1	4
S35-MW-06	3/25/2016	7.7 J-	372	201	414	228	200	240	<4	<1	2	53	17	2	5
S35-MW-06	5/18/2016	7.5 J-	376	191	134	231	200	240	<4	1	2	50	16	2	5
S35-MW-06	10/20/2016	7.6 J-	372	189	47	216	200	250	<4	<1	<1	49	16	2	5
S25-MW-06	4/24/2017	7.8	518	240	<10	349	150	180	<4	54	18	74	14	2	2
S35-MW-06	10/6/2017	7.9 J-	388	194	42	253	190	240	<4	6	4	58	12	2	5
S35-MW-06	6/8/2018	7.8 J-	421	179	37	258	170	200	<4	17	12	53	11	2	7
S35-MW-06	10/10/2018	7.6	392	188	67	212	210	250	<4	<1	2	51	15	1	5
S35-MW-06	6/4/2019	7.5 J-	352	191	11	190	180	220	<4	<1	1	52	15	1	4
S35-MW-06	10/13/2019	7.6	374	184	10	207	200	240	<4	<1	1	50	14	1	4
S35-MW-06	10/5/2020	7.7 J-	365	186	<10	218	200	240	<4	<1	2 J-	50	15	1	5

Table 39. Repository Area Groundwater Physiochemical, Anions, and Cations; Historical Compilation
Page 5 of 5

Section 35 Groundwater (physiochemical, anions, and cations)															
Collection		Physiochemical					Common Anions (mg/L)					Common Cations (dissolved, mg/L)			
Sample ID	Date	pH*	Conductivity, umhos	Hardness	Total Susp. Solids, mg/L	Total Diss. Solids, mg/L	Alkalinity	Bicarbonate	Carbonate	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	Standard	6.5 - 8.5	----	----	----	----	----	----	----	----	----	----	----	----	----

Note: < Indicates the concentration is less than the reporting limit

Exceeds standard

*B-1 Classification Standards ARM 17.30.623(2)(c)

---- No standard

mg/L = milligrams per liter

umhos = micromhos

J = validation flag denotes the reported results are estimates with high or low bias

J- = validation flag denotes the reported results are estimates with a low bias

J+ = validation flag denotes that the result is an estimate with high bias

UJ = validation flag denotes the reported results are non-detect, and are estimates due to low ICS recovery

U = validation flag denotes the reported result is a false positive/non-detect

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Appendix G

Field Notes

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UBMC 24



Rite in the Rain.

ALL-WEATHER

TRANSIT

Nº 301FX

4/9/24 UBNC Q1

P. Opp K. Reichle

37°F overcast, light mist

Calibrated YSI at office

S35-MW-03 @ 11:52

DTW: No. 25

Pump Inlet = 31

Start Purge = 11:04

Stop Purge = 11:51

Vol Purged = 12 L

Vol	Time	Temp	DO*	SC	pH	ORP	SW
2	11:12	-	-	-	-	-	18.83
4	11:20	-	-	-	-	-	20.97
6	11:27	-	-	-	-	-	22.34
8	11:35	6.2	31.2/3.82	506	7.68	201.8	23.14
10	11:43	6.3	30.2/3.72	509	7.67	202.2	23.88
12	11:51	6.3	30.2/3.71	513	7.65	202.6	24.36

* DO seems low despite DO calibration being successful.

MoB back to Helena.

UBMC 24



Rite in the Rain.

ALL-WEATHER

TRANSIT

Nº 301FX

5/20/24 USMC AZ

P. Capp K. Reichle, overcast, slight breeze
~42°F

Calibrated YSI, no river

BRSW-309 (Equipment Blank) @ 8:20

BRSW-12 @ 9:47

BRSW-307 (duplicate of BRSW-12) @ 9:05

Photos: 3181 looking upstream
3180 " downstream

Temp: 49°C
DO: 92.7% / 11.87 mg/L ORP: 111.9 mV
SC: 130.7 μ S/cm

BRSW-308 (Field Blank) @ 10:22

Collected on side of Mike House Rd
near access to BRSW-12/Edith wells.

BRSW-10 @ 10:42

Photo: 3181 upstream
3182 downstream

Temp: 4.8
DO: 93.1 / 11.97
SC: 80.7

pH: 7.47
ORP: 121.9

5/20/24 USMC AZ cont.

BRSW-33 @ 11:06

Photo: 3183 upstream
3184 downstream

Temp: 5.4
DO: 90.6 / 11.44
SC: 129.8
pH: 7.54
ORP: 117.5

BRSW-36 @ 11:30

Photo: 3185 upstream
3186 downstream

Temp: 5.8
DO: 89.3 / 11.17
SC: 154.4
pH: 7.72
ORP: 113.8

3187 - Flow in black pipe at WTP
3188 - No flow in effluent channel
at WTP

BRSW-003A @ 12:02 (no effluent flow)

Photo: 3189 - upstream 3190 - downstream

Temp: 5.1
DO: 89.9 / 11.44
SC: 146.8
pH: 7.77
ORP: 192.6

8 5/20/24 UBMC Q2 cont.

BRSW-29 @ 12:25

Photo: 3191 - upstream

3192 - downstream

Temp: 5.2

DO: 89.3 / 11.35

SC: 147.4

pH: 7.68

ORP: 113.1

BRSW-304 @ 13:30

Photo: 3193 - upstream

Temp: 4.0

DO: 89.5 / 11.74

SC: 176.1

3194 - downstream

pH: 7.68

ORP: 142.6

UMHMW-25 6.51 TOC

UMHMW-20 9.17

UMHMW-3 7.44

UMHMW-8 6.06

MITGW-01 9.67

SHGW-101 7.43

SHGW-102 10.31

SGGW-101 26.07

PMMW-2 26.28

PMMW-1 27.49

PMMW-3 49.04

5/20/24 UBMC Q2 cont.

Carbonate Ref - Can drive up road to Jack's Ref.

3197 - Jack's Ref. at Carbonate Ref.

3198 - Either ~~Ucmw-101~~ or Ucmw-437 yr

GPS: Ucmw-101 (4) po stickup well

3199 - Either ~~Ucmw-101~~ or Ucmw-437 yr

GPS: Ucmw-411 stickup well

* unidentified well *

- SWGW-101 (stickup) 8.98, labeled w

Photo: 3200

GPS: SWGW-101

* Same key w Mib Horse Wells

* Could not unlock other two wells

Do not have right key.

(Ucmw-101) (photo)

- Flushmont 1 73.70 TOC, No name label

Photos 3207, 3208, 3209

GPS: UCFM-1

No mark on casing, marked w pin

prior to recording reading

(SWGW-102) (photo)

- Flushmont 2 21.82 TOC, No name label

Photo: 3210, 3211

GPS: UCFM-2

No mark, made a mark on TOC before reading

See Needs to measure TO to identify well

5/20/24 vBNC Q2 cont

Changed out all tubing in peristaltic pump prior to Deposition SW sampling

S35-JW-08 @ 16:40

Photo: 3212

Temp: 10.0

DO: 81.5/9.18

SC: 18512

pH: 7.31

ORP: 66.1

S35-^{SW}ATW-06 @ 17:07Photo: ~~3213~~³²¹³, 3214

Temp: 8.5

DO: 37.1/4.30

SC: 557

pH: 7.54

ORP: -9.8

End of Day in Field - back
to Lincoln

pa

5/21/24 vBNC Q2 cont

P. Opp K. Reichle

Overcast, 43°F, light breeze / windy ^{more}

MHMW-11 (Equipment Blank) @ 8:36

S35-MW-03 @ 10:35

DTW: 15.16

Photo: 3215

Ramp Inlet: 31

Start Rise: 9:47

Stop Pump: 10:33

Vol Purged: 14 L

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	9:54	-	-	-	-	-	18.06
4	9:59	-	-	-	-	-	20.06
6	10:05	-	-	-	-	-	21.72
8	10:12	-	-	-	-	-	22.84
10	10:19	6.2	63.2/7.77	522	7.36	101.8	23.89
12	10:26	6.3	62.7/7.71	524	7.37	103.3	23.87
14	10:33	6.4	62.2/7.80	527	7.36	103.6	24.01

S35-TP-112: 20.34

S35-TP-113: 19.96

5/21/24 UBMC QZ cont.

S35-MW-04 @ --- "Dry"

DTW: 42.32

Start Purge: 11:18
↳ No water

42.77 - DTW remeasured
after pump
TD: 42.82 attempt

* Could not pump any water. Well "Dry"
- No Sample collected from S35-MW-04

Decanned pump, new bladder - prep for
UBMC well sampling

S35-SB-215T1: 18.35

S35-SB-215T8: 18.12

S35-TP-103: 21.31

S35-TP-101A: 7.02

S35-TP-101B: 7.41

S35-TP-101C: 6.85

S35-P2-04: 5.39 needs cap ~ 2 3/4 in

S35-TP-10: 9.76

5/21/24 UBMC QZ cont.

S35-MW-01 @ N6 Sample

DTW: 23.56 (low compared to past)

Start Purge: NA

Stop Purge: NA

Vol Purged: NA

Peristaltic pump quite working upon
commencement of pumping. No power.
Tried new battery. Still no power.
Need to troubleshoot & repair pump
then resample. Cannot sample w/
bladder pump due to bent casing
in the well. Need peristaltic pump
to collect sample.

MW-2018-01 (above conf.) @ 14:35

DTW: 4.14

Photo: 3216

Pump Inlet:

Start Purge: 14:15 Stop Purge: 14:34, 12.4

Vol	Time	Temp	SC	DO	se	pH	ORP
2	14:08	-	-	-	-	-	421
4	14:21	6.2	692	79.8/9.86	6.41	127.0	4.17
6	14:24	6.2	693	80.0/9.84	6.26	137.6	4.16
8	14:27	6.0	695	79.9/9.92	6.30	145.4	4.16
10	14:30	6.0	694	80.0/9.91	6.28	151.0	4.18
12	14:34	5.9	697	80.4/10.02	6.35	154.5	4.17

14 5/21/24 VMC QZ cont.

Decanned pump.

MW-2018-03 @ 15:11

OTW: 4.66

Photo: 3217

Start Rise: 15:00

Pump Inlet:

Stop Rise: 15:10

Vol Rysd: 8L

Vol	Time	Temp	DO	SC	pH	ORP	JWL
2	15:02	6.7	74.4	9.09	226.3	6.96	4.72
4	15:05	6.4	75.8	9.29	227.5	7.18	4.72
6	15:07	6.5	75.8	9.35	227.6	7.12	4.71
8	15:10	6.4	76.0	9.40	228.2	7.13	4.72

Decanned pump

MW-2019-04 @ 16:25

Photo: 3218

OTW: 4.32

Pump Inlet:

Start Rise: 16:08

Stop Rise: 16:24, 10L

Vol	Time	Temp	DO	SC	pH	ORP	JWL
2	16:13	4.9	80.0	10.19	106.8	7.20	4.36
4	16:15	4.8	77.7	10.0	106.7	7.20	4.41
6	16:19	4.7	77.9	9.99	106.8	7.14	4.38
8	16:21	4.8	77.9	9.98	106.7	7.23	4.39
10	16:24	4.8	77.7	9.97	106.8	7.24	4.38

15 5/21/24 VMC QZ cont.

MW-2019-05 @ 17:31

OTW: 3.87

Start Rise: 17:12

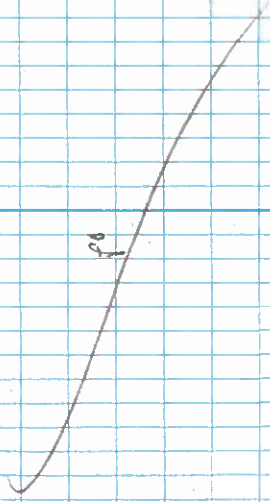
Stop Rise: 17:30

Vol Rysd: 10L

Pump Inlet:

Vol	Time	Temp	DO	SC	pH	ORP	JWL
2	17:16	5.8	76.6	9.54	172.6	7.42	3.90
4	17:19	5.6	78.5	9.90	170.6	7.34	3.93
6	17:23	5.5	79.7	10.02	170.0	7.37	3.94
8	17:27	5.5	80.6	10.13	169.7	7.37	3.92
10	17:30	5.5	81.1	10.22	169.6	7.37	3.93

Decanned Pump
End of Field Day
Back to Lincoln



5/22/24 USAC Q2 cont.

Ropp K Reichle

Raining 40's

Downloaded data loggers

DTW

S35-MW-03

see 5/21

S35-MW-205B

14.61

logger in well

S35-MW-205T

14.10

logger in well

S35-SB-215T1

see 5/21

S35-SB-215T2 Would not connect. Pulled

logger to troubleshoot. Successful download-
bad USB connection to computer. Reinstalled in
PM.

MHMW-10 (Field Blank) @ 9:30

9:30-13:30 Field tour w/ Dave

Bowers + Amber Nickel, DEQ

LCMW-5 @ 14:33

DTW: 2.24

Photo: 3227

Start Purge: 14:03

Stop Purge: 14:32, 12L

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	14:08	-	-	-	-	-	3.52
4	14:13	-	-	-	-	-	3.47
6	14:17	5.6	6.1/0.72	723	4.64	238.5	3.49
8	14:21	5.6	2.4/0.29	729	4.62	238.2	3.51
10	14:27	5.6	18/6.22	735	4.63	236.8	3.34
12	14:32	5.6	15/0.19	737	4.64	235.9	3.34

5/22/24 USAC Q2 cont.

Decanned pump

LCMW-1 @ 15:25

MHMW-9 (Duplicate of LCMW-1) @ 16:16

DTW: 7.71

Photo: 3228

Start Purge: 15:03

Stop Purge: 15:24

Vol Purged: 10L

* Red lock on well - Paragon tube

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	15:07	-	-	-	-	-	7.77
4	15:11	-	-	-	-	-	7.77
6	15:15	3.9	79.9/10.43	206.5	6.51	105.1	7.83
8	15:20	3.8	78.1/10.30	207.0	6.51	103.6	7.8
10	15:24	3.9	77.1/10.09	206.8	6.53	102.3	7.77

Flushment 1 PVC

DTW 73.81 TOC

UCMW-11 TD: 83.76 v. hard to feel + detn

bottom

Placed a black mark on the casing
for future DTW measurement

- Labeled well cap

5/22/24 USMC AZ cont

(Flushment 2: DW: 81.86

SW-102) TD = 22.49

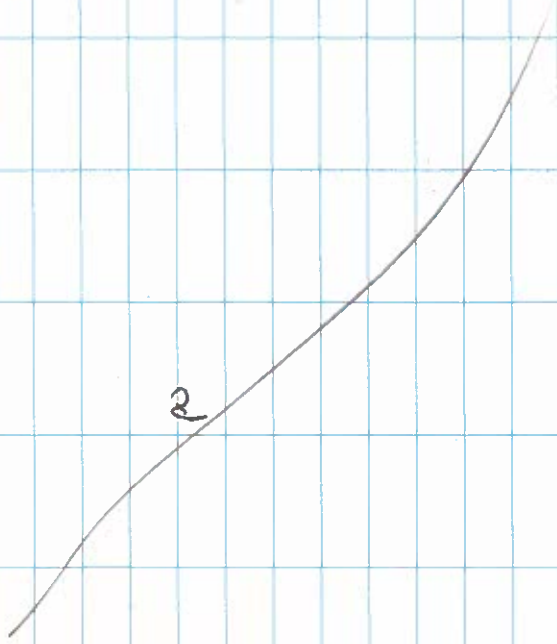
- Placed a black mark on PVC casing for future OTW measurement.
- Labeled well cap.

Downloaded DataLoggo

S35-MW-04

S35-MW-01

End of Day, Back to Lincoln.



5/23/24 USMC AZ cont

Popp K. Reichle

Overcast, wet ~36°F, snow on ground

~~Downloaded DataLoggo~~ po

S35-MW-06 OTW: 38.18

Photo: 3231

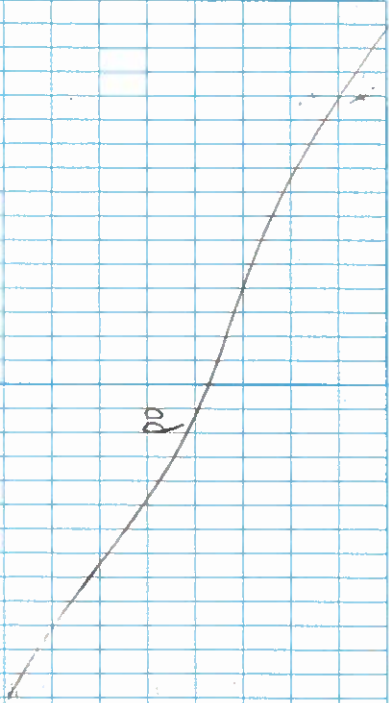
- Could not get logger to connect - computer issue suspected.

Mob back to Helena

Will download S35-MW-06, -05, -02 when go back to sample S35-MW-01.

Complete COC paperwork.

Samples hand delivered to Energy Lab, Helena, MT by Popp.



UBMC 24



Rite in the Rain.

ALL-WEATHER

TRANSIT

Nº 301FX

6/14/24 USMC 02
P.O.P. A. Lober Claw

S35-MW-06 DTW = 38.55 Photo 3032
S35-MW-05 DTW = 45.14 3233
S35-MW-02 DTW = 82.40 3234

S35-MW-06 data logger would not
connect. Data Corruption error.
Removed logger from well to troubleshoot
at office

S35-MW-05 downloaded logger
S35-MW-02

S35-MW-01 @ 14:37, turbid

DTW = 21.54

Start Purge: 14:17

Stop Purge: 14:36

Vol Purged: 10L

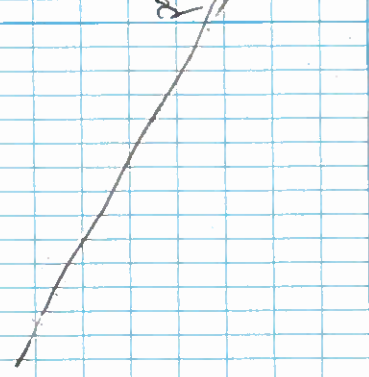
Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	14:21	-	-	-	-	-	-
4	14:25	7.2	97.7	11.78	97.3	6.90	123.8 21.59
6	14:29	7.4	101.6	12.20	98.2	6.89	120.1 -
8	14:32	7.5	102.0	12.23	97.6	6.92	116.8 21.59
10	14:36	7.5	102.4	12.24	97.1	6.89	113.5 21.59

6/14/24

Replaced locks on following wells
but locker keyed the same as
the access gate lock (blue lock)
S35-MW-03
S35-MW-06
S35-MW-01

New blue lock shackle too big
to fit through hole on following
wells. Lid holes will need to be
drilled out to get new, blue locker
to fit.

S35-MW-02
S35-MW-04
S35-MW-05
S35-MW-205B/205T



9/23/24 UPMC Q3

P. Opp

A. Lebo

00's light wind,
suny

Calibrated YSI at office - no issue

BRSW-309 (Equip Blank) @ 12:25

BRSW-12 @ 13:50

BRSW-307 (Duplicate of BRSW-12) @ 13:21

BRSD-12 @ 13:50

BRSD-307 (Duplicate of BRSD-12) @ 13:21

Temp = 14.1°C

DO = 93.3% / 9.59 mg/L

SC = 228.9 mS/cm

PH = 7.73

ORP = 140.9 mV

BRSW-10 @ 14:42

Photo: 3252 - upstream

3253 - downstream

Temp: 10.5

DO: 45.4 / 5.05

SC: 119.4

PH: 7.20

ORP: 115.6

Dry at culvert, resurfaced

downstream of culvert where

sample was collected. Still

above confluence.

9/23/24 cont. UPMC Q3 cont.

BRSW-33 @ 15:11

Photo: 3254 - up

3255 - down

Temp: 12.9

DO: 85.4 / 9.02

SC: 300.7

PH: 7.49

ORP: 96.4

BRSW-34 @ 15:51

Photo: 3256 - down

3257 - up

Temp: 14.1

DO: 91.2 / 9.37

SC: 402.9

PH: 7.45

ORP: 65.0

BRSW-308 (Field Blank) @ 16:30

Collected on Mike Hare Rd area
from water treatment plant windy

BRSW-003A @ 16:39

Photo: 3258 - up

3259 - down

Effluent NOT flowing

9/23/04 UBM 03 cont. Windy

BRSW-0034

cont.

Temp: 11.7

DO: 93.0/10.09

SC: 197.8

pH: 7.84

ORP: 105.4

BRSW-29 @ 17:25

Photo: 3260-up

3261-down

Temp: 11.8

DO: 82.4/18.92

SC: 203.4

pH: 7.67

ORP: 114.4

BRSW-304 @ 18:14

Photo: 3262-up

3263-down

Temp: 7.4

DO: 86.1/10.33

SC: 215.3

pH: 7.85

ORP: 145.6

pg

9/24/04 UBM 03 cont.

P.Opp, A. Leber Sunny, 50°F, calm

Changed out tubing in pri. pump.

SBS-SW-08 @ 9:35

Photo: 3264

SBS-SW-08 @ 9:35

Temp: 8.4

DO: 10.0/12

SC: 51.8

pH: 7.97

ORP: -294.8

Sample turbid. Hard to collect and getting suspended solids in the sample.

SBS-SW-06 @ 10:18

Photo: 3265

Temp: 10.8

DO: 88.6/9.80

SC: 530

pH: 7.30

ORP: 92.6

9/24/24 UBMC Q3 cont.

S35-MW-04 DM=42.28 → Dry TD=42.83

* Insufficient water to collect sample.

No sample collected.

Downloaded data logger.

Charged link to new, blue lock

S35-MW-03 @ 12:28 TD=41.5 - sediment bottom

OTW=18.94

Probe: 3247 - sediment on

Start purge: 11:48

probe from bottom of

Pump Inlet: 31 well while measuring

Stop Purge: 12:27

Vol Purge: 12L

Downloaded data logger

Vol Time Temp DO SC pH ORP ^{Sub} ^{22.72} ^{21.72}

2 11:54

4 12:00

6 12:05

8 12:12

10 12:19

11 12:23

12 12:27

-

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9/24/24 UBMC Q3 cont.

OTW

TD

S35-MW-205B

17.42

S35-MW-205T

17.16

Down loaded data logger,
Charged link to new blue lock

S35-TP-101A

12.80

20.92

S35-TP-101B

12.47

15.27

S35-TP-101C

9.06

9.36

sediment accumulation in bottom of
A and B.

S35-TP-04

9.73

9.95

sediment accumulation in bottom

S35-TP-103

21.31

21.59

S35-SB215-T1

22.34

57.15

S35-SB215-T2

22.43

30.85

T1 and T2 - sediment accumulation in

bottom

S35-TP-112

20.33

20.62

S35-TP-113

19.93

20.24

S35-TP-10₂

13.71

15.02

9/24/24 UBML Q3 cont.

S35-MW-01 @ 15:02

OTW: 22.57

Start Purge: 12:43

Stop Purge: 15:01

Vol Purged: 8L

Photo: 3266

Downloaded data logger

Vol	Time	Temp	DP	SC	pH	ORP	Sal
2	14:48	7.7	47.4/5.64	19.2	7.25	70.9	22.57
4	14:52	7.5	57.0/7.07	19.6	7.29	66.5	22.57
6	14:56	7.5	64.6/7.74	19.5	7.25	69.3	22.57
8	15:01	7.5	65.1/7.80	19.7	7.2/7.08	22.57	

9/24/24 UBML Q3 cont.

Rec'd A. Leber
 Calibrated WI at other, Decu Blecter pump

S35-MW-06 OTW= 39.79 TD= 67.28

Sediment in bottom

- No data logger. Malfunctioned in spring.
 i not replaced.

S35-MW-05 OTW= 45.14 TO= 45.52

Downloaded data logger. Kept getting

"Data Corrupted" error message but

eventually said "download complete"

after numerous attempts. Logger back

in well. Put blue lock on well.

S35-MW-02 OTW= 82.44 TO= 83.80

Downloaded data logger

Put blue lock on well. sediment in bottom

~~Law-2018-01-01-01~~

MHMW-10 (Field Blank) @ 14:0

Collected at borehole bend

MHMW-11 (Equipment Blank) @ 14:23

9/26/24 U3MC Q3 cont.

MW-2018-01 (above conf.) @ 15:38

DTW: 5.20

Start Purge: 15:27

Stop Purge: 15:37

Vol Purged: 8L

Pump T-Test:

Photo: 3268, ^{locked down}

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	15:32	10.4	6.41	7.18	6.13	6.31	163.3

4	15:32	10.4	6.34	7.09	6.12	6.16	171.6

6	15:35	10.4	6.48	7.24	6.13	6.25	170.4

8	15:37	10.4	6.50	7.36	6.13	6.26	170.2

Replaced lock w/ MH well lock.

Decanned Pump

Photo: 3269, ³²⁷⁰ Damaged w/ enclosure joint

upstream of MW-2018-03. Ripped out at both ends

MW-2018-03 @ 16:38

DTW: 5.18

Start Purge: 14:19, turbid

Stop Purge: 16:37

Vol Purged: 10L

Replaced lock w/ MH well lock.

Photo: 3271

9/26/24 U3MC Q3 cont.

MW-2018-03 cont.

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	16:23	-	-	-	-	-	5.21
4	16:26	12.4	47.5	5.16	257.8	7.08	109.2
6	16:30	12.3	47.2	5.02	258.8	7.04	110.3
8	16:33	12.3	47.5	5.11	258.6	7.04	111.0
10	16:37	12.3	48.0	5.13	259.1	7.03	111.8

Decanned Pump

MITGW-01 DTW = 13.37

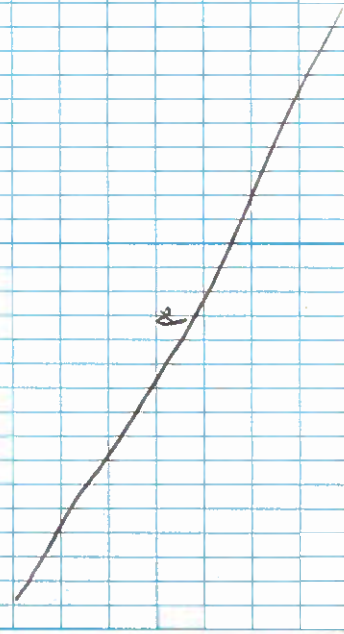
UMH MW-00 DTW = 14.76

UMH MW-25 DTW = 10.22

UMH MW-3 DTW = 8.78

UMH MW-8 DTW = 7.56

SGGW-101 DTW = 33.43



Return to Pump

9/27/24

USMC 03 cont.

04
 MW-2019-03⁰⁴ @ 9:45 P. opp, A. Leber clear, sunny
 windy, ~45-50°F

DTW = 4.90

Start Rge: 9:30

Stop Rge: 9:44

Vol Rge: 8L

Pump Inlet:

Replaced lock w/ M+ lock

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	9:34	11.1	42.2/46.1	238.3	7.29	126.7	4.92
4	9:37	11.2	41.4/45.5	237.8	7.21	117.0	4.94
6	9:40	11.2	41.4/45.7	237.9	7.20	112.1	4.92
8	9:44	11.2	41.7/45.9	237.9	7.20	110.1	4.93

MW-2019-03 DTW = 8.12

Replaced lock w/ M+ lock

Decanned Pump

MW-2019-05 @ 11:24

DTW = 6.56

Start Rge: 11:10

Stop Rge: 11:23

Vol Rge: 8L

Pump Inlet:

9/27/24 USMC 03 cont.

MW-2019-05 cont.

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	11:14	12.9	54.2/57.2	407.8	7.20	93.2	6.57
4	11:17	12.9	54.9/57.7	407.1	7.22	96.9	6.58
6	11:20	12.8	55.8/58.9	407.3	7.22	99.1	6.58
8	11:23	12.6	56.1/59.5	407.3	7.23	101.4	6.58

SHGW-101 DTW = 9.10

SHGW-102 DTW = 11.04

PMMW-1 28.69

PMMW-2 30.34

PMMW-3 49.71

VCMW-4 No k2.1 to lock

VCMW-11 DTW = 75.65

SWGW-101 DTW = 8.98

SWGW-102 DTW = 21.82

90

10/1/24 UCMC Q3 cont.
P.O.P. outcast, ~50°F, light wind

Calibrated YSI at office
Decomd pump + new bladder

Carbonate Rep

UCMW-4 DTW: 54.91 TO: 55.27

Photo: 3274-3277

Lock cut + replaced w/ MTH monster lock

Unidentified well/Pipe 1

Photo: 3278-3281

Lock cut ~~appeared w/ MTH monster lock~~ ^{10/1/24}

Post sticking out of hillside nearby

spot. Silver pipe sticking up. Cap on pipe.

Unidentified well Pipe 2 - GPS point recorded
Downslope at SWGW

Silver pipe sticking up, similar to

Unidentified well, w/ stick

jammed into it. Could not remove stick.

Photo: 3282, 3283

10/1/24 UCMC Q3 cont.

LCMW-5 DTW: 13.00

DTW: 3.35

Start Purge: 12:28, clear Photo: 3284

Stop Purge: 12:58

Vol Purged: 12 L

Vol	Time	Temp	DO	SC	pH	ORP	SWC
2	12:32	-	-	-	-	-	4.70
4	12:36	-	-	-	-	-	4.46
6	12:41	8.5	68.5/7.98	706	5.94	61.6	4.22
7	12:45	8.5	66.6/7.77	704	5.93	63.8	4.23
8	12:48	8.5	63.0/7.37	701	5.93	65.6	4.24
9	12:51	8.5	60.7/7.13	698	5.93	65.1	4.24
10	12:53	8.5	58.3/6.80	696	5.93	64.3	4.20
11	12:56	8.5	55.8/6.57	697	5.94	64.1	-
12	12:58	8.5	54.2/6.31	696	5.93	64.9	4.24

LCMW-1 @ 14:05

MTHW-9 (Duplicate of LCMW-1) @ 14:53

DTW: 8.90

Start Purge: 13:41, turbid, orange, clear

Stop Purge: 14:03 w/ pumping

Vol Purged: 10 L

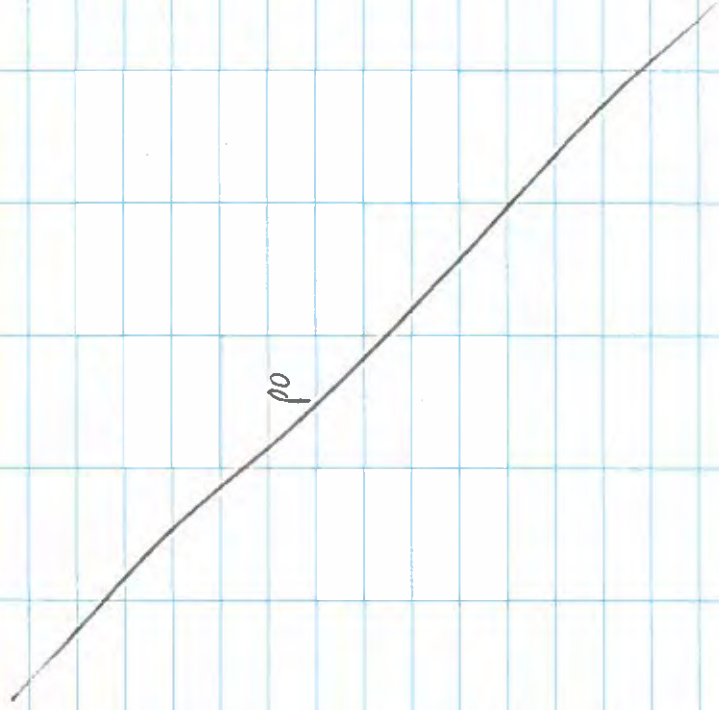
Photo: 3285

* Still need to replace lock w/ MTH lock.

10/1/24 UBMC Q3 cont.

LCMW-1 cont.

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	13:45	—	—	—	—	—	8.95
4	13:49	—	—	—	—	—	8.95
6	13:54	9.9	14.8/1.68	225.3	6.62	67.3	8.94
8	13:59	9.8	13.9/1.56	225.2	6.61	68.9	8.95
10	14:03	9.8	13.5/1.54	225.3	6.60	70.2	—

10/4/24 UBMC Residential well, Q3
P.Opp ~45-50°F clear, sunny

BRRW-5 (McInnis) @ 11:11

Tim mentioned that the pump was replaced 4 yr ago and a sensor was replaced 3 wks ago. Lines were all purged to replace sensor. Suggested letting it run awhile to purge out.

Vol to Purge = 177 gal
5 gal = 41.34 sec

$$177 \text{ gal} \times \frac{41.34 \text{ sec}}{5 \text{ gal}} \times \frac{1 \text{ min}}{60 \text{ sec}} = 26.16 \text{ min purge time}$$

Start Purge: 10:35
Stop Purge: 11:10

Time	Temp	DO	SC	pH	ORP
10:50	7.1°C	60.8%/7.35%	270.4	7.58	136.4 mV
10:54	7.1	60.7/7.34	270.8	7.54	131.8
10:58	7.1	61.0/7.38	270.6	7.54	129.5
11:02	7.1	61.5/7.45	270.3	7.52	127.8
11:06	7.1	61.9/7.48	270.0	7.54	126.2
11:10	7.1	62.0/7.50	269.8	7.51	124.9

10/1/84 Residential well - cont. UBM @ 3

BRW-1 (G. Ince) @ 12:09

Vel to Purge: 44 gal
5 gal = 28, 84, 100

41 gal x 28.84 sec x $\frac{1 \text{ min}}{60 \text{ sec}}$ = 4.2 min purge
5 gal loose

Start Purge: 11:57
Stop Purge: 12:08

Time	Temp	DO	SC	pH	ORP
12:00	6.0	72.3/9.02	155.0	7.56	100.2
12:01	5.9	75.2/9.41	155.0	7.52	79.1
12:02	5.9	76.6/9.55	155.1	7.52	72.3
12:04	5.9	78.8/9.86	155.5	7.49	62.9
12:06	5.8	80.9/10.10	155.9	7.48	58.9
12:08	5.8	82.7/10.36	156.3	7.47	61.0

po

UBMC 24



Rite in the Rain®

ALL-WEATHER

TRANSIT

Nº 301FX

12/18/24 UBMC 84

Piopp

YSI Calibrated at NWP office

M. Tanko

Snow on ground. Overcast, 35°F, light snow/rain

Held Safety Meeting

S35-MW-03 @ ~~20.62~~ 11:50, clear

DTW = 20.62

Photo =

Start Purge = 10:57, clear

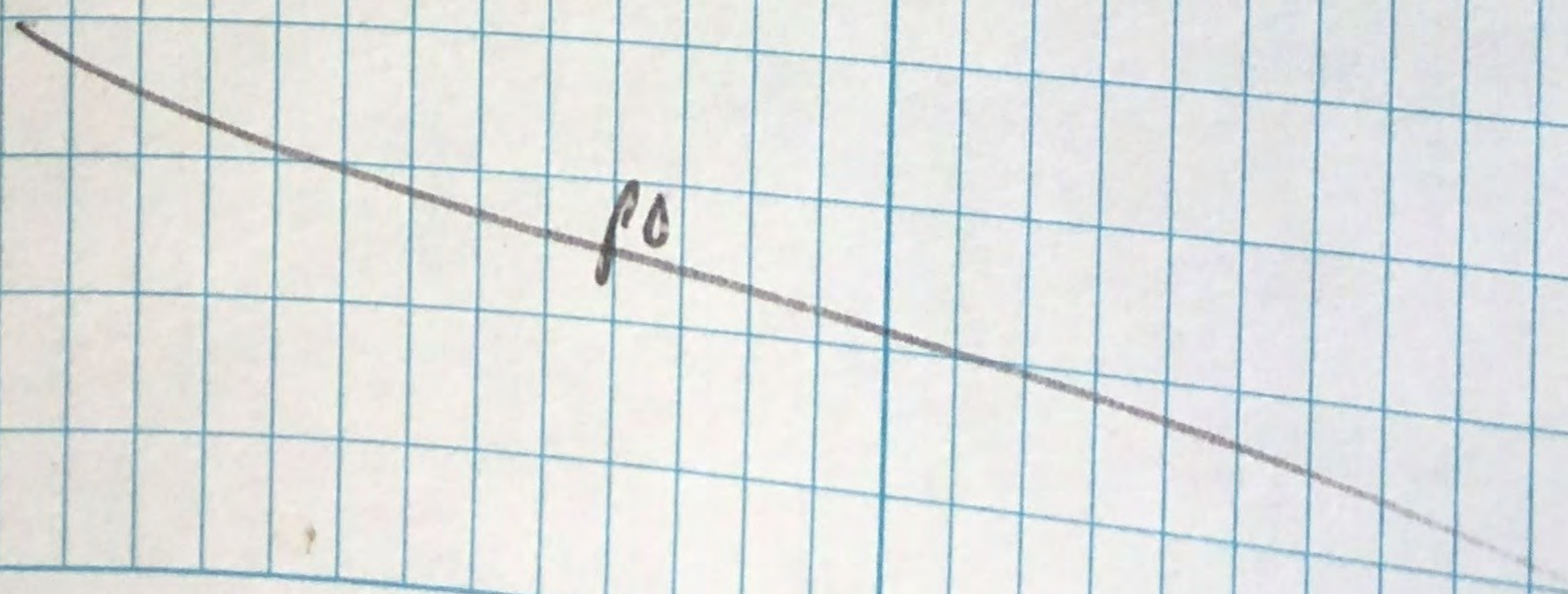
Stop Purge = 11:49

Vol Purged = 12 L

Pump Inlet = 31

Vol	Time	Temp	DO	SC	pH	ORP	SWL
2	11:07	-	-	-	-	-	24.06
4	11:15	-	-	-	-	-	24.17
6	11:23	-	-	-	-	-	26.43
8	11:32	7.0	36.5/4.42	545	7.71	97.8	23.57
10	11:40	7.0	35.2/4.27	551	7.69	97.9	24.04
12	11:49	6.9	34.6/4.18	555	7.68	98.0	24.22

Photos taken w/ ROPP phone.



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Appendix H

Laboratory Analytical Data Reports

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ANALYTICAL SUMMARY REPORT

April 18, 2024

MT DEQ-Site Response

PO Box 200901

Helena, MT 59620-0901

Work Order: H24040347

Quote ID: H1361

Project Name: UBMC Ground Water

Energy Laboratories Inc Helena MT received the following 1 sample for MT DEQ-Site Response on 4/9/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24040347-001	S35-MW-03	04/09/24 11:52	04/09/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-03
Lab ID: H24040347-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 04/09/24 11:52 **DateReceived:** 04/09/24
Report Date: 04/18/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.8	s.u.	H	0.1		A4500-H B	04/10/24 09:36 / dpw		PHSC_101-H_240410A : 13		R193842
pH Measurement Temp	9.7	°C				A4500-H B	04/10/24 09:36 / dpw		PHSC_101-H_240410A : 13		R193842
Conductivity @ 25 C	558	umhos/cm		5		A2510 B	04/10/24 09:36 / dpw		PHSC_101-H_240410A : 14		R193842
Solids, Total Suspended TSS @ 105 C	15	mg/L		10		A2540 D	04/10/24 13:52 / dpw		-124 (14410200)_240410B : 6		TSS20240410A
Solids, Total Dissolved TDS @ 180 C	335	mg/L		20		A2540 C	04/10/24 14:01 / dpw		-124 (14410200)_240410A : 6		TDS20240410A
INORGANICS											
Alkalinity, Total as CaCO3	230	mg/L		4		A2320 B	04/09/24 15:50 / dpw		PHSC_101-H_240409A : 67		R193808
Bicarbonate as HCO3	280	mg/L		4		A2320 B	04/09/24 15:50 / dpw		PHSC_101-H_240409A : 67		R193808
Carbonate as CO3	ND	mg/L		4		A2320 B	04/09/24 15:50 / dpw		PHSC_101-H_240409A : 67		R193808
Chloride	28	mg/L		1		E300.0	04/12/24 15:37 / SR		IC METROHM_240412A : 17		R193984
Sulfate	9	mg/L		1		E300.0	04/12/24 15:37 / SR		IC METROHM_240412A : 17		R193984
Hardness as CaCO3	231	mg/L		1		A2340 B	04/17/24 11:44 / slj		WATERCALC_240417A : 2		R194054
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Arsenic	0.004	mg/L		0.003		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Cadmium	ND	mg/L		0.00008		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Calcium	67	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Copper	ND	mg/L		0.001		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Iron	ND	mg/L		0.05		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Lead	ND	mg/L		0.0005		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Magnesium	16	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Manganese	ND	mg/L		0.005		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Potassium	2	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Sodium	12	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Zinc	ND	mg/L		0.01		E200.8	04/17/24 02:17 / dck		ICPMS206-H_240416B : 114		R194044

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193808

Date: 18-Apr-24

Run ID :Run Order: PHSC_101-H_240409A: 55			SampType: Method Blank			Lab ID: MBLK			Method: A2320 B		
Analysis Date: 04/09/24 14:49			Units: mg/L			Prep Info: Prep Date:			Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									
Associated samples: H24040347-001A											

Run ID :Run Order: PHSC_101-H_240409A: 56				SampType: Laboratory Control Sample				Lab ID: LCS				Method: A2320 B			
Analysis Date: 04/09/24 14:56				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Alkalinity, Total as CaCO3		580	4.0	600	0	97	90	110							
Associated samples: H24040347-001A															

Run ID :Run Order: PHSC_101-H_240409A: 59		SampType: Sample Duplicate			Lab ID: H24040338-001ADUP				Method: A2320 B		
Analysis Date: 04/09/24 15:20		Units: mg/L			Prep Info:		Prep Date:		Prep Method:		
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	130	4.0		0				131.3	1.9	10	
Bicarbonate as HCO3	160	4.0		0				159.6	1.9	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24040347-001A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193842

Date: 18-Apr-24

Run ID :Run Order: PHSC_101-H_240410A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 04/10/24 08:56	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	155	5.0	150	0	103	90	110				

Associated samples: H24040347-001A

Run ID :Run Order: PHSC_101-H_240410A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 04/10/24 08:58	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19800	5.0	20000	0	99	90	110				

Associated samples: H24040347-001A

Run ID :Run Order: PHSC_101-H_240410A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 04/10/24 09:00	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4950	5.0	5000	0	99	90	110				

Associated samples: H24040347-001A

Run ID :Run Order: PHSC_101-H_240410A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 04/10/24 09:02	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1000	5.0	1000	0	100	90	110				

Associated samples: H24040347-001A

Run ID :Run Order: PHSC_101-H_240410A: 6	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 04/10/24 09:28	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									

Associated samples: H24040347-001A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



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ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193842

Date: 18-Apr-24

Run ID :Run Order: PHSC_101-H_240410A: 10				SampType: Sample Duplicate				Lab ID: H24040362-001ADUP				Method: A2510 B			
Analysis Date: 04/10/24 09:32				Units: umhos/cm				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C				777	5.0		0				772.8	0.6	10		
Associated samples: H24040347-001A															

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193842

Date: 18-Apr-24

Run ID :Run Order: PHSC_101-H_240410A: 1				SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 04/10/24 08:51				Units: s.u.		Prep Info: Prep Date:			Prep Method:				
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH		7.0	0.1	7	0	99	98	102					
pH Measurement Temp		21.6			0		0	0					

Associated samples: H24040347-001A

Run ID :Run Order: PHSC_101-H_240410A: 9				SampType: Sample Duplicate			Lab ID: H24040362-001ADUP			Method: A4500-H B		
Analysis Date: 04/10/24 09:32		Units: s.u.		Prep Info: Prep Date:			Prep Method:					
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.2	0.1		0				7.15	0.1	3	H	
pH Measurement Temp	11.7			0				12.5				

Associated samples: H24040347-001A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193870

Date: 18-Apr-24

Run ID :Run Order: ICP2-HE_240410B: 6		SampType: Initial Calibration Verification Standard				Lab ID: ICV		Method: E200.7			
Analysis Date: 04/10/24 11:10		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.5	1.0	40	0	101	95	105				
Magnesium	40.4	1.0	40	0	101	95	105				
Potassium	41.8	1.0	40	0	104	95	105				
Sodium	41.7	1.0	40	0	104	95	105				

Associated samples: H24040347-001B

Run ID :Run Order: ICP2-HE_240410B: 8		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-1		Method: E200.7			
Analysis Date: 04/10/24 11:20		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	26.0	1.0	25	0	104	95	105				
Magnesium	25.5	1.0	25	0	102	95	105				
Potassium	25.9	1.0	25	0	104	95	105				
Sodium	25.4	1.0	25	0	102	95	105				

Associated samples: H24040347-001B

Run ID :Run Order: ICP2-HE_240410B: 14			SampType: Method Blank			Lab ID: MB			Method: E200.7		
Analysis Date: 04/10/24 12:03		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Potassium	0.07	0.06									
Sodium	0.03	0.03									

Associated samples: H24040347-001B

Run ID :Run Order: ICP2-HE_240410B: 15		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7		
Analysis Date: 04/10/24 12:07		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.0	1.0	50	0	96	85	115				
Magnesium	47.5	1.0	50	0	95	85	115				
Potassium	49.7	1.0	50	0	99	85	115				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193870

Date: 18-Apr-24

Run ID :Run Order: ICP2-HE_240410B: 15				SampType: Laboratory Fortified Blank				Lab ID: LFB				Method: E200.7			
Analysis Date: 04/10/24 12:07				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 4		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Sodium		49.5	1.0	50	0	99	85	115							

Associated samples: H24040347-001B

Run ID :Run Order: ICP2-HE_240410B: 33		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.7		
Analysis Date: 04/10/24 13:17		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.1	1.0	25	0	96	90	110				
Magnesium	24.8	1.0	25	0	99	90	110				
Potassium	26.6	1.0	25	0	106	90	110				
Sodium	26.0	1.0	25	0	104	90	110				

Associated samples: H24040347-001B

Run ID :Run Order: ICP2-HE_240410B: 38		SampType: Sample Matrix Spike				Lab ID: H24040347-001BMS2			Method: E200.7		
Analysis Date: 04/10/24 13:36		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	112	1.0	50	66.72	91	70	130				
Magnesium	63.0	1.0	50	15.53	95	70	130				
Potassium	56.4	1.0	50	2.464	108	70	130				
Sodium	65.8	1.0	50	12.19	107	70	130				

Associated samples: H24040347-001B

Run ID :Run Order: ICP2-HE_240410B: 39			SampType: Sample Matrix Spike Duplicate			Lab ID: H24040347-001BMSD2			Method: E200.7		
Analysis Date: 04/10/24 13:39		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	112	1.0	50	66.72	90	70	130	112.2	0.5	20	
Magnesium	63.0	1.0	50	15.53	95	70	130	62.97	0	20	
Potassium	54.3	1.0	50	2.464	104	70	130	56.4	3.8	20	
Sodium	63.0	1.0	50	12.19	102	70	130	65.81	4.3	20	

Associated samples: H24040347-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193984

Date: 18-Apr-24

Run ID :Run Order: IC METROHM_240412A: 2				SampType: Method Blank			Lab ID: ICB			Method: E300.0		
Analysis Date: 04/12/24 12:02				Units: mg/L		Prep Info:		Prep Date:		Prep Method:		
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		ND	0.02									
Sulfate		ND	0.03									

Associated samples: H24040347-001A

Run ID :Run Order: IC METROHM_240412A: 3			SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 04/12/24 12:16		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	99.8	1.0	100	0	100	90	110					
Sulfate	394	1.0	400	0	98	90	110					

Associated samples: H24040347-001A

Run ID :Run Order: IC METROHM_240412A: 4				SampType: Laboratory Fortified Blank			Lab ID: LFB			Method: E300.0		
Analysis Date: 04/12/24 12:30		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	23.9	1.0	25	0	95	90	110					
Sulfate	98.8	1.0	100	0	99	90	110					

Associated samples: H24040347-001A

Run ID :Run Order: IC METROHM_240412A: 6				SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E300.0		
Analysis Date: 04/12/24 12:59		Units: mg/L		Prep Info:			Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride	48.2	1.0	50	0	96	90	110						
Sulfate	193	1.0	200	0	97	90	110						

Associated samples: H24040347-001A

Run ID :Run Order: IC METROHM_240412A: 18				SampType: Sample Matrix Spike				Lab ID: H24040347-001AMS				Method: E300.0	
Analysis Date: 04/12/24 15:52				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride		52.8	1.0	25	28.14	99	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R193984

Date: 18-Apr-24

Run ID :Run Order: IC METROHM_240412A: 18				SampType: Sample Matrix Spike		Lab ID: H24040347-001AMS				Method: E300.0		
Analysis Date: 04/12/24 15:52		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		108	1.0	100	9.134	99	90	110				
Associated samples: H24040347-001A												

Run ID :Run Order: IC METROHM_240412A: 19		SampType: Sample Matrix Spike Duplicate				Lab ID: H24040347-001AMSD			Method: E300.0		
Analysis Date: 04/12/24 16:06		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	52.9	1.0	25	28.14	99	90	110	52.79	0.3	20	
Sulfate	109	1.0	100	9.134	100	90	110	107.7	1.4	20	
Associated samples: H24040347-001A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R194030

Date: 18-Apr-24

Run ID :Run Order: ICPMS206-H_240414B: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 04/15/24 00:08		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.287	0.10	0.3	0	96	90	110				
Arsenic	0.0583	0.0050	0.06	0	97	90	110				
Cadmium	0.0294	0.0010	0.03	0	98	90	110				
Copper	0.0594	0.010	0.06	0	99	90	110				
Iron	0.300	0.020	0.3	0	100	90	110				
Lead	0.0587	0.010	0.06	0	98	90	110				
Manganese	0.310	0.010	0.3	0	103	90	110				

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240414B: 22			SampType: Method Blank			Lab ID: LRB				Method: E200.8		
Analysis Date: 04/15/24 00:42		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	ND	0.002										
Arsenic	ND	0.00001										
Cadmium	ND	7E-06										
Copper	ND	0.00004										
Iron	0.002	0.0007										
Lead	ND	0.00002										
Manganese	ND	0.00005										

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240414B: 23		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 04/15/24 00:45		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0512	0.10	0.05	0	102	85	115				
Arsenic	0.0491	0.0050	0.05	0	98	85	115				
Cadmium	0.0501	0.0010	0.05	0	100	85	115				
Copper	0.0501	0.010	0.05	0	100	85	115				
Iron	0.148	0.020	0.15	0	99	85	115				
Lead	0.0483	0.010	0.05	0	97	85	115				
Manganese	0.0494	0.010	0.05	0	99	85	115				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R194030

Date: 18-Apr-24

Run ID :Run Order: ICPMS206-H_240414B: 23				SampType: Laboratory Fortified Blank				Lab ID: LFB				Method: E200.8													
Analysis Date: 04/15/24 00:45				Units: mg/L				Prep Info: Prep Date:				Prep Method:													
Analytes Z				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Associated samples: H24040347-001B																									

Run ID :Run Order: ICPMS206-H_240414B: 50				SampType: Sample Matrix Spike		Lab ID: H24040338-001BMS				Method: E200.8		
Analysis Date: 04/15/24 02:47		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0468	0.030	0.05	0	94	70	130					
Arsenic	0.0531	0.0010	0.05	0.00109	104	70	130					
Cadmium	0.0503	0.0010	0.05	0.00001239	101	70	130					
Copper	0.0506	0.0050	0.05	0.002228	97	70	130					
Iron	12.7	0.020	0.15	12.67		70	130				A	
Lead	0.0503	0.0010	0.05	0.0001738	100	70	130					
Manganese	0.0881	0.0010	0.05	0.03798	100	70	130					

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240414B: 51				SampType: Sample Matrix Spike Duplicate			Lab ID: H24040338-001BMSD			Method: E200.8		
Analysis Date: 04/15/24 02:50		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0455	0.030	0.05	0	91	70	130	0.0468	2.7	20	A	
Arsenic	0.0525	0.0010	0.05	0.00109	103	70	130	0.05309	1.1	20		
Cadmium	0.0490	0.0010	0.05	0.00001239	98	70	130	0.0503	2.6	20		
Copper	0.0498	0.0050	0.05	0.002228	95	70	130	0.05064	1.6	20		
Iron	12.4	0.020	0.15	12.67		70	130	12.73	2.5	20		
Lead	0.0482	0.0010	0.05	0.0001738	96	70	130	0.05032	4.2	20		
Manganese	0.0874	0.0010	0.05	0.03798	99	70	130	0.08806	0.7	20		

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240414B: 53				SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 04/15/24 02:56		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0487	0.10	0.05	0	97	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R194030

Date: 18-Apr-24

Run ID :Run Order: ICPMS206-H_240414B: 53		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 04/15/24 02:56		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0523	0.0050	0.05	0	105	90	110				
Cadmium	0.0502	0.0010	0.05	0	100	90	110				
Copper	0.0488	0.010	0.05	0	98	90	110				
Iron	1.30	0.020	1.3	0	100	90	110				
Lead	0.0475	0.010	0.05	0	95	90	110				
Manganese	0.0497	0.010	0.05	0	99	90	110				

Associated samples: H24040347-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R194044

Date: 18-Apr-24

Run ID :Run Order: ICPMS206-H_240416B: 87				SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 04/17/24 00:26				Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Zinc		0.0588	0.010	0.06	0	98	90	110					

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240416B: 97				SampType: Method Blank				Lab ID: LRB				Method: E200.8		
Analysis Date: 04/17/24 01:07				Units: mg/L		Prep Info: Prep Date:				Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Zinc		ND	0.0007											

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240416B: 98				SampType: Laboratory Fortified Blank		Lab ID: LFB			Method: E200.8		
Analysis Date: 04/17/24 01:11		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.0490	0.010	0.05	0	98	85	115				

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240416B: 111				SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 04/17/24 02:04		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Zinc	0.0474	0.010	0.05	0	95	90	110					

Associated samples: H24040347-001B

Run ID :Run Order: ICPMS206-H_240416B: 118				SampType: Sample Matrix Spike				Lab ID: H24040347-001BMS				Method: E200.8	
Analysis Date: 04/17/24 02:33				Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Zinc		0.0494	0.010	0.05	0.001246	96	70	130					

Associated samples: H24040347-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



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ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: R194044

Date: 18-Apr-24

Run ID :Run Order: ICPMS206-H_240416B: 119				SampType: Sample Matrix Spike Duplicate				Lab ID: H24040347-001BMSD				Method: E200.8	
Analysis Date: 04/17/24 02:37				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Zinc		0.0492	0.010	0.05	0.001246	96	70	130	0.04941	0.4	20		

Associated samples: H24040347-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: TDS20240410A

Date: 18-Apr-24

Run ID :Run Order: Accu-124 (14410200)_240410A: 1					SampType: Method Blank		Lab ID: MBLK_20240410-1			Method: A2540 C		
Analysis Date: 04/10/24 13:59		Units: mg/L			Prep Info:		Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C		ND	7									
Associated samples: H24040347-001A												

Run ID :Run Order: Accu-124 (14410200)_240410A: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20240410-1			Method: A2540 C		
Analysis Date: 04/10/24 13:59		Units: mg/L			Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C		1990	50	2000	0	100	90	110				
Associated samples: H24040347-001A												

Run ID :Run Order: Accu-124 (14410200)_240410A: 4				SampType: Sample Duplicate				Lab ID: H24040362-002ADUP				Method: A2540 C		
Analysis Date: 04/10/24 14:00				Units: mg/L				Prep Info:		Prep Date:		Prep Method:		
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C				324	25		0				321	0.9	10	
Associated samples: H24040347-001A														

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24040347

BatchID: TSS20240410A

Date: 18-Apr-24

Run ID :Run Order: Accu-124 (14410200)_240410B: 1				SampType: Method Blank		Lab ID: MBLK_20240410-2				Method: A2540 D		
Analysis Date: 04/10/24 13:21		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		ND	0.3									
Associated samples: H24040347-001A												

Run ID :Run Order: Accu-124 (14410200)_240410B: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20240410-2			Method: A2540 D		
Analysis Date: 04/10/24 13:51		Units: mg/L		Prep Info: Prep Date:			Prep Method:					
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C		99.0	25	100	0	99	80	120				
Associated samples: H24040347-001A												

Run ID :Run Order: Accu-124 (14410200)_240410B: 4					SampType: Sample Duplicate		Lab ID: H24040365-002BDUP			Method: A2540 D		
Analysis Date: 04/10/24 13:52		Units: mg/L		Prep Info: Prep Date:			Prep Method:					
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C	248	42		0				245	1.4	10		
Associated samples: H24040347-001A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount
Page 17 of 19



Work Order Receipt Checklist

MT DEQ-Site Response

H24040347

Login completed by: Rebecca A. Tooke

Date Received: 4/9/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 4/11/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.0°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None



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Chain of Custody (COC) & Analytical Request Record

Lab Workorder #: **H24040347**

Project Information

Client: MI DEQ-Site Response
 Project: UBMC Ground Water
 Purchase Order:
 Contact/Phone: **Pebble Gap, NWL (406) 461-3660**

Comments:

Please copy results to: **poppernorthwindy.p.com**
1.00 TB on ice no salts hand del

Contact ELI prior to RUSH sample submittal for charges, availability & scheduling. Samples submitted may be subcontracted to other laboratories to complete the test(s) requested; this will be clearly noted on the analytical report.

Laboratory Use

Quote: 1361 v.4 * BO#: 47543 EE#: 8509 Turn-Around Time: Standard		Critical Hold Time: 7 Days # of Samples: 1 Matrix: Aqueous						
Analysis Requested * Schedule(s) and tests will be taken and priced from the current quote version.								
Hold Time (Days)	14	14	28	28	7	7	180	180
# of Containers	2	W						
Matrix								
RUSH TAT								
Acidity to pH 8.3 (A2310 B)	X							
Alkalinity to pH 4.5 (A2320 B)	X							
Conductivity (A2510 B)	X							
Anions by Ion Chromatography (E300.0)	X							
pH (A4500-H B)	X							
Solids, Total Dissolved (A2540 C)	X							
Solids, Total Suspended (A2540 D)	X							
Metals by ICP/ICPMS, Dissolved (E200.7 B)	X							
Hardness (A2340 B)	X							

Custody Record MUST be signed	Lab provided preservatives were used ☒ Yes ☐ No		Sampler Name (if different than Relinquished by): (406) 461-3660		Sampler Phone:
	Relinquished by (print) Pebble Gap	Date/Time 4/9/24 14:33	Signature 	Received by (print) Roberta Taylor	Date/Time 4-9-24 1433

Date Printed: 04/02/2024

EE: HE - 8509

COC: Page 1 of 1

Q2

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ANALYTICAL SUMMARY REPORT

June 05, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24050729 Quote ID: H1361

Project Name: UBMC Surface Water

Energy Laboratories Inc Helena MT received the following 6 samples for MT DEQ-Site Response on 5/23/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24050729-001	BRSW-309	05/20/24 8:20	05/23/24	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Metals Digestion by E200.2 Solids, Total Dissolved Solids, Total Suspended
H24050729-002	BRSW-307	05/20/24 9:05	05/23/24	Aqueous	Same As Above
H24050729-003	BRSW-12	05/20/24 9:47	05/23/24	Aqueous	Same As Above
H24050729-004	BRSW-308	05/20/24 10:22	05/23/24	Aqueous	Same As Above
H24050729-005	BRSW-10	05/20/24 10:42	05/23/24	Aqueous	Same As Above
H24050729-006	BRSW-33	05/20/24 11:06	05/23/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-309
Lab ID: H24050729-001
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 08:20 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.4	s.u.	H	0.1		A4500-H B	05/23/24 17:13 / dpw		PHSC_101-H_240523A : 80		R195147
pH Measurement Temp	13.4	°C				A4500-H B	05/23/24 17:13 / dpw		PHSC_101-H_240523A : 80		R195147
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	05/23/24 17:13 / dpw		PHSC_101-H_240523A : 81		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:22 / dpw		-124 (14410200)_240524B : 6		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 12:50 / dpw		-124 (14410200)_240524A : 6		TDS20240524A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 10:47 / dpw		PHSC_101-H_240603A : 20		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 10:47 / dpw		PHSC_101-H_240603A : 20		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:47 / dpw		PHSC_101-H_240603A : 20		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 10:19 / eer		IC METROHM_240528A : 79		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 10:19 / eer		IC METROHM_240528A : 79		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 1		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 19:37 / dck		ICPMS206-H_240528C : 210		R195285
Calcium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
Magnesium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Copper	ND	mg/L		0.001		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Iron	ND	mg/L		0.03		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Lead	ND	mg/L		0.0005		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Manganese	ND	mg/L		0.005		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Zinc	ND	mg/L		0.01		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979

Report RL - Analyte Reporting Limit

Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-307
Lab ID: H24050729-002
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 09:05 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.6	s.u.	H	0.1		A4500-H B	05/23/24 17:16 / dpw		PHSC_101-H_240523A : 82		R195147
pH Measurement Temp	13.3	°C				A4500-H B	05/23/24 17:16 / dpw		PHSC_101-H_240523A : 82		R195147
Conductivity @ 25 C	139	umhos/cm		5		A2510 B	05/23/24 17:16 / dpw		PHSC_101-H_240523A : 83		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:22 / dpw		-124 (14410200)_240524B : 7		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	79	mg/L		20		A2540 C	05/24/24 12:50 / dpw		-124 (14410200)_240524A : 7		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	58	mg/L		4		A2320 B	06/03/24 10:52 / dpw		PHSC_101-H_240603A : 22		R195382
Bicarbonate as HCO ₃	71	mg/L		4		A2320 B	06/03/24 10:52 / dpw		PHSC_101-H_240603A : 22		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 10:52 / dpw		PHSC_101-H_240603A : 22		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 10:34 / eer		IC METROHM_240528A : 80		R195317
Sulfate	10	mg/L		1		E300.0	05/29/24 10:34 / eer		IC METROHM_240528A : 80		R195317
Hardness as CaCO ₃	65	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 2		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 19:45 / dck		ICPMS206-H_240528C : 212		R195285
Calcium	14	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
Magnesium	7	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979
Cadmium	0.00014	mg/L		0.00008		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979
Copper	0.002	mg/L		0.001		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979
Iron	0.04	mg/L		0.03		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979
Lead	0.0009	mg/L		0.0005		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979
Manganese	0.015	mg/L		0.005		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979
Zinc	0.03	mg/L		0.01		E200.8	05/29/24 19:49 / dck 05/28/24 11:38		ICPMS206-H_240528C : 213		71979

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-12
Lab ID: H24050729-003
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 09:47 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.7	s.u.	H	0.1		A4500-H B	05/23/24 17:19 / dpw		PHSC_101-H_240523A : 84		R195147
pH Measurement Temp	13.5	°C				A4500-H B	05/23/24 17:19 / dpw		PHSC_101-H_240523A : 84		R195147
Conductivity @ 25 C	139	umhos/cm		5		A2510 B	05/23/24 17:19 / dpw		PHSC_101-H_240523A : 85		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:22 / dpw		-124 (14410200)_240524B : 8		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	79	mg/L		20		A2540 C	05/24/24 12:51 / dpw		-124 (14410200)_240524A : 8		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	57	mg/L		4		A2320 B	06/03/24 10:59 / dpw		PHSC_101-H_240603A : 24		R195382
Bicarbonate as HCO ₃	69	mg/L		4		A2320 B	06/03/24 10:59 / dpw		PHSC_101-H_240603A : 24		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 10:59 / dpw		PHSC_101-H_240603A : 24		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 10:48 / eer		IC METROHM_240528A : 81		R195317
Sulfate	10	mg/L		1		E300.0	05/29/24 10:48 / eer		IC METROHM_240528A : 81		R195317
Hardness as CaCO ₃	65	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 3		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:17 / dck		ICPMS206-H_240528C : 220		R195285
Calcium	14	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
Magnesium	7	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Cadmium	0.00016	mg/L		0.00008		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Copper	0.002	mg/L		0.001		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Iron	0.04	mg/L		0.03		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Lead	0.0006	mg/L		0.0005		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Manganese	0.015	mg/L		0.005		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Zinc	0.03	mg/L		0.01		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-308
Lab ID: H24050729-004
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 10:22 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.4	s.u.	H	0.1		A4500-H B	05/23/24 17:21 / dpw		PHSC_101-H_240523A : 86		R195147
pH Measurement Temp	13.7	°C				A4500-H B	05/23/24 17:21 / dpw		PHSC_101-H_240523A : 86		R195147
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	05/23/24 17:21 / dpw		PHSC_101-H_240523A : 87		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:23 / dpw		-124 (14410200)_240524B : 9		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 12:51 / dpw		-124 (14410200)_240524A : 9		TDS20240524A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 11:05 / dpw		PHSC_101-H_240603A : 26		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 11:05 / dpw		PHSC_101-H_240603A : 26		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:05 / dpw		PHSC_101-H_240603A : 26		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:02 / eer		IC METROHM_240528A : 82		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 11:02 / eer		IC METROHM_240528A : 82		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 4		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:25 / dck		ICPMS206-H_240528C : 222		R195285
Calcium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
Magnesium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Copper	ND	mg/L		0.001		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Iron	ND	mg/L		0.03		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Lead	ND	mg/L		0.0005		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Manganese	ND	mg/L		0.005		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Zinc	ND	mg/L		0.01		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-10
Lab ID: H24050729-005
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 10:42 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.5	s.u.	H	0.1		A4500-H B	05/23/24 17:24 / dpw		PHSC_101-H_240523A : 88		R195147
pH Measurement Temp	13.8	°C				A4500-H B	05/23/24 17:24 / dpw		PHSC_101-H_240523A : 88		R195147
Conductivity @ 25 C	87	umhos/cm		5		A2510 B	05/23/24 17:24 / dpw		PHSC_101-H_240523A : 89		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:23 / dpw		124 (14410200)_240524B : 10		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	52	mg/L		20		A2540 C	05/24/24 12:51 / dpw		124 (14410200)_240524A : 10		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	41	mg/L		4		A2320 B	06/03/24 11:10 / dpw		PHSC_101-H_240603A : 28		R195382
Bicarbonate as HCO ₃	49	mg/L		4		A2320 B	06/03/24 11:10 / dpw		PHSC_101-H_240603A : 28		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 11:10 / dpw		PHSC_101-H_240603A : 28		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:17 / eer		IC METROHM_240528A : 83		R195317
Sulfate	2	mg/L		1		E300.0	05/29/24 11:17 / eer		IC METROHM_240528A : 83		R195317
Hardness as CaCO ₃	39	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 5		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:33 / dck		ICPMS206-H_240528C : 224		R195285
Calcium	9	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
Magnesium	4	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981
Copper	0.003	mg/L		0.001		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981
Zinc	ND	mg/L		0.01		E200.8	05/29/24 20:37 / dck	05/28/24 11:39	ICPMS206-H_240528C : 225		71981

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-33
Lab ID: H24050729-006
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 11:06 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.7	s.u.	H	0.1		A4500-H B	05/23/24 17:27 / dpw		PHSC_101-H_240523A : 90		R195147
pH Measurement Temp	13.4	°C				A4500-H B	05/23/24 17:27 / dpw		PHSC_101-H_240523A : 90		R195147
Conductivity @ 25 C	140	umhos/cm		5		A2510 B	05/23/24 17:27 / dpw		PHSC_101-H_240523A : 91		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:23 / dpw		124 (14410200)_240524B : 11		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	85	mg/L		20		A2540 C	05/24/24 12:51 / dpw		124 (14410200)_240524A : 11		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	59	mg/L		4		A2320 B	06/03/24 11:16 / dpw		PHSC_101-H_240603A : 30		R195382
Bicarbonate as HCO ₃	71	mg/L		4		A2320 B	06/03/24 11:16 / dpw		PHSC_101-H_240603A : 30		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 11:16 / dpw		PHSC_101-H_240603A : 30		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:31 / eer		IC METROHM_240528A : 84		R195317
Sulfate	9	mg/L		1		E300.0	05/29/24 11:31 / eer		IC METROHM_240528A : 84		R195317
Hardness as CaCO ₃	65	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 6		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:41 / dck		ICPMS206-H_240528C : 226		R195285
Calcium	14	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
Magnesium	7	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Cadmium	0.00012	mg/L		0.00008		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Copper	0.002	mg/L		0.001		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Zinc	0.02	mg/L		0.01		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: 71979

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 163			SampType: Method Blank			Lab ID: MB-71979			Method: E200.8		
Analysis Date: 05/29/24 16:31		Units: mg/L		Prep Info:			Prep Date: 5/28/2024		Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.00002									
Cadmium	0.00001	5E-06									
Copper	ND	0.0001									
Iron	ND	0.005									
Lead	ND	0.00005									
Manganese	ND	0.0002									
Zinc	ND	0.0006									

Associated samples: H24050729-001C, H24050729-002C, H24050729-003C, H24050729-004C

Run ID :Run Order: ICPMS206-H_240528C: 169		SampType: Laboratory Control Sample			Lab ID: LCS-71979				Method: E200.8		
Analysis Date: 05/29/24 16:55		Units: mg/L			Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.502	0.0010	0.5	0	100	85	115				
Cadmium	0.258	0.0010	0.25	0	103	85	115				
Copper	0.480	0.0050	0.5	0	96	85	115				
Iron	2.36	0.020	2.5	0	94	85	115				
Lead	0.476	0.0010	0.5	0	95	85	115				
Manganese	2.38	0.0010	2.5	0	95	85	115				
Zinc	0.495	0.010	0.5	0	99	85	115				

Associated samples: H24050729-001C, H24050729-002C, H24050729-003C, H24050729-004C

Run ID :Run Order: ICPMS206-H_240528C: 214			SampType: Sample Matrix Spike			Lab ID: H24050696-012EMS3			Method: E200.8		
Analysis Date: 05/29/24 19:53		Units: mg/L		Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2				
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.487	0.0010	0.5	0.00002058	97	70	130				
Cadmium	0.254	0.0010	0.25	0.000008194	102	70	130				
Copper	0.477	0.0050	0.5	0.0002375	95	70	130				
Iron	2.33	0.020	2.5	0.04863	91	70	130				
Lead	0.472	0.0010	0.5	0.0001	94	70	130				
Manganese	2.35	0.0010	2.5	0.0006365	94	70	130				
Zinc	0.482	0.010	0.5	0.0008461	96	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: 71979

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 214		SampType: Sample Matrix Spike		Lab ID: H24050696-012EMS3				Method: E200.8			
Analysis Date: 05/29/24 19:53		Units: mg/L		Prep Info: Prep Date: 5/28/2024				Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Associated samples: H24050729-001C, H24050729-002C, H24050729-003C, H24050729-004C											

Run ID :Run Order: ICPMS206-H_240528C: 215		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-012EMSD3			Method: E200.8		
Analysis Date: 05/29/24 19:57		Units: mg/L		Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2				
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.486	0.0010	0.5	0.00002058	97	70	130	0.4868	0.2	20	
Cadmium	0.261	0.0010	0.25	0.000008194	105	70	130	0.2542	2.8	20	
Copper	0.467	0.0050	0.5	0.0002375	93	70	130	0.4773	2.1	20	
Iron	2.35	0.020	2.5	0.04863	92	70	130	2.327	0.9	20	
Lead	0.481	0.0010	0.5	0.0001	96	70	130	0.4724	1.7	20	
Manganese	2.31	0.0010	2.5	0.0006365	92	70	130	2.349	1.8	20	
Zinc	0.482	0.010	0.5	0.0008461	96	70	130	0.4815	0.2	20	
Associated samples: H24050729-001C, H24050729-002C, H24050729-003C, H24050729-004C											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: 71981

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 219			SampType: Method Blank			Lab ID: MB-71981			Method: E200.8		
Analysis Date: 05/29/24 20:13			Units: mg/L		Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.00002	0.00002									
Cadmium	ND	5E-06									
Copper	ND	0.0001									
Iron	ND	0.005									
Lead	ND	0.00005									
Manganese	ND	0.0002									
Zinc	ND	0.0006									

Associated samples: H24050729-005C, H24050729-006C

Run ID :Run Order: ICPMS206-H_240528C: 228		SampType: Laboratory Control Sample			Lab ID: LCS-71981				Method: E200.8		
Analysis Date: 05/29/24 20:49		Units: mg/L			Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.484	0.0010	0.5	0	97	85	115				
Cadmium	0.257	0.0010	0.25	0	103	85	115				
Copper	0.469	0.0050	0.5	0	94	85	115				
Iron	2.28	0.020	2.5	0	91	85	115				
Lead	0.463	0.0010	0.5	0	93	85	115				
Manganese	2.29	0.0010	2.5	0	92	85	115				
Zinc	0.474	0.010	0.5	0	95	85	115				

Associated samples: H24050729-005C, H24050729-006C

Run ID :Run Order: ICPMS206-H_240528C: 229		SampType: Sample Matrix Spike			Lab ID: H24050729-005CMS3				Method: E200.8		
Analysis Date: 05/29/24 20:53		Units: mg/L			Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.481	0.0010	0.5	0.0003315	96	70	130				
Cadmium	0.244	0.0010	0.25	0.00004998	98	70	130				
Copper	0.472	0.0050	0.5	0.003162	94	70	130				
Iron	2.25	0.020	2.5	0.009125	90	70	130				
Lead	0.469	0.0010	0.5	0	94	70	130				
Manganese	2.28	0.0010	2.5	0.0008246	91	70	130				
Zinc	0.482	0.010	0.5	0.006379	95	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: 71981

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 229			SampType: Sample Matrix Spike			Lab ID: H24050729-005CMS3			Method: E200.8			
Analysis Date: 05/29/24 20:53			Units: mg/L			Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2			
Analytes Z		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Associated samples: H24050729-005C, H24050729-006C												

Run ID :Run Order: ICPMS206-H_240528C: 230		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050729-005CMSD3			Method: E200.8		
Analysis Date: 05/29/24 20:56		Units: mg/L		Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2				
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.490	0.0010	0.5	0.0003315	98	70	130	0.4814	1.7	20	
Cadmium	0.252	0.0010	0.25	0.00004998	101	70	130	0.2443	3.1	20	
Copper	0.473	0.0050	0.5	0.003162	94	70	130	0.4718	0.3	20	
Iron	2.33	0.020	2.5	0.009125	93	70	130	2.248	3.7	20	
Lead	0.474	0.0010	0.5	0	95	70	130	0.4686	1.1	20	
Manganese	2.33	0.0010	2.5	0.0008246	93	70	130	2.285	1.9	20	
Zinc	0.489	0.010	0.5	0.006379	97	70	130	0.4822	1.4	20	
Associated samples: H24050729-005C, H24050729-006C											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195147

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 05/23/24 09:01	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	154	5.0	150	0	102	90	110				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240523A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 05/23/24 09:03	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19800	5.0	20000	0	99	90	110				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240523A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 05/23/24 09:05	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4950	5.0	5000	0	99	90	110				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240523A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 05/23/24 09:06	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1000	5.0	1000	0	100	90	110				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240523A: 6	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 05/23/24 11:27	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195147

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 26				SampType: Sample Duplicate			Lab ID: H24050696-002ADUP				Method: A2510 B		
Analysis Date: 05/23/24 11:54				Units: umhos/cm			Prep Info:		Prep Date:		Prep Method:		
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		327	5.0		0				329	0.7	10		

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: PHSC_101-H_240523A: 64				SampType: Continuing Calibration Verification Standar				Lab ID: CCV - SC 1413				Method: A2510 B	
Analysis Date: 05/23/24 12:59		Units: umhos/cm		Prep Info:				Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Conductivity @ 25 C	1410	5.0	1413	0	100	90	110						

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195147

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7		Method: A4500-H B			
Analysis Date: 05/23/24 08:55		Units: s.u.		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	20.6			0		0	0				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240523A: 25		SampType: Sample Duplicate			Lab ID: H24050696-002ADUP				Method: A4500-H B		
Analysis Date: 05/23/24 11:54		Units: s.u.		Prep Info: Prep Date:			Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.0	0.1		0				8	0.5	3	H
pH Measurement Temp	11.5			0				11.5			
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240523A: 63				SampType: Continuing Calibration Verification Standar				Lab ID: CCV - pH 7				Method: A4500-H B			
Analysis Date: 05/23/24 12:56				Units: s.u.				Prep Info: Prep Date:				Prep Method:			
Analytes 2				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH				7.0	0.1	7	0	100	98	102					
pH Measurement Temp				19.0			0		0	0					
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A															

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 6	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7			
Analysis Date: 05/24/24 08:21	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	38.6	1.0	40	0	97	95	105				
Magnesium	38.6	1.0	40	0	97	95	105				
Potassium	39.4	1.0	40	0	98	95	105				
Sodium	39.4	1.0	40	0	98	95	105				

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 7	SampType: Continuing Calibration Verification Standar				Lab ID: CCV-1			Method: E200.7			
Analysis Date: 05/24/24 08:25	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.3	1.0	25	0	97	95	105				
Magnesium	24.4	1.0	25	0	98	95	105				
Potassium	25.6	1.0	25	0	102	95	105				
Sodium	25.0	1.0	25	0	100	95	105				

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 13	SampType: Method Blank				Lab ID: MB			Method: E200.7			
Analysis Date: 05/24/24 08:48	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Potassium	ND	0.06									
Sodium	0.06	0.03									

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 14	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7			
Analysis Date: 05/24/24 08:52	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.1	1.0	50	0	96	85	115				
Magnesium	46.8	1.0	50	0	94	85	115				
Potassium	49.1	1.0	50	0	98	85	115				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 14				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7		
Analysis Date: 05/24/24 08:52				Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Sodium		49.5	1.0	50	0	99	85	115					

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 109			SampType: Sample Matrix Spike			Lab ID: H24050728-004BMS2			Method: E200.7		
Analysis Date: 05/24/24 15:34		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	75.4	1.0	50	24.28	102	70	130				
Magnesium	67.1	1.0	50	13.51	107	70	130				
Potassium	57.6	1.0	50	0.5875	114	70	130				
Sodium	58.8	1.0	50	1.361	115	70	130				

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 110			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050728-004BMSD2			Method: E200.7		
Analysis Date: 05/24/24 15:38		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	73.7	1.0	50	24.28	99	70	130	75.38	2.2	20	
Magnesium	64.8	1.0	50	13.51	103	70	130	67.06	3.4	20	
Potassium	56.7	1.0	50	0.5875	112	70	130	57.64	1.6	20	
Sodium	57.8	1.0	50	1.361	113	70	130	58.83	1.8	20	

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 112		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.7		
Analysis Date: 05/24/24 15:45		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.6	1.0	25	0	98	90	110				
Magnesium	25.1	1.0	25	0	100	90	110				
Potassium	25.6	1.0	25	0	102	90	110				
Sodium	25.2	1.0	25	0	101	90	110				

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 126				SampType: Sample Matrix Spike		Lab ID: H24050730-003BMS2			Method: E200.7		
Analysis Date: 05/24/24 16:43		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	131	1.0	50	84.73	92	70	130				
Magnesium	74.9	1.0	50	26.47	97	70	130				
Potassium	53.3	1.0	50	2.161	102	70	130				
Sodium	59.8	1.0	50	8.306	103	70	130				

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICP2-HE_240524A: 127			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050730-003BMSD2			Method: E200.7		
Analysis Date: 05/24/24 16:46		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	131	1.0	50	84.73	92	70	130	130.9	0.3	20	
Magnesium	74.3	1.0	50	26.47	96	70	130	74.94	0.8	20	
Potassium	52.2	1.0	50	2.161	100	70	130	53.26	2.0	20	
Sodium	58.6	1.0	50	8.306	101	70	130	59.8	1.9	20	

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195285

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 05/28/24 20:49		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.297	0.10	0.3	0	99	90	110				
Arsenic	0.0612	0.0050	0.06	0	102	90	110				
Cadmium	0.0300	0.0010	0.03	0	100	90	110				
Copper	0.0632	0.010	0.06	0	105	90	110				
Iron	0.315	0.020	0.3	0	105	90	110				
Lead	0.0575	0.010	0.06	0	96	90	110				
Manganese	0.309	0.010	0.3	0	103	90	110				
Zinc	0.0622	0.010	0.06	0	104	90	110				

Associated samples: H24050729-001B, H24050729-001C, H24050729-002B, H24050729-002C, H24050729-003B, H24050729-003C, H24050729-004B, H24050729-004C, H24050729-005B, H24050729-005C, H24050729-006B, H24050729-006C

Run ID :Run Order: ICPMS206-H_240528C: 22				SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 05/28/24 21:34				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum				ND	0.002										

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICPMS206-H_240528C: 23				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 05/28/24 21:39				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum		0.0530	0.10	0.05	0	106	85	115					

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Run ID :Run Order: ICPMS206-H_240528C: 200				SampType: Sample Matrix Spike			Lab ID: H24050696-010DMS			Method: E200.8		
Analysis Date: 05/29/24 18:57		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0570	0.030	0.05	0.01094	92	70	130					

Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195285

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 201				SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-010DMSD				Method: E200.8		
Analysis Date: 05/29/24 19:01				Units: mg/L				Prep Info:		Prep Date:		Prep Method:		
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum				0.0580	0.030	0.05	0.01094	94	70	130	0.05695	1.8	20	
Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B														

Run ID :Run Order: ICPMS206-H_240528C: 203		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.8		
Analysis Date: 05/29/24 19:09		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0482	0.10	0.05	0	96	90	110				
Arsenic	0.0490	0.0050	0.05	0	98	90	110				
Cadmium	0.0506	0.0010	0.05	0	101	90	110				
Copper	0.0498	0.010	0.05	0	100	90	110				
Iron	1.17	0.020	1.3	0	90	90	110				
Lead	0.0492	0.010	0.05	0	98	90	110				
Manganese	0.0490	0.010	0.05	0	98	90	110				
Zinc	0.0495	0.010	0.05	0	99	90	110				
Associated samples: H24050729-001B, H24050729-001C, H24050729-002B, H24050729-002C, H24050729-003B, H24050729-003C, H24050729-004B, H24050729-004C, H24050729-005B, H24050729-005C, H24050729-006B, H24050729-006C											

Run ID :Run Order: ICPMS206-H_240528C: 217		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.8		
Analysis Date: 05/29/24 20:05		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0493	0.10	0.05	0	99	90	110				
Arsenic	0.0488	0.0050	0.05	0	98	90	110				
Cadmium	0.0502	0.0010	0.05	0	100	90	110				
Copper	0.0498	0.010	0.05	0	100	90	110				
Iron	1.20	0.020	1.3	0	92	90	110				
Lead	0.0474	0.010	0.05	0	95	90	110				
Manganese	0.0495	0.010	0.05	0	99	90	110				
Zinc	0.0493	0.010	0.05	0	99	90	110				
Associated samples: H24050729-001B, H24050729-001C, H24050729-002B, H24050729-002C, H24050729-003B, H24050729-003C, H24050729-004B, H24050729-004C, H24050729-005B, H24050729-005C, H24050729-006B, H24050729-006C											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195285

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 242		SampType: Sample Matrix Spike				Lab ID: H24050730-002BMS				Method: E200.8		
Analysis Date: 05/29/24 21:44		Units: mg/L				Prep Info:		Prep Date:		Prep Method:		
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum		0.0458	0.030	0.05	0	92	70	130				
Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B												

Run ID :Run Order: ICPMS206-H_240528C: 243		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050730-002BMSD			Method: E200.8		
Analysis Date: 05/29/24 21:48		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0468	0.030	0.05	0	94	70	130	0.04583	2.2	20	
Associated samples: H24050729-001B, H24050729-002B, H24050729-003B, H24050729-004B, H24050729-005B, H24050729-006B											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195317

Date: 05-Jun-24

Run ID :Run Order: IC METROHM_240528A: 2		SampType: Method Blank				Lab ID: ICB			Method: E300.0		
Analysis Date: 05/28/24 11:55		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.03									

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 3		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 05/28/24 12:09		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.9	1.0	100	0	99	90	110				
Sulfate	389	1.0	400	0	97	90	110				

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 4		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0		
Analysis Date: 05/28/24 12:24		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	23.8	1.0	25	0	95	90	110				
Sulfate	98.4	1.0	100	0	98	90	110				

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 75		SampType: Sample Matrix Spike				Lab ID: H24050696-009AMS			Method: E300.0		
Analysis Date: 05/29/24 09:21		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37.4	1.0	25	12.16	101	90	110				
Sulfate	138	1.0	100	39.16	99	90	110				

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 76		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-009AMSD			Method: E300.0		
Analysis Date: 05/29/24 09:36		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37.3	1.0	25	12.16	101	90	110	37.39	0.1	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195317

Date: 05-Jun-24

Run ID :Run Order: IC METROHM_240528A: 76				SampType: Sample Matrix Spike Duplicate			Lab ID: H24050696-009AMSD			Method: E300.0		
Analysis Date: 05/29/24 09:36				Units: mg/L		Prep Info: Prep Date:			Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		139	1.0	100	39.16	100	90	110	138.1	0.6	20	

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 77			SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E300.0		
Analysis Date: 05/29/24 09:50		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.5	1.0	50	0	99	90	110				
Sulfate	198	1.0	200	0	99	90	110				

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 89				SampType: Sample Matrix Spike		Lab ID: H24050696-010AMS				Method: E300.0	
Analysis Date: 05/29/24 12:43		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.7	1.0	25	8.292	102	90	110				
Sulfate	139	1.0	100	39.21	100	90	110				

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Run ID :Run Order: IC METROHM_240528A: 90		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-010AMSD			Method: E300.0		
Analysis Date: 05/29/24 12:58		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.7	1.0	25	8.292	102	90	110	33.75	0.1	20	
Sulfate	140	1.0	100	39.21	100	90	110	138.9	0.6	20	

Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: R195382

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240603A: 6		SampType: Method Blank			Lab ID: MBLK			Method: A2320 B			
Analysis Date: 06/03/24 09:47		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: PHSC_101-H_240603A: 7			SampType: Laboratory Control Sample			Lab ID: LCS			Method: A2320 B				
Analysis Date: 06/03/24 09:56			Units: mg/L			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3			610	4.0	600	0	101	90	110				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A													

Run ID :Run Order: PHSC_101-H_240603A: 12		SampType: Sample Duplicate			Lab ID: H24050728-002ADUP				Method: A2320 B		
Analysis Date: 06/03/24 10:19		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	230	4.0		0				237.7	4.7	10	
Bicarbonate as HCO3	280	4.0		0				289.4	4.7	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: TDS20240524A

Date: 05-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524A: 1	SampType: Method Blank				Lab ID: MBLK_20240524-1				Method: A2540 C		
Analysis Date: 05/24/24 12:47	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	ND	7									
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: Accu-124 (14410200)_240524A: 2	SampType: Laboratory Control Sample				Lab ID: LCS_20240524-1				Method: A2540 C		
Analysis Date: 05/24/24 12:48	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1940	50	2000	0	97	90	110				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: Accu-124 (14410200)_240524A: 4	SampType: Sample Duplicate				Lab ID: H24050696-012BDUP				Method: A2540 C		
Analysis Date: 05/24/24 12:48	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	11.0	25		0				10		10	L
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

TDS did not obtain the minimum residue requirement of 2.5 mg residue.

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050729

BatchID: TSS20240524A

Date: 05-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524B: 1				SampType: Method Blank				Lab ID: MBLK_20240524-3				Method: A2540 D											
Analysis Date: 05/24/24 12:20				Units: mg/L				Prep Info:		Prep Date:		Prep Method:											
Analytes 1		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Solids, Total Suspended TSS @ 105 C		ND		0.3																			
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A																							

Run ID :Run Order: Accu-124 (14410200)_240524B: 2		SampType: Laboratory Control Sample			Lab ID: LCS_20240524-3			Method: A2540 D			
Analysis Date: 05/24/24 12:20		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	89.0	25	100	0	89	80	120				
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A											

Run ID :Run Order: Accu-124 (14410200)_240524B: 4				SampType: Sample Duplicate				Lab ID: H24050688-002BDUP				Method: A2540 D	
Analysis Date: 05/24/24 12:21				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C		387	56		0				353.3	9.0	10		
Associated samples: H24050729-001A, H24050729-002A, H24050729-003A, H24050729-004A, H24050729-005A, H24050729-006A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24050729

Login completed by: Wanda J. Johnson

Date Received: 5/23/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 5/28/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.8°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None



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Page 1 of 1

Account Information *(Billing information)*

Company/Name		MT OEQ	
Contact		Dave Bowers	
Phone		(406) 444-6335	
Mailing Address			
City, State, Zip			
Email dbowers@mt.gov			
Receive Invoice		☐ Hard Copy	☒ Email
Purchase Order		Quote	
		1361	
Bottle Order		47998	

Report Information (if different than Account Information)

Company/Name _____

Contact _____

Phone _____

Mailing Address _____

City, State, Zip _____

Email _____

Receive Report ☐ Hard Copy ☐ Email

Special Report/Formats:

☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

Comments

Please copy results to:
popp@northwindgrip.com
MS DEA
UBMC SW
Cooler #1

Project Information

Project Name, PWSID, Permit, etc. UBMC Surface Water	
Sampler Name P. O'Neil	Sampler Phone (406) 461-3660
Sample Origin State MT	EPA/State Compliance ☐ Yes ☐ No
Lab provided preservatives were used ☒ Yes ☐ No	
INFORMING CLIENTS, please indicate sample type. If one has been processed or refined, call before sending.	
Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*	

Analysis Requested

[illegible]

Sample Identification (Name, Location, Interval, etc.)	Collection		Number of Containers	Matrix (See Codes Above)	See	RUSH TAT	ELI LAB ID Laboratory Use Only
	Date	Time					
1 BRSW-309	5/20/24	8:20	3	W	X		H24650724
2 BRSW-307		9:05					
3 BRSW-12		9:47					
4 BRSW-308		10:22					
5 BRSW-10		10:42					
6 BRSW-33	5/20/24	11:06	3	W	X		
7							
8							
9							
10							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature					
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature					
LABORATORY USE ONLY											
Shipped By	Cooler ID(s)	Custody Seals		Intact	Receipt Temp °C	Temp Blank	On Ice	Payment Type		Amount	Receipt Number (cash/check only)
		Y	N					C	B		
				Y	N	Y	N	Y	N		

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly noted on your analytical report.



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www.energylab.com

Billings, MT 406.252.8325 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 47998

47998

SHIPPED MT DEQ-Site Response

TO:



To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us

Contact: Pebbles Opp

Order Created by: Wanda J. Johnson

Shipped From: Helena, MT

59620-0901

Ship Date: 5/14/2024

Phone: (406) 461-3660

VIA: PickUp

Project: UBMC-Mike Horse

Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UMBC Surface Water (13 Sets)

1 Liter Plastic	1	A2310 B	Acidity to pH 8.3	0.25 hrs			1
		A2320 B	Alkalinity to pH 4.5				
		A2510 B	Conductivity				
		E300.0	Anions by Ion Chromatography				
		A4500-H B	pH				
		A2540 C	Solids, Total Dissolved				
		A2540 D	Solids, Total Suspended				
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		HNO3	Filter before preservation	1
		A2340 B	Hardness				
		MCAWW	Preparation, Dissolved Filtration MCAWW				
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Tot. Rec.		HNO3		1
		E200.2	Metals Digestion by E200.2				

UBMC Groundwater (13 Sets)

BO#: 47998

1 of 2

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs		1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		 HNO3	1

Sediments (9 Sets)

4 oz Wide Mouth Amber Glass	1	E5010.20 D2974 SW3050 B	Metals by ICP/ICPMS, Total Moisture Total Metals Digestion by SW3050B			1

Comments

 HNO3 - Nitric Acid	 H2SO4 - Sulfuric Acid	 NaOH - Sodium Hydroxide	We strongly suggest that the samples are shipped the same day as they are collected.
 ZnAc - Zinc Acetate	 HCl - Hydrochloric Acid	 H3PO4 - Phosphoric Acid	
Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets			
Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.			
Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.			

BO#: 47998



ANALYTICAL SUMMARY REPORT

June 06, 2024

MT DEQ-Site Response

PO Box 200901

Helena, MT 59620-0901

Work Order: H24050731

Quote ID: H1361

Project Name: UBMC Surface Water

Energy Laboratories Inc Helena MT received the following 6 samples for MT DEQ-Site Response on 5/23/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24050731-001	BRSW-36	05/20/24 11:30	05/23/24	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Metals Digestion by E200.2 Solids, Total Dissolved Solids, Total Suspended
H24050731-002	BRSW-003A	05/20/24 12:02	05/23/24	Aqueous	Same As Above
H24050731-003	BRSW-29	05/20/24 12:25	05/23/24	Aqueous	Same As Above
H24050731-004	BRSW-304	05/20/24 13:30	05/23/24	Aqueous	Same As Above
H24050731-005	S35-SW-08	05/20/24 16:40	05/23/24	Aqueous	Same As Above
H24050731-006	S35-SW-06	05/20/24 17:07	05/23/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-36
Lab ID: H24050731-001
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 11:30 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.8	s.u.	H	0.1		A4500-H B	05/23/24 17:43 / dpw		PHSC_101-H_240523A : 102		R195147
pH Measurement Temp	14.9	°C				A4500-H B	05/23/24 17:43 / dpw		PHSC_101-H_240523A : 102		R195147
Conductivity @ 25 C	164	umhos/cm		5		A2510 B	05/23/24 17:43 / dpw		PHSC_101-H_240523A : 103		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:32 / dpw		124 (14410200)_240524B : 35		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	96	mg/L		20		A2540 C	05/24/24 13:01 / dpw		124 (14410200)_240524A : 28		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	69	mg/L		4		A2320 B	06/03/24 11:52 / dpw		PHSC_101-H_240603A : 42		R195382
Bicarbonate as HCO ₃	84	mg/L		4		A2320 B	06/03/24 11:52 / dpw		PHSC_101-H_240603A : 42		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 11:52 / dpw		PHSC_101-H_240603A : 42		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:10 / eer		IC METROHM_240528A : 95		R195317
Sulfate	12	mg/L		1		E300.0	05/29/24 14:10 / eer		IC METROHM_240528A : 95		R195317
Hardness as CaCO ₃	76	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 11		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:28 / dck		ICPMS206-H_240528C : 238		R195285
Calcium	16	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Cadmium	0.00016	mg/L		0.00008		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Copper	0.001	mg/L		0.001		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Zinc	0.03	mg/L		0.01		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-003A
Lab ID: H24050731-002
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 12:02 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.8	s.u.	H	0.1		A4500-H B	05/23/24 17:47 / dpw		PHSC_101-H_240523A : 104		R195147
pH Measurement Temp	15.1	°C				A4500-H B	05/23/24 17:47 / dpw		PHSC_101-H_240523A : 104		R195147
Conductivity @ 25 C	156	umhos/cm		5		A2510 B	05/23/24 17:47 / dpw		PHSC_101-H_240523A : 105		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:33 / dpw		124 (14410200)_240524B : 36		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	91	mg/L		20		A2540 C	05/24/24 13:03 / dpw		124 (14410200)_240524A : 29		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	70	mg/L		4		A2320 B	06/03/24 11:59 / dpw		PHSC_101-H_240603A : 44		R195382
Bicarbonate as HCO3	85	mg/L		4		A2320 B	06/03/24 11:59 / dpw		PHSC_101-H_240603A : 44		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:59 / dpw		PHSC_101-H_240603A : 44		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:24 / eer		IC METROHM_240528A : 96		R195317
Sulfate	8	mg/L		1		E300.0	05/29/24 14:24 / eer		IC METROHM_240528A : 96		R195317
Hardness as CaCO3	76	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 12		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:36 / dck		ICPMS206-H_240528C : 240		R195285
Calcium	16	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Cadmium	0.00010	mg/L		0.00008		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Zinc	0.02	mg/L		0.01		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981

Report Definitions: RL - Analyte Reporting Limit
H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-29
Lab ID: H24050731-003
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 12:25 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	8.0	s.u.	H	0.1		A4500-H B	05/23/24 18:12 / dpw		PHSC_101-H_240523A : 117		R195147
pH Measurement Temp	16.1	°C				A4500-H B	05/23/24 18:12 / dpw		PHSC_101-H_240523A : 117		R195147
Conductivity @ 25 C	157	umhos/cm		5		A2510 B	05/23/24 18:12 / dpw		PHSC_101-H_240523A : 118		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:33 / dpw		124 (14410200)_240524B : 37		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	88	mg/L		20		A2540 C	05/24/24 13:03 / dpw		124 (14410200)_240524A : 30		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	70	mg/L		4		A2320 B	06/03/24 12:05 / dpw		PHSC_101-H_240603A : 46		R195382
Bicarbonate as HCO3	85	mg/L		4		A2320 B	06/03/24 12:05 / dpw		PHSC_101-H_240603A : 46		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 12:05 / dpw		PHSC_101-H_240603A : 46		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:39 / eer		IC METROHM_240528A : 97		R195317
Sulfate	8	mg/L		1		E300.0	05/29/24 14:39 / eer		IC METROHM_240528A : 97		R195317
Hardness as CaCO3	75	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 13		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:04 / dck		ICPMS206-H_240528C : 247		R195285
Calcium	16	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Cadmium	0.00010	mg/L		0.00008		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Zinc	0.02	mg/L		0.01		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-304
Lab ID: H24050731-004
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 13:30 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.9	s.u.	H	0.1		A4500-H B	05/23/24 18:15 / dpw		PHSC_101-H_240523A : 119		R195147
pH Measurement Temp	15.4	°C				A4500-H B	05/23/24 18:15 / dpw		PHSC_101-H_240523A : 119		R195147
Conductivity @ 25 C	187	umhos/cm		5		A2510 B	05/23/24 18:15 / dpw		PHSC_101-H_240523A : 120		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:33 / dpw		124 (14410200)_240524B : 38		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	99	mg/L		20		A2540 C	05/24/24 13:03 / dpw		124 (14410200)_240524A : 31		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	85	mg/L		4		A2320 B	06/03/24 12:12 / dpw		PHSC_101-H_240603A : 48		R195382
Bicarbonate as HCO3	100	mg/L		4		A2320 B	06/03/24 12:12 / dpw		PHSC_101-H_240603A : 48		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 12:12 / dpw		PHSC_101-H_240603A : 48		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:53 / eer		IC METROHM_240528A : 98		R195317
Sulfate	8	mg/L		1		E300.0	05/29/24 14:53 / eer		IC METROHM_240528A : 98		R195317
Hardness as CaCO3	92	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 14		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:12 / dck		ICPMS206-H_240528C : 249		R195285
Calcium	20	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
Magnesium	10	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Cadmium	0.00038	mg/L		0.00008		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Copper	0.004	mg/L		0.001		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Lead	0.0015	mg/L		0.0005		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Zinc	0.06	mg/L		0.01		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-08
Lab ID: H24050731-005
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 16:40 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.5	s.u.	H	0.1		A4500-H B	05/23/24 18:18 / dpw		PHSC_101-H_240523A : 121		R195147
pH Measurement Temp	15.5	°C				A4500-H B	05/23/24 18:18 / dpw		PHSC_101-H_240523A : 121		R195147
Conductivity @ 25 C	196	umhos/cm		5		A2510 B	05/23/24 18:18 / dpw		PHSC_101-H_240523A : 122		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:34 / dpw		124 (14410200)_240524B : 39		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	118	mg/L		20		A2540 C	05/24/24 13:04 / dpw		124 (14410200)_240524A : 32		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	74	mg/L		4		A2320 B	06/03/24 12:49 / dpw		PHSC_101-H_240603A : 54		R195382
Bicarbonate as HCO3	90	mg/L		4		A2320 B	06/03/24 12:49 / dpw		PHSC_101-H_240603A : 54		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 12:49 / dpw		PHSC_101-H_240603A : 54		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 15:07 / eer		IC METROHM_240528A : 99		R195317
Sulfate	21	mg/L		1		E300.0	05/29/24 15:07 / eer		IC METROHM_240528A : 99		R195317
Hardness as CaCO3	91	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 15		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:20 / dck		ICPMS206-H_240528C : 251		R195285
Calcium	21	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Iron	0.18	mg/L		0.03		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Manganese	0.015	mg/L		0.005		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Zinc	ND	mg/L		0.01		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-06
Lab ID: H24050731-006
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 17:07 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	8.0	s.u.	H	0.1		A4500-H B	05/23/24 18:20 / dpw		PHSC_101-H_240523A : 123		R195147
pH Measurement Temp	15.8	°C				A4500-H B	05/23/24 18:20 / dpw		PHSC_101-H_240523A : 123		R195147
Conductivity @ 25 C	589	umhos/cm		5		A2510 B	05/23/24 18:20 / dpw		PHSC_101-H_240523A : 124		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:34 / dpw		124 (14410200)_240524B : 40		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	376	mg/L		20		A2540 C	05/24/24 13:04 / dpw		124 (14410200)_240524A : 33		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	190	mg/L		4		A2320 B	06/03/24 13:02 / dpw		PHSC_101-H_240603A : 58		R195382
Bicarbonate as HCO3	230	mg/L		4		A2320 B	06/03/24 13:02 / dpw		PHSC_101-H_240603A : 58		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 13:02 / dpw		PHSC_101-H_240603A : 58		R195382
Chloride	5	mg/L		1		E300.0	05/29/24 15:22 / eer		C METROHM_240528A : 100		R195317
Sulfate	112	mg/L		1		E300.0	05/29/24 15:22 / eer		C METROHM_240528A : 100		R195317
Hardness as CaCO3	283	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 16		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:28 / dck		ICPMS206-H_240528C : 253		R195285
Calcium	78	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
Magnesium	21	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
Potassium	2	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
Sodium	6	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Iron	0.03	mg/L		0.03		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Lead	0.0010	mg/L		0.0005		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Zinc	ND	mg/L		0.01		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: 71981

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 219	SampType: Method Blank				Lab ID: MB-71981				Method: E200.8			
Analysis Date: 05/29/24 20:13	Units: mg/L				Prep Info: Prep Date: 5/28/2024				Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic	0.00002	0.00002										
Cadmium	ND	5E-06										
Copper	ND	0.0001										
Iron	ND	0.005										
Lead	ND	0.00005										
Manganese	ND	0.0002										
Zinc	ND	0.0006										

Associated samples: H24050731-001C, H24050731-002C, H24050731-003C, H24050731-004C, H24050731-005C, H24050731-006C

Run ID :Run Order: ICPMS206-H_240528C: 228	SampType: Laboratory Control Sample				Lab ID: LCS-71981				Method: E200.8			
Analysis Date: 05/29/24 20:49	Units: mg/L				Prep Info: Prep Date: 5/28/2024				Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic	0.484	0.0010	0.5	0	97	85	115					
Cadmium	0.257	0.0010	0.25	0	103	85	115					
Copper	0.469	0.0050	0.5	0	94	85	115					
Iron	2.28	0.020	2.5	0	91	85	115					
Lead	0.463	0.0010	0.5	0	93	85	115					
Manganese	2.29	0.0010	2.5	0	92	85	115					
Zinc	0.474	0.010	0.5	0	95	85	115					

Associated samples: H24050731-001C, H24050731-002C, H24050731-003C, H24050731-004C, H24050731-005C, H24050731-006C

Run ID :Run Order: ICPMS206-H_240528C: 229	SampType: Sample Matrix Spike				Lab ID: H24050729-005CMS3				Method: E200.8			
Analysis Date: 05/29/24 20:53	Units: mg/L				Prep Info: Prep Date: 5/28/2024				Prep Method: E200.2			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic	0.481	0.0010	0.5	0.0003315	96	70	130					
Cadmium	0.244	0.0010	0.25	0.00004998	98	70	130					
Copper	0.472	0.0050	0.5	0.003162	94	70	130					
Iron	2.25	0.020	2.5	0.009125	90	70	130					
Lead	0.469	0.0010	0.5	0	94	70	130					
Manganese	2.28	0.0010	2.5	0.0008246	91	70	130					
Zinc	0.482	0.010	0.5	0.006379	95	70	130					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: 71981

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 229			SampType: Sample Matrix Spike			Lab ID: H24050729-005CMS3			Method: E200.8		
Analysis Date: 05/29/24 20:53			Units: mg/L			Prep Info: Prep Date: 5/28/2024			Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Associated samples: H24050731-001C, H24050731-002C, H24050731-003C, H24050731-004C, H24050731-005C, H24050731-006C											

Run ID :Run Order: ICPMS206-H_240528C: 230		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050729-005CMSD3			Method: E200.8		
Analysis Date: 05/29/24 20:56		Units: mg/L		Prep Info:			Prep Date: 5/28/2024		Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.490	0.0010	0.5	0.0003315	98	70	130	0.4814	1.7	20	
Cadmium	0.252	0.0010	0.25	0.00004998	101	70	130	0.2443	3.1	20	
Copper	0.473	0.0050	0.5	0.003162	94	70	130	0.4718	0.3	20	
Iron	2.33	0.020	2.5	0.009125	93	70	130	2.248	3.7	20	
Lead	0.474	0.0010	0.5	0	95	70	130	0.4686	1.1	20	
Manganese	2.33	0.0010	2.5	0.0008246	93	70	130	2.285	1.9	20	
Zinc	0.489	0.010	0.5	0.006379	97	70	130	0.4822	1.4	20	
Associated samples: H24050731-001C, H24050731-002C, H24050731-003C, H24050731-004C, H24050731-005C, H24050731-006C											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195147

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 05/23/24 09:01	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	154	5.0	150	0	102	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: PHSC_101-H_240523A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 05/23/24 09:03	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19800	5.0	20000	0	99	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: PHSC_101-H_240523A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 05/23/24 09:05	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4950	5.0	5000	0	99	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: PHSC_101-H_240523A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 05/23/24 09:06	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1000	5.0	1000	0	100	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: PHSC_101-H_240523A: 6	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 05/23/24 11:27	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195147

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 64			SampType: Continuing Calibration Verification Standard			Lab ID: CCV - SC 1413			Method: A2510 B				
Analysis Date: 05/23/24 12:59			Units: umhos/cm			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			1410	5.0	1413	0	100	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A													

Run ID :Run Order: PHSC_101-H_240523A: 111		SampType: Continuing Calibration Verification Standard				Lab ID: CCV - SC 1413			Method: A2510 B		
Analysis Date: 05/23/24 17:56		Units: umhos/cm		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1400	5.0	1413	0	99	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: PHSC_101-H_240523A: 116			SampType: Sample Duplicate			Lab ID: H24050696-009ADUP			Method: A2510 B				
Analysis Date: 05/23/24 18:10			Units: umhos/cm			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			382	5.0		0				380.4	0.3	10	
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195147

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 05/23/24 08:55		Units: s.u.		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	20.6			0		0	0				

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: PHSC_101-H_240523A: 63				SampType: Continuing Calibration Verification Standard				Lab ID: CCV - pH 7				Method: A4500-H B			
Analysis Date: 05/23/24 12:56				Units: s.u.		Prep Info:				Prep Date:		Prep Method:			
Analytes 2				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH				7.0	0.1	7	0	100	98	102					
pH Measurement Temp				19.0			0		0	0					

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: PHSC_101-H_240523A: 108				SampType: Sample Duplicate				Lab ID: H24050696-008ADUP				Method: A4500-H B	
Analysis Date: 05/23/24 17:52		Units: s.u.		Prep Info:				Prep Date:		Prep Method:			
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
pH	8.3	0.1		0				8.26	0.5	3	H		
pH Measurement Temp	18.0			0				17.4					

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: PHSC_101-H_240523A: 110				SampType: Continuing Calibration Verification Standard				Lab ID: CCV - pH 7				Method: A4500-H B			
Analysis Date: 05/23/24 17:54				Units: s.u.				Prep Info:		Prep Date:		Prep Method:			
Analytes 2				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH				7.0	0.1	7	0	100	98	102					
pH Measurement Temp				18.8			0		0	0					

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195206

Date: 06-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 6	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7			
Analysis Date: 05/24/24 08:21	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	38.6	1.0	40	0	97	95	105				
Magnesium	38.6	1.0	40	0	97	95	105				
Potassium	39.4	1.0	40	0	98	95	105				
Sodium	39.4	1.0	40	0	98	95	105				

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 7	SampType: Continuing Calibration Verification Standard				Lab ID: CCV-1			Method: E200.7			
Analysis Date: 05/24/24 08:25	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.3	1.0	25	0	97	95	105				
Magnesium	24.4	1.0	25	0	98	95	105				
Potassium	25.6	1.0	25	0	102	95	105				
Sodium	25.0	1.0	25	0	100	95	105				

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 13	SampType: Method Blank				Lab ID: MB			Method: E200.7			
Analysis Date: 05/24/24 08:48	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Potassium	ND	0.06									
Sodium	0.06	0.03									

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 14	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7			
Analysis Date: 05/24/24 08:52	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.1	1.0	50	0	96	85	115				
Magnesium	46.8	1.0	50	0	94	85	115				
Potassium	49.1	1.0	50	0	98	85	115				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195206

Date: 06-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 14				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7		
Analysis Date: 05/24/24 08:52				Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Sodium		49.5	1.0	50	0	99	85	115					

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 124		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.7		
Analysis Date: 05/24/24 16:32		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.4	1.0	25	0	98	90	110				
Magnesium	25.6	1.0	25	0	102	90	110				
Potassium	26.8	1.0	25	0	107	90	110				
Sodium	26.6	1.0	25	0	106	90	110				

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 126			SampType: Sample Matrix Spike			Lab ID: H24050730-003BMS2			Method: E200.7		
Analysis Date: 05/24/24 16:43		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	131	1.0	50	84.73	92	70	130				
Magnesium	74.9	1.0	50	26.47	97	70	130				
Potassium	53.3	1.0	50	2.161	102	70	130				
Sodium	59.8	1.0	50	8.306	103	70	130				

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 127			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050730-003BMSD2			Method: E200.7		
Analysis Date: 05/24/24 16:46		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	131	1.0	50	84.73	92	70	130	130.9	0.3	20	
Magnesium	74.3	1.0	50	26.47	96	70	130	74.94	0.8	20	
Potassium	52.2	1.0	50	2.161	100	70	130	53.26	2.0	20	
Sodium	58.6	1.0	50	8.306	101	70	130	59.8	1.9	20	

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195206

Date: 06-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 142		SampType: Sample Matrix Spike				Lab ID: H24050689-001EMS2			Method: E200.7		
Analysis Date: 05/24/24 17:44		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	62.4	1.0	50	16.76	91	70	130				
Magnesium	58.1	1.0	50	5.628	105	70	130				
Potassium	57.5	1.0	50	0.7158	114	70	130				
Sodium	68.1	1.0	50	11.37	113	70	130				

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICP2-HE_240524A: 143			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050689-001EMSD2			Method: E200.7		
Analysis Date: 05/24/24 17:48		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	65.2	1.0	50	16.76	97	70	130	62.36	4.5	20	
Magnesium	61.1	1.0	50	5.628	111	70	130	58.11	5.0	20	
Potassium	57.7	1.0	50	0.7158	114	70	130	57.47	0.3	20	
Sodium	68.0	1.0	50	11.37	113	70	130	68.08	0.2	20	

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount
Page 15 of 27



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195285

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 05/28/24 20:49		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.297	0.10	0.3	0	99	90	110				
Arsenic	0.0612	0.0050	0.06	0	102	90	110				
Cadmium	0.0300	0.0010	0.03	0	100	90	110				
Copper	0.0632	0.010	0.06	0	105	90	110				
Iron	0.315	0.020	0.3	0	105	90	110				
Lead	0.0575	0.010	0.06	0	96	90	110				
Manganese	0.309	0.010	0.3	0	103	90	110				
Zinc	0.0622	0.010	0.06	0	104	90	110				

Associated samples: H24050731-001B, H24050731-001C, H24050731-002B, H24050731-002C, H24050731-003B, H24050731-003C, H24050731-004B, H24050731-004C, H24050731-005B, H24050731-005C, H24050731-006B, H24050731-006C

Run ID :Run Order: ICPMS206-H_240528C: 22				SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 05/28/24 21:34				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum				ND	0.002										

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICPMS206-H_240528C: 23				SampType: Laboratory Fortified Blank			Lab ID: LFB			Method: E200.8		
Analysis Date: 05/28/24 21:39		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0530	0.10	0.05	0	106	85	115					

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICPMS206-H_240528C: 232			SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 05/29/24 21:04		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0495	0.10	0.05	0	99	90	110				
Arsenic	0.0492	0.0050	0.05	0	98	90	110				
Cadmium	0.0507	0.0010	0.05	0	101	90	110				
Copper	0.0498	0.010	0.05	0	100	90	110				
Iron	1.23	0.020	1.3	0	95	90	110				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195285

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 232			SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 05/29/24 21:04		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0465	0.010	0.05	0	93	90	110				
Manganese	0.0496	0.010	0.05	0	99	90	110				
Zinc	0.0495	0.010	0.05	0	99	90	110				

Associated samples: H24050731-001B, H24050731-001C, H24050731-002B, H24050731-002C, H24050731-003B, H24050731-003C, H24050731-004B, H24050731-004C, H24050731-005B, H24050731-005C, H24050731-006B, H24050731-006C

Run ID :Run Order: ICPMS206-H_240528C: 242				SampType: Sample Matrix Spike		Lab ID: H24050730-002BMS				Method: E200.8		
Analysis Date: 05/29/24 21:44		Units: mg/L		Prep Info: Prep Date:			Prep Method:					
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0458	0.030	0.05	0	92	70	130					

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICPMS206-H_240528C: 243				SampType: Sample Matrix Spike Duplicate				Lab ID: H24050730-002BMSSD				Method: E200.8	
Analysis Date: 05/29/24 21:48				Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum		0.0468	0.030	0.05	0	94	70	130	0.04583	2.2	20		

Associated samples: H24050731-001B, H24050731-002B, H24050731-003B, H24050731-004B, H24050731-005B, H24050731-006B

Run ID :Run Order: ICPMS206-H_240528C: 245			SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 05/29/24 21:56		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0477	0.10	0.05	0	95	90	110				
Arsenic	0.0490	0.0050	0.05	0	98	90	110				
Cadmium	0.0489	0.0010	0.05	0	98	90	110				
Copper	0.0497	0.010	0.05	0	99	90	110				
Iron	1.23	0.020	1.3	0	95	90	110				
Lead	0.0477	0.010	0.05	0	95	90	110				
Manganese	0.0490	0.010	0.05	0	98	90	110				
Zinc	0.0494	0.010	0.05	0	99	90	110				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195285

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 245	SampType: Continuing Calibration Verification Standard	Lab ID: CCV	Method: E200.8								
Analysis Date: 05/29/24 21:56	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H24050731-001B, H24050731-001C, H24050731-002B, H24050731-002C, H24050731-003B, H24050731-003C, H24050731-004B, H24050731-004C, H24050731-005B, H24050731-005C, H24050731-006B, H24050731-006C

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195317

Date: 06-Jun-24

Run ID :Run Order: IC METROHM_240528A: 2	SampType: Method Blank				Lab ID: ICB				Method: E300.0		
Analysis Date: 05/28/24 11:55	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.03									

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 3	SampType: Initial Calibration Verification Standard				Lab ID: ICV				Method: E300.0		
Analysis Date: 05/28/24 12:09	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.9	1.0	100	0	99	90	110				
Sulfate	389	1.0	400	0	97	90	110				

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 4	SampType: Laboratory Fortified Blank				Lab ID: LFB				Method: E300.0		
Analysis Date: 05/28/24 12:24	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	23.8	1.0	25	0	95	90	110				
Sulfate	98.4	1.0	100	0	98	90	110				

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 89	SampType: Sample Matrix Spike				Lab ID: H24050696-010AMS				Method: E300.0		
Analysis Date: 05/29/24 12:43	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.7	1.0	25	8.292	102	90	110				
Sulfate	139	1.0	100	39.21	100	90	110				

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 90	SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-010AMSD				Method: E300.0		
Analysis Date: 05/29/24 12:58	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.7	1.0	25	8.292	102	90	110	33.75	0.1	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195317

Date: 06-Jun-24

Run ID :Run Order: IC METROHM_240528A: 90	SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-010AMSD				Method: E300.0		
Analysis Date: 05/29/24 12:58	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	140	1.0	100	39.21	100	90	110	138.9	0.6	20	

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 91	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E300.0		
Analysis Date: 05/29/24 13:12	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.6	1.0	50	0	99	90	110				
Sulfate	200	1.0	200	0	100	90	110				

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 102	SampType: Sample Matrix Spike				Lab ID: H24050696-011AMS				Method: E300.0		
Analysis Date: 05/29/24 15:50	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	34.3	1.0	25	8.853	102	90	110				
Sulfate	146	1.0	100	46.74	100	90	110				

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Run ID :Run Order: IC METROHM_240528A: 103	SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-011AMSD				Method: E300.0		
Analysis Date: 05/29/24 16:05	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.3	1.0	25	8.853	98	90	110	34.27	2.8	20	
Sulfate	143	1.0	100	46.74	96	90	110	146.5	2.3	20	

Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: R195382

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240603A: 6			SampType: Method Blank			Lab ID: MBLK			Method: A2320 B				
Analysis Date: 06/03/24 09:47			Units: mg/L			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3			ND	2									
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A													

Run ID :Run Order: PHSC_101-H_240603A: 7				SampType: Laboratory Control Sample				Lab ID: LCS				Method: A2320 B			
Analysis Date: 06/03/24 09:56				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3				610	4.0	600	0	101	90	110					
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A															

Run ID :Run Order: PHSC_101-H_240603A: 50		SampType: Sample Duplicate			Lab ID: H24050731-004ADUP				Method: A2320 B		
Analysis Date: 06/03/24 12:19		Units: mg/L			Prep Info:		Prep Date:		Prep Method:		
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	85	4.0		0				85.1	0.1	10	
Bicarbonate as HCO3	100	4.0		0				103.2	0.1	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: PHSC_101-H_240603A: 56		SampType: Sample Duplicate			Lab ID: H24050731-005ADUP				Method: A2320 B		
Analysis Date: 06/03/24 12:55		Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	77	4.0		0				74.25	3.1	10	
Bicarbonate as HCO3	93	4.0		0				89.98	3.1	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: TDS20240524A

Date: 06-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524A: 1				SampType: Method Blank				Lab ID: MBLK_20240524-1				Method: A2540 C			
Analysis Date: 05/24/24 12:47				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C				ND	7										
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A															

Run ID :Run Order: Accu-124 (14410200)_240524A: 2		SampType: Laboratory Control Sample				Lab ID: LCS_20240524-1			Method: A2540 C		
Analysis Date: 05/24/24 12:48		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1940	50	2000	0	97	90	110				
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A											

Run ID :Run Order: Accu-124 (14410200)_240524A: 4				SampType: Sample Duplicate		Lab ID: H24050696-012BDUP				Method: A2540 C		
Analysis Date: 05/24/24 12:48		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		11.0	25		0				10		10	L
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A												

TDS did not obtain the minimum residue requirement of 2.5 mg residue.

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050731

BatchID: TSS20240524A

Date: 06-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524B: 1				SampType: Method Blank		Lab ID: MBLK_20240524-3				Method: A2540 D		
Analysis Date: 05/24/24 12:20				Units: mg/L		Prep Info: Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		ND	0.3									
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A												

Run ID :Run Order: Accu-124 (14410200)_240524B: 2				SampType: Laboratory Control Sample				Lab ID: LCS_20240524-3				Method: A2540 D			
Analysis Date: 05/24/24 12:20				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C				89.0	25	100	0	89	80	120					
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A															

Run ID :Run Order: Accu-124 (14410200)_240524B: 4				SampType: Sample Duplicate				Lab ID: H24050688-002BDUP				Method: A2540 D	
Analysis Date: 05/24/24 12:21				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C		387	56		0				353.3	9.0	10		
Associated samples: H24050731-001A, H24050731-002A, H24050731-003A, H24050731-004A, H24050731-005A, H24050731-006A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount
Page 23 of 27



Work Order Receipt Checklist

MT DEQ-Site Response

H24050731

Login completed by: Wanda J. Johnson

Date Received: 5/23/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 5/28/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.0°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None



www.energylab.com

Account Information *(Billing information)*

Company/Name		MT DEQ	
Contact	Dave Bowers		
Phone	(406) 444-6335		
Mailing Address			
City, State, Zip			
Email		dbowers@mt.gov	
Receive Invoice	☐ Hard Copy	☒ Email	
Purchase Order		Receive Report	☐ Hard Copy ☒ Email
Quote		Bottle Order	
1361		47998	

Report Information (if different than Account Information)

Company/Name _____
Contact _____
Phone _____
Mailing Address _____
City, State, Zip _____
Email _____
Receive Report ☐ Hard Copy ☐ Email
Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

Comments

Please copy results to:
popp@northwindg.prc.com
MT DEA
UBMC₁ Cooler #2
SW

Project Information

Project Name, PWSID, Permit, etc. UBMC Surface water	
Sampler Name P. Oll	Sampler Phone (406) 461-3660
Sample Origin State MT	EPA/State Compliance ☐ Yes ☐ No
Lab provided preservatives were used ☒ Yes ☐ No	
MINIMUM CLIENTS, please indicate sample type. If one has been processed or refined, call before sending.	
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*	

Analysis Requested

[illegible]

Custody Record MUST be signed	Relinquished by (print)	Signature	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Signature	Received by Laboratory (print)	Date/Time	Signature
LABORATORY USE ONLY					
Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank
		☒ A ☒ B ☒ C ☒ D	Y N	1.0 °C	☒ Y ☐ N
					Payment Type
					Cash
					Check
					Amount \$
					Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 406.252.6325 * Casper, WY 307.235.0515 * Gillette, WY 307.666.7175 * Helena, MT 406.442.0711

BOTTLE ORDER 47998

7998

SHIPPED MT DEQ-Site Response
TO:

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp

Order Created by: Wanda J. Johnson

Shipped From: Helena, MT

Ship Date: 5/14/2024

Phone: (406) 461-3660

Project: UBMC-Mike Horse

VIA: PickUp

Quote Used: 1361

59620-0901

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
UMBC Surface Water (13 Sets)							
1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs			1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		HNO3	Filter before preservation	1
250 mL Plastic	1	E200.7_8 E200.2	Metals by ICP/ICPMS, Tot. Rec. Metals Digestion by E200.2		HNO3		1

UBMC Groundwater (13 Sets)

BO#: 47998

1 of 2

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs		1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		 HNO3	1 Filter before preservation

Sediments (9 Sets)

4 oz Wide Mouth Amber Glass	1	E6010.20 D2974 SW3050 B	Metals by ICP/ICPMS, Total Moisture Total Metals Digestion by SW3050B			1

Comments

 HNO3 - Nitric Acid
  H2SO4 - Sulfuric Acid
  NaOH - Sodium Hydroxide

 ZnAc - Zinc Acetate
  HCl - Hydrochloric Acid
  H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com -> Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BO#: 47998

2 of 2



ANALYTICAL SUMMARY REPORT

June 06, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24050728 Quote ID: H1361
Project Name: UBMC Ground Water

Energy Laboratories Inc Helena MT received the following 5 samples for MT DEQ-Site Response on 5/23/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24050728-001	MHMW-11	05/21/24 8:36	05/23/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended
H24050728-002	S35-MW-03	05/21/24 10:35	05/23/24	Aqueous	Same As Above
H24050728-003	MW-2018-01	05/21/24 14:35	05/23/24	Aqueous	Same As Above
H24050728-004	MW-2018-03	05/21/24 15:11	05/23/24	Aqueous	Same As Above
H24050728-005	MW-2018-04	05/21/24 16:25	05/23/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-11
Lab ID: H24050728-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 08:36 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.9	s.u.	H	0.1		A4500-H B	05/23/24 16:59 / dpw		PHSC_101-H_240523A : 70		R195147
pH Measurement Temp	12.8	°C				A4500-H B	05/23/24 16:59 / dpw		PHSC_101-H_240523A : 70		R195147
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	05/23/24 16:59 / dpw		PHSC_101-H_240523A : 71		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:39 / dpw		124 (14410200)_240524B : 52		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 13:04 / dpw		124 (14410200)_240524A : 34		TDS20240524A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 10:07 / dpw		PHSC_101-H_240603A : 8		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 10:07 / dpw		PHSC_101-H_240603A : 8		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:07 / dpw		PHSC_101-H_240603A : 8		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 07:55 / eer		IC METROHM_240528A : 69		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 07:55 / eer		IC METROHM_240528A : 69		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 8		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:24 / dck		ICPMS206-H_240528C : 87		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Cadmium	ND	mg/L		0.00008		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Calcium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Copper	ND	mg/L		0.001		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Magnesium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Zinc	ND	mg/L		0.01		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-03
Lab ID: H24050728-002
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 10:35 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.6	s.u.	H	0.1		A4500-H B	05/23/24 17:02 / dpw		PHSC_101-H_240523A : 72		R195147
pH Measurement Temp	12.6	°C				A4500-H B	05/23/24 17:02 / dpw		PHSC_101-H_240523A : 72		R195147
Conductivity @ 25 C	554	umhos/cm		5		A2510 B	05/23/24 17:02 / dpw		PHSC_101-H_240523A : 73		R195147
Solids, Total Suspended TSS @ 105 C	14	mg/L		10		A2540 D	05/24/24 12:40 / dpw		124 (14410200)_240524B : 53		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	327	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 35		TDS20240524A
INORGANICS											
Alkalinity, Total as CaCO3	240	mg/L		4		A2320 B	06/03/24 10:11 / dpw		PHSC_101-H_240603A : 10		R195382
Bicarbonate as HCO3	290	mg/L		4		A2320 B	06/03/24 10:11 / dpw		PHSC_101-H_240603A : 10		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:11 / dpw		PHSC_101-H_240603A : 10		R195382
Chloride	29	mg/L		1		E300.0	05/29/24 08:09 / eer		IC METROHM_240528A : 70		R195317
Sulfate	10	mg/L		1		E300.0	05/29/24 08:09 / eer		IC METROHM_240528A : 70		R195317
Hardness as CaCO3	252	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 9		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:28 / dck		ICPMS206-H_240528C : 88		R195285
Arsenic	0.003	mg/L		0.003		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Cadmium	ND	mg/L		0.00008		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Calcium	73	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Copper	ND	mg/L		0.001		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Magnesium	17	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Potassium	2	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Sodium	12	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Zinc	ND	mg/L		0.01		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-01
Lab ID: H24050728-003
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 14:35 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.6	s.u.	H	0.1		A4500-H B	05/23/24 17:05 / dpw		PHSC_101-H_240523A : 74		R195147
pH Measurement Temp	12.7	°C				A4500-H B	05/23/24 17:05 / dpw		PHSC_101-H_240523A : 74		R195147
Conductivity @ 25 C	744	umhos/cm		5		A2510 B	05/23/24 17:05 / dpw		PHSC_101-H_240523A : 75		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:40 / dpw		124 (14410200)_240524B : 54		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	548	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 36		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	21	mg/L		4		A2320 B	06/03/24 10:27 / dpw		PHSC_101-H_240603A : 14		R195382
Bicarbonate as HCO3	25	mg/L		4		A2320 B	06/03/24 10:27 / dpw		PHSC_101-H_240603A : 14		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:27 / dpw		PHSC_101-H_240603A : 14		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 08:24 / eer		IC METROHM_240528A : 71		R195317
Sulfate	361	mg/L		1		E300.0	05/29/24 08:24 / eer		IC METROHM_240528A : 71		R195317
Hardness as CaCO3	379	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 10		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:33 / dck		ICPMS206-H_240528C : 89		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Cadmium	0.00403	mg/L		0.00008		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Calcium	73	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Copper	0.001	mg/L		0.001		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Magnesium	48	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Potassium	1	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Zinc	1.55	mg/L		0.01		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-03
Lab ID: H24050728-004
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 15:11
DateReceived: 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.2	s.u.	H	0.1		A4500-H B	05/23/24 17:08 / dpw		PHSC_101-H_240523A : 76		R195147
pH Measurement Temp	13.1	°C				A4500-H B	05/23/24 17:08 / dpw		PHSC_101-H_240523A : 76		R195147
Conductivity @ 25 C	242	umhos/cm		5		A2510 B	05/23/24 17:08 / dpw		PHSC_101-H_240523A : 77		R195147
Solids, Total Suspended TSS @ 105 C	12	mg/L		10		A2540 D	05/24/24 12:41 / dpw		124 (14410200)_240524B : 55		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	145	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 37		TDS20240524A
INORGANICS											
Alkalinity, Total as CaCO3	74	mg/L		4		A2320 B	06/03/24 10:34 / dpw		PHSC_101-H_240603A : 16		R195382
Bicarbonate as HCO3	90	mg/L		4		A2320 B	06/03/24 10:34 / dpw		PHSC_101-H_240603A : 16		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:34 / dpw		PHSC_101-H_240603A : 16		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 08:38 / eer		IC METROHM_240528A : 72		R195317
Sulfate	45	mg/L		1		E300.0	05/29/24 08:38 / eer		IC METROHM_240528A : 72		R195317
Hardness as CaCO3	116	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 11		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:37 / dck		ICPMS206-H_240528C : 90		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Cadmium	0.00029	mg/L		0.00008		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Calcium	24	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Copper	0.002	mg/L		0.001		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Magnesium	14	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Zinc	0.05	mg/L		0.01		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-04
Lab ID: H24050728-005
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 16:25 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.4	s.u.	H	0.1		A4500-H B	05/23/24 17:10 / dpw		PHSC_101-H_240523A : 78		R195147
pH Measurement Temp	13.5	°C				A4500-H B	05/23/24 17:10 / dpw		PHSC_101-H_240523A : 78		R195147
Conductivity @ 25 C	178	umhos/cm		5		A2510 B	05/23/24 17:10 / dpw		PHSC_101-H_240523A : 79		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:41 / dpw		124 (14410200)_240524B : 56		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	107	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 38		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	71	mg/L		4		A2320 B	06/03/24 10:41 / dpw		PHSC_101-H_240603A : 18		R195382
Bicarbonate as HCO3	86	mg/L		4		A2320 B	06/03/24 10:41 / dpw		PHSC_101-H_240603A : 18		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:41 / dpw		PHSC_101-H_240603A : 18		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 08:53 / eer		IC METROHM_240528A : 73		R195317
Sulfate	16	mg/L		1		E300.0	05/29/24 08:53 / eer		IC METROHM_240528A : 73		R195317
Hardness as CaCO3	85	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 12		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:42 / dck		ICPMS206-H_240528C : 91		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Cadmium	0.00015	mg/L		0.00008		E200.8	05/29/24 02:42 / dck		ICPMS206-H_240528C : 91		R195285
Calcium	18	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Copper	0.001	mg/L		0.001		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Magnesium	9	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Zinc	0.03	mg/L		0.01		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221

Report Definitions: RL - Analyte Reporting Limit
H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195147

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 05/23/24 09:01	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	154	5.0	150	0	102	90	110				
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Run ID :Run Order: PHSC_101-H_240523A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 05/23/24 09:03	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19800	5.0	20000	0	99	90	110				
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Run ID :Run Order: PHSC_101-H_240523A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 05/23/24 09:05	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4950	5.0	5000	0	99	90	110				
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Run ID :Run Order: PHSC_101-H_240523A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 05/23/24 09:06	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1000	5.0	1000	0	100	90	110				
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Run ID :Run Order: PHSC_101-H_240523A: 6	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 05/23/24 11:27	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195147

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 64	SampType: Continuing Calibration Verification Standard				Lab ID: CCV - SC 1413			Method: A2510 B			
Analysis Date: 05/23/24 12:59	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1410	5.0	1413	0	100	90	110				
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Run ID :Run Order: PHSC_101-H_240523A: 69	SampType: Sample Duplicate				Lab ID: H24050696-007ADUP			Method: A2510 B			
Analysis Date: 05/23/24 16:57	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	361	5.0		0				361.4	0.1	10	
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195147

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 1				SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 05/23/24 08:55				Units: s.u.		Prep Info:		Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH		7.0	0.1	7	0	100	98	102					
pH Measurement Temp		20.6			0		0	0					

Associated samples: **H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A**

Run ID :Run Order: PHSC_101-H_240523A: 63			SampType: Continuing Calibration Verification Standard			Lab ID: CCV - pH 7			Method: A4500-H B		
Analysis Date: 05/23/24 12:56		Units: s.u.		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	19.0			0		0	0				

Associated samples: **H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A**

Run ID :Run Order: PHSC_101-H_240523A: 68				SampType: Sample Duplicate		Lab ID: H24050696-007ADUP				Method: A4500-H B		
Analysis Date: 05/23/24 16:57		Units: s.u.		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	8.2	0.1		0				8.09	0.9	3	H	
pH Measurement Temp	15.5			0				16				

Associated samples: **H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195206

Date: 06-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 6		SampType: Initial Calibration Verification Standard				Lab ID: ICV		Method: E200.7			
Analysis Date: 05/24/24 08:21		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	38.6	1.0	40	0	97	95	105				
Magnesium	38.6	1.0	40	0	97	95	105				
Potassium	39.4	1.0	40	0	98	95	105				
Sodium	39.4	1.0	40	0	98	95	105				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICP2-HE_240524A: 7		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-1			Method: E200.7		
Analysis Date: 05/24/24 08:25		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.3	1.0	25	0	97	95	105				
Magnesium	24.4	1.0	25	0	98	95	105				
Potassium	25.6	1.0	25	0	102	95	105				
Sodium	25.0	1.0	25	0	100	95	105				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICP2-HE_240524A: 13			SampType: Method Blank			Lab ID: MB			Method: E200.7		
Analysis Date: 05/24/24 08:48		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Potassium	ND	0.06									
Sodium	0.06	0.03									

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICP2-HE_240524A: 14				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7	
Analysis Date: 05/24/24 08:52		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	48.1	1.0	50	0	96	85	115					
Magnesium	46.8	1.0	50	0	94	85	115					
Potassium	49.1	1.0	50	0	98	85	115					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195206

Date: 06-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 14				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7		
Analysis Date: 05/24/24 08:52				Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Sodium		49.5	1.0	50	0	99	85	115					

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICP2-HE_240524A: 100			SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.7		
Analysis Date: 05/24/24 14:59		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.7	1.0	25	0	99	90	110				
Magnesium	24.9	1.0	25	0	99	90	110				
Potassium	24.8	1.0	25	0	99	90	110				
Sodium	24.6	1.0	25	0	99	90	110				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICP2-HE_240524A: 109			SampType: Sample Matrix Spike			Lab ID: H24050728-004BMS2			Method: E200.7		
Analysis Date: 05/24/24 15:34		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	75.4	1.0	50	24.28	102	70	130				
Magnesium	67.1	1.0	50	13.51	107	70	130				
Potassium	57.6	1.0	50	0.5875	114	70	130				
Sodium	58.8	1.0	50	1.361	115	70	130				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICP2-HE_240524A: 110			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050728-004BMSD2			Method: E200.7		
Analysis Date: 05/24/24 15:38		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	73.7	1.0	50	24.28	99	70	130	75.38	2.2	20	
Magnesium	64.8	1.0	50	13.51	103	70	130	67.06	3.4	20	
Potassium	56.7	1.0	50	0.5875	112	70	130	57.64	1.6	20	
Sodium	57.8	1.0	50	1.361	113	70	130	58.83	1.8	20	

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195221

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240524A: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 05/24/24 15:21		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0614	0.0050	0.06	0	102	90	110				
Cadmium	0.0289	0.0010	0.03	0	96	90	110				
Copper	0.0625	0.010	0.06	0	104	90	110				
Iron	0.326	0.020	0.3	0	109	90	110				
Lead	0.0591	0.010	0.06	0	99	90	110				
Manganese	0.310	0.010	0.3	0	103	90	110				
Zinc	0.0607	0.010	0.06	0	101	90	110				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICPMS206-H_240524A: 23			SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 05/24/24 16:41		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0490	0.0050	0.05	0	98	90	110				
Cadmium	0.0500	0.0010	0.05	0	100	90	110				
Copper	0.0501	0.010	0.05	0	100	90	110				
Iron	1.29	0.020	1.3	0	99	90	110				
Lead	0.0469	0.010	0.05	0	94	90	110				
Manganese	0.0497	0.010	0.05	0	99	90	110				
Zinc	0.0512	0.010	0.05	0	102	90	110				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICPMS206-H_240524A: 25			SampType: Method Blank			Lab ID: LRB			Method: E200.8		
Analysis Date: 05/24/24 16:57		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.00001									
Cadmium	0.00001	7E-06									
Copper	0.00006	0.00004									
Iron	0.005	0.0007									
Lead	ND	0.00002									
Manganese	ND	0.00005									
Zinc	0.0007	0.0007									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195221

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240524A: 25				SampType: Method Blank				Lab ID: LRB				Method: E200.8											
Analysis Date: 05/24/24 16:57				Units: mg/L				Prep Info:		Prep Date:		Prep Method:											
Analytes Z		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B																							

Run ID :Run Order: ICPMS206-H_240524A: 26		SampType: Laboratory Fortified Blank			Lab ID: LFB			Method: E200.8			
Analysis Date: 05/24/24 17:01		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0493	0.0050	0.05	0	99	85	115				
Cadmium	0.0500	0.0010	0.05	0	100	85	115				
Copper	0.0515	0.010	0.05	0	103	85	115				
Iron	0.155	0.020	0.15	0	103	85	115				
Lead	0.0488	0.010	0.05	0	98	85	115				
Manganese	0.0506	0.010	0.05	0	101	85	115				
Zinc	0.0523	0.010	0.05	0	105	85	115				
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B											

Run ID :Run Order: ICPMS206-H_240524A: 39		SampType: Sample Matrix Spike				Lab ID: H24050730-004BMS			Method: E200.8		
Analysis Date: 05/24/24 17:53		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0501	0.0010	0.05	0.0001902	100	70	130				
Cadmium	0.0512	0.0010	0.05	0.0014	99	70	130				
Copper	0.0638	0.0050	0.05	0.01384	100	70	130				
Iron	0.338	0.020	0.15	0.1947	95	70	130				
Lead	0.0509	0.0010	0.05	0	102	70	130				
Manganese	0.0803	0.0010	0.05	0.03062	99	70	130				
Zinc	0.134	0.010	0.05	0.08249	102	70	130				
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B											

Run ID :Run Order: ICPMS206-H_240524A: 40				SampType: Sample Matrix Spike Duplicate				Lab ID: H24050730-004BMSD			Method: E200.8	
Analysis Date: 05/24/24 17:57				Units: mg/L		Prep Info: Prep Date:			Prep Method:			
Analytes Z		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		0.0495	0.0010	0.05	0.0001902	99	70	130	0.05013	1.3	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195221

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240524A: 40			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050730-004BMSD			Method: E200.8		
Analysis Date: 05/24/24 17:57		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.0508	0.0010	0.05	0.0014	99	70	130	0.05115	0.6	20	
Copper	0.0633	0.0050	0.05	0.01384	99	70	130	0.06385	0.9	20	
Iron	0.348	0.020	0.15	0.1947	102	70	130	0.3379	2.8	20	
Lead	0.0492	0.0010	0.05	0	98	70	130	0.0509	3.4	20	
Manganese	0.0808	0.0010	0.05	0.03062	100	70	130	0.08034	0.5	20	
Zinc	0.134	0.010	0.05	0.08249	102	70	130	0.1337	0.1	20	

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195285

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 12			SampType: Initial Calibration Verification Standard			Lab ID: ICV			Method: E200.8		
Analysis Date: 05/28/24 20:49		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.297	0.10	0.3	0	99	90	110				
Cadmium	0.0300	0.0010	0.03	0	100	90	110				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICPMS206-H_240528C: 22			SampType: Method Blank			Lab ID: LRB			Method: E200.8		
Analysis Date: 05/28/24 21:34		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.002									
Cadmium	ND	7E-06									

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICPMS206-H_240528C: 23			SampType: Laboratory Fortified Blank			Lab ID: LFB			Method: E200.8		
Analysis Date: 05/28/24 21:39		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0530	0.10	0.05	0	106	85	115				
Cadmium	0.0466	0.0010	0.05	0	93	85	115				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICPMS206-H_240528C: 81			SampType: Sample Matrix Spike			Lab ID: H24050706-001BMS			Method: E200.8		
Analysis Date: 05/29/24 01:57		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0542	0.030	0.05	0	108	70	130				
Cadmium	0.0483	0.0010	0.05	0	97	70	130				

Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B

Run ID :Run Order: ICPMS206-H_240528C: 82				SampType: Sample Matrix Spike Duplicate				Lab ID: H24050706-001BMSD				Method: E200.8	
Analysis Date: 05/29/24 02:01				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum		0.0559	0.030	0.05	0	112	70	130	0.05419	3.2	20		

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195285

Date: 06-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 82	SampType: Sample Matrix Spike Duplicate				Lab ID: H24050706-001BMSD				Method: E200.8		
Analysis Date: 05/29/24 02:01	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.0488	0.0010	0.05	0	98	70	130	0.04829	1.0	20	
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B											

Run ID :Run Order: ICPMS206-H_240528C: 84	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E200.8		
Analysis Date: 05/29/24 02:10	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0492	0.10	0.05	0	98	90	110				
Cadmium	0.0473	0.0010	0.05	0	95	90	110				
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B											

Run ID :Run Order: ICPMS206-H_240528C: 96	SampType: Sample Matrix Spike				Lab ID: H24050744-001BMS				Method: E200.8		
Analysis Date: 05/29/24 03:04	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0539	0.030	0.05	0	108	70	130				
Cadmium	0.0482	0.0010	0.05	0.00003883	96	70	130				
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B											

Run ID :Run Order: ICPMS206-H_240528C: 97	SampType: Sample Matrix Spike Duplicate				Lab ID: H24050744-001BMSD				Method: E200.8		
Analysis Date: 05/29/24 03:08	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0534	0.030	0.05	0	107	70	130	0.05386	0.8	20	
Cadmium	0.0482	0.0010	0.05	0.00003883	96	70	130	0.04815	0.0	20	
Associated samples: H24050728-001B, H24050728-002B, H24050728-003B, H24050728-004B, H24050728-005B											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195317

Date: 06-Jun-24

Run ID :Run Order: IC METROHM_240528A: 2			SampType: Method Blank			Lab ID: ICB			Method: E300.0		
Analysis Date: 05/28/24 11:55		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.03									

Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A

Run ID :Run Order: IC METROHM_240528A: 3			SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 05/28/24 12:09		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	98.9	1.0	100	0	99	90	110					
Sulfate	389	1.0	400	0	97	90	110					

Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A

Run ID :Run Order: IC METROHM_240528A: 4				SampType: Laboratory Fortified Blank			Lab ID: LFB			Method: E300.0		
Analysis Date: 05/28/24 12:24				Units: mg/L		Prep Info:		Prep Date:		Prep Method:		
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		23.8	1.0	25	0	95	90	110				
Sulfate		98.4	1.0	100	0	98	90	110				

Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A

Run ID :Run Order: IC METROHM_240528A: 63				SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E300.0		
Analysis Date: 05/29/24 06:29		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	49.5	1.0	50	0	99	90	110					
Sulfate	199	1.0	200	0	100	90	110					

Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A

Run ID :Run Order: IC METROHM_240528A: 75				SampType: Sample Matrix Spike				Lab ID: H24050696-009AMS				Method: E300.0	
Analysis Date: 05/29/24 09:21				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride		37.4	1.0	25	12.16	101	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195317

Date: 06-Jun-24

Run ID :Run Order: IC METROHM_240528A: 75				SampType: Sample Matrix Spike				Lab ID: H24050696-009AMS				Method: E300.0			
Analysis Date: 05/29/24 09:21				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Sulfate		138	1.0	100	39.16	99	90	110							
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A															

Run ID :Run Order: IC METROHM_240528A: 76		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050696-009AMSD			Method: E300.0		
Analysis Date: 05/29/24 09:36		Units: mg/L		Prep Info:		Prep Date:			Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37.3	1.0	25	12.16	101	90	110	37.39	0.1	20	
Sulfate	139	1.0	100	39.16	100	90	110	138.1	0.6	20	
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: R195382

Date: 06-Jun-24

Run ID :Run Order: PHSC_101-H_240603A: 6				SampType: Method Blank				Lab ID: MBLK				Method: A2320 B													
Analysis Date: 06/03/24 09:47				Units: mg/L				Prep Info:		Prep Date:				Prep Method:											
Analytes 1				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Alkalinity, Total as CaCO3				ND		2																			
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A																									

Run ID :Run Order: PHSC_101-H_240603A: 7			SampType: Laboratory Control Sample			Lab ID: LCS			Method: A2320 B			
Analysis Date: 06/03/24 09:56			Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3		610	4.0	600	0	101	90	110				
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A												

Run ID :Run Order: PHSC_101-H_240603A: 12		SampType: Sample Duplicate			Lab ID: H24050728-002ADUP				Method: A2320 B		
Analysis Date: 06/03/24 10:19		Units: mg/L		Prep Info:		Prep Date:			Prep Method:		
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	230	4.0		0				237.7	4.7	10	
Bicarbonate as HCO3	280	4.0		0				289.4	4.7	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: TDS20240524A

Date: 06-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524A: 1				SampType: Method Blank				Lab ID: MBLK_20240524-1				Method: A2540 C													
Analysis Date: 05/24/24 12:47				Units: mg/L				Prep Info: Prep Date:				Prep Method:													
Analytes 1				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Solids, Total Dissolved TDS @ 180 C				ND		7																			
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A																									

Run ID :Run Order: Accu-124 (14410200)_240524A: 2				SampType: Laboratory Control Sample				Lab ID: LCS_20240524-1				Method: A2540 C	
Analysis Date: 05/24/24 12:48				Units: mg/L		Prep Info: Prep Date:		Prep Method:					
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C		1940	50	2000	0	97	90	110					
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A													

Run ID :Run Order: Accu-124 (14410200)_240524A: 4					SampType: Sample Duplicate		Lab ID: H24050696-012BDUP			Method: A2540 C		
Analysis Date: 05/24/24 12:48		Units: mg/L		Prep Info:			Prep Date:			Prep Method:		
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		11.0	25		0				10		10	L
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A												

TDS did not obtain the minimum residue requirement of 2.5 mg residue.

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050728

BatchID: TSS20240524A

Date: 06-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524B: 1				SampType: Method Blank		Lab ID: MBLK_20240524-3				Method: A2540 D		
Analysis Date: 05/24/24 12:20				Units: mg/L		Prep Info: Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		ND	0.3									
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A												

Run ID :Run Order: Accu-124 (14410200)_240524B: 2				SampType: Laboratory Control Sample				Lab ID: LCS_20240524-3				Method: A2540 D			
Analysis Date: 05/24/24 12:20				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C				89.0	25	100	0	89	80	120					
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A															

Run ID :Run Order: Accu-124 (14410200)_240524B: 4				SampType: Sample Duplicate				Lab ID: H24050688-002BDUP				Method: A2540 D	
Analysis Date: 05/24/24 12:21				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C		387	56		0				353.3	9.0	10		
Associated samples: H24050728-001A, H24050728-002A, H24050728-003A, H24050728-004A, H24050728-005A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount
Page 21 of 25



Work Order Receipt Checklist

MT DEQ-Site Response

H24050728

Login completed by: Rebecca A. Tooke

Date Received: 5/23/2024

Reviewed by: wjohnson

Received by: RAT

Reviewed Date: 5/28/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.6°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None



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Page 1 of 1

Report Information (if different than Account Information)

Company Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐ Hard Copy ☐ Email
Special Report/Formats:	
☐ LEVEL IV	☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

Analysis Requested

Matrix Codes

A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.

	RUSH	TAT	ELI LAB ID Laboratory Use Only
See	X	X	H24050728

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



Trust Our People. Trust Our Data.
605.406.4422

Billings, MT 406.252.6325 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 47998

47998

SHIPPED MT DEQ-Site Response

TO:

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp

59620-0901

Phone: (406) 461-3660

Project: UBMC-Mike Horse

Order Created by: Wanda J. Johnson

Shipped From: Helena, MT

Ship Date: 5/14/2024

VIA: PickUp

Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UMBC Surface Water (13 Sets)

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs			1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		HNO3	Filter before preservation	1
250 mL Plastic	1	E200.7_8 E200.2	Metals by ICP/ICPMS, Tot. Rec. Metals Digestion by E200.2		HNO3		1

UBMC Groundwater (13 Sets)

BO#: 47998

1 of 2

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs		1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		 HNO3	1

~~Sediments (0 Sets)~~

4 oz Wide Mouth Amber Glass	1	E6010.20 D2974 SW3050 B	Metals by ICP/ICPMS, Total ~~Moisture~~ Total Metals Digestion by SW3050B			1

Comments

 HNO3 - Nitric Acid	 H2SO4 - Sulfuric Acid	 NaOH - Sodium Hydroxide	We strongly suggest that the samples are shipped the same day as they are collected.
 ZnAc - Zinc Acetate	 HCl - Hydrochloric Acid	 H3PO4 - Phosphoric Acid	
Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.			
Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.			

BO#: 47998

2 of 2



ANALYTICAL SUMMARY REPORT

June 05, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24050730 Quote ID: H1361

Project Name: UBMC Ground Water

Energy Laboratories Inc Helena MT received the following 5 samples for MT DEQ-Site Response on 5/23/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24050730-001	MW-2019-05	05/21/24 17:31	05/23/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended
H24050730-002	MHMW-10	05/22/24 9:30	05/23/24	Aqueous	Same As Above
H24050730-003	LCMW-5	05/22/24 14:33	05/23/24	Aqueous	Same As Above
H24050730-004	LCMW-1	05/22/24 15:25	05/23/24	Aqueous	Same As Above
H24050730-005	MHMW-9	05/22/24 16:16	05/23/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2019-05
Lab ID: H24050730-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 17:31 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.5	s.u.	H	0.1		A4500-H B	05/23/24 17:30 / dpw		PHSC_101-H_240523A : 92		R195147
pH Measurement Temp	13.6	°C				A4500-H B	05/23/24 17:30 / dpw		PHSC_101-H_240523A : 92		R195147
Conductivity @ 25 C	180	umhos/cm		5		A2510 B	05/23/24 17:30 / dpw		PHSC_101-H_240523A : 93		R195147
Solids, Total Suspended TSS @ 105 C	13	mg/L		10		A2540 D	05/24/24 12:42 / dpw		124 (14410200)_240524B : 60		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	112	mg/L		20		A2540 C	05/24/24 13:06 / dpw		124 (14410200)_240524A : 39		TDS20240524A
INORGANICS											
Alkalinity, Total as CaCO ₃	69	mg/L		4		A2320 B	06/03/24 11:23 / dpw		PHSC_101-H_240603A : 32		R195382
Bicarbonate as HCO ₃	83	mg/L		4		A2320 B	06/03/24 11:23 / dpw		PHSC_101-H_240603A : 32		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 11:23 / dpw		PHSC_101-H_240603A : 32		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:46 / eer		IC METROHM_240528A : 85		R195317
Sulfate	20	mg/L		1		E300.0	05/29/24 11:46 / eer		IC METROHM_240528A : 85		R195317
Hardness as CaCO ₃	83	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 7		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:12 / dck		ICPMS206-H_240528C : 234		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Cadmium	0.00039	mg/L		0.00008		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Calcium	18	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Copper	0.002	mg/L		0.001		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Magnesium	9	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Zinc	0.07	mg/L		0.01		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-10
Lab ID: H24050730-002
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 09:30 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.2	s.u.	H	0.1		A4500-H B	05/23/24 17:32 / dpw		PHSC_101-H_240523A : 94		R195147
pH Measurement Temp	13.8	°C				A4500-H B	05/23/24 17:32 / dpw		PHSC_101-H_240523A : 94		R195147
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	05/23/24 17:32 / dpw		PHSC_101-H_240523A : 95		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L	L	20		A2540 D	05/24/24 12:43 / dpw		124 (14410200)_240524B : 61		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 13:06 / dpw		124 (14410200)_240524A : 40		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 11:29 / dpw		PHSC_101-H_240603A : 34		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 11:29 / dpw		PHSC_101-H_240603A : 34		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:29 / dpw		PHSC_101-H_240603A : 34		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 12:00 / eer		IC METROHM_240528A : 86		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 12:00 / eer		IC METROHM_240528A : 86		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 8		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:16 / dck		ICPMS206-H_240528C : 235		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Cadmium	ND	mg/L		0.00008		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Calcium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Copper	ND	mg/L		0.001		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Magnesium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Zinc	ND	mg/L		0.01		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221

Report RL - Analyte Reporting Limit

Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-5
Lab ID: H24050730-003
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 14:33 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	5.0	s.u.	H	0.1		A4500-H B	05/23/24 17:35 / dpw		PHSC_101-H_240523A : 96		R195147
pH Measurement Temp	13.7	°C				A4500-H B	05/23/24 17:35 / dpw		PHSC_101-H_240523A : 96		R195147
Conductivity @ 25 C	762	umhos/cm		5		A2510 B	05/23/24 17:35 / dpw		PHSC_101-H_240523A : 97		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 13:42 / dpw		124 (14410200)_240524B : 68		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	610	mg/L		20		A2540 C	05/24/24 13:06 / dpw		124 (14410200)_240524A : 42		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 11:35 / dpw		PHSC_101-H_240603A : 36		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 11:35 / dpw		PHSC_101-H_240603A : 36		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:35 / dpw		PHSC_101-H_240603A : 36		R195382
Chloride	3	mg/L		1		E300.0	05/29/24 12:15 / eer		IC METROHM_240528A : 87		R195317
Sulfate	376	mg/L		1		E300.0	05/29/24 12:15 / eer		IC METROHM_240528A : 87		R195317
Hardness as CaCO3	321	mg/L		1		A2340 B	05/28/24 12:34 / slj		WATERCALC_240528A : 1		R195241
METALS, DISSOLVED											
Aluminum	1.47	mg/L		0.03		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Cadmium	0.133	mg/L		0.00008		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Calcium	85	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Copper	1.02	mg/L		0.001		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Iron	6.76	mg/L		0.05		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Lead	0.0099	mg/L		0.0005		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Magnesium	26	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Manganese	11.4	mg/L		0.005		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Potassium	2	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Sodium	8	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Zinc	5.15	mg/L		0.01		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-1
Lab ID: H24050730-004
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 15:25 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.7	s.u.	H	0.1		A4500-H B	05/23/24 17:38 / dpw		PHSC_101-H_240523A : 98		R195147
pH Measurement Temp	14.2	°C				A4500-H B	05/23/24 17:38 / dpw		PHSC_101-H_240523A : 98		R195147
Conductivity @ 25 C	217	umhos/cm		5		A2510 B	05/23/24 17:38 / dpw		PHSC_101-H_240523A : 99		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 13:43 / dpw		124 (14410200)_240524B : 69		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	131	mg/L		20		A2540 C	05/24/24 13:07 / dpw		124 (14410200)_240524A : 43		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	46	mg/L		4		A2320 B	06/03/24 11:39 / dpw		PHSC_101-H_240603A : 38		R195382
Bicarbonate as HCO3	56	mg/L		4		A2320 B	06/03/24 11:39 / dpw		PHSC_101-H_240603A : 38		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:39 / dpw		PHSC_101-H_240603A : 38		R195382
Chloride	2	mg/L		1		E300.0	05/29/24 13:41 / eer		IC METROHM_240528A : 93		R195317
Sulfate	53	mg/L		1		E300.0	05/29/24 13:41 / eer		IC METROHM_240528A : 93		R195317
Hardness as CaCO3	89	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 9		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:20 / dck		ICPMS206-H_240528C : 236		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Cadmium	0.00140	mg/L		0.00008		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Calcium	19	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Copper	0.014	mg/L		0.001		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Iron	0.19	mg/L		0.05		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Magnesium	10	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Manganese	0.031	mg/L		0.005		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Sodium	4	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Zinc	0.08	mg/L		0.01		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-9
Lab ID: H24050730-005
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 16:16 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.8	s.u.	H	0.1		A4500-H B	05/23/24 17:41 / dpw		PHSC_101-H_240523A : 100		R195147
pH Measurement Temp	14.9	°C				A4500-H B	05/23/24 17:41 / dpw		PHSC_101-H_240523A : 100		R195147
Conductivity @ 25 C	217	umhos/cm		5		A2510 B	05/23/24 17:41 / dpw		PHSC_101-H_240523A : 101		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 13:43 / dpw		124 (14410200)_240524B : 70		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	130	mg/L		20		A2540 C	05/24/24 13:09 / dpw		124 (14410200)_240524A : 44		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	46	mg/L		4		A2320 B	06/03/24 11:45 / dpw		PHSC_101-H_240603A : 40		R195382
Bicarbonate as HCO3	56	mg/L		4		A2320 B	06/03/24 11:45 / dpw		PHSC_101-H_240603A : 40		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:45 / dpw		PHSC_101-H_240603A : 40		R195382
Chloride	2	mg/L		1		E300.0	05/29/24 13:55 / eer		IC METROHM_240528A : 94		R195317
Sulfate	53	mg/L		1		E300.0	05/29/24 13:55 / eer		IC METROHM_240528A : 94		R195317
Hardness as CaCO3	89	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 10		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:24 / dck		ICPMS206-H_240528C : 237		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Cadmium	0.00137	mg/L		0.00008		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Calcium	19	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Copper	0.014	mg/L		0.001		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Iron	0.19	mg/L		0.05		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Magnesium	10	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Manganese	0.031	mg/L		0.005		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Sodium	4	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Zinc	0.08	mg/L		0.01		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195147

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 2		SampType: Initial Calibration Verification Standard				Lab ID: SC 150		Method: A2510 B			
Analysis Date: 05/23/24 09:01		Units: umhos/cm				Prep Info: Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	154	5.0	150	0	102	90	110				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Run ID :Run Order: PHSC_101-H_240523A: 3			SampType: Initial Calibration Verification Standard			Lab ID: SC 20000			Method: A2510 B				
Analysis Date: 05/23/24 09:03			Units: umhos/cm			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			19800	5.0	20000	0	99	90	110				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A													

Run ID :Run Order: PHSC_101-H_240523A: 4			SampType: Initial Calibration Verification Standard			Lab ID: SC 5000			Method: A2510 B				
Analysis Date: 05/23/24 09:05			Units: umhos/cm			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			4950	5.0	5000	0	99	90	110				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A													

Run ID :Run Order: PHSC_101-H_240523A: 5		SampType: Laboratory Control Sample			Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 05/23/24 09:06		Units: umhos/cm			Prep Info:		Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1000	5.0	1000	0	100	90	110				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Run ID :Run Order: PHSC_101-H_240523A: 6			SampType: Method Blank			Lab ID: MBLK			Method: A2510 B				
Analysis Date: 05/23/24 11:27			Units: umhos/cm			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			ND	5									
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195147

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 26				SampType: Sample Duplicate			Lab ID: H24050696-002ADUP				Method: A2510 B		
Analysis Date: 05/23/24 11:54				Units: umhos/cm			Prep Info:		Prep Date:		Prep Method:		
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		327	5.0		0				329	0.7	10		

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: PHSC_101-H_240523A: 64				SampType: Continuing Calibration Verification Standar				Lab ID: CCV - SC 1413				Method: A2510 B	
Analysis Date: 05/23/24 12:59		Units: umhos/cm		Prep Info:				Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Conductivity @ 25 C	1410	5.0	1413	0	100	90	110						

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195147

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240523A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 05/23/24 08:55		Units: s.u.		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	20.6			0		0	0				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Run ID :Run Order: PHSC_101-H_240523A: 25		SampType: Sample Duplicate			Lab ID: H24050696-002ADUP				Method: A4500-H B		
Analysis Date: 05/23/24 11:54		Units: s.u.		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.0	0.1		0				8	0.5	3	H
pH Measurement Temp	11.5			0				11.5			
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Run ID :Run Order: PHSC_101-H_240523A: 63				SampType: Continuing Calibration Verification Standar			Lab ID: CCV - pH 7			Method: A4500-H B		
Analysis Date: 05/23/24 12:56		Units: s.u.		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.0	0.1	7	0	100	98	102					
pH Measurement Temp	19.0			0		0	0					
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 6	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7			
Analysis Date: 05/24/24 08:21	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	3.98	0.10	4	0	100	95	105				
Calcium	38.6	1.0	40	0	97	95	105				
Iron	3.85	0.020	4	0	96	95	105				
Magnesium	38.6	1.0	40	0	97	95	105				
Manganese	3.85	0.010	4	0	96	95	105				
Potassium	39.4	1.0	40	0	98	95	105				
Sodium	39.4	1.0	40	0	98	95	105				
Zinc	0.801	0.010	0.8	0	100	95	105				

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICP2-HE_240524A: 7	SampType: Continuing Calibration Verification Standar				Lab ID: CCV-1			Method: E200.7			
Analysis Date: 05/24/24 08:25	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2.53	0.10	2.5	0	101	95	105				
Calcium	24.3	1.0	25	0	97	95	105				
Iron	2.47	0.020	2.5	0	99	95	105				
Magnesium	24.4	1.0	25	0	98	95	105				
Manganese	2.51	0.010	2.5	0	101	95	105				
Potassium	25.6	1.0	25	0	102	95	105				
Sodium	25.0	1.0	25	0	100	95	105				
Zinc	2.53	0.010	2.5	0	101	95	105				

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICP2-HE_240524A: 13	SampType: Method Blank				Lab ID: MB			Method: E200.7			
Analysis Date: 05/24/24 08:48	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.03									
Calcium	ND	0.2									
Iron	ND	0.008									
Magnesium	ND	0.05									
Manganese	ND	0.001									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 13	SampType: Method Blank				Lab ID: MB			Method: E200.7			
Analysis Date: 05/24/24 08:48	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	ND	0.06									
Sodium	0.06	0.03									
Zinc	ND	0.003									

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICP2-HE_240524A: 14	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7			
Analysis Date: 05/24/24 08:52	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4.95	0.10	5	0	99	85	115				
Calcium	48.1	1.0	50	0	96	85	115				
Iron	4.66	0.020	5	0	93	85	115				
Magnesium	46.8	1.0	50	0	94	85	115				
Manganese	4.64	0.010	5	0	93	85	115				
Potassium	49.1	1.0	50	0	98	85	115				
Sodium	49.5	1.0	50	0	99	85	115				
Zinc	0.971	0.010	1	0	97	85	115				

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICP2-HE_240524A: 112	SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.7			
Analysis Date: 05/24/24 15:45	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2.57	0.10	2.5	0	103	90	110				
Calcium	24.6	1.0	25	0	98	90	110				
Iron	2.50	0.020	2.5	0	100	90	110				
Magnesium	25.1	1.0	25	0	100	90	110				
Manganese	2.59	0.010	2.5	0	104	90	110				
Potassium	25.6	1.0	25	0	102	90	110				
Sodium	25.2	1.0	25	0	101	90	110				
Zinc	2.66	0.010	2.5	0	106	90	110				

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 124			SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.7		
Analysis Date: 05/24/24 16:32		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	2.59	0.10	2.5	0	103	90	110					
Calcium	24.4	1.0	25	0	98	90	110					
Iron	2.54	0.020	2.5	0	101	90	110					
Magnesium	25.6	1.0	25	0	102	90	110					
Manganese	2.60	0.010	2.5	0	104	90	110					
Potassium	26.8	1.0	25	0	107	90	110					
Sodium	26.6	1.0	25	0	106	90	110					
Zinc	2.70	0.010	2.5	0	108	90	110					

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICP2-HE_240524A: 126		SampType: Sample Matrix Spike				Lab ID: H24050730-003BMS2			Method: E200.7			
Analysis Date: 05/24/24 16:43		Units: mg/L				Prep Info:		Prep Date:		Prep Method:		
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	6.55	0.030	5	1.465	102	70	130					
Calcium	131	1.0	50	84.73	92	70	130					
Iron	11.6	0.020	5	6.761	97	70	130					
Magnesium	74.9	1.0	50	26.47	97	70	130					
Manganese	16.1	0.0014	5	11.37	94	70	130					
Potassium	53.3	1.0	50	2.161	102	70	130					
Sodium	59.8	1.0	50	8.306	103	70	130					
Zinc	6.04	0.010	1	5.155		70	130				A	

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICP2-HE_240524A: 127		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050730-003BMSD2			Method: E200.7		
Analysis Date: 05/24/24 16:46		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	6.48	0.030	5	1.465	100	70	130	6.551	1.0	20	
Calcium	131	1.0	50	84.73	92	70	130	130.9	0.3	20	
Iron	11.5	0.020	5	6.761	94	70	130	11.62	1.3	20	
Magnesium	74.3	1.0	50	26.47	96	70	130	74.94	0.8	20	
Manganese	15.9	0.0014	5	11.37	91	70	130	16.07	0.9	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195206

Date: 05-Jun-24

Run ID :Run Order: ICP2-HE_240524A: 127			SampType: Sample Matrix Spike Duplicate			Lab ID: H24050730-003BMSD2			Method: E200.7		
Analysis Date: 05/24/24 16:46		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes g	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	52.2	1.0	50	2.161	100	70	130	53.26	2.0	20	
Sodium	58.6	1.0	50	8.306	101	70	130	59.8	1.9	20	
Zinc	6.08	0.010	1	5.155		70	130	6.036	0.8	20	A
Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195221

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240524A: 12	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8			
Analysis Date: 05/24/24 15:21	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0614	0.0050	0.06	0	102	90	110				
Cadmium	0.0289	0.0010	0.03	0	96	90	110				
Copper	0.0625	0.010	0.06	0	104	90	110				
Iron	0.326	0.020	0.3	0	109	90	110				
Lead	0.0591	0.010	0.06	0	99	90	110				
Manganese	0.310	0.010	0.3	0	103	90	110				
Zinc	0.0607	0.010	0.06	0	101	90	110				

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICPMS206-H_240524A: 23	SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.8			
Analysis Date: 05/24/24 16:41	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0490	0.0050	0.05	0	98	90	110				
Cadmium	0.0500	0.0010	0.05	0	100	90	110				
Copper	0.0501	0.010	0.05	0	100	90	110				
Iron	1.29	0.020	1.3	0	99	90	110				
Lead	0.0469	0.010	0.05	0	94	90	110				
Manganese	0.0497	0.010	0.05	0	99	90	110				
Zinc	0.0512	0.010	0.05	0	102	90	110				

Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B

Run ID :Run Order: ICPMS206-H_240524A: 25	SampType: Method Blank				Lab ID: LRB			Method: E200.8			
Analysis Date: 05/24/24 16:57	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.00001									
Cadmium	0.00001	7E-06									
Copper	0.00006	0.00004									
Iron	0.005	0.0007									
Lead	ND	0.00002									
Manganese	ND	0.00005									
Zinc	0.0007	0.0007									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195221

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240524A: 25				SampType: Method Blank				Lab ID: LRB				Method: E200.8											
Analysis Date: 05/24/24 16:57				Units: mg/L				Prep Info: Prep Date:				Prep Method:											
Analytes Z		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B																							

Run ID :Run Order: ICPMS206-H_240524A: 26		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 05/24/24 17:01		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0493	0.0050	0.05	0	99	85	115				
Cadmium	0.0500	0.0010	0.05	0	100	85	115				
Copper	0.0515	0.010	0.05	0	103	85	115				
Iron	0.155	0.020	0.15	0	103	85	115				
Lead	0.0488	0.010	0.05	0	98	85	115				
Manganese	0.0506	0.010	0.05	0	101	85	115				
Zinc	0.0523	0.010	0.05	0	105	85	115				
Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B											

Run ID :Run Order: ICPMS206-H_240524A: 39		SampType: Sample Matrix Spike				Lab ID: H24050730-004BMS			Method: E200.8		
Analysis Date: 05/24/24 17:53		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0501	0.0010	0.05	0.0001902	100	70	130				
Cadmium	0.0512	0.0010	0.05	0.0014	99	70	130				
Copper	0.0638	0.0050	0.05	0.01384	100	70	130				
Iron	0.338	0.020	0.15	0.1947	95	70	130				
Lead	0.0509	0.0010	0.05	0	102	70	130				
Manganese	0.0803	0.0010	0.05	0.03062	99	70	130				
Zinc	0.134	0.010	0.05	0.08249	102	70	130				
Associated samples: H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B											

Run ID :Run Order: ICPMS206-H_240524A: 40				SampType: Sample Matrix Spike Duplicate				Lab ID: H24050730-004BMSD				Method: E200.8	
Analysis Date: 05/24/24 17:57				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes Z		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic		0.0495	0.0010	0.05	0.0001902	99	70	130	0.05013	1.3	20		

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195221

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240524A: 40		SampType: Sample Matrix Spike Duplicate				Lab ID: H24050730-004BMSD			Method: E200.8		
Analysis Date: 05/24/24 17:57		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.0508	0.0010	0.05	0.0014	99	70	130	0.05115	0.6	20	
Copper	0.0633	0.0050	0.05	0.01384	99	70	130	0.06385	0.9	20	
Iron	0.348	0.020	0.15	0.1947	102	70	130	0.3379	2.8	20	
Lead	0.0492	0.0010	0.05	0	98	70	130	0.0509	3.4	20	
Manganese	0.0808	0.0010	0.05	0.03062	100	70	130	0.08034	0.5	20	
Zinc	0.134	0.010	0.05	0.08249	102	70	130	0.1337	0.1	20	

Associated samples: **H24050730-001B, H24050730-002B, H24050730-003B, H24050730-004B, H24050730-005B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195285

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 05/28/24 20:49		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.297	0.10	0.3	0	99	90	110				
Associated samples: H24050730-001B, H24050730-002B, H24050730-004B, H24050730-005B											

Run ID :Run Order: ICPMS206-H_240528C: 22				SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 05/28/24 21:34				Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Aluminum		ND	0.002												
Associated samples: H24050730-001B, H24050730-002B, H24050730-004B, H24050730-005B															

Run ID :Run Order: ICPMS206-H_240528C: 23		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 05/28/24 21:39		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0530	0.10	0.05	0	106	85	115				
Associated samples: H24050730-001B, H24050730-002B, H24050730-004B, H24050730-005B											

Run ID :Run Order: ICPMS206-H_240528C: 232		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.8		
Analysis Date: 05/29/24 21:04		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0495	0.10	0.05	0	99	90	110				
Associated samples: H24050730-001B, H24050730-002B, H24050730-004B, H24050730-005B											

Run ID :Run Order: ICPMS206-H_240528C: 242		SampType: Sample Matrix Spike				Lab ID: H24050730-002BMS				Method: E200.8	
Analysis Date: 05/29/24 21:44		Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0458	0.030	0.05	0	92	70	130				
Associated samples: H24050730-001B, H24050730-002B, H24050730-004B, H24050730-005B											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195285

Date: 05-Jun-24

Run ID :Run Order: ICPMS206-H_240528C: 243				SampType: Sample Matrix Spike Duplicate			Lab ID: H24050730-002BMSD			Method: E200.8		
Analysis Date: 05/29/24 21:48				Units: mg/L		Prep Info:		Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0468	0.030	0.05	0	94	70	130	0.04583	2.2	20		

Associated samples: H24050730-001B, H24050730-002B, H24050730-004B, H24050730-005B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195317

Date: 05-Jun-24

Run ID :Run Order: IC METROHM_240528A: 2				SampType: Method Blank		Lab ID: ICB			Method: E300.0		
Analysis Date: 05/28/24 11:55		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.03									

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: IC METROHM_240528A: 3		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 05/28/24 12:09		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.9	1.0	100	0	99	90	110				
Sulfate	389	1.0	400	0	97	90	110				

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: IC METROHM_240528A: 4				SampType: Laboratory Fortified Blank		Lab ID: LFB			Method: E300.0		
Analysis Date: 05/28/24 12:24		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	23.8	1.0	25	0	95	90	110				
Sulfate	98.4	1.0	100	0	98	90	110				

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: IC METROHM_240528A: 77		SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E300.0			
Analysis Date: 05/29/24 09:50		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.5	1.0	50	0	99	90	110				
Sulfate	198	1.0	200	0	99	90	110				

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: IC METROHM_240528A: 89				SampType: Sample Matrix Spike		Lab ID: H24050696-010AMS				Method: E300.0		
Analysis Date: 05/29/24 12:43		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	33.7	1.0	25	8.292	102	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195317

Date: 05-Jun-24

Run ID :Run Order: IC METROHM_240528A: 89				SampType: Sample Matrix Spike		Lab ID: H24050696-010AMS				Method: E300.0		
Analysis Date: 05/29/24 12:43		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		139	1.0	100	39.21	100	90	110				

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: IC METROHM_240528A: 90				SampType: Sample Matrix Spike Duplicate			Lab ID: H24050696-010AMSD			Method: E300.0		
Analysis Date: 05/29/24 12:58				Units: mg/L		Prep Info: Prep Date:			Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		33.7	1.0	25	8.292	102	90	110	33.75	0.1	20	
Sulfate		140	1.0	100	39.21	100	90	110	138.9	0.6	20	

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Run ID :Run Order: IC METROHM_240528A: 91		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E300.0		
Analysis Date: 05/29/24 13:12		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.6	1.0	50	0	99	90	110				
Sulfate	200	1.0	200	0	100	90	110				

Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: R195382

Date: 05-Jun-24

Run ID :Run Order: PHSC_101-H_240603A: 6				SampType: Method Blank				Lab ID: MBLK				Method: A2320 B			
Analysis Date: 06/03/24 09:47				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3				ND	2										
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A															

Run ID :Run Order: PHSC_101-H_240603A: 7			SampType: Laboratory Control Sample			Lab ID: LCS			Method: A2320 B				
Analysis Date: 06/03/24 09:56			Units: mg/L			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3			610	4.0	600	0	101	90	110				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A													

Run ID :Run Order: PHSC_101-H_240603A: 12		SampType: Sample Duplicate			Lab ID: H24050728-002ADUP				Method: A2320 B		
Analysis Date: 06/03/24 10:19		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	230	4.0		0				237.7	4.7	10	
Bicarbonate as HCO3	280	4.0		0				289.4	4.7	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: TDS20240524A

Date: 05-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524A: 1				SampType: Method Blank				Lab ID: MBLK_20240524-1				Method: A2540 C													
Analysis Date: 05/24/24 12:47				Units: mg/L				Prep Info:		Prep Date:		Prep Method:													
Analytes 1				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Solids, Total Dissolved TDS @ 180 C				ND		7																			
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A																									

Run ID :Run Order: Accu-124 (14410200)_240524A: 2		SampType: Laboratory Control Sample			Lab ID: LCS_20240524-1			Method: A2540 C			
Analysis Date: 05/24/24 12:48		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1940	50	2000	0	97	90	110				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Run ID :Run Order: Accu-124 (14410200)_240524A: 4				SampType: Sample Duplicate		Lab ID: H24050696-012BDUP				Method: A2540 C		
Analysis Date: 05/24/24 12:48		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		11.0	25		0				10		10	L
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A												

TDS did not obtain the minimum residue requirement of 2.5 mg residue.

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24050730

BatchID: TSS20240524A

Date: 05-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240524B: 1				SampType: Method Blank		Lab ID: MBLK_20240524-3				Method: A2540 D		
Analysis Date: 05/24/24 12:20				Units: mg/L		Prep Info: Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		ND	0.3									
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A												

Run ID :Run Order: Accu-124 (14410200)_240524B: 2		SampType: Laboratory Control Sample			Lab ID: LCS_20240524-3				Method: A2540 D		
Analysis Date: 05/24/24 12:20		Units: mg/L			Prep Info: Prep Date:		Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	89.0	25	100	0	89	80	120				
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Run ID :Run Order: Accu-124 (14410200)_240524B: 4		SampType: Sample Duplicate			Lab ID: H24050688-002BDUP				Method: A2540 D		
Analysis Date: 05/24/24 12:21		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	387	56		0				353.3	9.0	10	
Associated samples: H24050730-001A, H24050730-002A, H24050730-003A, H24050730-004A, H24050730-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24050730

Login completed by: Rebecca A. Tooke

Date Received: 5/23/2024

Reviewed by: wjohnson

Received by: RAT

Reviewed Date: 5/28/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.6°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None



Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

Account Information (Billing Information)

Company/Name	MT DEK
Contact	Dave Bevers
Phone	(406) 444-6335
Mailing Address	
City, State, Zip	
Email	chevrons@mt.gov
Receive Invoice	☐ Hard Copy ☒ Email
Purchase Order	Quote 1361
Receive Report	☐ Hard Copy ☒ Email
Bottle Order	47998

Report Information (If different than Account Information)

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐ Hard Copy ☐ Email
Special Report/Formats:	
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other	

Comments

Please copy result to:
popper@northwindgrp.com
UBMC Co
Cooler #2

Project Information

Project Name, PWSID, Permit, etc.	UBMC Groundwater
Sampler Name	P. App
Sample Origin State	MT
Lab provided preservatives were used	☒ Yes ☐ No
MINING CLIENTS, please indicate sample type: ☐ If ore has been processed or refined, call before sending. ☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*	

Matrix Codes

A - Air
W - Water
S - Solids/
V - Vegetation
B - Bioassay
O - Other
DW - Drinking
Water

Analysis Requested

See Attached

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification

(Name, Location, Interval, etc.)

Sample Identification	Collection Date	Time	Number of Containers	Matrix (Same Codes Above)	Analysis Requested	Signature	Signature
1 MW-2019-05	5/21/24	17:31	2	W			
2 MHMW-10	5/22/24	9:30	2	W			
3 LCMW-5		14:33					
4 LCMW-1		15:25					
5 MHMW-9	5/22/24	16:16	2	W			
6							
7							
8							
9							
10							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	PSBIE OAR	5/23/24 14:30	PSBIE OAR	PSBIE OAR	5-23-24 1430	PSBIE OAR

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	CC	Cash	Check	Amount	Receipt Number (asst/check only)
Ward	Y	N C B	Y N	0.6 °C	Y N	Y N					

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 406.252.6925 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 47998

47998

SHIPPED MT DEQ-Site Response
TO:

Contact: Pebbles Opp

59620-0901

Phone: (406) 461-3660

Project: UBMC-Mike Horse



To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us

Order Created by: Wanda J. Johnson

Shipped From: Helena, MT

Ship Date: 5/14/2024

VIA: PickUp

Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UMBC Surface Water (13 Sets)

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300 0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs			1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		HNO3	Filter before preservation	1
250 mL Plastic	1	E200.7_8 E200.2	Metals by ICP/ICPMS, Tot. Rec. Metals Digestion by E200.2		HNO3		1

UBMC Groundwater (13 Sets)

BO#: 47998

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300 0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs			1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		☒ HNO3	Filter before preservation	1

~~Sediments (9 Sets)~~

4 oz Wide Mouth Amber Glass	1	E6010.20 D2924 SW3050 B	Metals by ICP/ICPMS, Total Moisture Total Metals Digestion by SW3050B				1

Comments

☒ HNO3 - Nitric Acid ☒ H2SO4 - Sulfuric Acid ☒ NaOH - Sodium Hydroxide
☒ ZnAc - Zinc Acetate ☒ HCl - Hydrochloric Acid ☐ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com -> Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BO#: 47998



ANALYTICAL SUMMARY REPORT

June 27, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24060478 Quote ID: H1361

Project Name: UBMC Groundwater

Energy Laboratories Inc Helena MT received the following 1 sample for MT DEQ-Site Response on 6/17/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24060478-001	S35-MW-01	06/14/24 14:37	06/17/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Preparation, Dissolved Filtration MCAWW Solids, Total Dissolved Solids, Total Suspended

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-01
Lab ID: H24060478-001
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 06/14/24 14:37 **DateReceived:** 06/17/24
Report Date: 06/27/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.0	s.u.	H	0.1		A4500-H B	06/18/24 11:13 / SR		PHSC_101-H_240618A : 39		R195837
pH Measurement Temp	14.2	°C				A4500-H B	06/18/24 11:13 / SR		PHSC_101-H_240618A : 39		R195837
Conductivity @ 25 C	102	umhos/cm		5		A2510 B	06/18/24 11:13 / SR		PHSC_101-H_240618A : 40		R195837
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	06/18/24 12:32 / cti		-124 (14410200)_240618B : 6		TSS20240618A
Solids, Total Dissolved TDS @ 180 C	198	mg/L		20		A2540 C	06/19/24 12:55 / dpw		-124 (14410200)_240619B : 3		TDS20240619A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	49	mg/L		4		A2320 B	06/18/24 09:59 / SR		PHSC_101-H_240618A : 16		R195837
Bicarbonate as HCO3	60	mg/L		4		A2320 B	06/18/24 09:59 / SR		PHSC_101-H_240618A : 16		R195837
Carbonate as CO3	ND	mg/L		4		A2320 B	06/18/24 09:59 / SR		PHSC_101-H_240618A : 16		R195837
Chloride	ND	mg/L		1		E300.0	06/19/24 23:18 / SR		C METROHM_240618A : 159		R195887
Sulfate	2	mg/L		1		E300.0	06/19/24 23:18 / SR		C METROHM_240618A : 159		R195887
Hardness as CaCO3	45	mg/L		1		A2340 B	06/24/24 00:14 / JCS		CALC_240627A : 14		R196201
METALS, DISSOLVED											
Aluminum	0.16	mg/L		0.03		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Arsenic	ND	mg/L		0.003		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Cadmium	ND	mg/L		0.00008		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Calcium	10	mg/L		1		E200.7	06/24/24 00:14 / slj	06/20/24 16:14	ICP2-HE_240623A : 210		R196039
Copper	0.002	mg/L		0.001		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Iron	0.10	mg/L		0.05		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Lead	ND	mg/L		0.0005		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Magnesium	5	mg/L		1		E200.7	06/24/24 00:14 / slj	06/20/24 16:14	ICP2-HE_240623A : 210		R196039
Manganese	0.007	mg/L		0.005		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Potassium	1	mg/L		1		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Sodium	2	mg/L		1		E200.7	06/24/24 00:14 / slj	06/20/24 16:14	ICP2-HE_240623A : 210		R196039
Zinc	ND	mg/L		0.01		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R195837

Date: 27-Jun-24

Run ID :Run Order: PHSC_101-H_240618A: 6				SampType: Method Blank				Lab ID: MBLK				Method: A2320 B			
Analysis Date: 06/18/24 09:14				Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3				ND	2										
Associated samples: H24060478-001A															

Run ID :Run Order: PHSC_101-H_240618A: 7				SampType: Laboratory Control Sample				Lab ID: LCS				Method: A2320 B			
Analysis Date: 06/18/24 09:18				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Alkalinity, Total as CaCO3		610	4.0	600	0	101	90	110							
Associated samples: H24060478-001A															

Run ID :Run Order: PHSC_101-H_240618A: 10			SampType: Sample Duplicate			Lab ID: H24060323-002ADUP			Method: A2320 B		
Analysis Date: 06/18/24 09:36		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	190	4.0		0				188.8	1.1	10	
Bicarbonate as HCO3	230	4.0		0				229.7	1.1	10	
Carbonate as CO3	ND	4.0		0				0		10	
Associated samples: H24060478-001A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R195837

Date: 27-Jun-24

Run ID :Run Order: PHSC_101-H_240618A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 06/18/24 08:57	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	154	5.0	150	0	102	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: PHSC_101-H_240618A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 06/18/24 08:59	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19700	5.0	20000	0	99	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: PHSC_101-H_240618A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 06/18/24 09:01	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4940	5.0	5000	0	99	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: PHSC_101-H_240618A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 06/18/24 09:03	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1050	5.0	1000	0	105	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: PHSC_101-H_240618A: 26	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 06/18/24 10:59	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									

Associated samples: H24060478-001A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R195837

Date: 27-Jun-24

Run ID :Run Order: PHSC_101-H_240618A: 38				SampType: Sample Duplicate			Lab ID: H24060469-005ADUP				Method: A2510 B		
Analysis Date: 06/18/24 11:11				Units: umhos/cm			Prep Info:		Prep Date:		Prep Method:		
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		641	5.0		0				642	0.1	10		

Associated samples: **H24060478-001A**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R195837

Date: 27-Jun-24

Run ID :Run Order: PHSC_101-H_240618A: 1			SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B			
Analysis Date: 06/18/24 08:52			Units: s.u.		Prep Info:			Prep Date:		Prep Method:			
Analytes 2			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH			7.0	0.1	7	0	100	98	102				
pH Measurement Temp			20.7			0		0	0				

Associated samples: H24060478-001A

Run ID :Run Order: PHSC_101-H_240618A: 37				SampType: Sample Duplicate				Lab ID: H24060469-005ADUP				Method: A4500-H B	
Analysis Date: 06/18/24 11:11				Units: s.u.				Prep Info: Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH		7.6	0.1		0				7.64	0.0	3	H	
pH Measurement Temp		14.1			0				13.8				

Associated samples: H24060478-001A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R195887

Date: 27-Jun-24

Run ID :Run Order: IC METROHM_240618A: 2				SampType: Method Blank		Lab ID: ICB				Method: E300.0		
Analysis Date: 06/18/24 09:23		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	ND	0.02										
Sulfate	ND	0.03										

Associated samples: H24060478-001A

Run ID :Run Order: IC METROHM_240618A: 3		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 06/18/24 09:37		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.5	1.0	100	0	98	90	110				
Sulfate	390	1.0	400	0	97	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: IC METROHM_240618A: 4				SampType: Laboratory Fortified Blank		Lab ID: LFB			Method: E300.0		
Analysis Date: 06/18/24 09:51		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.0	1.0	25	0	96	90	110				
Sulfate	99.6	1.0	100	0	100	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: IC METROHM_240618A: 13				SampType: Sample Duplicate		Lab ID: H24060323-002ADUP				Method: E300.0		
Analysis Date: 06/18/24 12:15		Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	3.82	1.0		0				3.802	0.4	20		
Sulfate	15.2	1.0		0				15.14	0.2	20		

Associated samples: H24060478-001A

Run ID :Run Order: IC METROHM_240618A: 153				SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E300.0		
Analysis Date: 06/19/24 21:51		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	49.8	1.0	50	0	100	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R195887

Date: 27-Jun-24

Run ID :Run Order: IC METROHM_240618A: 153				SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E300.0		
Analysis Date: 06/19/24 21:51		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		199	1.0	200	0	100	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: IC METROHM_240618A: 162			SampType: Sample Matrix Spike			Lab ID: H24060488-002AMS			Method: E300.0				
Analysis Date: 06/20/24 00:01			Units: mg/L			Prep Info:		Prep Date:		Prep Method:			
Analytes 2			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride			154	1.0	125	26.16	102	90	110				
Sulfate			1900	1.0	500	1410	99	90	110				

Associated samples: H24060478-001A

Run ID :Run Order: IC METROHM_240618A: 163			SampType: Sample Matrix Spike Duplicate			Lab ID: H24060488-002AMSD			Method: E300.0		
Analysis Date: 06/20/24 00:16		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	154	1.0	125	26.16	102	90	110	153.7	0	20	
Sulfate	1910	1.0	500	1410	100	90	110	1904	0.2	20	

Associated samples: H24060478-001A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R196039

Date: 27-Jun-24

Run ID :Run Order: ICP2-HE_240623A: 6	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7			
Analysis Date: 06/23/24 11:09	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	39.9	1.0	40	0	100	95	105				
Magnesium	39.4	1.0	40	0	98	95	105				
Sodium	40.4	1.0	40	0	101	95	105				

Associated samples: H24060478-001B

Run ID :Run Order: ICP2-HE_240623A: 7	SampType: Continuing Calibration Verification Standar				Lab ID: CCV-1			Method: E200.7			
Analysis Date: 06/23/24 11:13	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.5	1.0	25	0	98	95	105				
Magnesium	24.3	1.0	25	0	97	95	105				
Sodium	24.2	1.0	25	0	97	95	105				

Associated samples: H24060478-001B

Run ID :Run Order: ICP2-HE_240623A: 14	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7			
Analysis Date: 06/23/24 11:40	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.7	1.0	50	0	97	85	115				
Magnesium	48.1	1.0	50	0	96	85	115				
Sodium	49.9	1.0	50	0	100	85	115				

Associated samples: H24060478-001B

Run ID :Run Order: ICP2-HE_240623A: 207	SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.7			
Analysis Date: 06/24/24 00:02	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.6	1.0	25	0	98	90	110				
Magnesium	25.4	1.0	25	0	102	90	110				
Sodium	26.0	1.0	25	0	104	90	110				

Associated samples: H24060478-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R196039

Date: 27-Jun-24

Run ID :Run Order: ICP2-HE_240623A: 209			SampType: Method Blank			Lab ID: MB-72442			Method: E200.7		
Analysis Date: 06/24/24 00:10		Units: mg/L		Prep Info: Prep Date: 6/20/2024			Prep Method:				
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Sodium	0.3	0.03									

Associated samples: H24060478-001B

Run ID :Run Order: ICP2-HE_240623A: 212		SampType: Sample Matrix Spike				Lab ID: H24060478-001BMS2				Method: E200.7	
Analysis Date: 06/24/24 00:21		Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	58.8	1.0	50	10.39	97	70	130				
Magnesium	54.8	1.0	50	4.516	101	70	130				
Sodium	56.5	1.0	50	1.686	110	70	130				

Associated samples: H24060478-001B

Run ID :Run Order: ICP2-HE_240623A: 213				SampType: Sample Matrix Spike Duplicate				Lab ID: H24060478-001BMSD2				Method: E200.7	
Analysis Date: 06/24/24 00:25		Units: mg/L		Prep Info:				Prep Date:		Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Calcium	58.3	1.0	50	10.39	96	70	130	58.79	0.9	20			
Magnesium	53.8	1.0	50	4.516	99	70	130	54.82	1.9	20			
Sodium	54.8	1.0	50	1.686	106	70	130	56.53	3.0	20			

Associated samples: H24060478-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R196157

Date: 27-Jun-24

Run ID :Run Order: ICPMS206-H_240625A: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 06/25/24 23:57		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.279	0.10	0.3	0	93	90	110				
Arsenic	0.0600	0.0050	0.06	0	100	90	110				
Cadmium	0.0300	0.0010	0.03	0	100	90	110				
Copper	0.0627	0.010	0.06	0	104	90	110				
Iron	0.314	0.020	0.3	0	105	90	110				
Lead	0.0572	0.010	0.06	0	95	90	110				
Manganese	0.306	0.010	0.3	0	102	90	110				
Potassium	3.07	0.50	3	0	102	90	110				
Zinc	0.0650	0.010	0.06	0	108	90	110				

Associated samples: H24060478-001B

Run ID :Run Order: ICPMS206-H_240625A: 23		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 06/26/24 00:48		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0498	0.10	0.05	0	100	85	115				
Arsenic	0.0500	0.0050	0.05	0	100	85	115				
Cadmium	0.0500	0.0010	0.05	0	100	85	115				
Copper	0.0522	0.010	0.05	0	104	85	115				
Iron	0.157	0.020	0.15	0	105	85	115				
Lead	0.0484	0.010	0.05	0	97	85	115				
Manganese	0.0514	0.010	0.05	0	103	85	115				
Potassium	1.09	0.50	1	0	109	85	115				
Zinc	0.0536	0.010	0.05	0	107	85	115				

Associated samples: H24060478-001B

Run ID :Run Order: ICPMS206-H_240625A: 94				SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: E200.8		
Analysis Date: 06/26/24 12:49		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0450	0.10	0.05	0	90	90	110					
Arsenic	0.0488	0.0050	0.05	0	97	90	110					
Cadmium	0.0494	0.0010	0.05	0	99	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R196157

Date: 27-Jun-24

Run ID :Run Order: ICPMS206-H_240625A: 94			SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: E200.8		
Analysis Date: 06/26/24 12:49		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes <u>9</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0501	0.010	0.05	0	100	90	110				
Iron	1.31	0.020	1.3	0	101	90	110				
Lead	0.0463	0.010	0.05	0	93	90	110				
Manganese	0.0489	0.010	0.05	0	98	90	110				
Potassium	13.6	0.50	12.5	0	109	90	110				
Zinc	0.0486	0.010	0.05	0	97	90	110				

Associated samples: H24060478-001B

Run ID :Run Order: ICPMS206-H_240625A: 105				SampType: Method Blank		Lab ID: MB-72442				Method: E200.8		
Analysis Date: 06/26/24 13:28		Units: mg/L		Prep Info: Prep Date: 6/20/2024				Prep Method:				
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	ND	0.002										
Arsenic	ND	0.00001										
Cadmium	ND	7E-06										
Copper	0.0003	0.00004										
Iron	ND	0.0007										
Lead	ND	0.00002										
Manganese	0.0002	0.00005										
Potassium	0.06	0.02										
Zinc	ND	0.0007										

Associated samples: H24060478-001B

Run ID :Run Order: ICPMS206-H_240625A: 110			SampType: Sample Matrix Spike			Lab ID: H24060408-001BMS			Method: E200.8		
Analysis Date: 06/26/24 13:46		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes <u>9</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0495	0.030	0.05	0	99	70	130				
Arsenic	0.0533	0.0010	0.05	0.004715	97	70	130				
Cadmium	0.0496	0.0010	0.05	0	99	70	130				
Copper	0.0573	0.0050	0.05	0.00753	100	70	130				
Iron	0.208	0.020	0.15	0.05892	100	70	130				
Lead	0.0504	0.0010	0.05	0.00004807	101	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: R196157

Date: 27-Jun-24

Run ID :Run Order: ICPMS206-H_240625A: 110			SampType: Sample Matrix Spike			Lab ID: H24060408-001BMS			Method: E200.8		
Analysis Date: 06/26/24 13:46			Units: mg/L		Prep Info: Prep Date:			Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.0502	0.0010	0.05	0.001195	98	70	130				
Potassium	2.11	1.0	1	1.102	100	70	130				
Zinc	0.0736	0.010	0.05	0.0245	98	70	130				

Associated samples: **H24060478-001B**

Run ID :Run Order: ICPMS206-H_240625A: 111			SampType: Sample Matrix Spike Duplicate			Lab ID: H24060408-001BMSD			Method: E200.8		
Analysis Date: 06/26/24 13:49		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0451	0.030	0.05	0	90	70	130	0.04947	9.2	20	
Arsenic	0.0534	0.0010	0.05	0.004715	97	70	130	0.05327	0.3	20	
Cadmium	0.0493	0.0010	0.05	0	99	70	130	0.04959	0.5	20	
Copper	0.0572	0.0050	0.05	0.00753	99	70	130	0.05733	0.3	20	
Iron	0.208	0.020	0.15	0.05892	99	70	130	0.2082	0.3	20	
Lead	0.0503	0.0010	0.05	0.00004807	101	70	130	0.0504	0.1	20	
Manganese	0.0502	0.0010	0.05	0.001195	98	70	130	0.05017	0.1	20	
Potassium	2.10	1.0	1	1.102	99	70	130	2.106	0.5	20	
Zinc	0.0736	0.010	0.05	0.0245	98	70	130	0.07358	0.1	20	

Associated samples: **H24060478-001B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: TDS20240619A

Date: 27-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240619B: 1				SampType: Method Blank		Lab ID: MBLK_20240619-2				Method: A2540 C		
Analysis Date: 06/19/24 12:55		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		ND	7									
Associated samples: H24060478-001A												

Run ID :Run Order: Accu-124 (14410200)_240619B: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20240619-2			Method: A2540 C			
Analysis Date: 06/19/24 12:55			Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C			2000	50	2000	0	100	90	110				
Associated samples: H24060478-001A													

Run ID :Run Order: Accu-124 (14410200)_240619B: 4				SampType: Sample Duplicate				Lab ID: H24060478-001ADUP				Method: A2540 C													
Analysis Date: 06/19/24 12:56				Units: mg/L				Prep Info:		Prep Date:		Prep Method:													
Analytes 1				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Solids, Total Dissolved TDS @ 180 C				193		25				0								198		2.6		10			
Associated samples: H24060478-001A																									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24060478

BatchID: TSS20240618A

Date: 27-Jun-24

Run ID :Run Order: Accu-124 (14410200)_240618B: 1				SampType: Method Blank		Lab ID: MBLK_20240618-1				Method: A2540 D		
Analysis Date: 06/18/24 12:30		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C		ND	0.3									
Associated samples: H24060478-001A												

Run ID :Run Order: Accu-124 (14410200)_240618B: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20240618-1			Method: A2540 D			
Analysis Date: 06/18/24 12:31			Units: mg/L		Prep Info: Prep Date:		Prep Method:						
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C			102	25	100	0	102	80	120				
Associated samples: H24060478-001A													

Run ID :Run Order: Accu-124 (14410200)_240618B: 4		SampType: Sample Duplicate		Lab ID: H24060504-002BDUP				Method: A2540 D			
Analysis Date: 06/18/24 12:32		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	98.0	50		0				96	2.1	10	
Associated samples: H24060478-001A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24060478

Login completed by: Taylor K. Jones

Date Received: 6/17/2024

Reviewed by: rtooke

Received by: RAT

Reviewed Date: 6/18/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	-0.3°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None



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BOTTLE ORDER 47998

47998

SHIPPED TO: MT DEQ-Site Response

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp

Order Created by: Wanda J. Johnson

Shipped From: Helena, MT

Ship Date: 5/14/2024

VIA: PickUp

Quote Used: 1361

59620-0901

Phone: (406) 461-3660

Project: UBMC-Mike Horse

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UMBC Surface Water (13 Sets)

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs			1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		HNO3	Filter before preservation	1
250 mL Plastic	1	E200.7_8 E200.2	Metals by ICP/ICPMS, Tot. Rec. Metals Digestion by E200.2		HNO3		1

UBMC Groundwater (13 Sets)

BO#: 47998

1 of 2

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs		1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		 HNO3	1 Filter before preservation

Sediments (9 Sets)

4 oz Wide Mouth Amber Glass	1	E6010.20 D2974 SW3050 B	Metals by ICP/ICPMS, Total Moisture Total Metals Digestion by SW3050B			1

Comments

 HNO3 - Nitric Acid  H2SO4 - Sulfuric Acid  NaOH - Sodium Hydroxide

 ZnAc - Zinc Acetate  HCl - Hydrochloric Acid  H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com -> Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BO#: 47998

2 of 2

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ANALYTICAL SUMMARY REPORT

October 10, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24090913 Quote ID: H1361

Project Name: UBMC Surface Water

Energy Laboratories Inc Helena MT received the following 12 samples for MT DEQ-Site Response on 9/25/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24090913-001	BRSW-309	09/23/24 12:25	09/25/24	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Metals Digestion by E200.2 Solids, Total Dissolved Solids, Total Suspended
H24090913-002	BRSW-307	09/23/24 13:21	09/25/24	Aqueous	Same As Above
H24090913-003	BRSW-12	09/23/24 13:50	09/25/24	Aqueous	Same As Above
H24090913-004	BRSW-10	09/23/24 14:42	09/25/24	Aqueous	Same As Above
H24090913-005	BRSW-33	09/23/24 15:11	09/25/24	Aqueous	Same As Above
H24090913-006	BRSW-36	09/23/24 15:51	09/25/24	Aqueous	Same As Above
H24090913-007	BRSW-308	09/23/24 16:30	09/25/24	Aqueous	Same As Above
H24090913-008	BRSW-003A	09/23/24 16:39	09/25/24	Aqueous	Same As Above
H24090913-009	BRSW-29	09/23/24 17:25	09/25/24	Aqueous	Same As Above
H24090913-010	BRSW-304	09/23/24 18:14	09/25/24	Aqueous	Same As Above
H24090913-011	S35-SW-08	09/24/24 9:35	09/25/24	Aqueous	Same As Above
H24090913-012	S35-SW-06	09/24/24 10:18	09/25/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-309
Lab ID: H24090913-001
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 12:25 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.3	s.u.	H	0.1		A4500-H B	09/26/24 10:20 / dpw		PHSC_101-H_240926A : 37		R198890
pH Measurement Temp	14.9	°C				A4500-H B	09/26/24 10:20 / dpw		PHSC_101-H_240926A : 37		R198890
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	09/26/24 10:20 / dpw		PHSC_101-H_240926A : 38		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:55 / eer		ius-BCA124-1S_240926B : 29		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	09/26/24 11:27 / ctl		ius-BCA124-1S_240926A : 29		TDS20240926A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	09/30/24 12:01 / dpw		PHSC_101-H_240930A : 16		R198975
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	09/30/24 12:01 / dpw		PHSC_101-H_240930A : 16		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:01 / dpw		PHSC_101-H_240930A : 16		R198975
Chloride	ND	mg/L		1		E300.0	10/02/24 13:20 / eer		IC METROHM_241001A : 102		R199079
Sulfate	ND	mg/L		1		E300.0	10/02/24 13:20 / eer		IC METROHM_241001A : 102		R199079
Hardness as CaCO3	ND	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 1		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 09:59 / dck		ICPMS205-H_241008A : 79		R199288
Calcium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
Magnesium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
Sodium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 20:31 / dck	09/27/24 10:34	ICPMS206-H_241005A : 52		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-307
Lab ID: H24090913-002
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 13:21 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.7	s.u.	H	0.1		A4500-H B	09/26/24 10:22 / dpw		PHSC_101-H_240926A : 39		R198890
pH Measurement Temp	14.7	°C				A4500-H B	09/26/24 10:22 / dpw		PHSC_101-H_240926A : 39		R198890
Conductivity @ 25 C	311	umhos/cm		5		A2510 B	09/26/24 10:22 / dpw		PHSC_101-H_240926A : 40		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:56 / eer		ius-BCA124-1S_240926B : 30		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	187	mg/L		20		A2540 C	09/26/24 11:28 / ctl		ius-BCA124-1S_240926A : 30		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	77	mg/L		4		A2320 B	09/30/24 12:05 / dpw		PHSC_101-H_240930A : 18		R198975
Bicarbonate as HCO3	93	mg/L		4		A2320 B	09/30/24 12:05 / dpw		PHSC_101-H_240930A : 18		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:05 / dpw		PHSC_101-H_240930A : 18		R198975
Chloride	ND	mg/L		1		E300.0	10/02/24 13:35 / eer		IC METROHM_241001A : 103		R199079
Sulfate	71	mg/L		1		E300.0	10/02/24 13:35 / eer		IC METROHM_241001A : 103		R199079
Hardness as CaCO3	144	mg/L		1		A2340 B	09/26/24 16:16 / SR		CALC_241007B : 498		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:11 / dck		ICPMS205-H_241008A : 83		R199288
Calcium	33	mg/L		1		E200.7	09/26/24 16:16 / slj		ICP2-HE_240926A : 74		R198905
Magnesium	15	mg/L		1		E200.7	09/26/24 16:16 / slj		ICP2-HE_240926A : 74		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:17 / slj		ICP2-HE_240930A : 37		R199004
Sodium	6	mg/L		1		E200.7	09/26/24 16:16 / slj		ICP2-HE_240926A : 74		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Cadmium	0.00033	mg/L		0.00008		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Copper	0.002	mg/L		0.001		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Iron	0.06	mg/L		0.03		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Manganese	0.058	mg/L		0.005		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Zinc	0.08	mg/L		0.01		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-12
Lab ID: H24090913-003
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 13:50 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.8	s.u.	H	0.1		A4500-H B	09/26/24 10:24 / dpw		PHSC_101-H_240926A : 41		R198890
pH Measurement Temp	14.3	°C				A4500-H B	09/26/24 10:24 / dpw		PHSC_101-H_240926A : 41		R198890
Conductivity @ 25 C	312	umhos/cm		5		A2510 B	09/26/24 10:24 / dpw		PHSC_101-H_240926A : 42		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:56 / eer		ius-BCA124-1S_240926B : 31		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	192	mg/L		20		A2540 C	09/26/24 11:32 / ctl		ius-BCA124-1S_240926A : 31		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	77	mg/L		4		A2320 B	09/30/24 12:11 / dpw		PHSC_101-H_240930A : 20		R198975
Bicarbonate as HCO3	93	mg/L		4		A2320 B	09/30/24 12:11 / dpw		PHSC_101-H_240930A : 20		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:11 / dpw		PHSC_101-H_240930A : 20		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 10:31 / eer		IC METROHM_241001A : 181		R199079
Sulfate	75	mg/L		1		E300.0	10/03/24 10:31 / eer		IC METROHM_241001A : 181		R199079
Hardness as CaCO3	145	mg/L		1		A2340 B	09/30/24 12:39 / SR		CALC_241007B : 509		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:15 / dck		ICPMS205-H_241008A : 84		R199288
Calcium	33	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
Magnesium	15	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
Potassium	1	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
Sodium	6	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Cadmium	0.00033	mg/L		0.00008		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Copper	0.002	mg/L		0.001		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Iron	0.07	mg/L		0.03		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Manganese	0.057	mg/L		0.005		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Zinc	0.08	mg/L		0.01		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-10
Lab ID: H24090913-004
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 14:42 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.2	s.u.	H	0.1		A4500-H B	09/26/24 10:30 / dpw		PHSC_101-H_240926A : 45		R198890
pH Measurement Temp	14.9	°C				A4500-H B	09/26/24 10:30 / dpw		PHSC_101-H_240926A : 45		R198890
Conductivity @ 25 C	137	umhos/cm		5		A2510 B	09/26/24 10:30 / dpw		PHSC_101-H_240926A : 46		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:56 / eer		ius-BCA124-1S_240926B : 32		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	76	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 32		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	63	mg/L		4		A2320 B	09/30/24 12:17 / dpw		PHSC_101-H_240930A : 22		R198975
Bicarbonate as HCO3	77	mg/L		4		A2320 B	09/30/24 12:17 / dpw		PHSC_101-H_240930A : 22		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:17 / dpw		PHSC_101-H_240930A : 22		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 10:45 / eer		IC METROHM_241001A : 182		R199079
Sulfate	4	mg/L		1		E300.0	10/03/24 10:45 / eer		IC METROHM_241001A : 182		R199079
Hardness as CaCO3	68	mg/L		1		A2340 B	09/30/24 12:43 / SR		CALC_241007B : 520		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:18 / dck		ICPMS205-H_241008A : 85		R199288
Calcium	16	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
Magnesium	7	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
Potassium	ND	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
Sodium	2	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Cadmium	0.00010	mg/L		0.00008		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Copper	0.003	mg/L		0.001		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-33
Lab ID: H24090913-005
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 15:11 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.6	s.u.	H	0.1		A4500-H B	09/26/24 10:32 / dpw		PHSC_101-H_240926A : 47		R198890
pH Measurement Temp	15.2	°C				A4500-H B	09/26/24 10:32 / dpw		PHSC_101-H_240926A : 47		R198890
Conductivity @ 25 C	335	umhos/cm		5		A2510 B	09/26/24 10:32 / dpw		PHSC_101-H_240926A : 48		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:57 / eer		ius-BCA124-1S_240926B : 33		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	202	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 33		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	80	mg/L		4		A2320 B	09/30/24 12:24 / dpw		PHSC_101-H_240930A : 24		R198975
Bicarbonate as HCO ₃	97	mg/L		4		A2320 B	09/30/24 12:24 / dpw		PHSC_101-H_240930A : 24		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:24 / dpw		PHSC_101-H_240930A : 24		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 10:59 / eer		IC METROHM_241001A : 183		R199079
Sulfate	83	mg/L		1		E300.0	10/03/24 10:59 / eer		IC METROHM_241001A : 183		R199079
Hardness as CaCO ₃	156	mg/L		1		A2340 B	09/26/24 16:31 / SR		CALC_241007B : 531		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:21 / dck		ICPMS205-H_241008A : 86		R199288
Calcium	36	mg/L		1		E200.7	09/26/24 16:31 / slj		ICP2-HE_240926A : 77		R198905
Magnesium	16	mg/L		1		E200.7	09/26/24 16:31 / slj		ICP2-HE_240926A : 77		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:47 / slj		ICP2-HE_240930A : 45		R199004
Sodium	7	mg/L		1		E200.7	09/26/24 16:31 / slj		ICP2-HE_240926A : 77		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Cadmium	0.00026	mg/L		0.00008		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Copper	0.001	mg/L		0.001		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Manganese	0.011	mg/L		0.005		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Zinc	0.06	mg/L		0.01		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-36
Lab ID: H24090913-006
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 15:51 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.5	s.u.	H	0.1		A4500-H B	09/26/24 10:34 / dpw		PHSC_101-H_240926A : 49		R198890
pH Measurement Temp	15.2	°C				A4500-H B	09/26/24 10:34 / dpw		PHSC_101-H_240926A : 49		R198890
Conductivity @ 25 C	448	umhos/cm		5		A2510 B	09/26/24 10:34 / dpw		PHSC_101-H_240926A : 50		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:57 / eer		ius-BCA124-1S_240926B : 34		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	288	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 34		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	88	mg/L		4		A2320 B	09/30/24 12:30 / dpw		PHSC_101-H_240930A : 26		R198975
Bicarbonate as HCO3	110	mg/L		4		A2320 B	09/30/24 12:30 / dpw		PHSC_101-H_240930A : 26		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:30 / dpw		PHSC_101-H_240930A : 26		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 11:28 / eer		IC METROHM_241001A : 185		R199079
Sulfate	134	mg/L		1		E300.0	10/03/24 11:28 / eer		IC METROHM_241001A : 185		R199079
Hardness as CaCO3	213	mg/L		1		A2340 B	09/26/24 16:35 / SR		CALC_241007B : 542		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:24 / dck		ICPMS205-H_241008A : 87		R199288
Calcium	49	mg/L		1		E200.7	09/26/24 16:35 / slj		ICP2-HE_240926A : 78		R198905
Magnesium	22	mg/L		1		E200.7	09/26/24 16:35 / slj		ICP2-HE_240926A : 78		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:51 / slj		ICP2-HE_240930A : 46		R199004
Sodium	10	mg/L		1		E200.7	09/26/24 16:35 / slj		ICP2-HE_240926A : 78		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Cadmium	0.00013	mg/L		0.00008		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Copper	0.001	mg/L		0.001		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Manganese	0.017	mg/L		0.005		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Zinc	0.02	mg/L		0.01		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-308
Lab ID: H24090913-007
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 16:30 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	5.7	s.u.	H	0.1		A4500-H B	09/26/24 11:55 / dpw		PHSC_101-H_240926A : 101		R198890
pH Measurement Temp	13.9	°C				A4500-H B	09/26/24 11:55 / dpw		PHSC_101-H_240926A : 101		R198890
Conductivity @ 25 C	6	umhos/cm		5		A2510 B	09/26/24 11:55 / dpw		PHSC_101-H_240926A : 102		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:57 / eer		ius-BCA124-1S_240926B : 35		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 35		TDS20240926A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	ND	mg/L		4		A2320 B	09/30/24 12:36 / dpw		PHSC_101-H_240930A : 28		R198975
Bicarbonate as HCO ₃	ND	mg/L		4		A2320 B	09/30/24 12:36 / dpw		PHSC_101-H_240930A : 28		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:36 / dpw		PHSC_101-H_240930A : 28		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 11:14 / eer		IC METROHM_241001A : 184		R199079
Sulfate	ND	mg/L		1		E300.0	10/03/24 11:14 / eer		IC METROHM_241001A : 184		R199079
Hardness as CaCO ₃	ND	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 2		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:28 / dck		ICPMS205-H_241008A : 88		R199288
Calcium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
Magnesium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
Sodium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-003A
Lab ID: H24090913-008
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 16:39 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	8.0	s.u.	H	0.1		A4500-H B	09/27/24 12:40 / dpw		PHSC_101-H_240927A : 11		R198937
pH Measurement Temp	14.0	°C				A4500-H B	09/27/24 12:40 / dpw		PHSC_101-H_240927A : 11		R198937
Conductivity @ 25 C	233	umhos/cm		5		A2510 B	09/27/24 12:40 / dpw		PHSC_101-H_240927A : 12		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:58 / eer		ius-BCA124-1S_240926B : 36		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	118	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 36		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	98	mg/L		4		A2320 B	09/30/24 12:41 / dpw		PHSC_101-H_240930A : 30		R198975
Bicarbonate as HCO ₃	120	mg/L		4		A2320 B	09/30/24 12:41 / dpw		PHSC_101-H_240930A : 30		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:41 / dpw		PHSC_101-H_240930A : 30		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 12:40 / eer		IC METROHM_241001A : 190		R199079
Sulfate	13	mg/L		1		E300.0	10/03/24 12:40 / eer		IC METROHM_241001A : 190		R199079
Hardness as CaCO ₃	115	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 3		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:31 / dck		ICPMS205-H_241008A : 89		R199288
Calcium	26	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
Magnesium	12	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
Sodium	2	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Cadmium	0.00023	mg/L		0.00008		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Zinc	0.05	mg/L		0.01		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-29
Lab ID: H24090913-009
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 17:25 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.8	s.u.	H	0.1		A4500-H B	09/27/24 12:43 / dpw		PHSC_101-H_240927A : 13		R198937
pH Measurement Temp	14.6	°C				A4500-H B	09/27/24 12:43 / dpw		PHSC_101-H_240927A : 13		R198937
Conductivity @ 25 C	233	umhos/cm		5		A2510 B	09/27/24 12:43 / dpw		PHSC_101-H_240927A : 14		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:58 / eer		ius-BCA124-1S_240926B : 37		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	128	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 37		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	100	mg/L		4		A2320 B	09/30/24 12:47 / dpw		PHSC_101-H_240930A : 32		R198975
Bicarbonate as HCO3	120	mg/L		4		A2320 B	09/30/24 12:47 / dpw		PHSC_101-H_240930A : 32		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:47 / dpw		PHSC_101-H_240930A : 32		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 12:55 / eer		IC METROHM_241001A : 191		R199079
Sulfate	17	mg/L		1		E300.0	10/03/24 12:55 / eer		IC METROHM_241001A : 191		R199079
Hardness as CaCO3	120	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 4		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:34 / dck		ICPMS205-H_241008A : 90		R199288
Calcium	26	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
Magnesium	13	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
Sodium	2	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Cadmium	0.00009	mg/L		0.00008		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Zinc	0.02	mg/L		0.01		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-304
Lab ID: H24090913-010
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 18:14 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	8.0	s.u.	H	0.1		A4500-H B	09/27/24 12:46 / dpw		PHSC_101-H_240927A : 15		R198937
pH Measurement Temp	15.0	°C				A4500-H B	09/27/24 12:46 / dpw		PHSC_101-H_240927A : 15		R198937
Conductivity @ 25 C	245	umhos/cm		5		A2510 B	09/27/24 12:46 / dpw		PHSC_101-H_240927A : 16		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:58 / eer		ius-BCA124-1S_240926B : 38		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	128	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 38		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	110	mg/L		4		A2320 B	09/30/24 12:53 / dpw		PHSC_101-H_240930A : 34		R198975
Bicarbonate as HCO ₃	130	mg/L		4		A2320 B	09/30/24 12:53 / dpw		PHSC_101-H_240930A : 34		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:53 / dpw		PHSC_101-H_240930A : 34		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 13:09 / eer		IC METROHM_241001A : 192		R199079
Sulfate	15	mg/L		1		E300.0	10/03/24 13:09 / eer		IC METROHM_241001A : 192		R199079
Hardness as CaCO ₃	126	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 5		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:44 / dck		ICPMS205-H_241008A : 93		R199288
Calcium	29	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
Magnesium	13	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
Sodium	ND	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Cadmium	0.00109	mg/L		0.00008		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Copper	0.010	mg/L		0.001		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Lead	0.0024	mg/L		0.0005		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Manganese	0.010	mg/L		0.005		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Zinc	0.16	mg/L		0.01		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-08
Lab ID: H24090913-011
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/24/24 09:35 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.4	s.u.	H	0.1		A4500-H B	09/27/24 12:49 / dpw		PHSC_101-H_240927A : 17		R198937
pH Measurement Temp	14.8	°C				A4500-H B	09/27/24 12:49 / dpw		PHSC_101-H_240927A : 17		R198937
Conductivity @ 25 C	236	umhos/cm		5		A2510 B	09/27/24 12:49 / dpw		PHSC_101-H_240927A : 18		R198937
Solids, Total Suspended TSS @ 105 C	79	mg/L		20		A2540 D	09/26/24 11:59 / eer		ius-BCA124-1S_240926B : 39		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	139	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 39		TDS20240926A
INORGANICS											
Alkalinity, Total as CaCO ₃	110	mg/L		4		A2320 B	09/30/24 13:00 / dpw		PHSC_101-H_240930A : 36		R198975
Bicarbonate as HCO ₃	140	mg/L		4		A2320 B	09/30/24 13:00 / dpw		PHSC_101-H_240930A : 36		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 13:00 / dpw		PHSC_101-H_240930A : 36		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 13:24 / eer		IC METROHM_241001A : 193		R199079
Sulfate	7	mg/L		1		E300.0	10/03/24 13:24 / eer		IC METROHM_241001A : 193		R199079
Hardness as CaCO ₃	120	mg/L		1		A2340 B	09/26/24 16:54 / SR		CALC_241007B : 597		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:47 / dck		ICPMS205-H_241008A : 94		R199288
Calcium	27	mg/L		1		E200.7	09/26/24 16:54 / slj		ICP2-HE_240926A : 83		R198905
Magnesium	13	mg/L		1		E200.7	09/26/24 16:54 / slj		ICP2-HE_240926A : 83		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:55 / slj		ICP2-HE_240930A : 47		R199004
Sodium	3	mg/L		1		E200.7	09/26/24 16:54 / slj		ICP2-HE_240926A : 83		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Iron	0.47	mg/L		0.03		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Manganese	0.051	mg/L		0.005		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-06
Lab ID: H24090913-012
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/24/24 10:18 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.6	s.u.	H	0.1		A4500-H B	09/27/24 12:52 / dpw		PHSC_101-H_240927A : 19		R198937
pH Measurement Temp	14.9	°C				A4500-H B	09/27/24 12:52 / dpw		PHSC_101-H_240927A : 19		R198937
Conductivity @ 25 C	592	umhos/cm		5		A2510 B	09/27/24 12:52 / dpw		PHSC_101-H_240927A : 20		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:59 / eer		ius-BCA124-1S_240926B : 40		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	388	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 40		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	190	mg/L		4		A2320 B	09/30/24 13:07 / dpw		PHSC_101-H_240930A : 38		R198975
Bicarbonate as HCO ₃	230	mg/L		4		A2320 B	09/30/24 13:07 / dpw		PHSC_101-H_240930A : 38		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 13:07 / dpw		PHSC_101-H_240930A : 38		R198975
Chloride	5	mg/L		1		E300.0	10/03/24 13:38 / eer		IC METROHM_241001A : 194		R199079
Sulfate	106	mg/L		1		E300.0	10/03/24 13:38 / eer		IC METROHM_241001A : 194		R199079
Hardness as CaCO ₃	314	mg/L		1		A2340 B	09/26/24 17:17 / SR		CALC_241007B : 608		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:50 / dck		ICPMS205-H_241008A : 95		R199288
Calcium	89	mg/L		1		E200.7	09/26/24 17:17 / slj		ICP2-HE_240926A : 89		R198905
Magnesium	22	mg/L		1		E200.7	09/26/24 17:17 / slj		ICP2-HE_240926A : 89		R198905
Potassium	2	mg/L		1		E200.7	09/30/24 12:59 / slj		ICP2-HE_240930A : 48		R199004
Sodium	6	mg/L		1		E200.7	09/26/24 17:17 / slj		ICP2-HE_240926A : 89		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 22:27 / dck 09/27/24 10:35		ICPMS206-H_241005A : 85		74163

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: 74163

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241005A: 48	SampType: Method Blank				Lab ID: MB-74163				Method: E200.8		
Analysis Date: 10/05/24 20:17	Units: mg/L				Prep Info: Prep Date: 9/27/2024				Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.00002	0.00002									
Cadmium	ND	5E-06									
Copper	ND	0.0001									
Iron	ND	0.005									
Lead	ND	0.00005									
Manganese	ND	0.0002									
Zinc	ND	0.0006									

Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C

Run ID :Run Order: ICPMS206-H_241005A: 49	SampType: Laboratory Control Sample				Lab ID: LCS-74163				Method: E200.8		
Analysis Date: 10/05/24 20:20	Units: mg/L				Prep Info: Prep Date: 9/27/2024				Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.472	0.0010	0.5	0	94	85	115				
Cadmium	0.241	0.0010	0.25	0	96	85	115				
Copper	0.461	0.0050	0.5	0	92	85	115				
Iron	2.33	0.020	2.5	0	93	85	115				
Lead	0.482	0.0010	0.5	0	96	85	115				
Manganese	2.51	0.0010	2.5	0	100	85	115				
Zinc	0.477	0.010	0.5	0	95	85	115				

Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C

Run ID :Run Order: ICPMS206-H_241005A: 72	SampType: Sample Matrix Spike				Lab ID: H24090913-008CMS3				Method: E200.8		
Analysis Date: 10/05/24 21:42	Units: mg/L				Prep Info: Prep Date: 9/27/2024				Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.468	0.0010	0.5	0.0002637	93	70	130				
Cadmium	0.244	0.0010	0.25	0.0002331	97	70	130				
Copper	0.455	0.0050	0.5	0.0008134	91	70	130				
Iron	2.22	0.020	2.5	0.005641	89	70	130				
Lead	0.490	0.0010	0.5	0	98	70	130				
Manganese	2.46	0.0010	2.5	0.001643	98	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: 74163

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241005A: 72	SampType: Sample Matrix Spike				Lab ID: H24090913-008CMS3				Method: E200.8		
Analysis Date: 10/05/24 21:42	Units: mg/L				Prep Info: Prep Date: 9/27/2024				Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.514	0.010	0.5	0.05023	93	70	130				
Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C											

Run ID :Run Order: ICPMS206-H_241005A: 73	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-008CMSD3				Method: E200.8		
Analysis Date: 10/05/24 21:45	Units: mg/L				Prep Info: Prep Date: 9/27/2024				Prep Method: E200.2		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.467	0.0010	0.5	0.0002637	93	70	130	0.4676	0.2	20	
Cadmium	0.247	0.0010	0.25	0.0002331	99	70	130	0.2435	1.5	20	
Copper	0.457	0.0050	0.5	0.0008134	91	70	130	0.4546	0.5	20	
Iron	2.32	0.020	2.5	0.005641	93	70	130	2.219	4.5	20	
Lead	0.484	0.0010	0.5	0	97	70	130	0.4901	1.2	20	
Manganese	2.45	0.0010	2.5	0.001643	98	70	130	2.455	0	20	
Zinc	0.512	0.010	0.5	0.05023	92	70	130	0.5138	0.4	20	
Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198890

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240926A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 09/26/24 08:56	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	151	5.0	150	0	100	90	110				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 09/26/24 08:58	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19400	5.0	20000	0	97	90	110				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 09/26/24 09:00	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4930	5.0	5000	0	99	90	110				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 09/26/24 09:02	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1060	5.0	1000	0	106	90	110				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 44	SampType: Sample Duplicate				Lab ID: H24090913-003ADUP			Method: A2510 B			
Analysis Date: 09/26/24 10:27	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	313	5.0		0				312	0.3	10	

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198890

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240926A: 52			SampType: Continuing Calibration Verification Standard				Lab ID: CCV - SC 1413			Method: A2510 B		
Analysis Date: 09/26/24 10:39		Units: umhos/cm		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C	1420	5.0	1413	0	100	90	110					
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A												

Run ID :Run Order: PHSC_101-H_240926A: 79				SampType: Sample Duplicate				Lab ID: H24090891-002ADUP				Method: A2510 B	
Analysis Date: 09/26/24 11:19				Units: umhos/cm				Prep Info:		Prep Date:		Prep Method:	
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		1770	5.0		0				1777	0.2	10		
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A													

Run ID :Run Order: PHSC_101-H_240926A: 99		SampType: Continuing Calibration Verification Standard				Lab ID: CCV - SC 1413			Method: A2510 B		
Analysis Date: 09/26/24 11:42		Units: umhos/cm		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1410	5.0	1413	0	100	90	110				
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A											

Run ID :Run Order: PHSC_101-H_240926A: 100			SampType: Method Blank			Lab ID: MBLK			Method: A2510 B				
Analysis Date: 09/26/24 11:47			Units: umhos/cm			Prep Info: Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			ND	5									
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A													

Run ID :Run Order: PHSC_101-H_240926A: 106				SampType: Sample Duplicate				Lab ID: H24090906-010ADUP				Method: A2510 B	
Analysis Date: 09/26/24 12:01				Units: umhos/cm				Prep Info:		Prep Date:		Prep Method:	
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		532	5.0		0				532	0.0	10		
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A													

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198890

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240926A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 09/26/24 08:51		Units: s.u.		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	21.1			0		0	0				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 43				SampType: Sample Duplicate		Lab ID: H24090913-003ADUP				Method: A4500-H B		
Analysis Date: 09/26/24 10:27		Units: s.u.		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.8	0.1		0				7.76	0.0	3	H	
pH Measurement Temp	14.6			0				14.3				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 51				SampType: Continuing Calibration Verification Standard				Lab ID: CCV - pH 7			Method: A4500-H B	
Analysis Date: 09/26/24 10:36		Units: s.u.		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.0	0.1	7	0	101	98	102					
pH Measurement Temp	19.9			0		0	0					

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 78				SampType: Sample Duplicate		Lab ID: H24090891-002ADUP				Method: A4500-H B		
Analysis Date: 09/26/24 11:19		Units: s.u.		Prep Info:		Prep Date:			Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.6	0.1		0				7.63	0.0	3	H	
pH Measurement Temp	16.0			0				16				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A

Run ID :Run Order: PHSC_101-H_240926A: 98				SampType: Continuing Calibration Verification Standard				Lab ID: CCV - pH 7		Method: A4500-H B		
Analysis Date: 09/26/24 11:39		Units: s.u.		Prep Info:		Prep Date:		Prep Method:				
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.0	0.1	7	0	101	98	102				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198890

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240926A: 98		SampType: Continuing Calibration Verification Standard				Lab ID: CCV - pH 7			Method: A4500-H B		
Analysis Date: 09/26/24 11:39		Units: s.u.		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH Measurement Temp	20.0			0		0	0				
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A											

Run ID :Run Order: PHSC_101-H_240926A: 105				SampType: Sample Duplicate				Lab ID: H24090906-010ADUP				Method: A4500-H B													
Analysis Date: 09/26/24 12:01				Units: s.u.				Prep Info:		Prep Date:				Prep Method:											
Analytes 2				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
pH				6.8		0.1				0								6.79		0.0		3		H	
pH Measurement Temp				18.9						0								18.7							
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A																									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198905

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240926A: 6		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7		
Analysis Date: 09/26/24 11:56		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.3	1.0	40	0	101	95	105				
Magnesium	40.2	1.0	40	0	101	95	105				
Potassium	41.1	1.0	40	0	103	95	105				
Sodium	41.1	1.0	40	0	103	95	105				

Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240926A: 7		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-1			Method: E200.7		
Analysis Date: 09/26/24 12:00		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.4	1.0	25	0	101	95	105				
Magnesium	25.2	1.0	25	0	101	95	105				
Potassium	24.9	1.0	25	0	100	95	105				
Sodium	24.7	1.0	25	0	99	95	105				

Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240926A: 13			SampType: Method Blank			Lab ID: MB			Method: E200.7		
Analysis Date: 09/26/24 12:23		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Potassium	0.1	0.06									
Sodium	0.04	0.03									

Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240926A: 14				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7	
Analysis Date: 09/26/24 12:27		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	46.4	1.0	50	0	93	85	115					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198905

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240926A: 14		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7		
Analysis Date: 09/26/24 12:27		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	46.4	1.0	50	0	93	85	115				
Potassium	48.5	1.0	50	0	97	85	115				
Sodium	48.4	1.0	50	0	97	85	115				

Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240926A: 63			SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.7		
Analysis Date: 09/26/24 15:35		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.6	1.0	25	0	102	90	110				
Magnesium	25.7	1.0	25	0	103	90	110				
Potassium	25.8	1.0	25	0	103	90	110				
Sodium	25.5	1.0	25	0	102	90	110				

Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240926A: 70		SampType: Sample Matrix Spike				Lab ID: H24090913-001BMS2			Method: E200.7		
Analysis Date: 09/26/24 16:01		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.4	1.0	50	0	97	70	130				
Magnesium	48.8	1.0	50	0	98	70	130				
Potassium	51.0	1.0	50	0.1671	102	70	130				
Sodium	50.7	1.0	50	0.04105	101	70	130				

Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240926A: 71		SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-001BMSD2				Method: E200.7	
Analysis Date: 09/26/24 16:05		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	49.3	1.0	50	0	99	70	130	48.39	2.0	20	
Magnesium	49.7	1.0	50	0	99	70	130	48.8	1.9	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198905

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240926A: 71	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-001BMSD2				Method: E200.7		
Analysis Date: 09/26/24 16:05	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	51.0	1.0	50	0.1671	102	70	130	50.96	0.2	20	
Sodium	50.9	1.0	50	0.04105	102	70	130	50.71	0.3	20	
Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B											

Run ID :Run Order: ICP2-HE_240926A: 75	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E200.7		
Analysis Date: 09/26/24 16:20	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.5	1.0	25	0	102	90	110				
Magnesium	25.7	1.0	25	0	103	90	110				
Potassium	26.4	1.0	25	0	106	90	110				
Sodium	26.1	1.0	25	0	104	90	110				
Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B											

Run ID :Run Order: ICP2-HE_240926A: 85	SampType: Sample Matrix Spike				Lab ID: H24090913-011BMS2				Method: E200.7		
Analysis Date: 09/26/24 17:02	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	74.5	1.0	50	27.11	95	70	130				
Magnesium	61.2	1.0	50	12.82	97	70	130				
Potassium	49.3	1.0	50	1.193	96	70	130				
Sodium	51.0	1.0	50	2.858	96	70	130				
Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B											

Run ID :Run Order: ICP2-HE_240926A: 86	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-011BMSD2				Method: E200.7		
Analysis Date: 09/26/24 17:05	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	77.4	1.0	50	27.11	101	70	130	74.54	3.7	20	
Magnesium	63.5	1.0	50	12.82	101	70	130	61.24	3.6	20	
Potassium	50.7	1.0	50	1.193	99	70	130	49.25	2.8	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198905

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240926A: 86				SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-011BMSD2				Method: E200.7	
Analysis Date: 09/26/24 17:05				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Sodium		52.4	1.0	50	2.858	99	70	130	51.03	2.6	20		
Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B													

Run ID :Run Order: ICP2-HE_240926A: 87		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.7		
Analysis Date: 09/26/24 17:09		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.9	1.0	25	0	103	90	110				
Magnesium	25.9	1.0	25	0	104	90	110				
Potassium	25.0	1.0	25	0	100	90	110				
Sodium	24.7	1.0	25	0	99	90	110				
Associated samples: H24090913-001B, H24090913-002B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198937

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 09/27/24 09:07	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	152	5.0	150	0	101	90	110				
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: PHSC_101-H_240927A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 09/27/24 09:09	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19500	5.0	20000	0	98	90	110				
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: PHSC_101-H_240927A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 09/27/24 09:11	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4960	5.0	5000	0	99	90	110				
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: PHSC_101-H_240927A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 09/27/24 09:13	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1010	5.0	1000	0	101	90	110				
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: PHSC_101-H_240927A: 6	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 09/27/24 12:32	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198937

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 10		SampType: Sample Duplicate			Lab ID: H24090983-001ADUP			Method: A2510 B		
Analysis Date: 09/27/24 12:38		Units: umhos/cm			Prep Info: Prep Date:			Prep Method:		
Analytes <u>1</u>		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Conductivity @ 25 C		1460	5.0		0				1458	0.1 10
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A										

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198937

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 09/27/24 09:02		Units: s.u.		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	20.7			0		0	0				
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: PHSC_101-H_240927A: 9		SampType: Sample Duplicate				Lab ID: H24090983-001ADUP				Method: A4500-H B		
Analysis Date: 09/27/24 12:38		Units: s.u.		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.4	0.1		0				7.38	0.1	3	H	
pH Measurement Temp	19.9			0				19.8				
Associated samples: H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R198975

Date: 10-Oct-24

Run ID :Run Order: PHSC_101-H_240930A: 6				SampType: Method Blank				Lab ID: MBLK				Method: A2320 B				
Analysis Date: 09/30/24 10:03				Units: mg/L				Prep Info:		Prep Date:		Prep Method:				
Analytes 1		Result		PQL		SPK value		SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3				ND		2										
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A																

Run ID :Run Order: PHSC_101-H_240930A: 7				SampType: Laboratory Control Sample				Lab ID: LCS			Method: A2320 B		
Analysis Date: 09/30/24 10:08				Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3		600	4.0	600	0	101	90	110					
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A													

Run ID :Run Order: PHSC_101-H_240930A: 10				SampType: Sample Duplicate				Lab ID: H24091002-008ADUP				Method: A2320 B	
Analysis Date: 09/30/24 11:41				Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 3		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3		400	4.0		0				407.6	2.8	10		
Bicarbonate as HCO3		480	4.0		0				496.6	2.8	10		
Carbonate as CO3		ND	4.0		0				0		10		
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A													

Run ID :Run Order: PHSC_101-H_240930A: 50				SampType: Sample Duplicate		Lab ID: H24090936-005ADUP				Method: A2320 B		
Analysis Date: 09/30/24 14:01		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3	440	4.0		0				446	1.8	10		
Bicarbonate as HCO3	530	4.0		0				543.6	1.8	10		
Carbonate as CO3	ND	4.0		0				0		10		
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A												

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199004

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240930A: 6		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7		
Analysis Date: 09/30/24 10:16		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.2	1.0	40	0	101	95	105				
Magnesium	40.2	1.0	40	0	100	95	105				
Potassium	39.0	1.0	40	0	98	95	105				
Sodium	39.0	1.0	40	0	97	95	105				

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240930A: 7		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-1			Method: E200.7		
Analysis Date: 09/30/24 10:19		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.3	1.0	25	0	101	95	105				
Magnesium	25.4	1.0	25	0	102	95	105				
Potassium	24.3	1.0	25	0	97	95	105				
Sodium	24.4	1.0	25	0	98	95	105				

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240930A: 13			SampType: Method Blank			Lab ID: MB			Method: E200.7		
Analysis Date: 09/30/24 10:43		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Magnesium	ND	0.05									
Potassium	0.07	0.06									
Sodium	ND	0.03									

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240930A: 14				SampType: Laboratory Fortified Blank			Lab ID: LFB			Method: E200.7		
Analysis Date: 09/30/24 10:47		Units: mg/L					Prep Info: Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	46.6	1.0	50	0	93	85	115					
Magnesium	46.8	1.0	50	0	94	85	115					
Potassium	48.4	1.0	50	0	97	85	115					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199004

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240930A: 14	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7			
Analysis Date: 09/30/24 10:47	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	48.5	1.0	50	0	97	85	115				

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240930A: 27	SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.7			
Analysis Date: 09/30/24 11:39	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.5	1.0	25	0	102	90	110				
Magnesium	25.8	1.0	25	0	103	90	110				
Potassium	26.4	1.0	25	0	105	90	110				
Sodium	26.6	1.0	25	0	106	90	110				

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240930A: 39	SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.7			
Analysis Date: 09/30/24 12:25	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.5	1.0	25	0	102	90	110				
Magnesium	25.8	1.0	25	0	103	90	110				
Potassium	26.6	1.0	25	0	106	90	110				
Sodium	26.7	1.0	25	0	107	90	110				

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICP2-HE_240930A: 41	SampType: Sample Matrix Spike				Lab ID: H24090913-002BMS2			Method: E200.7			
Analysis Date: 09/30/24 12:32	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	80.5	1.0	50	33.12	95	70	130				
Magnesium	62.8	1.0	50	14.82	96	70	130				
Potassium	50.9	1.0	50	1.244	99	70	130				
Sodium	56.0	1.0	50	6.013	100	70	130				

Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199004

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_240930A: 42		SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-002BMSD2			Method: E200.7		
Analysis Date: 09/30/24 12:36		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	80.8	1.0	50	33.12	95	70	130	80.46	0.4	20	
Magnesium	63.4	1.0	50	14.82	97	70	130	62.78	0.9	20	
Potassium	51.5	1.0	50	1.244	101	70	130	50.9	1.2	20	
Sodium	56.7	1.0	50	6.013	101	70	130	55.97	1.3	20	
Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B											

Run ID :Run Order: ICP2-HE_240930A: 53		SampType: Sample Matrix Spike				Lab ID: H24091011-001CMS2				Method: E200.7		
Analysis Date: 09/30/24 13:18		Units: mg/L				Prep Info:		Prep Date:		Prep Method:		
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	1070	1.9	500	645.8	85	70	130					
Magnesium	2130	1.0	500	1757	74	70	130					
Potassium	596	1.0	500	127.6	94	70	130					
Sodium	1410	1.0	500	955.9	91	70	130					
Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B												

Run ID :Run Order: ICP2-HE_240930A: 54		SampType: Sample Matrix Spike Duplicate				Lab ID: H24091011-001CMSD2			Method: E200.7		
Analysis Date: 09/30/24 13:21		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	1090	1.9	500	645.8	89	70	130	1071	2.1	20	
Magnesium	2170	1.0	500	1757	82	70	130	2128	1.9	20	
Potassium	603	1.0	500	127.6	95	70	130	595.6	1.3	20	
Sodium	1420	1.0	500	955.9	93	70	130	1412	0.7	20	
Associated samples: H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-011B, H24090913-012B											

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199079

Date: 10-Oct-24

Run ID :Run Order: IC METROHM_241001A: 1	SampType: Method Blank				Lab ID: ICB				Method: E300.0			
Analysis Date: 10/01/24 10:00	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	ND	0.02										
Sulfate	ND	0.03										

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Run ID :Run Order: IC METROHM_241001A: 2	SampType: Initial Calibration Verification Standard				Lab ID: ICV				Method: E300.0			
Analysis Date: 10/01/24 10:14	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	98.3	1.0	100	0	98	90	110					
Sulfate	392	1.0	400	0	98	90	110					

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Run ID :Run Order: IC METROHM_241001A: 3	SampType: Laboratory Fortified Blank				Lab ID: LFB				Method: E300.0			
Analysis Date: 10/01/24 10:29	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	24.1	1.0	25	0	96	90	110					
Sulfate	99.5	1.0	100	0	100	90	110					

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Run ID :Run Order: IC METROHM_241001A: 91	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E300.0			
Analysis Date: 10/02/24 10:42	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	48.3	1.0	50	0	97	90	110					
Sulfate	191	1.0	200	0	96	90	110					

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199079

Date: 10-Oct-24

Run ID :Run Order: IC METROHM_241001A: 104		SampType: Sample Matrix Spike			Lab ID: H24090913-002AMS				Method: E300.0		
Analysis Date: 10/02/24 13:49		Units: mg/L			Prep Info:		Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25.3	1.0	25	0.208	100	90	110				
Sulfate	171	1.0	100	70.84	100	90	110				
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: IC METROHM_241001A: 105			SampType: Sample Matrix Spike Duplicate			Lab ID: H24090913-002AMSD			Method: E300.0		
Analysis Date: 10/02/24 14:03		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25.9	1.0	25	0.208	103	90	110	25.32	2.1	20	
Sulfate	176	1.0	100	70.84	105	90	110	170.9	2.7	20	
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: IC METROHM_241001A: 174			SampType: Continuing Calibration Verification Standard			Lab ID: CCV			Method: E300.0		
Analysis Date: 10/03/24 08:50		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51.3	1.0	50	0	103	90	110				
Sulfate	203	1.0	200	0	101	90	110				
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A											

Run ID :Run Order: IC METROHM_241001A: 186				SampType: Sample Matrix Spike				Lab ID: H24090913-006AMS				Method: E300.0			
Analysis Date: 10/03/24 11:43				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Chloride		24.8	1.0	25	0.218	98	90	110							
Sulfate		235	1.0	100	134	101	90	110							
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A															

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199079

Date: 10-Oct-24

Run ID :Run Order: IC METROHM_241001A: 187	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-006AMSD				Method: E300.0		
Analysis Date: 10/03/24 11:57	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.8	1.0	25	0.218	98	90	110	24.83	0.2	20	
Sulfate	236	1.0	100	134	102	90	110	234.8	0.5	20	

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Run ID :Run Order: IC METROHM_241001A: 188	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E300.0		
Analysis Date: 10/03/24 12:12	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	50.9	1.0	50	0	102	90	110				
Sulfate	203	1.0	200	0	101	90	110				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Run ID :Run Order: IC METROHM_241001A: 200	SampType: Sample Matrix Spike				Lab ID: H24090936-002AMS				Method: E300.0		
Analysis Date: 10/03/24 15:05	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	30.5	1.0	25	5.283	101	90	110				
Sulfate	135	1.0	100	35.77	99	90	110				

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Run ID :Run Order: IC METROHM_241001A: 201	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090936-002AMSD				Method: E300.0		
Analysis Date: 10/03/24 15:19	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	30.4	1.0	25	5.283	101	90	110	30.52	0.3	20	
Sulfate	135	1.0	100	35.77	100	90	110	135.2	0.1	20	

Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199221

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241005A: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 10/05/24 18:08		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0563	0.0050	0.06	0	94	90	110				
Cadmium	0.0286	0.0010	0.03	0	95	90	110				
Copper	0.0582	0.010	0.06	0	97	90	110				
Iron	0.277	0.020	0.3	0	92	90	110				
Lead	0.0574	0.010	0.06	0	96	90	110				
Manganese	0.288	0.010	0.3	0	96	90	110				
Zinc	0.0576	0.010	0.06	0	96	90	110				

Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C

Run ID :Run Order: ICPMS206-H_241005A: 46		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 10/05/24 20:10		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0475	0.0050	0.05	0	95	90	110				
Cadmium	0.0484	0.0010	0.05	0	97	90	110				
Copper	0.0486	0.010	0.05	0	97	90	110				
Iron	1.21	0.020	1.3	0	93	90	110				
Lead	0.0470	0.010	0.05	0	94	90	110				
Manganese	0.0489	0.010	0.05	0	98	90	110				
Zinc	0.0486	0.010	0.05	0	97	90	110				

Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C

Run ID :Run Order: ICPMS206-H_241005A: 64		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 10/05/24 21:13		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0477	0.0050	0.05	0	95	90	110				
Cadmium	0.0485	0.0010	0.05	0	97	90	110				
Copper	0.0483	0.010	0.05	0	97	90	110				
Iron	1.25	0.020	1.3	0	96	90	110				
Lead	0.0474	0.010	0.05	0	95	90	110				
Manganese	0.0486	0.010	0.05	0	97	90	110				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199221

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241005A: 64		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 10/05/24 21:13		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.0497	0.010	0.05	0	99	90	110				
Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C											

Run ID :Run Order: ICPMS206-H_241005A: 76		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 10/05/24 21:56		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes Z	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0470	0.0050	0.05	0	94	90	110				
Cadmium	0.0489	0.0010	0.05	0	98	90	110				
Copper	0.0482	0.010	0.05	0	96	90	110				
Iron	1.23	0.020	1.3	0	94	90	110				
Lead	0.0470	0.010	0.05	0	94	90	110				
Manganese	0.0484	0.010	0.05	0	97	90	110				
Zinc	0.0489	0.010	0.05	0	98	90	110				
Associated samples: H24090913-001C, H24090913-002C, H24090913-003C, H24090913-004C, H24090913-005C, H24090913-006C, H24090913-007C, H24090913-008C, H24090913-009C, H24090913-010C, H24090913-011C, H24090913-012C											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199288

Date: 10-Oct-24

Run ID :Run Order: ICPMS205-H_241008A: 32				SampType: Laboratory Fortified Blank		Lab ID: LFB			Method: E200.8		
Analysis Date: 10/08/24 13:27		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0465	0.10	0.05	0	93	85	115				

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 57		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 10/09/24 08:51		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.275	0.10	0.3	0	92	90	110				

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 67				SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 10/09/24 09:18				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Aluminum		ND	0.003												

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 76				SampType: Continuing Calibration Verification Standard				Lab ID: CCV		Method: E200.8		
Analysis Date: 10/09/24 09:49		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0490	0.10	0.05	0	98	90	110					

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 80				SampType: Sample Matrix Spike		Lab ID: H24090913-001BMS				Method: E200.8		
Analysis Date: 10/09/24 10:02		Units: mg/L				Prep Info: Prep Date:		Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0486	0.030	0.05	0	97	70	130					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: R199288

Date: 10-Oct-24

Run ID :Run Order: ICPMS205-H_241008A: 80	SampType: Sample Matrix Spike	Lab ID: H24090913-001BMS	Method: E200.8
Analysis Date: 10/09/24 10:02	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	PQL	SPK value
	SPK Ref Val	%REC	LowLimit
	HighLimit	RPD Ref Val	%RPD
	RPDLimit	Qual	

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 81	SampType: Sample Matrix Spike Duplicate	Lab ID: H24090913-001BMSD	Method: E200.8
Analysis Date: 10/09/24 10:05	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	PQL	SPK value
	SPK Ref Val	%REC	LowLimit
	HighLimit	RPD Ref Val	%RPD
	RPDLimit	Qual	
Aluminum	0.0493	0.030	0.05
	0	99	70
	130	0.04856	1.4
	20		

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 91	SampType: Continuing Calibration Verification Standard	Lab ID: CCV	Method: E200.8
Analysis Date: 10/09/24 10:37	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	PQL	SPK value
	SPK Ref Val	%REC	LowLimit
	HighLimit	RPD Ref Val	%RPD
	RPDLimit	Qual	
Aluminum	0.0526	0.10	0.05
	0	105	90
	110		

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 98	SampType: Sample Matrix Spike	Lab ID: H24090913-012BMS	Method: E200.8
Analysis Date: 10/09/24 11:05	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	PQL	SPK value
	SPK Ref Val	%REC	LowLimit
	HighLimit	RPD Ref Val	%RPD
	RPDLimit	Qual	
Aluminum	0.0473	0.030	0.05
	0	95	70
	130		

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Run ID :Run Order: ICPMS205-H_241008A: 99	SampType: Sample Matrix Spike Duplicate	Lab ID: H24090913-012BMSD	Method: E200.8
Analysis Date: 10/09/24 11:08	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	PQL	SPK value
	SPK Ref Val	%REC	LowLimit
	HighLimit	RPD Ref Val	%RPD
	RPDLimit	Qual	
Aluminum	0.0487	0.030	0.05
	0	97	70
	130	0.04726	3.1
	20		

Associated samples: H24090913-001B, H24090913-002B, H24090913-003B, H24090913-004B, H24090913-005B, H24090913-006B, H24090913-007B, H24090913-008B, H24090913-009B, H24090913-010B, H24090913-011B, H24090913-012B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: TDS20240926A

Date: 10-Oct-24

Run ID :Run Order: Sartorius-BCA124-1S_240926A: 24					SampType: Method Blank				Lab ID: MBLK_20240926-8				Method: A2540 C	
Analysis Date: 09/26/24 11:27			Units: mg/L		Prep Info:		Prep Date:		Prep Method:					
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C			ND	1										
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A														

Run ID :Run Order: Sartorius-BCA124-1S_240926A: 25					SampType: Laboratory Control Sample		Lab ID: LCS_20240926-8			Method: A2540 C		
Analysis Date: 09/26/24 11:27		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C	2070	50	2000	0	103	90	110					
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A												

Run ID :Run Order: Sartorius-BCA124-1S_240926A: 27					SampType: Sample Duplicate		Lab ID: H24090910-003ADUP				Method: A2540 C		
Analysis Date: 09/26/24 11:27		Units: mg/L		Prep Info:				Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Solids, Total Dissolved TDS @ 180 C	304	25		0				305	0.3	10	H		
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090913

BatchID: TSS20240926A

Date: 10-Oct-24

Run ID :Run Order: Sartorius-BCA124-1S_240926B: 24					SampType: Method Blank				Lab ID: MBLK_20240926-4				Method: A2540 D	
Analysis Date: 09/26/24 11:52			Units: mg/L		Prep Info:		Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C			ND	1										
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A														

Run ID :Run Order: Sartorius-BCA124-1S_240926B: 25					SampType: Laboratory Control Sample	Lab ID: LCS_20240926-4				Method: A2540 D		
Analysis Date: 09/26/24 11:54		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		97.0	25	100	0	97	80	120				
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A												

Run ID :Run Order: Sartorius-BCA124-1S_240926B: 27					SampType: Sample Duplicate				Lab ID: H24090912-002BDUP				Method: A2540 D		
Analysis Date: 09/26/24 11:55		Units: mg/L			Prep Info:		Prep Date:			Prep Method:					
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual				
Solids, Total Suspended TSS @ 105 C	200	83		0				213.3	6.5	10					
Associated samples: H24090913-001A, H24090913-002A, H24090913-003A, H24090913-004A, H24090913-005A, H24090913-006A, H24090913-007A, H24090913-008A, H24090913-009A, H24090913-010A, H24090913-011A, H24090913-012A															

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24090913

Login completed by: Wanda J. Johnson

Date Received: 9/25/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 10/2/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.3°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

The temperature blank temperature in shipping container 1 was 1.0°C and shipping container 2 was 1.3°C. Wjj
09/26/24



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Page 2 of 2

CommentsAnalysis Requested

RUSH

ELI LAB ID
Laboratory Use Only
H2490913

CELL is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 406.252.6325 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 47998-16

47998

SHIPPED MT DEQ-Site Response
TO:

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp
59620-0901
Phone: (406) 461-3660
Project: UBMC-Mike Horse

Order Created by: Wanda J. Johnson
Shipped From: Helena, MT
Ship Date: 5/14/2024
VIA: PickUp
Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UMBC Surface Water (13 Sets)

1 Liter Plastic	1	A2310 B	Acidity to pH 8.3	0.25 hrs			1
		A2320 B	Alkalinity to pH 4.5				
		A2510 B	Conductivity				
		E300.0	Anions by Ion Chromatography				
		A4500-H B	pH				
		A2540 C	Solids, Total Dissolved				
		A2540 D	Solids, Total Suspended				
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		HNO3	Filter before preservation	1
		A2340 B	Hardness				
		MCAWW	Preparation, Dissolved Filtration MCAWW				
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Tot. Rec.		HNO3		1
		E200.2	Metals Digestion by E200.2				

UBMC Groundwater (13 Sets)

BO#: 47998

1 of 2



ANALYTICAL SUMMARY REPORT

October 10, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24090916 Quote ID: H1361

Project Name: UBMC Sediment

Energy Laboratories Inc Helena MT received the following 3 samples for MT DEQ-Site Response on 9/25/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24090916-001	BRSD-307	09/23/24 13:21	09/25/24	Sediment	Metals by ICP/ICPMS, Total Moisture Total Metals Digestion by SW3050B
H24090916-002	BRSD-12	09/23/24 13:50	09/25/24	Sediment	Same As Above
H24090916-003	S35-SD-08	09/23/24 9:35	09/25/24	Sediment	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSD-307
Lab ID: H24090916-001
Matrix: Sediment

Project: UBMC Sediment
Collection Date: 09/23/24 13:21 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
METALS, TOTAL - EPA SW846											
Aluminum	8340	mg/kg		30		SW6010B	10/03/24 15:44 / slj	10/01/24 07:26	ICP2-HE_241003B : 83		74197
Arsenic	24	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Cadmium	7.70	mg/kg		0.05		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Copper	233	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Iron	22300	mg/kg		200		SW6010B	10/03/24 15:44 / slj	10/01/24 07:26	ICP2-HE_241003B : 83		74197
Lead	563	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Manganese	2490	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Zinc	1440	mg/kg		5		SW6010B	10/03/24 15:44 / slj	10/01/24 07:26	ICP2-HE_241003B : 83		74197

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSD-12
Lab ID: H24090916-002
Matrix: Sediment

Project: UBMC Sediment
Collection Date: 09/23/24 13:50 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
METALS, TOTAL - EPA SW846											
Aluminum	9330	mg/kg		30		SW6010B	10/03/24 15:48 / slj	10/01/24 07:26	ICP2-HE_241003B : 84		74197
Arsenic	20	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Cadmium	7.24	mg/kg		0.05		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Copper	220	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Iron	22800	mg/kg		200		SW6010B	10/03/24 15:48 / slj	10/01/24 07:26	ICP2-HE_241003B : 84		74197
Lead	559	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Manganese	2620	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Zinc	1480	mg/kg		2		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SD-08
Lab ID: H24090916-003
Matrix: Sediment

Project: UBMC Sediment
Collection Date: 09/23/24 09:35 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
METALS, TOTAL - EPA SW846											
Aluminum	3550	mg/kg		30		SW6010B	10/03/24 15:52 / slj	10/01/24 07:26	ICP2-HE_241003B : 85		74197
Arsenic	3	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Cadmium	ND	mg/kg		0.05		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Copper	7	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Iron	9390	mg/kg		200		SW6010B	10/03/24 15:52 / slj	10/01/24 07:26	ICP2-HE_241003B : 85		74197
Lead	4	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Manganese	137	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Zinc	21	mg/kg		2		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_241003B: 70				SampType: Method Blank				Lab ID: MB-74197				Method: SW6010B			
Analysis Date: 10/03/24 14:55				Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method: SW3050 B			
Analytes 3				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum				ND	3										
Iron				ND	20										
Zinc				ND	0.5										

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 71				SampType: Laboratory Fortified Blank		Lab ID: LFB-74197			Method: SW6010B		
Analysis Date: 10/03/24 14:59		Units: mg/kg		Prep Info: Prep Date: 10/1/2024			Prep Method: SW3050 B				
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	250	5.0	242.8	0	102	80	120				
Iron	250	18	242.8	0	101	80	120				
Zinc	48	5.0	48.55	0	99	80	120				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 72				SampType: Laboratory Control Sample		Lab ID: LCS-74197			Method: SW6010B		
Analysis Date: 10/03/24 15:03		Units: mg/kg				Prep Info: Prep Date: 10/1/2024		Prep Method: SW3050 B			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9400	29	9928	0	94	46.3	130.2				
Iron	15000	190	16460	0	92	51.7	131.9				
Zinc	240	5.0	233.3	0	103	75.3	111.7				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 74				SampType: Serial Dilution		Lab ID: H24090915-001ADIL			Method: SW6010B		
Analysis Date: 10/03/24 15:10		Units: mg/kg		Prep Info: Prep Date: 10/1/2024			Prep Method:				
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	13500	140		0		0	0	13790	2.3	10	
Iron	14600	920		0		0	0	14430	0.9	10	
Iron as Fe2O3	20800	1300		0		0	0	20630			

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_241003B: 75	SampType: Post Digestion/Distillation Spike				Lab ID: H24090915-001APDS				Method: SW6010B		
Analysis Date: 10/03/24 15:14	Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	15500	29	2524	13790		75	125				A
Iron	15800	190	2524	14430		75	125				A

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 76	SampType: Sample Matrix Spike				Lab ID: H24090915-001AMS				Method: SW6010B		
Analysis Date: 10/03/24 15:18	Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method: SW3050 B		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	22400	29	252.5	13790		75	125				A
Iron	21600	190	252.5	14430		75	125				A

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 77	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090915-001AMSD				Method: SW6010B		
Analysis Date: 10/03/24 15:22	Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method: SW3050 B		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	22700	29	255	13790		75	125	22430	1.2	20	A
Iron	18500	190	255	14430		75	125	21590	16	20	A

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_241003B: 70				SampType: Method Blank				Lab ID: MB-74197				Method: SW6010B			
Analysis Date: 10/03/24 14:55				Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method: SW3050 B			
Analytes 3				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum				ND	3										
Iron				ND	20										
Zinc				ND	0.5										

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 71				SampType: Laboratory Fortified Blank		Lab ID: LFB-74197			Method: SW6010B		
Analysis Date: 10/03/24 14:59		Units: mg/kg		Prep Info: Prep Date: 10/1/2024			Prep Method: SW3050 B				
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	250	5.0	242.8	0	102	80	120				
Iron	250	18	242.8	0	101	80	120				
Zinc	48	5.0	48.55	0	99	80	120				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 72				SampType: Laboratory Control Sample		Lab ID: LCS-74197			Method: SW6010B		
Analysis Date: 10/03/24 15:03		Units: mg/kg				Prep Info: Prep Date: 10/1/2024		Prep Method: SW3050 B			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9400	29	9928	0	94	46.3	130.2				
Iron	15000	190	16460	0	92	51.7	131.9				
Zinc	240	5.0	233.3	0	103	75.3	111.7				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 74				SampType: Serial Dilution		Lab ID: H24090915-001ADIL			Method: SW6010B		
Analysis Date: 10/03/24 15:10		Units: mg/kg		Prep Info: Prep Date: 10/1/2024			Prep Method:				
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	13500	140		0		0	0	13790	2.3	10	
Iron	14600	920		0		0	0	14430	0.9	10	
Iron as Fe2O3	20800	1300		0		0	0	20630			

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_241003B: 75	SampType: Post Digestion/Distillation Spike				Lab ID: H24090915-001APDS				Method: SW6010B		
Analysis Date: 10/03/24 15:14	Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method:		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	15500	29	2524	13790		75	125				A
Iron	15800	190	2524	14430		75	125				A

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 76	SampType: Sample Matrix Spike				Lab ID: H24090915-001AMS				Method: SW6010B		
Analysis Date: 10/03/24 15:18	Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method: SW3050 B		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	22400	29	252.5	13790		75	125				A
Iron	21600	190	252.5	14430		75	125				A

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 77	SampType: Sample Matrix Spike Duplicate				Lab ID: H24090915-001AMSD				Method: SW6010B		
Analysis Date: 10/03/24 15:22	Units: mg/kg				Prep Info: Prep Date: 10/1/2024				Prep Method: SW3050 B		
Analytes <u>2</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	22700	29	255	13790		75	125	22430	1.2	20	A
Iron	18500	190	255	14430		75	125	21590	16	20	A

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241002B: 27			SampType: Method Blank			Lab ID: MB-74197			Method: SW6020		
Analysis Date: 10/02/24 16:08			Units: mg/kg			Prep Info: Prep Date: 10/1/2024			Prep Method: SW3050 B		
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.8									
Cadmium	ND	0.04									
Copper	ND	0.6									
Lead	ND	0.5									
Manganese	ND	0.6									
Zinc	ND	2									

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICPMS206-H_241002B: 28			SampType: Laboratory Control Sample			Lab ID: LCS-74197			Method: SW6020		
Analysis Date: 10/02/24 16:11			Units: mg/kg		Prep Info: Prep Date: 10/1/2024			Prep Method: SW3050 B			
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	148	1.0	198	0	75	66.4	104				
Cadmium	92.8	1.0	99.99	0	93	79.2	121				
Copper	110	1.0	138.4	0	79	73.9	113				
Lead	99.9	1.0	106	0	94	71.6	128				
Manganese	371	1.0	438.3	0	85	74.4	123				
Zinc	219	2.4	233.3	0	94	83.1	125				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICPMS206-H_241002B: 29			SampType: Laboratory Fortified Blank			Lab ID: LFB-74197			Method: SW6020		
Analysis Date: 10/02/24 16:14			Units: mg/kg		Prep Info: Prep Date: 10/1/2024			Prep Method: SW3050 B			
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	43.1	1.0	48.55	0	89	80	120				
Cadmium	24.3	1.0	24.28	0	100	80	120				
Copper	44.0	1.0	48.55	0	91	80	120				
Lead	49.0	1.0	48.55	0	101	80	120				
Manganese	212	1.0	242.8	0	87	80	120				
Zinc	44.2	2.3	48.55	0	91	80	120				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241002B: 31		SampType: Serial Dilution			Lab ID: H24090915-001ADIL				Method: SW6020		
Analysis Date: 10/02/24 16:21		Units: mg/kg			Prep Info:		Prep Date: 10/1/2024		Prep Method:		
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5.28	3.7		0		0	0	4.866		10	N
Cadmium	ND	1.0		0		0	0	0.1322		10	
Copper	11.4	3.1		0		0	0	10.25		10	N
Lead	11.2	2.4		0		0	0	10.94		10	N
Manganese	314	3.0		0		0	0	286.3	9.1	10	
Zinc	51.1	12		0		0	0	42		10	N

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICPMS206-H_241002B: 32		SampType: Post Digestion/Distillation Spike				Lab ID: H24090915-001APDS1			Method: SW6020		
Analysis Date: 10/02/24 16:24		Units: mg/kg		Prep Info:			Prep Date: 10/1/2024		Prep Method:		
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	27.2	1.0	24.5	4.866	91	75	125				
Cadmium	25.1	1.0	24.5	0.1322	102	75	125				
Copper	32.2	1.0	24.5	10.25	90	75	125				
Lead	35.6	1.0	24.5	10.94	101	75	125				
Manganese	302	1.0	24.5	286.3		75	125				A
Zinc	62.2	2.3	24.5	42	83	75	125				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICPMS206-H_241002B: 33		SampType: Sample Matrix Spike			Lab ID: H24090915-001AMS			Method: SW6020			
Analysis Date: 10/02/24 16:27		Units: mg/kg			Prep Info: Prep Date: 10/1/2024			Prep Method: SW3050 B			
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.8	1.0	50.5	4.866	95	75	125				
Cadmium	25.8	1.0	25.25	0.1322	102	75	125				
Copper	57.5	1.0	50.5	10.25	94	75	125				
Lead	66.0	1.0	50.5	10.94	109	75	125				
Manganese	618	1.0	252.5	286.3	131	75	125				S
Zinc	111	2.4	50.5	42	136	75	125				S

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: 74197

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241002B: 34			SampType: Sample Matrix Spike Duplicate			Lab ID: H24090915-001AMSD			Method: SW6020		
Analysis Date: 10/02/24 16:31		Units: mg/kg		Prep Info: Prep Date: 10/1/2024					Prep Method: SW3050 B		
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.8	1.0	51	4.866	94	75	125	52.77	0.1	20	
Cadmium	25.9	1.0	25.5	0.1322	101	75	125	25.8	0.5	20	
Copper	58.9	1.0	51	10.25	95	75	125	57.47	2.4	20	
Lead	67.3	1.0	51	10.94	111	75	125	66	2.0	20	
Manganese	553	1.0	255	286.3	105	75	125	618.1	11	20	
Zinc	102	2.4	51	42	117	75	125	110.8	8.6	20	

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: R199124

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241002B: 12			SampType: Initial Calibration Verification Standard			Lab ID: ICV			Method: SW6020		
Analysis Date: 10/02/24 12:25		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0587	0.0010	0.06	0	98	90	110				
Cadmium	0.0297	0.0010	0.03	0	99	90	110				
Copper	0.0608	0.0010	0.06	0	101	90	110				
Lead	0.0596	0.0010	0.06	0	99	90	110				
Manganese	0.299	0.0010	0.3	0	100	90	110				
Zinc	0.0600	0.0010	0.06	0	100	90	110				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICPMS206-H_241002B: 15			SampType: Interference Check Sample A			Lab ID: ICSA			Method: SW6020		
Analysis Date: 10/02/24 12:35		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010		0							
Cadmium	ND	0.0010		0							
Copper	ND	0.0010		0							
Lead	ND	0.0010		0							
Manganese	ND	0.0010		0		0	0				
Zinc	ND	0.0010		0							

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICPMS206-H_241002B: 17			SampType: Interference Check Sample AB			Lab ID: ICSAB			Method: SW6020		
Analysis Date: 10/02/24 12:42		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0106	0.0010	0.01	0	106	70	130				
Cadmium	0.0105	0.0010	0.01	0	105	70	130				
Copper	0.0202	0.0010	0.02	0	101	70	130				
Lead	ND	0.0010		0		0	0				
Manganese	0.0209	0.0010	0.02	0	104	70	130				
Zinc	0.0117	0.0010	0.01	0	117	70	130				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: R199124

Date: 10-Oct-24

Run ID :Run Order: ICPMS206-H_241002B: 25			SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: SW6020		
Analysis Date: 10/02/24 16:01		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0486	0.0010	0.05	0	97	90	110				
Cadmium	0.0487	0.0010	0.05	0	97	90	110				
Copper	0.0487	0.0010	0.05	0	97	90	110				
Lead	0.0500	0.0010	0.05	0	100	90	110				
Manganese	0.0495	0.0010	0.05	0	99	90	110				
Zinc	0.0495	0.0010	0.05	0	99	90	110				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090916

BatchID: R199179

Date: 10-Oct-24

Run ID :Run Order: ICP2-HE_241003B: 6	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: SW6010B			
Analysis Date: 10/03/24 07:42	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4.02	0.10	4	0	101	90	110				
Iron	4.02	0.030	4	0	100	90	110				
Zinc	0.804	0.010	0.8	0	101	90	110				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 10	SampType: Interference Check Sample A				Lab ID: ICSA			Method: SW6010B			
Analysis Date: 10/03/24 07:57	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	530	0.10	500	0	106	80	120				
Iron	190	0.030	200	0	95	80	120				
Zinc	ND	0.010		0		0	0				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Run ID :Run Order: ICP2-HE_241003B: 11	SampType: Interference Check Sample AB				Lab ID: ICSAB			Method: SW6010B			
Analysis Date: 10/03/24 08:01	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	525	0.10	500	0	105	80	120				
Iron	187	0.030	200	0	94	80	120				
Zinc	1.02	0.010	1	0	102	80	120				

Associated samples: H24090916-001A, H24090916-002A, H24090916-003A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

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Work Order Receipt Checklist

MT DEQ-Site Response

H24090916

Login completed by: Wanda J. Johnson

Date Received: 9/25/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 10/2/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.2°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None



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Page 7 of 7

CommentsAnalysis Requested

ELI LAB ID
Laboratory Use Only

CEL is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0-25 hrs		1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		HNO3 Filter before preservation	1

Sediments (8 Sets)

4 oz Wide Mouth Amber Glass	1	E6010.20 D2974 SW3050 B	Metals by ICP/ICPMS, Total Moisture Total Metals Digestion by SW3050B			1

Comments

We strongly suggest that the samples are shipped the same day as they are collected.

☒ HNO3 - Nitric Acid ☒ H2SO4 - Sulfuric Acid ☒ NaOH - Sodium Hydroxide
☒ ZnAc - Zinc Acetate ☒ HCl - Hydrochloric Acid ☒ H3PO4 - Phosphoric Acid

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BO#: 47998

2 of 2



ANALYTICAL SUMMARY REPORT

October 07, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24090914 Quote ID: H1361

Project Name: UBMC Ground Water

Energy Laboratories Inc Helena MT received the following 2 samples for MT DEQ-Site Response on 9/25/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24090914-001	S35-MW-03	09/24/24 12:28	09/25/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended
H24090914-002	S35-MW-01	09/24/24 15:02	09/25/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-03
Lab ID: H24090914-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 09/24/24 12:28 **DateReceived:** 09/25/24
Report Date: 10/07/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.9	s.u.	H	0.1		A4500-H B	09/27/24 12:54 / dpw		PHSC_101-H_240927A : 21		R198937
pH Measurement Temp	15.2	°C				A4500-H B	09/27/24 12:54 / dpw		PHSC_101-H_240927A : 21		R198937
Conductivity @ 25 C	548	umhos/cm		5		A2510 B	09/27/24 12:54 / dpw		PHSC_101-H_240927A : 22		R198937
Solids, Total Suspended TSS @ 105 C	14	mg/L		10		A2540 D	09/26/24 11:59 / eer		ius-BCA124-1S_240926B : 41		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	326	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 41		TDS20240926A
INORGANICS											
Alkalinity, Total as CaCO3	230	mg/L		4		A2320 B	09/27/24 23:45 / dpw		PHSC_101-H_240927A : 154		R198937
Bicarbonate as HCO3	280	mg/L		4		A2320 B	09/27/24 23:45 / dpw		PHSC_101-H_240927A : 154		R198937
Carbonate as CO3	ND	mg/L		4		A2320 B	09/27/24 23:45 / dpw		PHSC_101-H_240927A : 154		R198937
Chloride	25	mg/L		1		E300.0	10/02/24 21:48 / eer		C METROHM_241001A : 128		R199079
Sulfate	10	mg/L		1		E300.0	10/02/24 21:48 / eer		C METROHM_241001A : 128		R199079
Hardness as CaCO3	266	mg/L		1		A2340 B	09/27/24 11:16 / slj		WATERCALC_240927C : 9		R198948
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Arsenic	0.004	mg/L		0.003		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Cadmium	ND	mg/L		0.00008		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Calcium	77	mg/L		1		E200.7	09/26/24 17:20 / slj		ICP2-HE_240926A : 90		R198905
Copper	ND	mg/L		0.001		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Iron	ND	mg/L		0.05		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Lead	ND	mg/L		0.0005		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Magnesium	18	mg/L		1		E200.7	09/26/24 17:20 / slj		ICP2-HE_240926A : 90		R198905
Manganese	ND	mg/L		0.005		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Potassium	2	mg/L		1		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Sodium	12	mg/L		1		E200.7	09/26/24 17:20 / slj		ICP2-HE_240926A : 90		R198905
Zinc	ND	mg/L		0.01		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-01
Lab ID: H24090914-002
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 09/24/24 15:02 **DateReceived:** 09/25/24
Report Date: 10/07/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.6	s.u.	H	0.1		A4500-H B	09/27/24 12:57 / dpw		PHSC_101-H_240927A : 23		R198937
pH Measurement Temp	15.4	°C				A4500-H B	09/27/24 12:57 / dpw		PHSC_101-H_240927A : 23		R198937
Conductivity @ 25 C	235	umhos/cm		5		A2510 B	09/27/24 12:57 / dpw		PHSC_101-H_240927A : 24		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 12:00 / eer		ius-BCA124-1S_240926B : 42		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	134	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 42		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	120	mg/L		4		A2320 B	09/27/24 23:51 / dpw		PHSC_101-H_240927A : 156		R198937
Bicarbonate as HCO3	140	mg/L		4		A2320 B	09/27/24 23:51 / dpw		PHSC_101-H_240927A : 156		R198937
Carbonate as CO3	ND	mg/L		4		A2320 B	09/27/24 23:51 / dpw		PHSC_101-H_240927A : 156		R198937
Chloride	ND	mg/L		1		E300.0	10/02/24 22:02 / eer		C METROHM_241001A : 129		R199079
Sulfate	5	mg/L		1		E300.0	10/02/24 22:02 / eer		C METROHM_241001A : 129		R199079
Hardness as CaCO3	121	mg/L		1		A2340 B	09/27/24 11:16 / slj		WATERCALC_240927C : 10		R198948
METALS, DISSOLVED											
Aluminum	0.04	mg/L		0.03		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Arsenic	ND	mg/L		0.003		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Cadmium	ND	mg/L		0.00008		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Calcium	27	mg/L		1		E200.7	09/26/24 17:24 / slj		ICP2-HE_240926A : 91		R198905
Copper	ND	mg/L		0.001		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Iron	ND	mg/L		0.05		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Lead	ND	mg/L		0.0005		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Magnesium	13	mg/L		1		E200.7	09/26/24 17:24 / slj		ICP2-HE_240926A : 91		R198905
Manganese	ND	mg/L		0.005		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Potassium	1	mg/L		1		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Sodium	2	mg/L		1		E200.7	09/26/24 17:24 / slj		ICP2-HE_240926A : 91		R198905
Zinc	ND	mg/L		0.01		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198905

Date: 07-Oct-24

Run ID :Run Order: ICP2-HE_240926A: 6		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7		
Analysis Date: 09/26/24 11:56		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.3	1.0	40	0	101	95	105				
Magnesium	40.2	1.0	40	0	101	95	105				
Sodium	41.1	1.0	40	0	103	95	105				

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICP2-HE_240926A: 7		SampType: Continuing Calibration Verification Standar				Lab ID: CCV-1			Method: E200.7		
Analysis Date: 09/26/24 12:00		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.4	1.0	25	0	101	95	105				
Magnesium	25.2	1.0	25	0	101	95	105				
Sodium	24.7	1.0	25	0	99	95	105				

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICP2-HE_240926A: 13			SampType: Method Blank			Lab ID: MB			Method: E200.7				
Analysis Date: 09/26/24 12:23			Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 3			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium			ND	0.2									
Magnesium			ND	0.05									
Sodium			0.04	0.03									

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICP2-HE_240926A: 14		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.7		
Analysis Date: 09/26/24 12:27		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	46.4	1.0	50	0	93	85	115				
Magnesium	46.4	1.0	50	0	93	85	115				
Sodium	48.4	1.0	50	0	97	85	115				

Associated samples: H24090914-001B, H24090914-002B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198905

Date: 07-Oct-24

Run ID :Run Order: ICP2-HE_240926A: 85		SampType: Sample Matrix Spike				Lab ID: H24090913-011BMS2			Method: E200.7		
Analysis Date: 09/26/24 17:02		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	74.5	1.0	50	27.11	95	70	130				
Magnesium	61.2	1.0	50	12.82	97	70	130				
Sodium	51.0	1.0	50	2.858	96	70	130				
Associated samples: H24090914-001B, H24090914-002B											

Run ID :Run Order: ICP2-HE_240926A: 86				SampType: Sample Matrix Spike Duplicate				Lab ID: H24090913-011BMSD2				Method: E200.7	
Analysis Date: 09/26/24 17:05		Units: mg/L		Prep Info:		Prep Date:		Prep Method:					
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Calcium	77.4	1.0	50	27.11	101	70	130	74.54	3.7	20			
Magnesium	63.5	1.0	50	12.82	101	70	130	61.24	3.6	20			
Sodium	52.4	1.0	50	2.858	99	70	130	51.03	2.6	20			
Associated samples: H24090914-001B, H24090914-002B													

Run ID :Run Order: ICP2-HE_240926A: 87			SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: E200.7		
Analysis Date: 09/26/24 17:09		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.9	1.0	25	0	103	90	110				
Magnesium	25.9	1.0	25	0	104	90	110				
Sodium	24.7	1.0	25	0	99	90	110				
Associated samples: H24090914-001B, H24090914-002B											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198937

Date: 07-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 114				SampType: Method Blank				Lab ID: MBLK				Method: A2320 B			
Analysis Date: 09/27/24 18:47				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Alkalinity, Total as CaCO3				ND	2										
Associated samples: H24090914-001A, H24090914-002A															

Run ID :Run Order: PHSC_101-H_240927A: 115		SampType: Laboratory Control Sample				Lab ID: LCS			Method: A2320 B		
Analysis Date: 09/27/24 18:51		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	600	4.0	600	0	101	90	110				
Associated samples: H24090914-001A, H24090914-002A											

Run ID :Run Order: PHSC_101-H_240927A: 150				SampType: Sample Duplicate				Lab ID: H24090930-008ADUP				Method: A2320 B	
Analysis Date: 09/27/24 23:30		Units: mg/L		Prep Info: Prep Date:				Prep Method:					
Analytes 3	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Alkalinity, Total as CaCO3	440	4.0		0				440.3	0.8	10			
Bicarbonate as HCO3	540	4.0		0				536.6	0.8	10			
Carbonate as CO3	ND	4.0		0				0		10			
Associated samples: H24090914-001A, H24090914-002A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198937

Date: 07-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 2	SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 09/27/24 09:07	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	152	5.0	150	0	101	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 3	SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 09/27/24 09:09	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	19500	5.0	20000	0	98	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 4	SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B			
Analysis Date: 09/27/24 09:11	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	4960	5.0	5000	0	99	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 5	SampType: Laboratory Control Sample				Lab ID: SC 1000			Method: A2510 B			
Analysis Date: 09/27/24 09:13	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1010	5.0	1000	0	101	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 6	SampType: Method Blank				Lab ID: MBLK			Method: A2510 B			
Analysis Date: 09/27/24 12:32	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	ND	5									

Associated samples: H24090914-001A, H24090914-002A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198937

Date: 07-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 10	SampType: Sample Duplicate				Lab ID: H24090983-001ADUP				Method: A2510 B		
Analysis Date: 09/27/24 12:38	Units: umhos/cm				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1460	5.0		0				1458	0.1	10	

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 36	SampType: Sample Duplicate				Lab ID: H24090983-004ADUP				Method: A2510 B		
Analysis Date: 09/27/24 13:10	Units: umhos/cm				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	1710	5.0		0				1714	0.1	10	

Associated samples: H24090914-001A, H24090914-002A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198937

Date: 07-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 1				SampType: Initial Calibration Verification Standard			Lab ID: pH 7		Method: A4500-H B		
Analysis Date: 09/27/24 09:02		Units: s.u.		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	20.7			0		0	0				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 9				SampType: Sample Duplicate				Lab ID: H24090983-001ADUP				Method: A4500-H B		
Analysis Date: 09/27/24 12:38				Units: s.u.				Prep Info:		Prep Date:		Prep Method:		
Analytes 2				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH				7.4	0.1		0				7.38	0.1	3	H
pH Measurement Temp				19.9			0				19.8			

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 35				SampType: Sample Duplicate				Lab ID: H24090983-004ADUP				Method: A4500-H B	
Analysis Date: 09/27/24 13:10				Units: s.u.				Prep Info:		Prep Date:		Prep Method:	
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH		7.2	0.1		0				7.17	0.0	3	H	
pH Measurement Temp		20.1			0				20.1				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 52				SampType: Sample Duplicate				Lab ID: H24091004-001CDUP				Method: A4500-H B		
Analysis Date: 09/27/24 13:42				Units: s.u.				Prep Info:		Prep Date:		Prep Method:		
Analytes 2				Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH				8.6	0.1		0				8.62	0.1	3	H
pH Measurement Temp				15.5			0				16.2			

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: PHSC_101-H_240927A: 66				SampType: Continuing Calibration Verification Standar				Lab ID: CCV - pH 7		Method: A4500-H B		
Analysis Date: 09/27/24 14:47		Units: s.u.		Prep Info:			Prep Date:		Prep Method:			
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.0	0.1	7	0	100	98	102				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198937

Date: 07-Oct-24

Run ID :Run Order: PHSC_101-H_240927A: 66				SampType: Continuing Calibration Verification Standar				Lab ID: CCV - pH 7			Method: A4500-H B		
Analysis Date: 09/27/24 14:47				Units: s.u.		Prep Info: Prep Date:			Prep Method:				
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH Measurement Temp		21.3			0		0	0					

Associated samples: **H24090914-001A, H24090914-002A**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198945

Date: 07-Oct-24

Run ID :Run Order: ICPMS205-H_240926A: 12		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 09/26/24 11:58		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.316	0.10	0.3	0	105	90	110				
Arsenic	0.0602	0.0050	0.06	0	100	90	110				
Cadmium	0.0312	0.0010	0.03	0	104	90	110				
Copper	0.0621	0.010	0.06	0	104	90	110				
Iron	0.317	0.020	0.3	0	106	90	110				
Lead	0.0599	0.010	0.06	0	100	90	110				
Manganese	0.303	0.010	0.3	0	101	90	110				
Potassium	3.12	0.50	3	0	104	90	110				
Zinc	0.0629	0.010	0.06	0	105	90	110				

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICPMS205-H_240926A: 22			SampType: Method Blank			Lab ID: LRB			Method: E200.8		
Analysis Date: 09/26/24 14:27		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.003									
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									
Iron	ND	0.004									
Lead	ND	0.0001									
Manganese	ND	0.0003									
Potassium	ND	0.04									
Zinc	ND	0.001									

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICPMS205-H_240926A: 23				SampType: Laboratory Fortified Blank		Lab ID: LFB			Method: E200.8		
Analysis Date: 09/26/24 14:30		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0520	0.10	0.05	0	104	85	115				
Arsenic	0.0493	0.0050	0.05	0	99	85	115				
Cadmium	0.0511	0.0010	0.05	0	102	85	115				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198945

Date: 07-Oct-24

Run ID :Run Order: ICPMS205-H_240926A: 23		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 09/26/24 14:30		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0506	0.010	0.05	0	101	85	115				
Iron	0.155	0.020	0.15	0	104	85	115				
Lead	0.0494	0.010	0.05	0	99	85	115				
Manganese	0.0502	0.010	0.05	0	100	85	115				
Potassium	1.02	0.50	1	0	102	85	115				
Zinc	0.0547	0.010	0.05	0	109	85	115				

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICPMS205-H_240926A: 55		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E200.8		
Analysis Date: 09/26/24 16:26		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0502	0.10	0.05	0	100	90	110				
Arsenic	0.0489	0.0050	0.05	0	98	90	110				
Cadmium	0.0500	0.0010	0.05	0	100	90	110				
Copper	0.0499	0.010	0.05	0	100	90	110				
Iron	1.35	0.020	1.3	0	104	90	110				
Lead	0.0490	0.010	0.05	0	98	90	110				
Manganese	0.0501	0.010	0.05	0	100	90	110				
Potassium	12.9	0.50	12.5	0	103	90	110				
Zinc	0.0502	0.010	0.05	0	100	90	110				

Associated samples: H24090914-001B, H24090914-002B

Run ID :Run Order: ICPMS205-H_240926A: 74		SampType: Sample Matrix Spike				Lab ID: H24090886-001BMS			Method: E200.8		
Analysis Date: 09/26/24 17:40		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes <u>9</u>	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0521	0.030	0.05	0	104	70	130				
Arsenic	0.0544	0.0010	0.05	0.00137	106	70	130				
Cadmium	0.0520	0.0010	0.05	0	104	70	130				
Copper	0.0527	0.0050	0.05	0.001395	103	70	130				
Iron	0.232	0.020	0.15	0.07534	104	70	130				
Lead	0.0540	0.0010	0.05	0.0001244	108	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R198945

Date: 07-Oct-24

Run ID :Run Order: ICPMS205-H_240926A: 74			SampType: Sample Matrix Spike			Lab ID: H24090886-001BMS			Method: E200.8		
Analysis Date: 09/26/24 17:40		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.0533	0.0010	0.05	0.001772	103	70	130				
Potassium	3.05	1.0	1	2.053	100	70	130				
Zinc	0.0642	0.010	0.05	0.01034	108	70	130				

Associated samples: **H24090914-001B, H24090914-002B**

Run ID :Run Order: ICPMS205-H_240926A: 75			SampType: Sample Matrix Spike Duplicate			Lab ID: H24090886-001BMSD			Method: E200.8		
Analysis Date: 09/26/24 17:43		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 9	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0540	0.030	0.05	0	108	70	130	0.0521	3.6	20	
Arsenic	0.0546	0.0010	0.05	0.00137	107	70	130	0.05438	0.5	20	
Cadmium	0.0523	0.0010	0.05	0	105	70	130	0.05199	0.7	20	
Copper	0.0523	0.0050	0.05	0.001395	102	70	130	0.05268	0.7	20	
Iron	0.233	0.020	0.15	0.07534	105	70	130	0.2315	0.8	20	
Lead	0.0545	0.0010	0.05	0.0001244	109	70	130	0.05402	0.9	20	
Manganese	0.0521	0.0010	0.05	0.001772	101	70	130	0.05331	2.3	20	
Potassium	3.00	1.0	1	2.053	95	70	130	3.05	1.6	20	
Zinc	0.0637	0.010	0.05	0.01034	107	70	130	0.0642	0.8	20	

Associated samples: **H24090914-001B, H24090914-002B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R199079

Date: 07-Oct-24

Run ID :Run Order: IC METROHM_241001A: 1				SampType: Method Blank		Lab ID: ICB			Method: E300.0		
Analysis Date: 10/01/24 10:00		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.03									

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: IC METROHM_241001A: 2		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 10/01/24 10:14		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.3	1.0	100	0	98	90	110				
Sulfate	392	1.0	400	0	98	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: IC METROHM_241001A: 3		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0		
Analysis Date: 10/01/24 10:29		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.1	1.0	25	0	96	90	110				
Sulfate	99.5	1.0	100	0	100	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: IC METROHM_241001A: 118		SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E300.0			
Analysis Date: 10/02/24 18:55		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.5	1.0	50	0	99	90	110				
Sulfate	200	1.0	200	0	100	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: IC METROHM_241001A: 130				SampType: Sample Matrix Spike		Lab ID: H24090914-002AMS				Method: E300.0		
Analysis Date: 10/02/24 22:17		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	25.0	1.0	25	0.375	99	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: R199079

Date: 07-Oct-24

Run ID :Run Order: IC METROHM_241001A: 130				SampType: Sample Matrix Spike		Lab ID: H24090914-002AMS				Method: E300.0		
Analysis Date: 10/02/24 22:17				Units: mg/L		Prep Info:		Prep Date:		Prep Method:		
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		105	1.0	100	5.447	99	90	110				

Associated samples: H24090914-001A, H24090914-002A

Run ID :Run Order: IC METROHM_241001A: 131				SampType: Sample Matrix Spike Duplicate				Lab ID: H24090914-002AMSD				Method: E300.0	
Analysis Date: 10/02/24 22:31				Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride		25.0	1.0	25	0.375	99	90	110	25.01	0.1	20		
Sulfate		106	1.0	100	5.447	101	90	110	104.8	1.2	20		

Associated samples: H24090914-001A, H24090914-002A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: TDS20240926A

Date: 07-Oct-24

Run ID :Run Order: Sartorius-BCA124-1S_240926A: 24					SampType: Method Blank				Lab ID: MBLK_20240926-8				Method: A2540 C	
Analysis Date: 09/26/24 11:27			Units: mg/L		Prep Info:		Prep Date:			Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C			ND	1										
Associated samples: H24090914-001A, H24090914-002A														

Run ID :Run Order: Sartorius-BCA124-1S_240926A: 25					SampType: Laboratory Control Sample	Lab ID: LCS_20240926-8				Method: A2540 C		
Analysis Date: 09/26/24 11:27		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		2070	50	2000	0	103	90	110				
Associated samples: H24090914-001A, H24090914-002A												

Run ID :Run Order: Sartorius-BCA124-1S_240926A: 50					SampType: Sample Duplicate		Lab ID: H24090930-005ADUP				Method: A2540 C	
Analysis Date: 09/26/24 11:39		Units: mg/L		Prep Info:		Prep Date:				Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C	4350	100		0				4264	2.0	10		
Associated samples: H24090914-001A, H24090914-002A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Site Response

Prepared by Helena, MT Branch

Work Order: H24090914

BatchID: TSS20240926A

Date: 07-Oct-24

Run ID :Run Order: Sartorius-BCA124-1S_240926B: 24					SampType: Method Blank				Lab ID: MBLK_20240926-4				Method: A2540 D	
Analysis Date: 09/26/24 11:52			Units: mg/L		Prep Info:		Prep Date:			Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Solids, Total Suspended TSS @ 105 C		ND	1											
Associated samples: H24090914-001A, H24090914-002A														

Run ID :Run Order: Sartorius-BCA124-1S_240926B: 25					SampType: Laboratory Control Sample	Lab ID: LCS_20240926-4				Method: A2540 D		
Analysis Date: 09/26/24 11:54		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		97.0	25	100	0	97	80	120				
Associated samples: H24090914-001A, H24090914-002A												

Run ID :Run Order: Sartorius-BCA124-1S_240926B: 50					SampType: Sample Duplicate	Lab ID: H24090928-001ADUP				Method: A2540 D		
Analysis Date: 09/26/24 15:30		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		33.3	17		0				36	7.7	10	
Associated samples: H24090914-001A, H24090914-002A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24090914

Login completed by: Wanda J. Johnson

Date Received: 9/25/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 10/2/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.2°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None



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Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

Account Information (Billing Information)

Company Name	MT OEG
Contact	Amber Nichols
Phone	(406) 444-6569
Mailing Address	
City, State, Zip	
Email	amber.nichols@mt.gov
Receive Invoice	☐ Hard Copy ☒ Email
Purchase Order	1361
Quote	49366

Report Information (If different than Account Information)

Company Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐ Hard Copy ☐ Email
Special Report Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

Please copy results to: popp@northwindgyp.com

Project Information

Project Name, PWSID, Permit, etc.	UBMC Groundwater
Sampler Name	P.O.P.P.
Sampler Phone	(406) 461-3460
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☐ No
URANIUM MINING CLIENTS MUST indicate sample type	
☐ Unprocessed Ore	
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING	
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)	

Matrix Codes

- A - Air
- W - Water
- S - Solids
- V - Vegetation
- B - Bioassay
- O - Oil
- DW - Drinking Water

Analysis Requested

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Time	Number of Containers	Matrix (See Codes Above)	See Attached	ELI LAB ID RUSH TAT Laboratory Use Only
1 S35-MW-03	9/24/24	12:28	2	W	X	424090914
2 S35-MW-01	9/24/24	15:02	2	W	X	
3						
4						
5						
6						
7						
8						
9						

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Signature	Date/Time	Signature	Date/Time	Amount	Receipt Number (cash/check only)
	Relinquished by (print)	Signature	Date/Time	Signature	Date/Time		
LABORATORY USE ONLY							
Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type
Handwritten	Y	N C B	Y N	0.2 °C	Y N	Y N	Cash Check

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



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Billings, MT 406.252.6325 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 49366



SHIPPED MT DEQ-Site Response TO:

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp
PO Box 200901
Helena MT 59620-0901
Phone: (406) 461-3660
Project: Groundwater

Order Created by: Wanda J. Johnson
Shipped From: Helena, MT
Ship Date: 9/17/2024
VIA: PickUp
Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UBMC Groundwater (12 Sets)

1 Liter Plastic	1	A2310 B	Acidity to pH 8.3	0.25 hrs			1
		A2320 B	Alkalinity to pH 4.5				
		A2510 B	Conductivity				
		E300 0	Anions by Ion Chromatography				
		A4500-H B	pH				
		A2540 C	Solids, Total Dissolved				
		A2540 D	Solids, Total Suspended				
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		HNO3	Filter before preservation	1
		A2340 B	Hardness				
		MCAWW	Preparation, Dissolved Filtration MCAWW				

Comments

HNO3 - Nitric Acid H2SO4 - Sulfuric Acid NaOH - Sodium Hydroxide

BO#: 49366

1 of 2



ANALYTICAL SUMMARY REPORT

October 14, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24100152 Quote ID: H1361

Project Name: UBMC Groundwater

Energy Laboratories Inc Helena MT received the following 9 samples for MT DEQ-Site Response on 10/2/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24100152-001	MHMW-10	09/26/24 14:10	10/02/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended
H24100152-002	MHMW-11	09/26/24 14:23	10/02/24	Aqueous	Same As Above
H24100152-003	MW-2018-01	09/26/24 15:38	10/02/24	Aqueous	Same As Above
H24100152-004	MW-2018-03	09/26/24 16:38	10/02/24	Aqueous	Same As Above
H24100152-005	MW-2019-04	09/27/24 9:45	10/02/24	Aqueous	Same As Above
H24100152-006	MW-2019-05	09/27/24 11:24	10/02/24	Aqueous	Same As Above
H24100152-007	LCMW-5	10/01/24 13:00	10/02/24	Aqueous	Same As Above
H24100152-008	LCMW-1	10/01/24 14:05	10/02/24	Aqueous	Same As Above
H24100152-009	MHMW-9	10/01/24 14:53	10/02/24	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-10
Lab ID: H24100152-001
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 14:10 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.0	s.u.	H	0.1		A4500-H B	10/03/24 11:39 / eer		PHSC_101-H_241003A : 26		R199110
pH Measurement Temp	15.5	°C				A4500-H B	10/03/24 11:39 / eer		PHSC_101-H_241003A : 26		R199110
Conductivity @ 25 C	ND	umhos/cm		5		A2510 B	10/03/24 11:39 / eer		PHSC_101-H_241003A : 27		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:07 / ctl		PHSC_101-H_241003A : 6		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	10/03/24 15:35 / ctl		PHSC_101-H_241003B : 5		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	ND	mg/L		4		A2320 B	10/09/24 18:17 / dpw		PHSC_101-H_241009A : 229		R199301
Bicarbonate as HCO ₃	ND	mg/L		4		A2320 B	10/09/24 18:17 / dpw		PHSC_101-H_241009A : 229		R199301
Carbonate as CO ₃	ND	mg/L		4		A2320 B	10/09/24 18:17 / dpw		PHSC_101-H_241009A : 229		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 13:23 / eer		IC METROHM_241010A : 15		R199422
Sulfate	ND	mg/L		1		E300.0	10/10/24 13:23 / eer		IC METROHM_241010A : 15		R199422
Hardness as CaCO ₃	ND	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 1		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Cadmium	ND	mg/L		0.00008		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Calcium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:49 / dck		ICPMS205-H_241010B : 60		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Magnesium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Sodium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Zinc	ND	mg/L		0.01		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288

Report RL - Analyte Reporting Limit

Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-11
Lab ID: H24100152-002
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 14:23 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.0	s.u.	H	0.1		A4500-H B	10/03/24 11:41 / eer		PHSC_101-H_241003A : 28		R199110
pH Measurement Temp	15.4	°C				A4500-H B	10/03/24 11:41 / eer		PHSC_101-H_241003A : 28		R199110
Conductivity @ 25 C	ND	umhos/cm		5		A2510 B	10/03/24 11:41 / eer		PHSC_101-H_241003A : 29		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:08 / ctl		PHSC_101-H_241003A : 7		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	10/03/24 15:35 / ctl		PHSC_101-H_241003B : 6		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	10/09/24 18:21 / dpw		PHSC_101-H_241009A : 231		R199301
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	10/09/24 18:21 / dpw		PHSC_101-H_241009A : 231		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:21 / dpw		PHSC_101-H_241009A : 231		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 13:38 / eer		IC METROHM_241010A : 16		R199422
Sulfate	ND	mg/L		1		E300.0	10/10/24 13:38 / eer		IC METROHM_241010A : 16		R199422
Hardness as CaCO3	ND	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 2		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Cadmium	ND	mg/L		0.00008		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Calcium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:53 / dck		ICPMS205-H_241010B : 61		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Magnesium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Sodium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Zinc	ND	mg/L		0.01		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288

Report RL - Analyte Reporting Limit

Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-01
Lab ID: H24100152-003
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 15:38
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.6	s.u.	H	0.1		A4500-H B	10/03/24 11:44 / eer		PHSC_101-H_241003A : 30		R199110
pH Measurement Temp	15.5	°C				A4500-H B	10/03/24 11:44 / eer		PHSC_101-H_241003A : 30		R199110
Conductivity @ 25 C	626	umhos/cm		5		A2510 B	10/03/24 11:44 / eer		PHSC_101-H_241003A : 31		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:08 / ctl		rius-BCA124-1S_241003A : 8		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	453	mg/L		20		A2540 C	10/03/24 15:35 / ctl		rius-BCA124-1S_241003B : 7		TDS20241003A
INORGANICS											
Alkalinity, Total as CaCO3	37	mg/L		4		A2320 B	10/09/24 18:25 / dpw		PHSC_101-H_241009A : 233		R199301
Bicarbonate as HCO3	45	mg/L		4		A2320 B	10/09/24 18:25 / dpw		PHSC_101-H_241009A : 233		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:25 / dpw		PHSC_101-H_241009A : 233		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 13:52 / eer		IC METROHM_241010A : 17		R199422
Sulfate	271	mg/L		1		E300.0	10/10/24 13:52 / eer		IC METROHM_241010A : 17		R199422
Hardness as CaCO3	327	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 3		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Cadmium	0.00249	mg/L		0.00008		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Calcium	63	mg/L		1		E200.7	10/03/24 09:37 / slj		ICP2-HE_241003A : 36		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:56 / dck		ICPMS205-H_241010B : 62		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Magnesium	41	mg/L		1		E200.7	10/03/24 09:37 / slj		ICP2-HE_241003A : 36		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Potassium	ND	mg/L		1		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Sodium	2	mg/L		1		E200.7	10/03/24 09:37 / slj		ICP2-HE_241003A : 36		R199174
Zinc	0.75	mg/L		0.01		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-03
Lab ID: H24100152-004
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 16:38
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.4	s.u.	H	0.1		A4500-H B	10/03/24 11:46 / eer		PHSC_101-H_241003A : 32		R199110
pH Measurement Temp	15.2	°C				A4500-H B	10/03/24 11:46 / eer		PHSC_101-H_241003A : 32		R199110
Conductivity @ 25 C	268	umhos/cm		5		A2510 B	10/03/24 11:46 / eer		PHSC_101-H_241003A : 33		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:08 / ctl		rius-BCA124-1S_241003A : 9		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	158	mg/L		20		A2540 C	10/03/24 15:35 / ctl		rius-BCA124-1S_241003B : 8		TDS20241003A
INORGANICS											
Alkalinity, Total as CaCO3	110	mg/L		4		A2320 B	10/09/24 18:32 / dpw		PHSC_101-H_241009A : 235		R199301
Bicarbonate as HCO3	130	mg/L		4		A2320 B	10/09/24 18:32 / dpw		PHSC_101-H_241009A : 235		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:32 / dpw		PHSC_101-H_241009A : 235		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 14:06 / eer		IC METROHM_241010A : 18		R199422
Sulfate	32	mg/L		1		E300.0	10/10/24 14:06 / eer		IC METROHM_241010A : 18		R199422
Hardness as CaCO3	135	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 4		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Cadmium	0.00032	mg/L		0.00008		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Calcium	28	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:59 / dck		ICPMS205-H_241010B : 63		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Magnesium	16	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Sodium	1	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Zinc	0.05	mg/L		0.01		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2019-04
Lab ID: H24100152-005
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/27/24 09:45
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.4	s.u.	H	0.1		A4500-H B	10/03/24 11:48 / eer		PHSC_101-H_241003A : 34		R199110
pH Measurement Temp	15.2	°C				A4500-H B	10/03/24 11:48 / eer		PHSC_101-H_241003A : 34		R199110
Conductivity @ 25 C	246	umhos/cm		5		A2510 B	10/03/24 11:48 / eer		PHSC_101-H_241003A : 35		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 10		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	141	mg/L		20		A2540 C	10/03/24 15:35 / ctl		rius-BCA124-1S_241003B : 9		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	100	mg/L		4		A2320 B	10/09/24 18:38 / dpw		PHSC_101-H_241009A : 237		R199301
Bicarbonate as HCO3	130	mg/L		4		A2320 B	10/09/24 18:38 / dpw		PHSC_101-H_241009A : 237		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:38 / dpw		PHSC_101-H_241009A : 237		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 15:18 / eer		IC METROHM_241010A : 23		R199422
Sulfate	23	mg/L		1		E300.0	10/10/24 15:18 / eer		IC METROHM_241010A : 23		R199422
Hardness as CaCO3	127	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 5		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Cadmium	0.00025	mg/L		0.00008		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Calcium	28	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Copper	0.001	mg/L		0.001		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 22:02 / dck		ICPMS205-H_241010B : 64		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Magnesium	14	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Sodium	2	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Zinc	0.04	mg/L		0.01		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2019-05
Lab ID: H24100152-006
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/27/24 11:24
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.4	s.u.	H	0.1		A4500-H B	10/03/24 11:49 / eer		PHSC_101-H_241003A : 36		R199110
pH Measurement Temp	15.4	°C				A4500-H B	10/03/24 11:49 / eer		PHSC_101-H_241003A : 36		R199110
Conductivity @ 25 C	418	umhos/cm		5		A2510 B	10/03/24 11:49 / eer		PHSC_101-H_241003A : 37		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 11		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	267	mg/L		20		A2540 C	10/03/24 15:35 / ctl		ius-BCA124-1S_241003B : 10		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	96	mg/L		4		A2320 B	10/09/24 18:45 / dpw		PHSC_101-H_241009A : 239		R199301
Bicarbonate as HCO3	120	mg/L		4		A2320 B	10/09/24 18:45 / dpw		PHSC_101-H_241009A : 239		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:45 / dpw		PHSC_101-H_241009A : 239		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 15:33 / eer		IC METROHM_241010A : 24		R199422
Sulfate	113	mg/L		1		E300.0	10/10/24 15:33 / eer		IC METROHM_241010A : 24		R199422
Hardness as CaCO3	191	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 6		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Cadmium	0.00110	mg/L		0.00008		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Calcium	42	mg/L		1		E200.7	10/03/24 09:58 / slj		ICP2-HE_241003A : 41		R199174
Copper	0.001	mg/L		0.001		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 22:05 / dck		ICPMS205-H_241010B : 65		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Magnesium	21	mg/L		1		E200.7	10/03/24 09:58 / slj		ICP2-HE_241003A : 41		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Potassium	1	mg/L		1		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Sodium	11	mg/L		1		E200.7	10/03/24 09:58 / slj		ICP2-HE_241003A : 41		R199174
Zinc	0.14	mg/L		0.01		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-5
Lab ID: H24100152-007
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 10/01/24 13:00 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.0	s.u.	H	0.1		A4500-H B	10/03/24 11:51 / eer		PHSC_101-H_241003A : 38		R199110
pH Measurement Temp	15.2	°C				A4500-H B	10/03/24 11:51 / eer		PHSC_101-H_241003A : 38		R199110
Conductivity @ 25 C	710	umhos/cm		5		A2510 B	10/03/24 11:51 / eer		PHSC_101-H_241003A : 39		R199110
Solids, Total Suspended TSS @ 105 C	11	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 12		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	541	mg/L		20		A2540 C	10/03/24 15:35 / ctl		ius-BCA124-1S_241003B : 11		TDS20241003A
INORGANICS											
Alkalinity, Total as CaCO3	14	mg/L		4		A2320 B	10/09/24 18:58 / dpw		PHSC_101-H_241009A : 243		R199301
Bicarbonate as HCO3	17	mg/L		4		A2320 B	10/09/24 18:58 / dpw		PHSC_101-H_241009A : 243		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:58 / dpw		PHSC_101-H_241009A : 243		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 15:47 / eer		IC METROHM_241010A : 25		R199422
Sulfate	325	mg/L		1		E300.0	10/10/24 15:47 / eer		IC METROHM_241010A : 25		R199422
Hardness as CaCO3	306	mg/L		1		A2340 B	10/10/24 14:53 / slj		WATERCALC_241010A : 8		R199369
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Cadmium	0.0120	mg/L		0.00008		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Calcium	80	mg/L		1		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Copper	0.021	mg/L		0.001		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Iron	16.1	mg/L		0.05		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Lead	0.0005	mg/L		0.0005		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Magnesium	26	mg/L		1		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Manganese	6.29	mg/L		0.005		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Potassium	3	mg/L		1		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Sodium	6	mg/L		1		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Zinc	0.64	mg/L		0.01		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-1
Lab ID: H24100152-008
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 10/01/24 14:05 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.8	s.u.	H	0.1		A4500-H B	10/03/24 11:53 / eer		PHSC_101-H_241003A : 40		R199110
pH Measurement Temp	15.4	°C				A4500-H B	10/03/24 11:53 / eer		PHSC_101-H_241003A : 40		R199110
Conductivity @ 25 C	302	umhos/cm		5		A2510 B	10/03/24 11:53 / eer		PHSC_101-H_241003A : 41		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 13		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	157	mg/L		20		A2540 C	10/03/24 15:36 / ctl		ius-BCA124-1S_241003B : 12		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	55	mg/L		4		A2320 B	10/09/24 19:04 / dpw		PHSC_101-H_241009A : 245		R199301
Bicarbonate as HCO ₃	67	mg/L		4		A2320 B	10/09/24 19:04 / dpw		PHSC_101-H_241009A : 245		R199301
Carbonate as CO ₃	ND	mg/L		4		A2320 B	10/09/24 19:04 / dpw		PHSC_101-H_241009A : 245		R199301
Chloride	1	mg/L		1		E300.0	10/10/24 16:02 / eer		IC METROHM_241010A : 26		R199422
Sulfate	53	mg/L		1		E300.0	10/10/24 16:02 / eer		IC METROHM_241010A : 26		R199422
Hardness as CaCO ₃	97	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 7		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Cadmium	0.00164	mg/L		0.00008		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Calcium	21	mg/L		1		E200.7	10/03/24 10:06 / slj		ICP2-HE_241003A : 43		R199174
Copper	0.016	mg/L		0.001		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Iron	0.18	mg/L		0.05		E200.8	10/10/24 22:09 / dck		ICPMS205-H_241010B : 66		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Magnesium	10	mg/L		1		E200.7	10/03/24 10:06 / slj		ICP2-HE_241003A : 43		R199174
Manganese	0.032	mg/L		0.005		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Potassium	1	mg/L		1		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Sodium	4	mg/L		1		E200.7	10/03/24 10:06 / slj		ICP2-HE_241003A : 43		R199174
Zinc	0.09	mg/L		0.01		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-9
Lab ID: H24100152-009
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 10/01/24 14:53 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	6.8	s.u.	H	0.1		A4500-H B	10/03/24 11:55 / eer		PHSC_101-H_241003A : 42		R199110
pH Measurement Temp	15.8	°C				A4500-H B	10/03/24 11:55 / eer		PHSC_101-H_241003A : 42		R199110
Conductivity @ 25 C	232	umhos/cm		5		A2510 B	10/03/24 11:55 / eer		PHSC_101-H_241003A : 43		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:10 / ctl		ius-BCA124-1S_241003A : 14		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	147	mg/L		20		A2540 C	10/03/24 15:36 / ctl		ius-BCA124-1S_241003B : 13		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	56	mg/L		4		A2320 B	10/09/24 19:11 / dpw		PHSC_101-H_241009A : 247		R199301
Bicarbonate as HCO3	67	mg/L		4		A2320 B	10/09/24 19:11 / dpw		PHSC_101-H_241009A : 247		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 19:11 / dpw		PHSC_101-H_241009A : 247		R199301
Chloride	1	mg/L		1		E300.0	10/10/24 16:16 / eer		IC METROHM_241010A : 27		R199422
Sulfate	52	mg/L		1		E300.0	10/10/24 16:16 / eer		IC METROHM_241010A : 27		R199422
Hardness as CaCO3	100	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 8		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Cadmium	0.00161	mg/L		0.00008		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Calcium	22	mg/L		1		E200.7	10/03/24 10:09 / slj		ICP2-HE_241003A : 44		R199174
Copper	0.016	mg/L		0.001		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Iron	0.19	mg/L		0.05		E200.8	10/10/24 22:12 / dck		ICPMS205-H_241010B : 67		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Magnesium	11	mg/L		1		E200.7	10/03/24 10:09 / slj		ICP2-HE_241003A : 44		R199174
Manganese	0.031	mg/L		0.005		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Potassium	1	mg/L		1		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Sodium	5	mg/L		1		E200.7	10/03/24 10:09 / slj		ICP2-HE_241003A : 44		R199174
Zinc	0.09	mg/L		0.01		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: H - Analysis performed past the method holding time



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199110

Date: 14-Oct-24

Run ID :Run Order: PHSC_101-H_241003A: 2			SampType: Initial Calibration Verification Standard			Lab ID: SC 150			Method: A2510 B		
Analysis Date: 10/03/24 07:38		Units: umhos/cm		Prep Info: Prep Date:			Prep Method:				
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	153	5.0	150	0	102	90	110				
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A											

Run ID :Run Order: PHSC_101-H_241003A: 3				SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 10/03/24 07:40				Units: umhos/cm				Prep Info: Prep Date:		Prep Method:				
Analytes 1				Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C				19500	5.0	20000	0	97	90	110				
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A														

Run ID :Run Order: PHSC_101-H_241003A: 4				SampType: Initial Calibration Verification Standard			Lab ID: SC 5000			Method: A2510 B		
Analysis Date: 10/03/24 07:42		Units: umhos/cm			Prep Info:		Prep Date:		Prep Method:			
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C	4970	5.0	5000	0	99	90	110					
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A												

Run ID :Run Order: PHSC_101-H_241003A: 5				SampType: Laboratory Control Sample				Lab ID: SC 1000				Method: A2510 B			
Analysis Date: 10/03/24 07:44				Units: umhos/cm				Prep Info: Prep Date:				Prep Method:			
Analytes 1				Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C				999	5.0	1000	0	100	90	110					
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A															

Run ID :Run Order: PHSC_101-H_241003A: 7				SampType: Method Blank				Lab ID: MBLK				Method: A2510 B			
Analysis Date: 10/03/24 11:20				Units: umhos/cm				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C				ND	5										
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A															

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199110

Date: 14-Oct-24

Run ID :Run Order: PHSC_101-H_241003A: 11	SampType: Sample Duplicate				Lab ID: H24100137-001ADUP				Method: A2510 B		
Analysis Date: 10/03/24 11:24	Units: umhos/cm				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	79.7	5.0		0				80.2	0.6	10	
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A											

Run ID :Run Order: PHSC_101-H_241003A: 47	SampType: Sample Duplicate				Lab ID: H24100137-003ADUP				Method: A2510 B		
Analysis Date: 10/03/24 11:59	Units: umhos/cm				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C	352	5.0		0				350.8	0.4	10	
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199110

Date: 14-Oct-24

Run ID :Run Order: PHSC_101-H_241003A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 10/03/24 07:33		Units: s.u.		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.0	0.1	7	0	100	98	102				
pH Measurement Temp	19.8			0		0	0				

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: PHSC_101-H_241003A: 10				SampType: Sample Duplicate				Lab ID: H24100137-001ADUP				Method: A4500-H B		
Analysis Date: 10/03/24 11:24				Units: s.u.		Prep Info: Prep Date:				Prep Method:				
Analytes 2		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
pH		7.2	0.1		0				7.14	0.4	3	H		
pH Measurement Temp		13.8			0				14.2					

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: PHSC_101-H_241003A: 46				SampType: Sample Duplicate				Lab ID: H24100137-003ADUP				Method: A4500-H B		
Analysis Date: 10/03/24 11:59				Units: s.u.		Prep Info: Prep Date:				Prep Method:				
Analytes 2		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
pH		8.2	0.1		0				8.17	0.1	3	H		
pH Measurement Temp		15.5			0				15.3					

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199174

Date: 14-Oct-24

Run ID :Run Order: ICP2-HE_241003A: 6		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.7		
Analysis Date: 10/03/24 07:42		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.3	1.0	40	0	101	95	105				
Iron	4.02	0.020	4	0	100	95	105				
Magnesium	40.3	1.0	40	0	101	95	105				
Manganese	3.92	0.010	4	0	98	95	105				
Potassium	41.6	1.0	40	0	104	95	105				
Sodium	41.6	1.0	40	0	104	95	105				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 7			SampType: Continuing Calibration Verification Standar				Lab ID: CCV-1		Method: E200.7		
Analysis Date: 10/03/24 07:45		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.2	1.0	25	0	101	95	105				
Iron	2.54	0.020	2.5	0	102	95	105				
Magnesium	25.2	1.0	25	0	101	95	105				
Manganese	2.53	0.010	2.5	0	101	95	105				
Potassium	25.9	1.0	25	0	104	95	105				
Sodium	25.4	1.0	25	0	101	95	105				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 13			SampType: Method Blank			Lab ID: MB			Method: E200.7		
Analysis Date: 10/03/24 08:08		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.2									
Iron	ND	0.008									
Magnesium	ND	0.05									
Manganese	ND	0.001									
Potassium	0.1	0.06									
Sodium	ND	0.03									

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199174

Date: 14-Oct-24

Run ID :Run Order: ICP2-HE_241003A: 14				SampType: Laboratory Fortified Blank		Lab ID: LFB			Method: E200.7		
Analysis Date: 10/03/24 08:12		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.0	1.0	50	0	96	85	115				
Iron	4.83	0.020	5	0	97	85	115				
Magnesium	48.1	1.0	50	0	96	85	115				
Manganese	4.66	0.010	5	0	93	85	115				
Potassium	50.0	1.0	50	0	100	85	115				
Sodium	50.1	1.0	50	0	100	85	115				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 27			SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E200.7		
Analysis Date: 10/03/24 09:03		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.4	1.0	25	0	101	90	110				
Iron	2.53	0.020	2.5	0	101	90	110				
Magnesium	25.2	1.0	25	0	101	90	110				
Manganese	2.51	0.010	2.5	0	101	90	110				
Potassium	25.9	1.0	25	0	103	90	110				
Sodium	25.4	1.0	25	0	102	90	110				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 29			SampType: Sample Matrix Spike			Lab ID: H24100062-001BMS2			Method: E200.7		
Analysis Date: 10/03/24 09:11		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	85.8	1.0	50	38.85	94	70	130				
Iron	5.00	0.020	5	0.213	96	70	130				
Magnesium	64.2	1.0	50	16.49	95	70	130				
Manganese	4.71	0.0014	5	0.01919	94	70	130				
Potassium	58.3	1.0	50	5.973	105	70	130				
Sodium	131	1.0	50	77.39	108	70	130				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199174

Date: 14-Oct-24

Run ID :Run Order: ICP2-HE_241003A: 30		SampType: Sample Matrix Spike Duplicate				Lab ID: H24100062-001BMSD2			Method: E200.7		
Analysis Date: 10/03/24 09:14		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	88.3	1.0	50	38.85	99	70	130	85.84	2.8	20	
Iron	5.22	0.020	5	0.213	100	70	130	5.002	4.2	20	
Magnesium	66.8	1.0	50	16.49	101	70	130	64.21	3.9	20	
Manganese	4.95	0.0014	5	0.01919	99	70	130	4.71	4.9	20	
Potassium	59.0	1.0	50	5.973	106	70	130	58.31	1.2	20	
Sodium	130	1.0	50	77.39	106	70	130	131.4	0.8	20	

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 33		SampType: Sample Matrix Spike				Lab ID: H24100152-001BMS2				Method: E200.7	
Analysis Date: 10/03/24 09:26		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	49.9	1.0	50	0	100	70	130				
Iron	4.89	0.020	5	0	98	70	130				
Magnesium	50.0	1.0	50	0	100	70	130				
Manganese	4.84	0.0014	5	0	97	70	130				
Potassium	53.3	1.0	50	0	107	70	130				
Sodium	53.0	1.0	50	0	106	70	130				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 34			SampType: Sample Matrix Spike Duplicate			Lab ID: H24100152-001BMSD2			Method: E200.7		
Analysis Date: 10/03/24 09:29		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	51.3	1.0	50	0	103	70	130	49.88	2.8	20	
Iron	5.04	0.020	5	0	101	70	130	4.89	3.0	20	
Magnesium	51.4	1.0	50	0	103	70	130	49.99	2.8	20	
Manganese	4.98	0.0014	5	0	100	70	130	4.844	2.8	20	
Potassium	57.8	1.0	50	0	116	70	130	53.28	8.2	20	
Sodium	57.7	1.0	50	0	115	70	130	53	8.5	20	

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199174

Date: 14-Oct-24

Run ID :Run Order: ICP2-HE_241003A: 39			SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: E200.7		
Analysis Date: 10/03/24 09:48		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.4	1.0	25	0	102	90	110				
Iron	2.52	0.020	2.5	0	101	90	110				
Magnesium	25.5	1.0	25	0	102	90	110				
Manganese	2.52	0.010	2.5	0	101	90	110				
Potassium	26.4	1.0	25	0	106	90	110				
Sodium	26.3	1.0	25	0	105	90	110				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 46		SampType: Sample Matrix Spike				Lab ID: H24100152-009BMS2			Method: E200.7		
Analysis Date: 10/03/24 10:17		Units: mg/L				Prep Info:		Prep Date:		Prep Method:	
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	71.4	1.0	50	22.27	98	70	130				
Iron	5.07	0.020	5	0.1941	98	70	130				
Magnesium	60.1	1.0	50	10.88	99	70	130				
Manganese	4.90	0.0014	5	0.03031	97	70	130				
Potassium	52.9	1.0	50	1.372	103	70	130				
Sodium	55.9	1.0	50	4.582	103	70	130				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICP2-HE_241003A: 47			SampType: Sample Matrix Spike Duplicate			Lab ID: H24100152-009BMSD2			Method: E200.7		
Analysis Date: 10/03/24 10:21		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	71.7	1.0	50	22.27	99	70	130	71.38	0.5	20	
Iron	5.20	0.020	5	0.1941	100	70	130	5.071	2.6	20	
Magnesium	60.9	1.0	50	10.88	100	70	130	60.15	1.2	20	
Manganese	4.97	0.0014	5	0.03031	99	70	130	4.905	1.3	20	
Potassium	55.1	1.0	50	1.372	108	70	130	52.88	4.2	20	
Sodium	57.8	1.0	50	4.582	107	70	130	55.91	3.4	20	

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199288

Date: 14-Oct-24

Run ID :Run Order: ICPMS205-H_241008A: 32		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 10/08/24 13:27		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0465	0.10	0.05	0	93	85	115				
Arsenic	0.0534	0.0050	0.05	0	107	85	115				
Cadmium	0.0553	0.0010	0.05	0	111	85	115				
Copper	0.0546	0.010	0.05	0	109	85	115				
Lead	0.0532	0.010	0.05	0	106	85	115				
Manganese	0.0529	0.010	0.05	0	106	85	115				
Potassium	1.05	0.50	1	0	105	85	115				
Zinc	0.0559	0.010	0.05	0	112	85	115				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241008A: 57		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 10/09/24 08:51		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.275	0.10	0.3	0	92	90	110				
Arsenic	0.0643	0.0050	0.06	0	107	90	110				
Cadmium	0.0314	0.0010	0.03	0	105	90	110				
Copper	0.0646	0.010	0.06	0	108	90	110				
Lead	0.0613	0.010	0.06	0	102	90	110				
Manganese	0.320	0.010	0.3	0	107	90	110				
Potassium	3.21	0.50	3	0	107	90	110				
Zinc	0.0650	0.010	0.06	0	108	90	110				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241008A: 73			SampType: Method Blank			Lab ID: MB-74407			Method: E200.8		
Analysis Date: 10/09/24 09:39		Units: mg/L		Prep Info: Prep Date: 10/8/2024			Prep Method:				
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.003									
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	0.0003	0.0001									
Lead	ND	0.0001									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199288

Date: 14-Oct-24

Run ID :Run Order: ICPMS205-H_241008A: 73				SampType: Method Blank		Lab ID: MB-74407				Method: E200.8		
Analysis Date: 10/09/24 09:39		Units: mg/L		Prep Info: Prep Date: 10/8/2024				Prep Method:				
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Manganese	ND	0.0003										
Potassium	ND	0.04										
Zinc	ND	0.001										

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241008A: 175			SampType: Sample Matrix Spike			Lab ID: H24100131-001BMS			Method: E200.8		
Analysis Date: 10/09/24 18:23		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0497	0.030	0.05	0	99	70	130				
Arsenic	0.0520	0.0010	0.05	0.0003628	103	70	130				
Cadmium	0.0516	0.0010	0.05	0	103	70	130				
Copper	0.0673	0.0050	0.05	0.01657	101	70	130				
Lead	0.0506	0.0010	0.05	0	101	70	130				
Manganese	0.0542	0.0010	0.05	0.002517	103	70	130				
Potassium	2.81	1.0	1	1.89	92	70	130				
Zinc	0.0855	0.010	0.05	0.0311	109	70	130				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241008A: 176			SampType: Sample Matrix Spike Duplicate			Lab ID: H24100131-001BMSD			Method: E200.8		
Analysis Date: 10/09/24 18:27		Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0470	0.030	0.05	0	94	70	130	0.04971	5.7	20	
Arsenic	0.0525	0.0010	0.05	0.0003628	104	70	130	0.05199	1.0	20	
Cadmium	0.0515	0.0010	0.05	0	103	70	130	0.0516	0.2	20	
Copper	0.0674	0.0050	0.05	0.01657	102	70	130	0.06731	0.1	20	
Lead	0.0518	0.0010	0.05	0	104	70	130	0.05059	2.5	20	
Manganese	0.0537	0.0010	0.05	0.002517	102	70	130	0.05418	0.9	20	
Potassium	2.82	1.0	1	1.89	93	70	130	2.814	0.3	20	
Zinc	0.0852	0.010	0.05	0.0311	108	70	130	0.08553	0.3	20	

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199288

Date: 14-Oct-24

Run ID :Run Order: ICPMS205-H_241008A: 178			SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: E200.8		
Analysis Date: 10/09/24 18:33		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0524	0.10	0.05	0	105	90	110				
Arsenic	0.0519	0.0050	0.05	0	104	90	110				
Cadmium	0.0515	0.0010	0.05	0	103	90	110				
Copper	0.0521	0.010	0.05	0	104	90	110				
Lead	0.0506	0.010	0.05	0	101	90	110				
Manganese	0.0510	0.010	0.05	0	102	90	110				
Potassium	12.2	0.50	12.5	0	98	90	110				
Zinc	0.0532	0.010	0.05	0	106	90	110				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241008A: 186			SampType: Sample Matrix Spike			Lab ID: H24100152-006BMS			Method: E200.8		
Analysis Date: 10/09/24 18:59		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0500	0.030	0.05	0	100	70	130				
Arsenic	0.0533	0.0010	0.05	0.000282	106	70	130				
Cadmium	0.0531	0.0010	0.05	0.001103	104	70	130				
Copper	0.0527	0.0050	0.05	0.001322	103	70	130				
Lead	0.0517	0.0010	0.05	0	103	70	130				
Manganese	0.0538	0.0010	0.05	0	108	70	130				
Potassium	2.01	1.0	1	1.063	94	70	130				
Zinc	0.186	0.010	0.05	0.1362	100	70	130				

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241008A: 187		SampType: Sample Matrix Spike Duplicate				Lab ID: H24100152-006BMSD			Method: E200.8		
Analysis Date: 10/09/24 19:02		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0508	0.030	0.05	0	102	70	130	0.05002	1.5	20	
Arsenic	0.0536	0.0010	0.05	0.000282	107	70	130	0.05327	0.6	20	
Cadmium	0.0537	0.0010	0.05	0.001103	105	70	130	0.05308	1.1	20	
Copper	0.0533	0.0050	0.05	0.001322	104	70	130	0.05268	1.2	20	
Lead	0.0517	0.0010	0.05	0	103	70	130	0.05169	0.1	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199288

Date: 14-Oct-24

Run ID :Run Order: ICPMS205-H_241008A: 187			SampType: Sample Matrix Spike Duplicate			Lab ID: H24100152-006BMSD			Method: E200.8		
Analysis Date: 10/09/24 19:02			Units: mg/L		Prep Info: Prep Date:			Prep Method:			
Analytes 8	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.0522	0.0010	0.05	0	104	70	130	0.05379	3.0	20	
Potassium	2.02	1.0	1	1.063	96	70	130	2.006	0.8	20	
Zinc	0.191	0.010	0.05	0.1362	110	70	130	0.1862	2.5	20	

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-007B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199301

Date: 14-Oct-24

Run ID :Run Order: PHSC_101-H_241009A: 203	SampType: Method Blank	Lab ID: MBLK	Method: A2320 B
Analysis Date: 10/09/24 16:40	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	RL	SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO ₃	ND	2	
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A			

Run ID :Run Order: PHSC_101-H_241009A: 204	SampType: Laboratory Control Sample	Lab ID: LCS	Method: A2320 B
Analysis Date: 10/09/24 16:47	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 1	Result	RL	SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO ₃	660	4.0	600 0 110 90 110
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A			

Run ID :Run Order: PHSC_101-H_241009A: 241	SampType: Sample Duplicate	Lab ID: H24100152-006ADUP	Method: A2320 B
Analysis Date: 10/09/24 18:52	Units: mg/L	Prep Info: Prep Date:	Prep Method:
Analytes 3	Result	RL	SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO ₃	95	4.0	0 96.35 0.9 10
Bicarbonate as HCO ₃	120	4.0	0 116.9 0.9 10
Carbonate as CO ₃	ND	4.0	0 0 10
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199422

Date: 14-Oct-24

Run ID :Run Order: IC METROHM_241010A: 1				SampType: Method Blank			Lab ID: ICB			Method: E300.0		
Analysis Date: 10/10/24 09:48		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	ND	0.02										
Sulfate	ND	0.03										

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: IC METROHM_241010A: 2		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 10/10/24 10:02		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.9	1.0	100	0	99	90	110				
Sulfate	386	1.0	400	0	96	90	110				

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: IC METROHM_241010A: 3		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0		
Analysis Date: 10/10/24 10:17		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	23.9	1.0	25	0	96	90	110				
Sulfate	98.2	1.0	100	0	98	90	110				

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: IC METROHM_241010A: 5		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E300.0		
Analysis Date: 10/10/24 10:45		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51.6	1.0	50	0	103	90	110				
Sulfate	206	1.0	200	0	103	90	110				

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: IC METROHM_241010A: 9				SampType: Sample Duplicate			Lab ID: H24090036-027CDUP			Method: E300.0		
Analysis Date: 10/10/24 11:57		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	3.09	1.0		0				3.004	2.7	20		

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199422

Date: 14-Oct-24

Run ID :Run Order: IC METROHM_241010A: 9				SampType: Sample Duplicate				Lab ID: H24090036-027CDUP				Method: E300.0	
Analysis Date: 10/10/24 11:57				Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 2		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Sulfate		151	1.0		0				136.1	10	20		
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A													

Run ID :Run Order: IC METROHM_241010A: 19				SampType: Sample Matrix Spike		Lab ID: H24100152-004AMS				Method: E300.0		
Analysis Date: 10/10/24 14:21		Units: mg/L				Prep Info: Prep Date:		Prep Method:				
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	25.6	1.0	25	0.142	102	90	110					
Sulfate	134	1.0	100	32.39	102	90	110					
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A												

Run ID :Run Order: IC METROHM_241010A: 20		SampType: Sample Matrix Spike Duplicate				Lab ID: H24100152-004AMSD			Method: E300.0		
Analysis Date: 10/10/24 14:35		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25.5	1.0	25	0.142	101	90	110	25.62	0.5	20	
Sulfate	134	1.0	100	32.39	102	90	110	134.1	0.3	20	
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A											

Run ID :Run Order: IC METROHM_241010A: 21		SampType: Continuing Calibration Verification Standar				Lab ID: CCV			Method: E300.0		
Analysis Date: 10/10/24 14:50		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.9	1.0	50	0	100	90	110				
Sulfate	200	1.0	200	0	100	90	110				
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A											

Run ID :Run Order: IC METROHM_241010A: 32				SampType: Sample Matrix Spike		Lab ID: H24091036-005AMS				Method: E300.0		
Analysis Date: 10/10/24 17:28		Units: mg/L				Prep Info: Prep Date:		Prep Method:				
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	36.2	1.0	25	10.24	104	90	110					
Sulfate	151	1.0	100	48.92	102	90	110					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199422

Date: 14-Oct-24

Run ID :Run Order: IC METROHM_241010A: 32	SampType: Sample Matrix Spike	Lab ID: H24091036-005AMS	Method: E300.0								
Analysis Date: 10/10/24 17:28	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Run ID :Run Order: IC METROHM_241010A: 33	SampType: Sample Matrix Spike Duplicate	Lab ID: H24091036-005AMSD	Method: E300.0								
Analysis Date: 10/10/24 17:43	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	36.3	1.0	25	10.24	104	90	110	36.19	0.3	20	
Sulfate	152	1.0	100	48.92	103	90	110	150.7	0.8	20	

Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199429

Date: 14-Oct-24

Run ID :Run Order: ICPMS205-H_241010B: 15				SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E200.8		
Analysis Date: 10/10/24 12:47				Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron		0.306	0.020	0.3	0	102	90	110					

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241010B: 25				SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 10/10/24 19:57				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Iron		ND	0.004												

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241010B: 26				SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 10/10/24 20:01				Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron		0.155	0.020	0.15	0	103	85	115					

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241010B: 55				SampType: Sample Matrix Spike			Lab ID: H24100329-001BMS				Method: E200.8		
Analysis Date: 10/10/24 21:33		Units: mg/L		Prep Info: Prep Date:					Prep Method:				
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Iron	0.596	0.020	0.15	0.4485	98	70	130						

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241010B: 56				SampType: Sample Matrix Spike Duplicate				Lab ID: H24100329-001BMSD				Method: E200.8	
Analysis Date: 10/10/24 21:37				Units: mg/L		Prep Info: Prep Date:			Prep Method:				
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron		0.592	0.020	0.15	0.4485	96	70	130	0.5955	0.5	20		

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: R199429

Date: 14-Oct-24

Run ID :Run Order: ICPMS205-H_241010B: 58				SampType: Continuing Calibration Verification Standar				Lab ID: CCV		Method: E200.8		
Analysis Date: 10/10/24 21:43		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron	1.31	0.020	1.3	0	101	90	110					

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241010B: 68				SampType: Sample Matrix Spike			Lab ID: H24100152-009BMS				Method: E200.8	
Analysis Date: 10/10/24 22:15		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron	0.333	0.020	0.15	0.1868	97	70	130					

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Run ID :Run Order: ICPMS205-H_241010B: 69				SampType: Sample Matrix Spike Duplicate				Lab ID: H24100152-009BMSD				Method: E200.8	
Analysis Date: 10/10/24 22:18				Units: mg/L		Prep Info: Prep Date:				Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron		0.333	0.020	0.15	0.1868	98	70	130	0.3326	0.2	20		

Associated samples: H24100152-001B, H24100152-002B, H24100152-003B, H24100152-004B, H24100152-005B, H24100152-006B, H24100152-008B, H24100152-009B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: TDS20241003A

Date: 14-Oct-24

Run ID :Run Order: Sartorius-BCA124-1S_241003B: 1					SampType: Method Blank		Lab ID: MBLK_20241003-2			Method: A2540 C			
Analysis Date: 10/03/24 15:34			Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C			ND	1									
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A													

Run ID :Run Order: Sartorius-BCA124-1S_241003B: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20241003-1			Method: A2540 C		
Analysis Date: 10/03/24 15:34		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		1960	50	2000	0	98	90	110				
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A												

Run ID :Run Order: Sartorius-BCA124-1S_241003B: 4					SampType: Sample Duplicate		Lab ID: H24100078-002BDUP			Method: A2540 C		
Analysis Date: 10/03/24 15:34		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		1320	50		0				1338	1.2	10	
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24100152

BatchID: TSS20241003A

Date: 14-Oct-24

Run ID :Run Order: Sartorius-BCA124-1S_241003A: 1					SampType: Method Blank		Lab ID: MBLK_20241003-3			Method: A2540 D			
Analysis Date: 10/03/24 15:06			Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C			ND	1									
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A													

Run ID :Run Order: Sartorius-BCA124-1S_241003A: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20241003-2			Method: A2540 D		
Analysis Date: 10/03/24 15:07		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		94.0	25	100	0	94	80	120				
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A												

Run ID :Run Order: Sartorius-BCA124-1S_241003A: 4					SampType: Sample Duplicate		Lab ID: H24100078-001BDUP			Method: A2540 D		
Analysis Date: 10/03/24 15:07			Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		276	50		0				264	4.4	10	
Associated samples: H24100152-001A, H24100152-002A, H24100152-003A, H24100152-004A, H24100152-005A, H24100152-006A, H24100152-007A, H24100152-008A, H24100152-009A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24100152

Login completed by: Rebecca A. Tooke

Date Received: 10/2/2024

Reviewed by: tjones

Received by: TKJ

Reviewed Date: 10/7/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.2°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None



www.energylab.com

Page 1 of 1Comments

Please copy results to:
popp@northwindgrip.com

All turnaround times are standard unless marked as RUSH.

Sample Identification (Name, Location, Interval, etc.)	Collection		Number of Containers	Matrix (See Codes Above)	Se	RUSH TAT	ELI LAB ID Laboratory Use Only
	Date	Time					
1 MAMW -10	9/26/24	14:10	2	W	X		251001424 H24100152
2 MAMW -11	↓	14:23	↓	↓	↓		
3 MW -2018-01	↓	15:38	↓	↓	↓		
4 MW -2018-03	9/26/24	16:38	2	W	X		
5 MW -2019-04	9/27/24	9:45	2	W	X		
6 MW -2019-05	9/27/24	11:24	2	W	X		
7 LCMW -5	10/1/24	13:00	2	W	X		
8 LCMW -1	↓	14:05	↓	↓	↓		
9 MAMW -9	10/1/24	14:53	2	W	X		

ELL is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COG.

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



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Billings, MT 406.252.6325 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 49366



SHIPPED MT DEQ-Site Response
TO:

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp
PO Box 200901
Helena MT 59620-0901
Phone: (406) 461-3660
Project: Groundwater

Order Created by: Wanda J. Johnson
Shipped From: Helena, MT
Ship Date: 9/17/2024
VIA: PickUp
Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
UBMC Groundwater (12 Sets)							
1 Liter Plastic	1	A2310 B A2320 B A2510 B E300.0 A4500-H B A2540 C A2540 D	Acidity to pH 8.3 Alkalinity to pH 4.5 Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended	0.25 hrs			1
250 mL Plastic	1	E200.7_8 A2340 B MCAWW	Metals by ICP/ICPMS, Dissolved Hardness Preparation, Dissolved Filtration MCAWW		HNO3	Filter before preservation	1

Comments

HNO3 - Nitric Acid H2SO4 - Sulfuric Acid NaOH - Sodium Hydroxide

BO#: 49366

1 of 2

ZnAc - Zinc Acetate HCl - Hydrochloric Acid H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com -> Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BO#: 49366

2 of 2

Q4

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ANALYTICAL SUMMARY REPORT

December 30, 2024

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Work Order: H24120563 Quote ID: H1361

Project Name: UBMC Groundwater

Energy Laboratories Inc Helena MT received the following 1 sample for MT DEQ-Site Response on 12/18/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24120563-001	535-MW-03	12/18/24 11:50	12/18/24	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.



CLIENT: MT DEQ-Site Response
Project: UBMC Groundwater
Work Order: H24120563

Report Date: 12/30/24

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: 535-MW-03
Lab ID: H24120563-001
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 12/18/24 11:50 **DateReceived:** 12/18/24
Report Date: 12/30/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.7	s.u.	H	0.1		A4500-H B	12/19/24 09:50 / dpw		PHSC_101-H_241219A : 15		R201482
pH Measurement Temp	9.9	°C				A4500-H B	12/19/24 09:50 / dpw		PHSC_101-H_241219A : 15		R201482
Conductivity @ 25 C	583	umhos/cm		5		A2510 B	12/19/24 09:50 / dpw		PHSC_101-H_241219A : 16		R201482
Solids, Total Suspended TSS @ 105 C	11	mg/L		10		A2540 D	12/19/24 14:53 / dpw		rius-BCA124-1S_241219A : 5		TSS20241219A
Solids, Total Dissolved TDS @ 180 C	327	mg/L		20		A2540 C	12/19/24 14:47 / dpw		ius-BCA124-1S_241219B : 14		TDS20241219A
INORGANICS											
Alkalinity, Total as CaCO3	240	mg/L		4		A2320 B	12/23/24 12:05 / dpw		PHSC_101-H_241223A : 12		R201555
Bicarbonate as HCO3	300	mg/L		4		A2320 B	12/23/24 12:05 / dpw		PHSC_101-H_241223A : 12		R201555
Carbonate as CO3	ND	mg/L		4		A2320 B	12/23/24 12:05 / dpw		PHSC_101-H_241223A : 12		R201555
Chloride	26	mg/L		1		E300.0	12/20/24 18:03 / eer		IC METROHM_241220A : 26		R201538
Sulfate	10	mg/L		1		E300.0	12/20/24 18:03 / eer		IC METROHM_241220A : 26		R201538
Hardness as CaCO3	268	mg/L		1		A2340 B	12/26/24 12:50 / JCS		CALC_241230A : 25		R201731
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	12/27/24 04:59 / eli-b		SUB-B434572 : 16		B_R434572
Arsenic	0.004	mg/L		0.003		E200.8	12/27/24 04:59 / eli-b		SUB-B434572 : 16		B_R434572
Cadmium	ND	mg/L		0.00008		E200.8	12/27/24 04:59 / eli-b		SUB-B434572 : 16		B_R434572
Calcium	78	mg/L		1		E200.7	12/26/24 12:50 / eli-b		SUB-B434584 : 8		B_R434584
Copper	ND	mg/L		0.001		E200.8	12/27/24 04:59 / eli-b		SUB-B434572 : 16		B_R434572
Iron	ND	mg/L		0.05		E200.8	12/28/24 15:02 / eli-b		SUB-B434631 : 19		B_R434631
Lead	ND	mg/L		0.0005		E200.8	12/28/24 15:02 / eli-b		SUB-B434631 : 19		B_R434631
Magnesium	18	mg/L		1		E200.7	12/26/24 12:50 / eli-b		SUB-B434584 : 8		B_R434584
Manganese	ND	mg/L		0.005		E200.7	12/26/24 12:50 / eli-b		SUB-B434584 : 8		B_R434584
Potassium	2	mg/L		1		E200.7	12/26/24 12:50 / eli-b		SUB-B434584 : 8		B_R434584
Sodium	12	mg/L		1		E200.7	12/26/24 12:50 / eli-b		SUB-B434584 : 8		B_R434584
Zinc	ND	mg/L		0.01		E200.7	12/26/24 12:50 / eli-b		SUB-B434584 : 8		B_R434584

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434572

Date: 30-Dec-24

Run ID :Run Order: SUB-B434572: 2	SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 12/26/24 12:15	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	ND	0.006										
Arsenic	ND	0.00006										
Cadmium	ND	0.00001										
Copper	ND	0.0001										

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434572: 3	SampType: Laboratory Fortified Blank				Lab ID: LFB				Method: E200.8			
Analysis Date: 12/26/24 12:31	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.0510	0.020	0.05	0	102	85	115	0				
Arsenic	0.0511	0.0050	0.05	0	102	85	115	0				
Cadmium	0.0502	0.0010	0.05	0	100	85	115	0				
Copper	0.0510	0.010	0.05	0	102	85	115	0				

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434572: 10	SampType: Method Blank				Lab ID: MB-195975				Method: E200.8			
Analysis Date: 12/26/24 15:03	Units: mg/L				Prep Info: Prep Date: 12/17/2024				Prep Method:			
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	ND	0.006										
Arsenic	ND	0.00006										
Cadmium	ND	0.00001										
Copper	ND	0.0001										

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434572: 11	SampType: Initial Calibration Verification Standard				Lab ID: QCS				Method: E200.8			
Analysis Date: 12/27/24 04:10	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aluminum	0.240	0.020	0.25	0	96	90	110	0				
Arsenic	0.0499	0.0050	0.05	0	100	90	110	0				
Cadmium	0.0241	0.0010	0.025	0	96	90	110	0				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434572

Date: 30-Dec-24

Run ID :Run Order: SUB-B434572: 11	SampType: Initial Calibration Verification Standard				Lab ID: QCS				Method: E200.8		
Analysis Date: 12/27/24 04:10	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0507	0.010	0.05	0	101	90	110	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434572: 12	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E200.8		
Analysis Date: 12/27/24 04:15	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0461	0.020	0.05	0	92	90	110	0			
Arsenic	0.0493	0.0050	0.05	0	99	90	110	0			
Cadmium	0.0470	0.0010	0.05	0	94	90	110	0			
Copper	0.0498	0.010	0.05	0	100	90	110	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434572: 14	SampType: Sample Matrix Spike				Lab ID: B24121918-002AMS				Method: E200.8		
Analysis Date: 12/27/24 05:42	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0519	0.030	0.05	0	104	70	130	0			
Arsenic	0.0511	0.0010	0.05	0	102	70	130	0			
Cadmium	0.0477	0.0010	0.05	0	95	70	130	0			
Copper	0.0482	0.0050	0.05	0.0002478	96	70	130	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434572: 15	SampType: Sample Matrix Spike Duplicate				Lab ID: B24121918-002AMSD				Method: E200.8		
Analysis Date: 12/27/24 05:47	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0501	0.030	0.05	0	100	70	130	0.05187	3.4	20	
Arsenic	0.0509	0.0010	0.05	0	102	70	130	0.05109	0.3	20	
Cadmium	0.0483	0.0010	0.05	0	97	70	130	0.04771	1.1	20	
Copper	0.0480	0.0050	0.05	0.0002478	95	70	130	0.04822	0.6	20	

Associated samples: H24120563-001B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434572

Date: 30-Dec-24

Run ID :Run Order: SUB-B434572: 17		SampType: Initial Calibration Verification Standard				Lab ID: QCS			Method: E200.8		
Analysis Date: 12/26/24 21:09		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 4	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.259	0.020	0.25	0	104	90	110	0			
Arsenic	0.0496	0.0050	0.05	0	99	90	110	0			
Cadmium	0.0256	0.0010	0.025	0	102	90	110	0			
Copper	0.0504	0.010	0.05	0	101	90	110	0			

Associated samples: H24120563-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434584

Date: 30-Dec-24

Run ID :Run Order: SUB-B434584: 1	SampType: Continuing Calibration Verification Standard				Lab ID: ICV				Method: E200.7			
Analysis Date: 12/26/24 11:45	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	25.4	1.0	25	0	102	95	105	0				
Magnesium	25.5	1.0	25	0	102	95	105	0				
Manganese	2.47	0.010	2.5	0	99	95	105	0				
Potassium	25.1	1.0	25	0	100	95	105	0				
Sodium	25.7	1.0	25	0	103	95	105	0				
Zinc	2.42	0.010	2.5	0	97	95	105	0				

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434584: 2	SampType: Method Blank				Lab ID: MB-5900DIS241226A				Method: E200.7			
Analysis Date: 12/26/24 11:58	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	ND	0.06										
Magnesium	ND	0.05										
Manganese	ND	0.0004										
Potassium	ND	0.1										
Sodium	ND	0.05										
Zinc	ND	0.005										

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434584: 3	SampType: Laboratory Fortified Blank				Lab ID: LFB-5900DIS241226A				Method: E200.7			
Analysis Date: 12/26/24 11:59	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	47.1	1.0	50	0	94	85	115	0				
Magnesium	49.2	1.0	50	0	98	85	115	0				
Manganese	4.48	0.010	5	0	90	85	115	0				
Potassium	49.8	1.0	50	0	100	85	115	0				
Sodium	49.8	1.0	50	0	100	85	115	0				
Zinc	0.877	0.010	1	0	88	85	115	0				

Associated samples: H24120563-001B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434584

Date: 30-Dec-24

Run ID :Run Order: SUB-B434584: 4	SampType: Sample Matrix Spike				Lab ID: B24121879-001BMS2				Method: E200.7		
Analysis Date: 12/26/24 12:39	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	1520	2.6	1250	94.73	114	70	130	0			
Magnesium	1430	2.1	1250	23.74	113	70	130	0			
Manganese	134	0.026	125	0.0635	107	70	130	0			
Potassium	1440	7.7	1250	11.17	114	70	130	0			
Sodium	3980	2.6	1250	2539	115	70	130	0			
Zinc	25.9	0.26	25	0	104	70	130	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434584: 5	SampType: Sample Matrix Spike Duplicate				Lab ID: B24121879-001BMSD2				Method: E200.7		
Analysis Date: 12/26/24 12:40	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	1400	2.6	1250	94.73	105	70	130	1521	8.0	20	
Magnesium	1330	2.1	1250	23.74	104	70	130	1434	7.8	20	
Manganese	124	0.026	125	0.0635	99	70	130	134.2	8.2	20	
Potassium	1330	7.7	1250	11.17	105	70	130	1436	7.9	20	
Sodium	3820	2.6	1250	2539	102	70	130	3981	4.1	20	
Zinc	24.0	0.26	25	0	96	70	130	25.88	7.7	20	

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434584: 6	SampType: Continuing Calibration Verification Standard				Lab ID: CCV				Method: E200.7		
Analysis Date: 12/26/24 12:43	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 6	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.1	1.0	25	0	100	90	110	0			
Magnesium	24.9	1.0	25	0	100	90	110	0			
Manganese	2.43	0.010	2.5	0	97	90	110	0			
Potassium	25.1	1.0	25	0	101	90	110	0			
Sodium	25.3	1.0	25	0	101	90	110	0			
Zinc	2.38	0.010	2.5	0	95	90	110	0			

Associated samples: H24120563-001B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434631

Date: 30-Dec-24

Run ID :Run Order: SUB-B434631: 1		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E200.8		
Analysis Date: 12/27/24 13:39		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	5.07	0.020	5	0	101	85	115	0			
Lead	0.0495	0.0010	0.05	0	99	85	115	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 2		SampType: Method Blank				Lab ID: LRB			Method: E200.8		
Analysis Date: 12/27/24 15:00		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.001	0.0009									
Lead	ND	0.00001									

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 14				SampType: Method Blank				Lab ID: LRB				Method: E200.8			
Analysis Date: 12/27/24 13:22				Units: mg/L				Prep Info:		Prep Date:		Prep Method:			
Analytes 2				Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron				ND	0.0009										
Lead				ND	0.00001										

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 15		SampType: Initial Calibration Verification Standard				Lab ID: QCS			Method: E200.8		
Analysis Date: 12/28/24 13:07		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.260	0.020	0.25	0	104	90	110	0			
Lead	0.0500	0.0010	0.05	0	100	90	110	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 16		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 12/28/24 14:18		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1.28	0.020	1.3	0	98	90	110	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: B_R434631

Date: 30-Dec-24

Run ID :Run Order: SUB-B434631: 16		SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E200.8		
Analysis Date: 12/28/24 14:18		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0452	0.0010	0.05	0	90	90	110	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 17		SampType: Sample Matrix Spike				Lab ID: B24121890-004AMS			Method: E200.8		
Analysis Date: 12/28/24 14:29		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	5.03	0.020	5	0.0009153	101	70	130	0			
Lead	0.0466	0.0010	0.05	0.00007605	93	70	130	0			

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 18		SampType: Sample Matrix Spike Duplicate				Lab ID: B24121890-004AMSD			Method: E200.8		
Analysis Date: 12/28/24 14:34		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	5.10	0.020	5	0.0009153	102	70	130	5.029	1.4	20	
Lead	0.0452	0.0010	0.05	0.00007605	90	70	130	0.0466	3.1	20	

Associated samples: H24120563-001B

Run ID :Run Order: SUB-B434631: 20		SampType: Initial Calibration Verification Standard				Lab ID: QCS			Method: E200.8		
Analysis Date: 12/27/24 21:46		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.257	0.020	0.25	0	103	90	110	0			
Lead	0.0473	0.0010	0.05	0	95	90	110	0			

Associated samples: H24120563-001B

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: R201482

Date: 30-Dec-24

Run ID :Run Order: PHSC_101-H_241219A: 2			SampType: Initial Calibration Verification Standard				Lab ID: SC 150			Method: A2510 B			
Analysis Date: 12/19/24 09:14			Units: umhos/cm		Prep Info:			Prep Date:		Prep Method:			
Analytes 1			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			148	5.0	150	0	98	90	110				

Associated samples: H24120563-001A

Run ID :Run Order: PHSC_101-H_241219A: 3			SampType: Initial Calibration Verification Standard				Lab ID: SC 20000			Method: A2510 B			
Analysis Date: 12/19/24 09:16			Units: umhos/cm		Prep Info:			Prep Date:		Prep Method:			
Analytes 1			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C			18900	5.0	20000	0	94	90	110				

Associated samples: H24120563-001A

Run ID :Run Order: PHSC_101-H_241219A: 4				SampType: Initial Calibration Verification Standard				Lab ID: SC 5000			Method: A2510 B		
Analysis Date: 12/19/24 09:18				Units: umhos/cm		Prep Info:			Prep Date:		Prep Method:		
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		4790	5.0	5000	0	96	90	110					

Associated samples: H24120563-001A

Run ID :Run Order: PHSC_101-H_241219A: 5				SampType: Laboratory Control Sample				Lab ID: SC 1000				Method: A2510 B	
Analysis Date: 12/19/24 09:20				Units: umhos/cm				Prep Info:		Prep Date:		Prep Method:	
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C		968	5.0	1000	0	97	90	110					

Associated samples: H24120563-001A

Run ID :Run Order: PHSC_101-H_241219A: 6				SampType: Method Blank				Lab ID: MBLK				Method: A2510 B			
Analysis Date: 12/19/24 09:34				Units: umhos/cm				Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Conductivity @ 25 C				ND	5										

Associated samples: H24120563-001A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: R201482

Date: 30-Dec-24

Run ID :Run Order: PHSC_101-H_241219A: 10				SampType: Sample Duplicate			Lab ID: H24120567-001ADUP				Method: A2510 B			
Analysis Date: 12/19/24 09:44				Units: umhos/cm			Prep Info:		Prep Date:		Prep Method:			
Analytes 1				Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity @ 25 C				347	5.0		0				346.5	0.2	10	
Associated samples: H24120563-001A														

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: R201482

Date: 30-Dec-24

Run ID :Run Order: PHSC_101-H_241219A: 1		SampType: Initial Calibration Verification Standard				Lab ID: pH 7			Method: A4500-H B		
Analysis Date: 12/19/24 09:09		Units: s.u.		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	6.9	0.1	7	0	99	98	102				
pH Measurement Temp	20.0			0		0	0				
Associated samples: H24120563-001A											

Run ID :Run Order: PHSC_101-H_241219A: 9				SampType: Sample Duplicate		Lab ID: H24120567-001ADUP				Method: A4500-H B		
Analysis Date: 12/19/24 09:44		Units: s.u.		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.8	0.1		0				7.76	0.4	3	H	
pH Measurement Temp	14.3			0				14.8				
Associated samples: H24120563-001A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: R201538

Date: 30-Dec-24

Run ID :Run Order: IC METROHM_241220A: 1	SampType: Method Blank				Lab ID: ICB			Method: E300.0			
Analysis Date: 12/20/24 10:23	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.03									

Associated samples: H24120563-001A

Run ID :Run Order: IC METROHM_241220A: 2	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0			
Analysis Date: 12/20/24 10:37	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	99.7	1.0	100	0	100	90	110				
Sulfate	393	1.0	400	0	98	90	110				

Associated samples: H24120563-001A

Run ID :Run Order: IC METROHM_241220A: 3	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0			
Analysis Date: 12/20/24 10:51	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.3	1.0	25	0	97	90	110				
Sulfate	101	1.0	100	0	101	90	110				

Associated samples: H24120563-001A

Run ID :Run Order: IC METROHM_241220A: 19	SampType: Continuing Calibration Verification Standard				Lab ID: CCV			Method: E300.0			
Analysis Date: 12/20/24 16:07	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	50.1	1.0	50	0	100	90	110				
Sulfate	206	1.0	200	0	103	90	110				

Associated samples: H24120563-001A

Run ID :Run Order: IC METROHM_241220A: 30	SampType: Sample Matrix Spike				Lab ID: H24120596-002BMS			Method: E300.0			
Analysis Date: 12/20/24 19:15	Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	27.2	1.0	25	1.27	104	90	110				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: R201538

Date: 30-Dec-24

Run ID :Run Order: IC METROHM_241220A: 30		SampType: Sample Matrix Spike				Lab ID: H24120596-002BMS				Method: E300.0		
Analysis Date: 12/20/24 19:15		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Sulfate	109	1.0	100	3.597	105	90	110					
Associated samples: H24120563-001A												

Run ID :Run Order: IC METROHM_241220A: 31		SampType: Sample Matrix Spike Duplicate				Lab ID: H24120596-002BMSD			Method: E300.0		
Analysis Date: 12/20/24 19:29		Units: mg/L		Prep Info:			Prep Date:		Prep Method:		
Analytes 2	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	27.2	1.0	25	1.27	104	90	110	27.19	0.2	20	
Sulfate	110	1.0	100	3.597	106	90	110	108.8	0.7	20	
Associated samples: H24120563-001A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: R201555

Date: 30-Dec-24

Run ID :Run Order: PHSC_101-H_241223A: 6	SampType: Method Blank				Lab ID: MBLK				Method: A2320 B		
Analysis Date: 12/23/24 11:34	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO ₃	ND	2									
Associated samples: H24120563-001A											

Run ID :Run Order: PHSC_101-H_241223A: 7	SampType: Laboratory Control Sample				Lab ID: LCS				Method: A2320 B		
Analysis Date: 12/23/24 11:39	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO ₃	630	4.0	600	0	105	90	110				
Associated samples: H24120563-001A											

Run ID :Run Order: PHSC_101-H_241223A: 10	SampType: Sample Duplicate				Lab ID: H24120557-001ADUP				Method: A2320 B		
Analysis Date: 12/23/24 11:57	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analytes 3	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO ₃	340	4.0		0				343.4	0.6	10	
Bicarbonate as HCO ₃	420	4.0		0				418.4	0.6	10	
Carbonate as CO ₃	ND	4.0		0				0		10	
Associated samples: H24120563-001A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: TDS20241219A

Date: 30-Dec-24

Run ID :Run Order: Sartorius-BCA124-1S_241219B: 1					SampType: Method Blank		Lab ID: MBLK_20241219-2				Method: A2540 C	
Analysis Date: 12/19/24 14:43		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C		ND	1									
Associated samples: H24120563-001A												

Run ID :Run Order: Sartorius-BCA124-1S_241219B: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20241219-1			Method: A2540 C		
Analysis Date: 12/19/24 14:43		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		1980	50	2000	0	99	90	110				
Associated samples: H24120563-001A												

Run ID :Run Order: Sartorius-BCA124-1S_241219B: 4					SampType: Sample Duplicate		Lab ID: H24120530-001CDUP				Method: A2540 C	
Analysis Date: 12/19/24 14:44		Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Dissolved TDS @ 180 C	24800	500		0				24860	0.2	10		
Associated samples: H24120563-001A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Prepared by Helena, MT Branch

Work Order: H24120563

BatchID: TSS20241219A

Date: 30-Dec-24

Run ID :Run Order: Sartorius-BCA124-1S_241219A: 1					SampType: Method Blank		Lab ID: MBLK_20241219-3				Method: A2540 D		
Analysis Date: 12/19/24 14:52		Units: mg/L		Prep Info:		Prep Date:			Prep Method:				
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Solids, Total Suspended TSS @ 105 C		ND	1										
Associated samples: H24120563-001A													

Run ID :Run Order: Sartorius-BCA124-1S_241219A: 2					SampType: Laboratory Control Sample		Lab ID: LCS_20241219-2			Method: A2540 D		
Analysis Date: 12/19/24 14:52		Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C		88.0	25	100	0	88	80	120				
Associated samples: H24120563-001A												

Run ID :Run Order: Sartorius-BCA124-1S_241219A: 4					SampType: Sample Duplicate		Lab ID: H24120582-001ADUP				Method: A2540 D	
Analysis Date: 12/19/24 14:53		Units: mg/L		Prep Info:		Prep Date:			Prep Method:			
Analytes 1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Solids, Total Suspended TSS @ 105 C	176	100		0				192	8.7	10		
Associated samples: H24120563-001A												

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

MT DEQ-Site Response

H24120563

Login completed by: Taylor K. Jones

Date Received: 12/18/2024

Reviewed by: Icadreau

Received by: WJJ

Reviewed Date: 12/23/2024

Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☒	Not Applicable ☐
Container/Temp Blank temperature:	6.0°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None

Laboratory Certifications and Accreditations

Current certificates are available at www.energylab.com website:

	Agency	Number
Billings, MT  	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
	Florida (Primary NELAP)	E87668
	Idaho	MT00005
	Louisiana	05079
	Montana	CERT0044
	Nebraska	NE-OS-13-04
	Nevada	NV-C24-00250
	North Dakota	R-007
	National Radon Proficiency	109383-RMP
	Oregon	4184
	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
Casper, WY 	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
	Louisiana	05083
	Montana	CERT0002
	Nebraska	NE-OS-08-04
	Nevada	NV-C24-00245
	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
Helena, MT	Colorado	MT00945
	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090



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Page / of /

Report Information (if different than Account Information)

Company/Name _____
 Contact _____
 Phone _____
 Mailing Address _____
 City, State, Zip _____
 Email _____
 Receive Report ☐ Hard Copy ☐ Email _____
 Special Report/Formats: _____
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

Please copy results to: pebbles.app@tetratech.com

Project Name, PWSID, Permit, etc. UBMC Groundwater
Sampler Name Pop, M. Tonko Sampler Phone (408) 441-3660
Sample Origin State MT EPA/State Compliance ☐ Yes ☒ No
URANIUM MINING CLIENTS MUST indicate sample type
☐ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)(2) Byproduct Material (Can ONLY be Submitted to ELL Casper)

Analysis Requested	
A - Air	
W - Water	
S - Solids/ Solids	
V - Vegetation	
B - Bioassay	
O - Oil	
DW - Drinking Water	

Sample Identification (Name, Location, Interval, etc.)		Collection		Number of Containers	Matrix (Soil Codes above)
		Date	Time		
1	S 35-MW-03	12/18/24	11:50	2	W
2					
3					
4					
5					
6					
7					
8					
9					

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Requisitioned by (print)	Date/Time	Requisitioned by (print)	Date/Time	Received by (print)	Date/Time	Signature				
	Requisitioned by (print)	Date/Time	Requisitioned by (print)	Date/Time	Received by (print)	Date/Time	Signature				
Shipped By	Cooler ID(s)	Custody	Seals	Intact	Receipt	Temp	Temp Blank	Temp	Payment Type	Amount	Receipt Number (cash/check only)
handed	11	Y	N	C	B	Y	N	Y	CC	\$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly noted on your analytical report.



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 406.252.6325 • Casper, WY 307.235.0515 • Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

BOTTLE ORDER 49366-PO

49366

SHIPPED MT DEQ-Site Response
TO:

To report an issue with this order, view Safety Data Sheets, or let us know how we are doing, scan here or go to energylab.com/contact-us



Contact: Pebbles Opp
~~PO Box 200904~~ PO

Helena MT 59620-0904 PO

Phone: (406) 461-3660

Project: Groundwater

Order Created by: Wanda J. Johnson

Shipped From: Helena, MT

Ship Date: 9/4/2024 PO

VIA: PickUp

Quote Used: 1361

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp

UBMC Groundwater (12 Sets)

1 Liter Plastic	1	A2310 B	Acidity to pH 8.3	0.25 hrs			1
		A2320 B	Alkalinity to pH 4.5				
		A2510 B	Conductivity				
		E300.0	Anions by Ion Chromatography				
		A4500-H B	pH				
		A2540 C	Solids, Total Dissolved				
250 mL Plastic		A2540 D	Solids, Total Suspended		HNO3	Filter before preservation	1
	1	E200.7_8	Metals by ICP/ICPMS, Dissolved				
		A2340 B	Hardness				
		MCAWW	Preparation, Dissolved Filtration MCAWW				

Comments

HNO3 - Nitric Acid H2SO4 - Sulfuric Acid NaOH - Sodium Hydroxide

BO#: 49366

1 of 2

☒ ZnAc - Zinc Acetate

☐ HCl - Hydrochloric Acid

☐ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BO#: 49366

2 of 2

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Appendix I

Data Validation Reports

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(UBMC Ground Water)

SDG#:	H24040347
Number of Samples:	1
Sample Matrix:	(1) Ground Water
Applicable Analytes:	(1) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Acidity, Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Dissolved Metals: (Al, As, Cd, Ca, Cu, Fe, Pb, Mg, Mn, K, Na, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
S35-MW-03	H24040347-001	Field Sample	Groundwater	04/09/24	SM 4500-H B	04/10/24
					SM 2510 B	04/10/24
					SM 2540 D	04/10/24
					SM 2540 C	04/10/24
					SM 2320 B	04/09/24
					EPA 300.0	04/12/24
					SM2340 B	04/17/24
					EPA 200.7	04/10/24
					EPA 200.8	04/15/24 & 04/17/24

*Indicates missed holding time

2. Reviewer Preliminary Comments
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.
One (1) groundwater sample was submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, acidity, anions, hardness, and dissolved metals by the methods listed above. The samples were received intact by the laboratory on 04/09/24 properly cooled to 1.0°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		

What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)	
U	Analyte was not detected above the reporting and/or detection limit (RL/DL).

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}\text{C}$ aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}\text{C}$).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were no significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for the samples were analyzed on 04/10/24, 1 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, the pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation	Y	N	NA
Are preparation logs for all samples present in the data package?			
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?	X		
Identify the preparation method(s) used:	X		
	Matrix		Method(s) (record # or NA)

6. Sample Preparation			Y	N	NA
	Water	EPA 200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7, 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		

8. ICP/MS Calibration	Y	N	NA
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)?	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?			X
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?			X

Reviewer Comments: Positive detections were noted in the preparation blanks for potassium, sodium, and iron. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- The potassium, sodium, and iron results were either >10x the blank concentration or non-detect. No qualifications necessary.
- The remaining method blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x$ PQL, or $\pm PQL$ when results are between PQL and $5x$ PQL)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 20\%$? (Per Project QAPP)			X

Reviewer Comments: Field duplicates were collected at a frequency of 1 per every 20 primary samples. A field duplicate was not included in this SDG. No qualification necessary.

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations >50x MDL, was the serial dilution %D <20%?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results.
Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Lab ID	Field Sample ID	Analyte	Qualifiers	Reason*
All	All	pH	J-	Exceeded holding time

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: North Wind Portage
Date: 11/11/2024	Date: 11/13/24

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-03
Lab ID: H24040347-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 04/09/24 11:52 **DateReceived:** 04/09/24
Report Date: 04/18/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.8	s.u.	H	0.1		A4500-H B	04/10/24 09:36 / dpw		PHSC_101-H_240410A : 13		R193842
pH Measurement Temp	9.7	°C				A4500-H B	04/10/24 09:36 / dpw		PHSC_101-H_240410A : 13		R193842
Conductivity @ 25 C	558	umhos/cm		5		A2510 B	04/10/24 09:36 / dpw		PHSC_101-H_240410A : 14		R193842
Solids, Total Suspended TSS @ 105 C	15	mg/L		10		A2540 D	04/10/24 13:52 / dpw		-124 (14410200)_240410B : 6		TSS20240410A
Solids, Total Dissolved TDS @ 180 C	335	mg/L		20		A2540 C	04/10/24 14:01 / dpw		-124 (14410200)_240410A : 6		TDS20240410A
INORGANICS											
Alkalinity, Total as CaCO3	230	mg/L		4		A2320 B	04/09/24 15:50 / dpw		PHSC_101-H_240409A : 67		R193808
Bicarbonate as HCO3	280	mg/L		4		A2320 B	04/09/24 15:50 / dpw		PHSC_101-H_240409A : 67		R193808
Carbonate as CO3	ND	mg/L		4		A2320 B	04/09/24 15:50 / dpw		PHSC_101-H_240409A : 67		R193808
Chloride	28	mg/L		1		E300.0	04/12/24 15:37 / SR		IC METROHM_240412A : 17		R193984
Sulfate	9	mg/L		1		E300.0	04/12/24 15:37 / SR		IC METROHM_240412A : 17		R193984
Hardness as CaCO3	231	mg/L		1		A2340 B	04/17/24 11:44 / slj		WATERCALC_240417A : 2		R194054
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Arsenic	0.004	mg/L		0.003		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Cadmium	ND	mg/L		0.00008		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Calcium	67	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Copper	ND	mg/L		0.001		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Iron	ND	mg/L		0.05		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Lead	ND	mg/L		0.0005		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Magnesium	16	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Manganese	ND	mg/L		0.005		E200.8	04/15/24 03:10 / dck		ICPMS206-H_240414B : 57		R194030
Potassium	2	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Sodium	12	mg/L		1		E200.7	04/10/24 13:28 / slj		ICP2-HE_240410B : 36		R193870
Zinc	ND	mg/L		0.01		E200.8	04/17/24 02:17 / dck		ICPMS206-H_240416B : 114		R194044

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



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Chain of Custody (COC) & Analytical Request Record

Lab Workorder #: H24040347

Project Information

Client: MT DEQ-Site Response

Project: UBMC Ground Water

Purchase Order:

Contact/Phone: Pebbles Opp, MW (406) 461-3660

Comments:

Please copy results to: popp@northwindg.p.com

1.0° TB on ice no salts
hand del

Contact ELI prior to RUSH sample submittal for charges, availability & scheduling. Samples submitted may be subcontracted to other laboratories to complete the test(s) requested; this will be clearly noted on the analytical report.

Laboratory Use

Quote: 1361 v.4 *

BO#: 47543

EE#: 8509

Turn-Around Time: Standard

Critical Hold Time: 7 Days

of Samples: 1

Matrix: Aqueous



Analysis Requested * Schedule(s) and tests will be taken and priced from the current quote version.

	Sample Identification	Collection Date/Time	# of Containers	Matrix	RUSH TAT	Hold Time (Days)													
						14	14	28	28	Fld	7	7	180	180					
						Acidity to pH 8.3 (A2310 B)	Alkalinity to pH 4.5 (A2320 B)	Conductivity (A2510 B)	Anions by Ion Chromatography (E300.0)	pH (A4500-H B)	Solids, Total Dissolved (A2540 C)	Solids, Total Suspended (A2540 D)	Metals by ICP/ICPMS, Dissolved (E200.7_b)	Hardness (A2340 B)					
1	S35-MW-03	4/9/24 / 11:52	2	W		X	X	X	X	X	X	X	X	X					
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			

Custody Record
MUST be
signed

Lab provided preservatives were used

☒ Yes ☐ No

Sampler Name (if different than Relinquished by):

Sampler Phone:

(406) 461-3660

Relinquished by (print)

Pebbles Opp

Date/Time

4/9/24 14:33

Signature

Pebbles Opp

Received by (print)

Roberta Tork

Date/Time

4-9-24 1433

Signature

Roberta Tork

Date Printed: 04/02/2024

EE: HE - 8509

COC: Page 1 of 1

(UBMC Ground Water)

SDG#:	H24050728
Number of Samples:	5
Sample Matrix:	(5) Ground Water
Applicable Analytes:	(5) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Dissolved Metals: (Al, As, Cd, Ca, Cu, Fe, Pb, Mg, Mn, K, Na, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
MHMW-11	H24050728-001	Equipment Blank	Groundwater	05/21/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/29/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24
S35-MW-03	H24050728-002	Field Sample	Groundwater	05/21/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/29/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24
MW-2018-01	H24050728-003	Field Sample	Groundwater	05/21/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/29/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24
MW-2018-03	H24050728-004	Field Sample	Groundwater	05/21/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/29/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24

1. Samples Submitted and Analyses Requested						
MW-2018-04	H24050728-005	Field Sample	Groundwater	05/21/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/29/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24

*Indicates missed holding time

2. Reviewer Preliminary Comments	
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.	
Five (5) groundwater samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, acidity, anions, hardness, and dissolved metals by the methods listed above. The samples were received intact by the laboratory on 05/23/24 properly cooled to 0.6°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).	

NQ = No Qualification

3. Data Package/Project Review		Y	N	NA
Where all laboratory quality control procedures complied with?		X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?		X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)		X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)				
U Analyte was not detected above the reporting and/or detection limit (RL/DL).				

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples		Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?		X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?		X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.				

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}\text{C}$ aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}\text{C}$).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were no significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for the samples were analyzed on 05/23/24, 2 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation			Y	N	NA
Are preparation logs for all samples present in the data package?					
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?			X		
Identify the preparation method(s) used:			X		
	Matrix	Method(s) (record # or NA)			
	Water	EPA 200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7, 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		

7. ICP Calibration	Y	N	NA
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		

8. ICP/MS Calibration	Y	N	NA
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?	X		
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?	X		

Reviewer Comments: Positive detections were noted in the equipment blank for conductivity, and preparation blanks for sodium, cadmium, copper, iron, and zinc. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- The conductivity, sodium cadmium, copper, iron and zinc results were either >10x the blank concentration or non-detect. No qualifications necessary.
- The remaining method blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		

13. Laboratory Control Sample	Y	N	NA
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x$ PQL, or $\pm PQL$ when results are between PQL and $5x$ PQL)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 20\%$? (Per Project QAPP)			X

Reviewer Comments: Field duplicates were collected at a frequency of 1 per every 20 primary samples. A field duplicate was not included in this SDG. No qualification necessary.

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations $>50x$ MDL, was the serial dilution %D $<20\%$?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS,	X		

17. Method Quantitation Limits	Y	N	NA
Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)			

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results.
Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Lab ID	Field Sample ID	Analyte	Qualifiers	Reason*
All	All	pH	J-	Exceeded holding time

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/11/2024	Date: 11/13/24



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-11
Lab ID: H24050728-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 08:36 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.9	s.u.	H	0.1		A4500-H B	05/23/24 16:59 / dpw		PHSC_101-H_240523A : 70		R195147
pH Measurement Temp	12.8	°C				A4500-H B	05/23/24 16:59 / dpw		PHSC_101-H_240523A : 70		R195147
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	05/23/24 16:59 / dpw		PHSC_101-H_240523A : 71		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:39 / dpw		124 (14410200)_240524B : 52		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 13:04 / dpw		124 (14410200)_240524A : 34		TDS20240524A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 10:07 / dpw		PHSC_101-H_240603A : 8		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 10:07 / dpw		PHSC_101-H_240603A : 8		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:07 / dpw		PHSC_101-H_240603A : 8		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 07:55 / eer		IC METROHM_240528A : 69		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 07:55 / eer		IC METROHM_240528A : 69		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 8		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:24 / dck		ICPMS206-H_240528C : 87		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Cadmium	ND	mg/L		0.00008		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Calcium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Copper	ND	mg/L		0.001		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Magnesium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 15:15 / slj		ICP2-HE_240524A : 104		R195206
Zinc	ND	mg/L		0.01		E200.8	05/24/24 17:33 / dck		ICPMS206-H_240524A : 34		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-03
Lab ID: H24050728-002
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 10:35 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.6	s.u.	H	0.1		A4500-H B	05/23/24 17:02 / dpw		PHSC_101-H_240523A : 72		R195147
pH Measurement Temp	12.6	°C				A4500-H B	05/23/24 17:02 / dpw		PHSC_101-H_240523A : 72		R195147
Conductivity @ 25 C	554	umhos/cm		5		A2510 B	05/23/24 17:02 / dpw		PHSC_101-H_240523A : 73		R195147
Solids, Total Suspended TSS @ 105 C	14	mg/L		10		A2540 D	05/24/24 12:40 / dpw		124 (14410200)_240524B : 53		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	327	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 35		TDS20240524A
INORGANICS											
Alkalinity, Total as CaCO3	240	mg/L		4		A2320 B	06/03/24 10:11 / dpw		PHSC_101-H_240603A : 10		R195382
Bicarbonate as HCO3	290	mg/L		4		A2320 B	06/03/24 10:11 / dpw		PHSC_101-H_240603A : 10		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:11 / dpw		PHSC_101-H_240603A : 10		R195382
Chloride	29	mg/L		1		E300.0	05/29/24 08:09 / eer		IC METROHM_240528A : 70		R195317
Sulfate	10	mg/L		1		E300.0	05/29/24 08:09 / eer		IC METROHM_240528A : 70		R195317
Hardness as CaCO3	252	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 9		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:28 / dck		ICPMS206-H_240528C : 88		R195285
Arsenic	0.003	mg/L		0.003		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Cadmium	ND	mg/L		0.00008		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Calcium	73	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Copper	ND	mg/L		0.001		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Magnesium	17	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221
Potassium	2	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Sodium	12	mg/L		1		E200.7	05/24/24 15:19 / slj		ICP2-HE_240524A : 105		R195206
Zinc	ND	mg/L		0.01		E200.8	05/24/24 17:37 / dck		ICPMS206-H_240524A : 35		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-01
Lab ID: H24050728-003
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 14:35 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.6	s.u.	H	0.1		A4500-H B	05/23/24 17:05 / dpw		PHSC_101-H_240523A : 74		R195147
pH Measurement Temp	12.7	°C				A4500-H B	05/23/24 17:05 / dpw		PHSC_101-H_240523A : 74		R195147
Conductivity @ 25 C	744	umhos/cm		5		A2510 B	05/23/24 17:05 / dpw		PHSC_101-H_240523A : 75		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:40 / dpw		124 (14410200)_240524B : 54		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	548	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 36		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	21	mg/L		4		A2320 B	06/03/24 10:27 / dpw		PHSC_101-H_240603A : 14		R195382
Bicarbonate as HCO3	25	mg/L		4		A2320 B	06/03/24 10:27 / dpw		PHSC_101-H_240603A : 14		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:27 / dpw		PHSC_101-H_240603A : 14		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 08:24 / eer		IC METROHM_240528A : 71		R195317
Sulfate	361	mg/L		1		E300.0	05/29/24 08:24 / eer		IC METROHM_240528A : 71		R195317
Hardness as CaCO3	379	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 10		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:33 / dck		ICPMS206-H_240528C : 89		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Cadmium	0.00403	mg/L		0.00008		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Calcium	73	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Copper	0.001	mg/L		0.001		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Magnesium	48	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221
Potassium	1	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 15:22 / slj		ICP2-HE_240524A : 106		R195206
Zinc	1.55	mg/L		0.01		E200.8	05/24/24 17:41 / dck		ICPMS206-H_240524A : 36		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-03
Lab ID: H24050728-004
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 15:11 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.2	s.u.	H	0.1		A4500-H B	05/23/24 17:08 / dpw		PHSC_101-H_240523A : 76		R195147
pH Measurement Temp	13.1	°C				A4500-H B	05/23/24 17:08 / dpw		PHSC_101-H_240523A : 76		R195147
Conductivity @ 25 C	242	umhos/cm		5		A2510 B	05/23/24 17:08 / dpw		PHSC_101-H_240523A : 77		R195147
Solids, Total Suspended TSS @ 105 C	12	mg/L		10		A2540 D	05/24/24 12:41 / dpw		124 (14410200)_240524B : 55		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	145	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 37		TDS20240524A
INORGANICS											
Alkalinity, Total as CaCO3	74	mg/L		4		A2320 B	06/03/24 10:34 / dpw		PHSC_101-H_240603A : 16		R195382
Bicarbonate as HCO3	90	mg/L		4		A2320 B	06/03/24 10:34 / dpw		PHSC_101-H_240603A : 16		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:34 / dpw		PHSC_101-H_240603A : 16		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 08:38 / eer		IC METROHM_240528A : 72		R195317
Sulfate	45	mg/L		1		E300.0	05/29/24 08:38 / eer		IC METROHM_240528A : 72		R195317
Hardness as CaCO3	116	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 11		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:37 / dck		ICPMS206-H_240528C : 90		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Cadmium	0.00029	mg/L		0.00008		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Calcium	24	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Copper	0.002	mg/L		0.001		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Magnesium	14	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 15:26 / slj		ICP2-HE_240524A : 107		R195206
Zinc	0.05	mg/L		0.01		E200.8	05/24/24 17:45 / dck		ICPMS206-H_240524A : 37		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-04
Lab ID: H24050728-005
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 16:25 **DateReceived:** 05/23/24
Report Date: 06/06/24

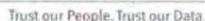
Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.4	s.u.	H	0.1		A4500-H B	05/23/24 17:10 / dpw		PHSC_101-H_240523A : 78		R195147
pH Measurement Temp	13.5	°C				A4500-H B	05/23/24 17:10 / dpw		PHSC_101-H_240523A : 78		R195147
Conductivity @ 25 C	178	umhos/cm		5		A2510 B	05/23/24 17:10 / dpw		PHSC_101-H_240523A : 79		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:41 / dpw		124 (14410200)_240524B : 56		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	107	mg/L		20		A2540 C	05/24/24 13:05 / dpw		124 (14410200)_240524A : 38		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	71	mg/L		4		A2320 B	06/03/24 10:41 / dpw		PHSC_101-H_240603A : 18		R195382
Bicarbonate as HCO3	86	mg/L		4		A2320 B	06/03/24 10:41 / dpw		PHSC_101-H_240603A : 18		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:41 / dpw		PHSC_101-H_240603A : 18		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 08:53 / eer		IC METROHM_240528A : 73		R195317
Sulfate	16	mg/L		1		E300.0	05/29/24 08:53 / eer		IC METROHM_240528A : 73		R195317
Hardness as CaCO3	85	mg/L		1		A2340 B	05/29/24 14:33 / slj		WATERCALC_240529A : 12		R195290
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 02:42 / dck		ICPMS206-H_240528C : 91		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Cadmium	0.00015	mg/L		0.00008		E200.8	05/29/24 02:42 / dck		ICPMS206-H_240528C : 91		R195285
Calcium	18	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Copper	0.001	mg/L		0.001		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Magnesium	9	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 15:41 / slj		ICP2-HE_240524A : 111		R195206
Zinc	0.03	mg/L		0.01		E200.8	05/24/24 17:49 / dck		ICPMS206-H_240524A : 38		R195221

LSB 11/14/24

Report Definitions: RL - Analyte Reporting Limit
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Page 1 of 1

Report Information (if different than Account Information)

Comments

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐ Hard Copy ☐ Email
Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

UBMC GW
Cooler # 1

Matrix Codes

A - Air
W- Water
S - Soils/
Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking
Water

Analysis Requested

[illegible]

Custody Record MUST be signed	Relinquished by (print) <i>Pebble on</i>	Date/Time <i>5/23/24 14:30</i>	Signature <i>Pebble on</i>	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) <i>Rebecca Pinks</i>	Date/Time <i>5-23-24 1430</i>	Signature <i>Rebecca Pinks</i>
LABORATORY USE ONLY						
Shipped By <i>Hand</i>	Cooler ID(s) <i>11</i>	Custody Seals Y ☒ N ☐ C ☐ B	Intact Y ☐ N ☐	Receipt Temp <i>0.6 °C</i>	Temp Blank Y ☒ N ☐	On Ice Y ☒ N ☐
			Payment Type CC Cash Check _____	Amount \$	Receipt Number (cash/check only)	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-06/08 v.2

(UBMC Surface Water)

SDG#:	H24050729
Number of Samples:	6
Sample Matrix:	(6) Surface Water
Applicable Analytes:	(6) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Total and Dissolved Metals
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
BRSW-309	H24050729-001	Equipment Blank	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
BRSW-307	H24050729-002	Field Duplicate (BRSW-12)	Surface Water	05/20/24	EPA 200.8	05/29/24
					SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
BRSW-12	H24050729-003	Field Sample	Surface Water	05/20/24	EPA 200.7	05/24/24
					EPA 200.8	05/29/24
					SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
BRSW-308	H24050729-004	Field Blank	Surface Water	05/20/24	SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24
					SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
BRSW-10	H24050729-005	Field Sample	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
BRSW-33	H24050729-006	Field Sample	Surface Water	05/20/24	EPA 200.8	05/29/24
					SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24

*Indicates missed holding time

2. Reviewer Preliminary Comments
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications. Six (6) surface water samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, anions, hardness, total metals, and dissolved metals. The samples were received intact by the laboratory on 05/23/23 properly cooled to 0.8°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}$ C aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}$ C).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were <u>no</u> significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for samples were analyzed on 05/23/24, 3 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation			Y	N	NA
Are preparation logs for all samples present in the data package?					
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?			X		
Identify the preparation method(s) used:			X		
	Matrix	Method(s) (record # or NA)			
	Water	200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7 and 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		

8. ICP/MS Calibration	Y	N	NA
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at	X		

10. Blanks	Y	N	NA
least 10% of the total number of samples, or as otherwise required?			
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?	X		

Reviewer Comments: Positive detections were noted in field blank (BRSW-308) and equipment blank (BRSW-309) for conductivity and in the preparation blank for cadmium, arsenic, and sodium. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- Cadmium, sodium, and arsenic have been left unqualified as the sample results were either non-detect or >QL, and >10x the blank concentration.
- The conductivity results in samples BRSW-308 and BRSW-309 have been qualified with a 'J+' validation flag as the sample results were >QL, but <10x the blank concentration.
 - The remaining conductivity results have been left unqualified as the sample results were >QL, and >10x the blank concentration.
- The remaining method blank, and field blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional

Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x$ PQL, or $\pm PQL$ when results are between PQL and $5x$ PQL)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?	X		
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 30\%$? (Per Project QAPP)		X	

Reviewer Comments: BRSW-12 and BRSW-307 were the field duplicate pair for this SDG. The field duplicate result for lead (40%) was outside of the 20% acceptance criteria. No qualifications necessary as the sample and duplicate were $<5x$ the PQL and the absolute difference between the sample and duplicate was $<PQL$. The remaining field duplicate results were within the 30% RPD for aqueous samples. No qualifications necessary.

Analyte	Sample	Duplicate	RPD
pH	7.7	7.6	1.31%
Conductivity	139	139	0.00%
TSS	ND	ND	0.00%
TDS	79	79	0.00%
Total Alkalinity	57	58	1.74%
Bicarbonate	69	71	2.86%
Carbonate	ND	ND	0.00%
Chloride	ND	ND	0.00%
Sulfate	10	10	0.00%
Hardness	65	65	0.00%
Aluminum	ND	ND	0.00%
Calcium	14	14	0.00%
Magnesium	7	7	0.00%
Potassium	ND	ND	0.00%
Sodium	2	2	0.00%
Arsenic	ND	ND	0.00%
Cadmium	0.00016	0.00014	13.3%
Copper	0.002	0.002	0.00%
Iron	0.04	0.04	0.00%
Lead	0.0006	0.0009	40%
Manganese	0.015	0.015	0.00%
Zinc	0.03	0.03	0.00%

$$RPD = [|S-D| / (S+D)] \times 200\%$$

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations >50x MDL, was the serial dilution %D <20%?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000, Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)

For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.

1. Recalculate 2 or more selected results from raw data. **NA**
 2. Did recalculation confirm reported results? **NA** If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
 3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? **NA**
 4. Were results from diluted samples corrected for the dilution factor? **NA**
 5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) **NA**
 6. Are results reported with up to three significant figures? **NA**
- Action: Indicate instances of manual calculations not confirming reported results.
Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Field Sample ID	Analyte	Qualifiers	Reason*
All	pH	J-	Exceeded HT
BRSW-308 and BRSW-309	Conductivity	J+	Equipment and Field Blank

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: North Wind Portage
Date: 11/12/2024	Date: 11/13/2024

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-309
Lab ID: H24050729-001
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 08:20 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.4	s.u.	H	0.1		A4500-H B	05/23/24 17:13 / dpw		PHSC_101-H_240523A : 80		R195147
pH Measurement Temp	13.4	°C				A4500-H B	05/23/24 17:13 / dpw		PHSC_101-H_240523A : 80		R195147
Conductivity @ 25 C J+	5	umhos/cm		5		A2510 B	05/23/24 17:13 / dpw		PHSC_101-H_240523A : 81		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:22 / dpw		-124 (14410200)_240524B : 6		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 12:50 / dpw		-124 (14410200)_240524A : 6		TDS20240524A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 10:47 / dpw		PHSC_101-H_240603A : 20		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 10:47 / dpw		PHSC_101-H_240603A : 20		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 10:47 / dpw		PHSC_101-H_240603A : 20		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 10:19 / eer		IC METROHM_240528A : 79		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 10:19 / eer		IC METROHM_240528A : 79		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 1		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 19:37 / dck		ICPMS206-H_240528C : 210		R195285
Calcium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
Magnesium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 15:53 / slj		ICP2-HE_240524A : 114		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Copper	ND	mg/L		0.001		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Iron	ND	mg/L		0.03		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Lead	ND	mg/L		0.0005		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Manganese	ND	mg/L		0.005		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979
Zinc	ND	mg/L		0.01		E200.8	05/29/24 19:41 / dck 05/28/24 11:38		ICPMS206-H_240528C : 211		71979

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-307
Lab ID: H24050729-002
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 09:05 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.6	s.u.	H	0.1		A4500-H B	05/23/24 17:16 / dpw		PHSC_101-H_240523A : 82		R195147
pH Measurement Temp	13.3	°C				A4500-H B	05/23/24 17:16 / dpw		PHSC_101-H_240523A : 82		R195147
Conductivity @ 25 C	139	umhos/cm		5		A2510 B	05/23/24 17:16 / dpw		PHSC_101-H_240523A : 83		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:22 / dpw		-124 (14410200)_240524B : 7		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	79	mg/L		20		A2540 C	05/24/24 12:50 / dpw		-124 (14410200)_240524A : 7		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	58	mg/L		4		A2320 B	06/03/24 10:52 / dpw		PHSC_101-H_240603A : 22		R195382
Bicarbonate as HCO ₃	71	mg/L		4		A2320 B	06/03/24 10:52 / dpw		PHSC_101-H_240603A : 22		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 10:52 / dpw		PHSC_101-H_240603A : 22		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 10:34 / eer		IC METROHM_240528A : 80		R195317
Sulfate	10	mg/L		1		E300.0	05/29/24 10:34 / eer		IC METROHM_240528A : 80		R195317
Hardness as CaCO ₃	65	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 2		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 19:45 / dck		ICPMS206-H_240528C : 212		R195285
Calcium	14	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
Magnesium	7	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 15:57 / slj		ICP2-HE_240524A : 115		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979
Cadmium	0.00014	mg/L		0.00008		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979
Copper	0.002	mg/L		0.001		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979
Iron	0.04	mg/L		0.03		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979
Lead	0.0009	mg/L		0.0005		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979
Manganese	0.015	mg/L		0.005		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979
Zinc	0.03	mg/L		0.01		E200.8	05/29/24 19:49 / dck	05/28/24 11:38	ICPMS206-H_240528C : 213		71979

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-12
Lab ID: H24050729-003
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 09:47 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.7	s.u.	H	0.1		A4500-H B	05/23/24 17:19 / dpw		PHSC_101-H_240523A : 84		R195147
pH Measurement Temp	13.5	°C				A4500-H B	05/23/24 17:19 / dpw		PHSC_101-H_240523A : 84		R195147
Conductivity @ 25 C	139	umhos/cm		5		A2510 B	05/23/24 17:19 / dpw		PHSC_101-H_240523A : 85		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:22 / dpw		-124 (14410200)_240524B : 8		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	79	mg/L		20		A2540 C	05/24/24 12:51 / dpw		-124 (14410200)_240524A : 8		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	57	mg/L		4		A2320 B	06/03/24 10:59 / dpw		PHSC_101-H_240603A : 24		R195382
Bicarbonate as HCO ₃	69	mg/L		4		A2320 B	06/03/24 10:59 / dpw		PHSC_101-H_240603A : 24		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 10:59 / dpw		PHSC_101-H_240603A : 24		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 10:48 / eer		IC METROHM_240528A : 81		R195317
Sulfate	10	mg/L		1		E300.0	05/29/24 10:48 / eer		IC METROHM_240528A : 81		R195317
Hardness as CaCO ₃	65	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 3		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:17 / dck		ICPMS206-H_240528C : 220		R195285
Calcium	14	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
Magnesium	7	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 16:01 / slj		ICP2-HE_240524A : 116		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Cadmium	0.00016	mg/L		0.00008		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Copper	0.002	mg/L		0.001		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Iron	0.04	mg/L		0.03		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Lead	0.0006	mg/L		0.0005		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Manganese	0.015	mg/L		0.005		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979
Zinc	0.03	mg/L		0.01		E200.8	05/29/24 20:21 / dck 05/28/24 11:38		ICPMS206-H_240528C : 221		71979

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-308
Lab ID: H24050729-004
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 10:22 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.4	s.u.	H	0.1		A4500-H B	05/23/24 17:21 / dpw		PHSC_101-H_240523A : 86		R195147
pH Measurement Temp	13.7	°C				A4500-H B	05/23/24 17:21 / dpw		PHSC_101-H_240523A : 86		R195147
Conductivity @ 25 C J+	5	umhos/cm		5		A2510 B	05/23/24 17:21 / dpw		PHSC_101-H_240523A : 87		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:23 / dpw		-124 (14410200)_240524B : 9		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 12:51 / dpw		-124 (14410200)_240524A : 9		TDS20240524A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 11:05 / dpw		PHSC_101-H_240603A : 26		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 11:05 / dpw		PHSC_101-H_240603A : 26		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:05 / dpw		PHSC_101-H_240603A : 26		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:02 / eer		IC METROHM_240528A : 82		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 11:02 / eer		IC METROHM_240528A : 82		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 4		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:25 / dck		ICPMS206-H_240528C : 222		R195285
Calcium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
Magnesium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 16:04 / slj		ICP2-HE_240524A : 117		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Copper	ND	mg/L		0.001		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Iron	ND	mg/L		0.03		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Lead	ND	mg/L		0.0005		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Manganese	ND	mg/L		0.005		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979
Zinc	ND	mg/L		0.01		E200.8	05/29/24 20:29 / dck 05/28/24 11:38		ICPMS206-H_240528C : 223		71979

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-10
Lab ID: H24050729-005
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 10:42 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.5	s.u.	H	0.1		A4500-H B	05/23/24 17:24 / dpw		PHSC_101-H_240523A : 88		R195147
pH Measurement Temp	13.8	°C				A4500-H B	05/23/24 17:24 / dpw		PHSC_101-H_240523A : 88		R195147
Conductivity @ 25 C	87	umhos/cm		5		A2510 B	05/23/24 17:24 / dpw		PHSC_101-H_240523A : 89		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:23 / dpw		124 (14410200)_240524B : 10		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	52	mg/L		20		A2540 C	05/24/24 12:51 / dpw		124 (14410200)_240524A : 10		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	41	mg/L		4		A2320 B	06/03/24 11:10 / dpw		PHSC_101-H_240603A : 28		R195382
Bicarbonate as HCO ₃	49	mg/L		4		A2320 B	06/03/24 11:10 / dpw		PHSC_101-H_240603A : 28		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 11:10 / dpw		PHSC_101-H_240603A : 28		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:17 / eer		IC METROHM_240528A : 83		R195317
Sulfate	2	mg/L		1		E300.0	05/29/24 11:17 / eer		IC METROHM_240528A : 83		R195317
Hardness as CaCO ₃	39	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 5		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:33 / dck		ICPMS206-H_240528C : 224		R195285
Calcium	9	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
Magnesium	4	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 16:08 / slj		ICP2-HE_240524A : 118		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981
Copper	0.003	mg/L		0.001		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981
Zinc	ND	mg/L		0.01		E200.8	05/29/24 20:37 / dck 05/28/24 11:39		ICPMS206-H_240528C : 225		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-33
Lab ID: H24050729-006
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 11:06 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.7	s.u.	H	0.1		A4500-H B	05/23/24 17:27 / dpw		PHSC_101-H_240523A : 90		R195147
pH Measurement Temp	13.4	°C				A4500-H B	05/23/24 17:27 / dpw		PHSC_101-H_240523A : 90		R195147
Conductivity @ 25 C	140	umhos/cm		5		A2510 B	05/23/24 17:27 / dpw		PHSC_101-H_240523A : 91		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:23 / dpw		124 (14410200)_240524B : 11		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	85	mg/L		20		A2540 C	05/24/24 12:51 / dpw		124 (14410200)_240524A : 11		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	59	mg/L		4		A2320 B	06/03/24 11:16 / dpw		PHSC_101-H_240603A : 30		R195382
Bicarbonate as HCO ₃	71	mg/L		4		A2320 B	06/03/24 11:16 / dpw		PHSC_101-H_240603A : 30		R195382
Carbonate as CO ₃	ND	mg/L		4		A2320 B	06/03/24 11:16 / dpw		PHSC_101-H_240603A : 30		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:31 / eer		IC METROHM_240528A : 84		R195317
Sulfate	9	mg/L		1		E300.0	05/29/24 11:31 / eer		IC METROHM_240528A : 84		R195317
Hardness as CaCO ₃	65	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 6		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 20:41 / dck		ICPMS206-H_240528C : 226		R195285
Calcium	14	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
Magnesium	7	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 16:12 / slj		ICP2-HE_240524A : 119		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Cadmium	0.00012	mg/L		0.00008		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Copper	0.002	mg/L		0.001		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981
Zinc	0.02	mg/L		0.01		E200.8	05/29/24 20:45 / dck 05/28/24 11:39		ICPMS206-H_240528C : 227		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
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ND - Not detected at the Reporting Limit (RL)



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Page 1 of 1

Comments

Please copy results to:
popp@northwindgrp.com
MT OEG
UBMC SW
Cooler #1

Analysis Requested

All turnaround times are standard unless marked as RUSH.

Energy Laboratories
MUST be contacted prior to RUSH sample submittal for charges and scheduling –
See Instructions Page

Custody Record MUST be signed	Relinquished by (print) <i>Rebecca Cobb</i>	Date/Time <i>5/23/24 14:30</i>	Signature <i>Rebecca Cobb</i>	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) <i>Rebecca Cobb</i>	Date/Time <i>5-23-24 1430</i>	Signature <i>Rebecca Cobb</i>
LABORATORY USE ONLY						
Shipped By <i>Hand</i>	Cooler ID(s) <i>4</i>	Custody Seals Y ☒ N ☐ C ☐ B ☐	Intact Y ☐ N ☐	Receipt Temp <i>0.6</i> °C	Temp Blank ☒ Y ☐ N	Qn Ice ☒ Y ☐ N
Payment Type CC ☐ Cash ☐ Check ☐			Amount \$		Receipt Number (cash/check only)	

ELI-COC-06/08 v.2

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(UBMC Ground Water)

SDG#:	H24050730
Number of Samples:	5
Sample Matrix:	(5) Ground Water
Applicable Analytes:	(5) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Dissolved Metals: (Al, As, Cd, Ca, Cu, Fe, Pb, Mg, Mn, K, Na, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
MW-2019-05	H24050730-001	Field Sample	Groundwater	05/21/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24
MHMW-10	H24050730-002	Field Blank	Groundwater	05/22/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24
LCMW-5	H24050730-003	Field Sample	Groundwater	05/22/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24
LCMW-1	H24050730-004	Field Sample	Groundwater	05/22/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/28/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24

1. Samples Submitted and Analyses Requested						
MHMW-9	H24050730-005	Field Duplicate (LCMW-1)	Groundwater	05/22/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/24/24 & 05/29/24

*Indicates missed holding time

2. Reviewer Preliminary Comments	
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.	
Five (5) groundwater samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, acidity, anions, hardness, and dissolved metals by the methods listed above. The samples were received intact by the laboratory on 05/23/24 properly cooled to 0.6°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).	

NQ = No Qualification

3. Data Package/Project Review		Y	N	NA
Where all laboratory quality control procedures complied with?		X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?		X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)		X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)				
U Analyte was not detected above the reporting and/or detection limit (RL/DL).				

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples		Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?		X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?		X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.				

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}\text{C}$ aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}\text{C}$).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were no significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for the samples were analyzed on 05/21/24 and 05/22/24, between 1 and 2 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation		Y	N	NA
Are preparation logs for all samples present in the data package?				
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?		X		
Identify the preparation method(s) used:		X		
	Matrix	Method(s) (record # or NA)		
	Water	EPA 200.2/200.7/200.8		
	Soil/Solid			
	Oil			
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.				

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7, 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		

7. ICP Calibration	Y	N	NA
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		

8. ICP/MS Calibration	Y	N	NA
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?	X		
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?			X

Reviewer Comments: Positive detections were noted in the preparation blanks for sodium, cadmium, copper, iron, and zinc. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- The sodium, cadmium, copper, iron and zinc results were either >10x the blank concentration or non-detect. No qualifications necessary.
- The remaining method blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		

13. Laboratory Control Sample	Y	N	NA
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x PQL$, or $\pm PQL$ when results are between PQL and $5x PQL$)?	X		

Reviewer Comments: MHMW-9 and LCMW-1 were the field duplicate pair for this SDG. The field duplicate results were within the 20% RPD for aqueous samples. No qualifications necessary.

Analyte	Sample	Duplicate	RPD
pH	6.7	6.8	1.48%
Conductivity	217	217	0.00%
TSS	ND	ND	0.00%
TDS	131	130	0.77%
Total Alkalinity	46	46	0.00%
Bicarbonate	56	56	0.00%
Carbonate	ND	ND	0.00%
Chloride	2	2	0.00%
Sulfate	53	53	0.00%
Hardness	89	89	0.00%
Aluminum	ND	ND	0.00%
Arsenic	ND	ND	0.00%
Cadmium	0.0014	0.00137	2.17%
Calcium	19	19	0.00%
Copper	0.014	0.014	0.00%
Iron	0.19	0.19	0.00%
Lead	ND	ND	0.00%
Magnesium	10	10	0.00%
Manganese	0.031	0.031	0.00%
Potassium	ND	ND	0.00%
Sodium	4	4	0.00%
Zinc	0.09	0.09	0.00%

$$RPD = [|S-D| / (S+D)] \times 200\%$$

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 20\%$? (Per Project QAPP)			X

Reviewer Comments: Field duplicates were collected at a frequency of 1 per every 20 primary samples. A field duplicate was not included in this SDG. No qualification necessary.

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations $>50 \times$ MDL, was the serial dilution $\%D < 20\%$?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no “J” values or values between the MDL and low standard or above the high standard)? (QSAS , Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results $> 5 \times$ the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results. Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Lab ID	Field Sample ID	Analyte	Qualifiers	Reason*
All	All	pH	J-	Exceeded holding time

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: North Wind Portage
Date: 11/11/2024	Date: 11/13/24

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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2019-05
Lab ID: H24050730-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/21/24 17:31 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.5	s.u.	H	0.1		A4500-H B	05/23/24 17:30 / dpw		PHSC_101-H_240523A : 92		R195147
pH Measurement Temp	13.6	°C				A4500-H B	05/23/24 17:30 / dpw		PHSC_101-H_240523A : 92		R195147
Conductivity @ 25 C	180	umhos/cm		5		A2510 B	05/23/24 17:30 / dpw		PHSC_101-H_240523A : 93		R195147
Solids, Total Suspended TSS @ 105 C	13	mg/L		10		A2540 D	05/24/24 12:42 / dpw		124 (14410200)_240524B : 60		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	112	mg/L		20		A2540 C	05/24/24 13:06 / dpw		124 (14410200)_240524A : 39		TDS20240524A
INORGANICS											
Alkalinity, Total as CaCO3	69	mg/L		4		A2320 B	06/03/24 11:23 / dpw		PHSC_101-H_240603A : 32		R195382
Bicarbonate as HCO3	83	mg/L		4		A2320 B	06/03/24 11:23 / dpw		PHSC_101-H_240603A : 32		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:23 / dpw		PHSC_101-H_240603A : 32		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 11:46 / eer		IC METROHM_240528A : 85		R195317
Sulfate	20	mg/L		1		E300.0	05/29/24 11:46 / eer		IC METROHM_240528A : 85		R195317
Hardness as CaCO3	83	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 7		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:12 / dck		ICPMS206-H_240528C : 234		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Cadmium	0.00039	mg/L		0.00008		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Calcium	18	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Copper	0.002	mg/L		0.001		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Magnesium	9	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 16:16 / slj		ICP2-HE_240524A : 120		R195206
Zinc	0.07	mg/L		0.01		E200.8	05/24/24 17:13 / dck		ICPMS206-H_240524A : 29		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-10
Lab ID: H24050730-002
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 09:30 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.2	s.u.	H	0.1		A4500-H B	05/23/24 17:32 / dpw		PHSC_101-H_240523A : 94		R195147
pH Measurement Temp	13.8	°C				A4500-H B	05/23/24 17:32 / dpw		PHSC_101-H_240523A : 94		R195147
Conductivity @ 25 C	5	umhos/cm		5		A2510 B	05/23/24 17:32 / dpw		PHSC_101-H_240523A : 95		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L	L	20		A2540 D	05/24/24 12:43 / dpw		124 (14410200)_240524B : 61		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	05/24/24 13:06 / dpw		124 (14410200)_240524A : 40		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 11:29 / dpw		PHSC_101-H_240603A : 34		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 11:29 / dpw		PHSC_101-H_240603A : 34		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:29 / dpw		PHSC_101-H_240603A : 34		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 12:00 / eer		IC METROHM_240528A : 86		R195317
Sulfate	ND	mg/L		1		E300.0	05/29/24 12:00 / eer		IC METROHM_240528A : 86		R195317
Hardness as CaCO3	ND	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 8		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:16 / dck		ICPMS206-H_240528C : 235		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Cadmium	ND	mg/L		0.00008		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Calcium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Copper	ND	mg/L		0.001		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Iron	ND	mg/L		0.05		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Magnesium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Manganese	ND	mg/L		0.005		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 16:20 / slj		ICP2-HE_240524A : 121		R195206
Zinc	ND	mg/L		0.01		E200.8	05/24/24 17:17 / dck		ICPMS206-H_240524A : 30		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-5
Lab ID: H24050730-003
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 14:33 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	5.0	s.u.	H	0.1		A4500-H B	05/23/24 17:35 / dpw		PHSC_101-H_240523A : 96		R195147
pH Measurement Temp	13.7	°C				A4500-H B	05/23/24 17:35 / dpw		PHSC_101-H_240523A : 96		R195147
Conductivity @ 25 C	762	umhos/cm		5		A2510 B	05/23/24 17:35 / dpw		PHSC_101-H_240523A : 97		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 13:42 / dpw		124 (14410200)_240524B : 68		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	610	mg/L		20		A2540 C	05/24/24 13:06 / dpw		124 (14410200)_240524A : 42		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	ND	mg/L		4		A2320 B	06/03/24 11:35 / dpw		PHSC_101-H_240603A : 36		R195382
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	06/03/24 11:35 / dpw		PHSC_101-H_240603A : 36		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:35 / dpw		PHSC_101-H_240603A : 36		R195382
Chloride	3	mg/L		1		E300.0	05/29/24 12:15 / eer		IC METROHM_240528A : 87		R195317
Sulfate	376	mg/L		1		E300.0	05/29/24 12:15 / eer		IC METROHM_240528A : 87		R195317
Hardness as CaCO3	321	mg/L		1		A2340 B	05/28/24 12:34 / slj		WATERCALC_240528A : 1		R195241
METALS, DISSOLVED											
Aluminum	1.47	mg/L		0.03		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Cadmium	0.133	mg/L		0.00008		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Calcium	85	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Copper	1.02	mg/L		0.001		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Iron	6.76	mg/L		0.05		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Lead	0.0099	mg/L		0.0005		E200.8	05/24/24 17:21 / dck		ICPMS206-H_240524A : 31		R195221
Magnesium	26	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Manganese	11.4	mg/L		0.005		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Potassium	2	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Sodium	8	mg/L		1		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206
Zinc	5.15	mg/L		0.01		E200.7	05/24/24 16:24 / slj		ICP2-HE_240524A : 122		R195206

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-1
Lab ID: H24050730-004
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 15:25 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.7	s.u.	H	0.1		A4500-H B	05/23/24 17:38 / dpw		PHSC_101-H_240523A : 98		R195147
pH Measurement Temp	14.2	°C				A4500-H B	05/23/24 17:38 / dpw		PHSC_101-H_240523A : 98		R195147
Conductivity @ 25 C	217	umhos/cm		5		A2510 B	05/23/24 17:38 / dpw		PHSC_101-H_240523A : 99		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 13:43 / dpw		124 (14410200)_240524B : 69		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	131	mg/L		20		A2540 C	05/24/24 13:07 / dpw		124 (14410200)_240524A : 43		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	46	mg/L		4		A2320 B	06/03/24 11:39 / dpw		PHSC_101-H_240603A : 38		R195382
Bicarbonate as HCO3	56	mg/L		4		A2320 B	06/03/24 11:39 / dpw		PHSC_101-H_240603A : 38		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:39 / dpw		PHSC_101-H_240603A : 38		R195382
Chloride	2	mg/L		1		E300.0	05/29/24 13:41 / eer		IC METROHM_240528A : 93		R195317
Sulfate	53	mg/L		1		E300.0	05/29/24 13:41 / eer		IC METROHM_240528A : 93		R195317
Hardness as CaCO3	89	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 9		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:20 / dck		ICPMS206-H_240528C : 236		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Cadmium	0.00140	mg/L		0.00008		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Calcium	19	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Copper	0.014	mg/L		0.001		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Iron	0.19	mg/L		0.05		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Magnesium	10	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Manganese	0.031	mg/L		0.005		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Sodium	4	mg/L		1		E200.7	05/24/24 16:50 / slj		ICP2-HE_240524A : 128		R195206
Zinc	0.08	mg/L		0.01		E200.8	05/24/24 17:25 / dck		ICPMS206-H_240524A : 32		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-9
Lab ID: H24050730-005
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 05/22/24 16:16 **DateReceived:** 05/23/24
Report Date: 06/05/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.8	s.u.	H	0.1		A4500-H B	05/23/24 17:41 / dpw		PHSC_101-H_240523A : 100		R195147
pH Measurement Temp	14.9	°C				A4500-H B	05/23/24 17:41 / dpw		PHSC_101-H_240523A : 100		R195147
Conductivity @ 25 C	217	umhos/cm		5		A2510 B	05/23/24 17:41 / dpw		PHSC_101-H_240523A : 101		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 13:43 / dpw		124 (14410200)_240524B : 70		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	130	mg/L		20		A2540 C	05/24/24 13:09 / dpw		124 (14410200)_240524A : 44		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	46	mg/L		4		A2320 B	06/03/24 11:45 / dpw		PHSC_101-H_240603A : 40		R195382
Bicarbonate as HCO3	56	mg/L		4		A2320 B	06/03/24 11:45 / dpw		PHSC_101-H_240603A : 40		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:45 / dpw		PHSC_101-H_240603A : 40		R195382
Chloride	2	mg/L		1		E300.0	05/29/24 13:55 / eer		IC METROHM_240528A : 94		R195317
Sulfate	53	mg/L		1		E300.0	05/29/24 13:55 / eer		IC METROHM_240528A : 94		R195317
Hardness as CaCO3	89	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 10		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:24 / dck		ICPMS206-H_240528C : 237		R195285
Arsenic	ND	mg/L		0.003		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Cadmium	0.00137	mg/L		0.00008		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Calcium	19	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Copper	0.014	mg/L		0.001		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Iron	0.19	mg/L		0.05		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Lead	ND	mg/L		0.0005		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Magnesium	10	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Manganese	0.031	mg/L		0.005		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221
Potassium	ND	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Sodium	4	mg/L		1		E200.7	05/24/24 16:54 / slj		ICP2-HE_240524A : 129		R195206
Zinc	0.08	mg/L		0.01		E200.8	05/24/24 17:29 / dck		ICPMS206-H_240524A : 33		R195221

LSB 11/14/24

Report RL - Analyte Reporting Limit
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Page 25 of 27

Comments

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐ Hard Copy ☐ Email
Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

UBMC GW
Cooler #2

Analysis Requested

A - Air
W- Water
S - Soils/
Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking
Water

[illegible]

See Attached

Energy Laboratories
MUST be contacted prior to
RUSH sample submittal for
charges and scheduling –
See Instructions Page

Sample Identification (Name, Location, Interval, etc.)		Collection		Number of Containers	Matrix (See Codes Above)	See A	RUSH TAT	ELI LAB ID Laboratory Use Only
		Date	Time					
1	MW-2019-05	5/21/24	17:31	2	W	X		
2	MHMW-10	5/22/24	9:30	2	W	X		H24050730
3	LCM W-5		14:33					
4	LCMW-1		15:25					
5	MHMW-9	5/22/24	16:16	2	W	X		
6								
7								
8								
9								
10								

Custody Record MUST be signed	Relinquished by (print) <i>Peggie Day</i>	Date/Time <i>5/23/24 14:30</i>	Signature <i>Peggie Day</i>	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) <i>Rebecca Toole</i>	Date/Time <i>5/23/24 14:30</i>	Signature <i>Rebecca Toole</i>
LABORATORY USE ONLY						
Shipped By <i>human</i>	Cooler ID(s) <i>4</i>	Custody Seals Y ☒ N ☐ C ☐ B ☐	Intact Y ☐ N ☐	Receipt Temp <i>0.6</i> °C	Temp Blank Y ☐ N ☐	On Ice Y ☐ N ☐
			Payment Type CC Cash Check ☐		Amount \$	Receipt Number (cash/check only)

ELI-COC-06/08 v.2

(UBMC Surface Water)

SDG#:	H24050731
Number of Samples:	6
Sample Matrix:	(6) Surface Water
Applicable Analytes:	(6) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Total and Dissolved Metals
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
BRSW-36	H24050731-001	Field Sample	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24
BRSW-003A	H24050731-002	Field Sample	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24
BRSW-29	H24050731-003	Field Sample	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24
BRSW-304	H24050731-004	Field Sample	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
S35-SW-08	H24050731-005	Field Sample	Surface Water	05/20/24	SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
S35-SW-06	H24050731-006	Field Sample	Surface Water	05/20/24	EPA 200.8	05/29/24
					SM 4500-H B	05/23/24*
					SM 2510 B	05/23/24
					SM 2540 D	05/24/24
					SM 2540 C	05/24/24
					SM 2320 B	06/03/24
					EPA 300.0	05/29/24
					SM2340 B	05/30/24
					EPA 200.7	05/24/24
					EPA 200.8	05/29/24

*Indicates missed holding time

2. Reviewer Preliminary Comments	
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.	
Six (6) surface water samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, anions, hardness, total metals, and dissolved metals. The samples were received intact by the laboratory on 05/23/23 properly cooled to 1.0°C.	
The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis:	
ND Analyte was not detected above the reporting and/or detection limit (RL/DL).	

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}$ C aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}$ C).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were <u>no</u> significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for samples were analyzed on 05/23/24, 3 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation			Y	N	NA
Are preparation logs for all samples present in the data package?					
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?			X		
Identify the preparation method(s) used:			X		
	Matrix	Method(s) (record # or NA)			
	Water	200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7 and 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		

8. ICP/MS Calibration	Y	N	NA
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at	X		

10. Blanks	Y	N	NA
least 10% of the total number of samples, or as otherwise required?			
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?	X		

Reviewer Comments: Positive detections were noted in the preparation blank for arsenic, and sodium. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- Sodium, and arsenic have been left unqualified as the sample results were either non-detect or >QL, and >10x the blank concentration.
- The remaining preparation blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x PQL$, or $\pm PQL$ when results are between PQL and $5x PQL$)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 30\%$? (Per Project QAPP)			X

Reviewer Comments: A field duplicate was collected at a frequency of one for every primary samples. A field duplicate was not included in the SDG. No qualifications necessary.

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations $>50x MDL$, was the serial dilution %D $<20\%$?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results.
Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Field Sample ID	Analyte	Qualifiers	Reason*
All	pH	J-	Exceeded HT

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/12/2024	Date: 11/13/2024



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-36
Lab ID: H24050731-001
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 11:30 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.8	s.u.	H	0.1		A4500-H B	05/23/24 17:43 / dpw		PHSC_101-H_240523A : 102		R195147
pH Measurement Temp	14.9	°C				A4500-H B	05/23/24 17:43 / dpw		PHSC_101-H_240523A : 102		R195147
Conductivity @ 25 C	164	umhos/cm		5		A2510 B	05/23/24 17:43 / dpw		PHSC_101-H_240523A : 103		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:32 / dpw		124 (14410200)_240524B : 35		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	96	mg/L		20		A2540 C	05/24/24 13:01 / dpw		124 (14410200)_240524A : 28		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	69	mg/L		4		A2320 B	06/03/24 11:52 / dpw		PHSC_101-H_240603A : 42		R195382
Bicarbonate as HCO3	84	mg/L		4		A2320 B	06/03/24 11:52 / dpw		PHSC_101-H_240603A : 42		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:52 / dpw		PHSC_101-H_240603A : 42		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:10 / eer		IC METROHM_240528A : 95		R195317
Sulfate	12	mg/L		1		E300.0	05/29/24 14:10 / eer		IC METROHM_240528A : 95		R195317
Hardness as CaCO3	76	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 11		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:28 / dck		ICPMS206-H_240528C : 238		R195285
Calcium	16	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 16:58 / slj		ICP2-HE_240524A : 130		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Cadmium	0.00016	mg/L		0.00008		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Copper	0.001	mg/L		0.001		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981
Zinc	0.03	mg/L		0.01		E200.8	05/29/24 21:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 239		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-003A
Lab ID: H24050731-002
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 12:02 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.8	s.u.	H	0.1		A4500-H B	05/23/24 17:47 / dpw		PHSC_101-H_240523A : 104		R195147
pH Measurement Temp	15.1	°C				A4500-H B	05/23/24 17:47 / dpw		PHSC_101-H_240523A : 104		R195147
Conductivity @ 25 C	156	umhos/cm		5		A2510 B	05/23/24 17:47 / dpw		PHSC_101-H_240523A : 105		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:33 / dpw		124 (14410200)_240524B : 36		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	91	mg/L		20		A2540 C	05/24/24 13:03 / dpw		124 (14410200)_240524A : 29		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	70	mg/L		4		A2320 B	06/03/24 11:59 / dpw		PHSC_101-H_240603A : 44		R195382
Bicarbonate as HCO3	85	mg/L		4		A2320 B	06/03/24 11:59 / dpw		PHSC_101-H_240603A : 44		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 11:59 / dpw		PHSC_101-H_240603A : 44		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:24 / eer		IC METROHM_240528A : 96		R195317
Sulfate	8	mg/L		1		E300.0	05/29/24 14:24 / eer		IC METROHM_240528A : 96		R195317
Hardness as CaCO3	76	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 12		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 21:36 / dck		ICPMS206-H_240528C : 240		R195285
Calcium	16	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 17:01 / slj		ICP2-HE_240524A : 131		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Cadmium	0.00010	mg/L		0.00008		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981
Zinc	0.02	mg/L		0.01		E200.8	05/29/24 21:40 / dck	05/28/24 11:39	ICPMS206-H_240528C : 241		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-29
Lab ID: H24050731-003
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 12:25 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	8.0	s.u.	H	0.1		A4500-H B	05/23/24 18:12 / dpw		PHSC_101-H_240523A : 117		R195147
pH Measurement Temp	16.1	°C				A4500-H B	05/23/24 18:12 / dpw		PHSC_101-H_240523A : 117		R195147
Conductivity @ 25 C	157	umhos/cm		5		A2510 B	05/23/24 18:12 / dpw		PHSC_101-H_240523A : 118		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:33 / dpw		124 (14410200)_240524B : 37		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	88	mg/L		20		A2540 C	05/24/24 13:03 / dpw		124 (14410200)_240524A : 30		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	70	mg/L		4		A2320 B	06/03/24 12:05 / dpw		PHSC_101-H_240603A : 46		R195382
Bicarbonate as HCO3	85	mg/L		4		A2320 B	06/03/24 12:05 / dpw		PHSC_101-H_240603A : 46		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 12:05 / dpw		PHSC_101-H_240603A : 46		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:39 / eer		IC METROHM_240528A : 97		R195317
Sulfate	8	mg/L		1		E300.0	05/29/24 14:39 / eer		IC METROHM_240528A : 97		R195317
Hardness as CaCO3	75	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 13		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:04 / dck		ICPMS206-H_240528C : 247		R195285
Calcium	16	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
Sodium	1	mg/L		1		E200.7	05/24/24 17:05 / slj		ICP2-HE_240524A : 132		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Cadmium	0.00010	mg/L		0.00008		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981
Zinc	0.02	mg/L		0.01		E200.8	05/29/24 22:08 / dck	05/28/24 11:39	ICPMS206-H_240528C : 248		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-304
Lab ID: H24050731-004
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 13:30 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.9	s.u.	H	0.1		A4500-H B	05/23/24 18:15 / dpw		PHSC_101-H_240523A : 119		R195147
pH Measurement Temp	15.4	°C				A4500-H B	05/23/24 18:15 / dpw		PHSC_101-H_240523A : 119		R195147
Conductivity @ 25 C	187	umhos/cm		5		A2510 B	05/23/24 18:15 / dpw		PHSC_101-H_240523A : 120		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:33 / dpw		124 (14410200)_240524B : 38		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	99	mg/L		20		A2540 C	05/24/24 13:03 / dpw		124 (14410200)_240524A : 31		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	85	mg/L		4		A2320 B	06/03/24 12:12 / dpw		PHSC_101-H_240603A : 48		R195382
Bicarbonate as HCO3	100	mg/L		4		A2320 B	06/03/24 12:12 / dpw		PHSC_101-H_240603A : 48		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 12:12 / dpw		PHSC_101-H_240603A : 48		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 14:53 / eer		IC METROHM_240528A : 98		R195317
Sulfate	8	mg/L		1		E300.0	05/29/24 14:53 / eer		IC METROHM_240528A : 98		R195317
Hardness as CaCO3	92	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 14		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:12 / dck		ICPMS206-H_240528C : 249		R195285
Calcium	20	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
Magnesium	10	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
Sodium	ND	mg/L		1		E200.7	05/24/24 17:09 / slj		ICP2-HE_240524A : 133		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Cadmium	0.00038	mg/L		0.00008		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Copper	0.004	mg/L		0.001		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Iron	ND	mg/L		0.03		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Lead	0.0015	mg/L		0.0005		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981
Zinc	0.06	mg/L		0.01		E200.8	05/29/24 22:16 / dck	05/28/24 11:39	ICPMS206-H_240528C : 250		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-08
Lab ID: H24050731-005
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 16:40 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.5	s.u.	H	0.1		A4500-H B	05/23/24 18:18 / dpw		PHSC_101-H_240523A : 121		R195147
pH Measurement Temp	15.5	°C				A4500-H B	05/23/24 18:18 / dpw		PHSC_101-H_240523A : 121		R195147
Conductivity @ 25 C	196	umhos/cm		5		A2510 B	05/23/24 18:18 / dpw		PHSC_101-H_240523A : 122		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:34 / dpw		124 (14410200)_240524B : 39		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	118	mg/L		20		A2540 C	05/24/24 13:04 / dpw		124 (14410200)_240524A : 32		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	74	mg/L		4		A2320 B	06/03/24 12:49 / dpw		PHSC_101-H_240603A : 54		R195382
Bicarbonate as HCO3	90	mg/L		4		A2320 B	06/03/24 12:49 / dpw		PHSC_101-H_240603A : 54		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 12:49 / dpw		PHSC_101-H_240603A : 54		R195382
Chloride	ND	mg/L		1		E300.0	05/29/24 15:07 / eer		IC METROHM_240528A : 99		R195317
Sulfate	21	mg/L		1		E300.0	05/29/24 15:07 / eer		IC METROHM_240528A : 99		R195317
Hardness as CaCO3	91	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 15		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:20 / dck		ICPMS206-H_240528C : 251		R195285
Calcium	21	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
Magnesium	9	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
Potassium	ND	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
Sodium	2	mg/L		1		E200.7	05/24/24 17:13 / slj		ICP2-HE_240524A : 134		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Iron	0.18	mg/L		0.03		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Lead	ND	mg/L		0.0005		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Manganese	0.015	mg/L		0.005		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981
Zinc	ND	mg/L		0.01		E200.8	05/29/24 22:24 / dck	05/28/24 11:39	ICPMS206-H_240528C : 252		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-06
Lab ID: H24050731-006
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 05/20/24 17:07 **DateReceived:** 05/23/24
Report Date: 06/06/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	8.0	s.u.	H	0.1		A4500-H B	05/23/24 18:20 / dpw		PHSC_101-H_240523A : 123		R195147
pH Measurement Temp	15.8	°C				A4500-H B	05/23/24 18:20 / dpw		PHSC_101-H_240523A : 123		R195147
Conductivity @ 25 C	589	umhos/cm		5		A2510 B	05/23/24 18:20 / dpw		PHSC_101-H_240523A : 124		R195147
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	05/24/24 12:34 / dpw		124 (14410200)_240524B : 40		TSS20240524A
Solids, Total Dissolved TDS @ 180 C	376	mg/L		20		A2540 C	05/24/24 13:04 / dpw		124 (14410200)_240524A : 33		TDS20240524A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	190	mg/L		4		A2320 B	06/03/24 13:02 / dpw		PHSC_101-H_240603A : 58		R195382
Bicarbonate as HCO3	230	mg/L		4		A2320 B	06/03/24 13:02 / dpw		PHSC_101-H_240603A : 58		R195382
Carbonate as CO3	ND	mg/L		4		A2320 B	06/03/24 13:02 / dpw		PHSC_101-H_240603A : 58		R195382
Chloride	5	mg/L		1		E300.0	05/29/24 15:22 / eer		C METROHM_240528A : 100		R195317
Sulfate	112	mg/L		1		E300.0	05/29/24 15:22 / eer		C METROHM_240528A : 100		R195317
Hardness as CaCO3	283	mg/L		1		A2340 B	05/30/24 11:25 / slj		WATERCALC_240530A : 16		R195308
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	05/29/24 22:28 / dck		ICPMS206-H_240528C : 253		R195285
Calcium	78	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
Magnesium	21	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
Potassium	2	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
Sodium	6	mg/L		1		E200.7	05/24/24 17:17 / slj		ICP2-HE_240524A : 135		R195206
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Cadmium	ND	mg/L		0.00008		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Copper	ND	mg/L		0.001		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Iron	0.03	mg/L		0.03		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Lead	0.0010	mg/L		0.0005		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Manganese	ND	mg/L		0.005		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981
Zinc	ND	mg/L		0.01		E200.8	05/29/24 22:32 / dck	05/28/24 11:39	ICPMS206-H_240528C : 254		71981

LSB 11/14/24

Report RL - Analyte Reporting Limit
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Page 1 of 1

Report Information (if different than Account Information)

Comments

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐ Hard Copy ☐ Email
Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

Please copy results to:
popp@northwindg.p.com
MT DEQ
UBMC Cooler #2
SW

Matrix Codes

A - Air
W- Water
S - Soils/
Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking
Water

Analysis Requested

Sample Identification (Name, Location, Interval, etc.)		Collection		Number of Containers	Matrix (See Codes Above)	See RUSH TAT	ELI LAB ID Laboratory Use Only
		Date	Time				
1	BRSW-36	5/20/24	11:30	3	W	X	H24050731
2	BRSW-0034	↓	12:02	↓	↓	↓	
3	BRSW-29		12:25				
4	BRSW-304		13:30				
5	S35-SW-08		↓				
6	S35-SW-06	5/20/24	17:07	3	W	X	
7							
8							
9							
10							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
LABORATORY USE ONLY						
Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice
hamed	4	Y N C B	Y N	1.0 °C	Y N	Y N
Payment Type			Amount		Receipt Number (cash/check only)	
CC Cash Check			\$			

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-06/08 v.2

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(UBMC Ground Water)

SDG#:	H24060478
Number of Samples:	1
Sample Matrix:	(1) Ground Water
Applicable Analytes:	(1) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Dissolved Metals: (Al, As, Cd, Ca, Cu, Fe, Pb, Mg, Mn, K, Na, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
S35-MW-01	H24060478-001	Field Sample	Groundwater	06/14/24	SM 4500-H B	06/18/24*
					SM 2510 B	06/18/24
					SM 2540 D	06/18/24
					SM 2540 C	06/19/24
					SM 2320 B	06/18/24
					EPA 300.0	06/19/24
					SM2340 B	06/24/24
					EPA 200.7	06/24/24
					EPA 200.8	06/26/24

*Indicates missed holding time

2. Reviewer Preliminary Comments
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.
One (1) groundwater sample was submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, acidity, anions, hardness, and dissolved metals by the methods listed above. The samples were received intact by the laboratory on 06/17/24 properly cooled to 0.3°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		

3. Data Package/Project Review	Y	N	NA
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}\text{C}$ aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}\text{C}$).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were <u>no</u> significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for the samples were analyzed on 06/14/24, 4 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation	Y	N	NA
Are preparation logs for all samples present in the data package?			
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?	X		
Identify the preparation method(s) used:	X		

6. Sample Preparation			Y	N	NA
	Matrix	Method(s) (record # or NA)			
	Water	EPA 200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7, 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		

8. ICP/MS Calibration	Y	N	NA
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)?	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?			X
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?			X

Reviewer Comments: Positive detections were noted in the preparation blanks for sodium, copper, manganese, and potassium. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- The potassium, copper and manganese results were either >10x the blank concentration or non-detect. No qualifications necessary.
- Sodium has been qualified with a 'J+' validation flag as the sample result was >QL, but <10x the blank concentration.
- The remaining method blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x PQL$, or $\pm PQL$ when results are between PQL and $5x PQL$)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		

15. Field Duplicate	Y	N	NA
Were reported precision estimates within project acceptance criteria RPD $\leq 20\%$? (Per Project QAPP)			X

Reviewer Comments: Field duplicates were collected at a frequency of 1 per every 20 primary samples. A field duplicate was not included in this SDG. No qualification necessary.

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations $>50\times$ MDL, was the serial dilution %D $<20\%$?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS , Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results $> 5\times$ the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results. Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

- U** The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
- J** The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
- J+** The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
- J-** The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
- UJ** The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
- B** The analyte was positively detected in an associated blank as well as in the sample.
- R** The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Lab ID	Field Sample ID	Analyte	Qualifiers	Reason*
All	All	pH	J-	Exceeded holding time
All	All	Na	J+	Method blank considerations

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/11/2024	Date: 11/13/24



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-01
Lab ID: H24060478-001
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 06/14/24 14:37 **DateReceived:** 06/17/24
Report Date: 06/27/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.0	s.u.	H	0.1		A4500-H B	06/18/24 11:13 / SR		PHSC_101-H_240618A : 39		R195837
pH Measurement Temp	14.2	°C				A4500-H B	06/18/24 11:13 / SR		PHSC_101-H_240618A : 39		R195837
Conductivity @ 25 C	102	umhos/cm		5		A2510 B	06/18/24 11:13 / SR		PHSC_101-H_240618A : 40		R195837
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	06/18/24 12:32 / cti		-124 (14410200)_240618B : 6		TSS20240618A
Solids, Total Dissolved TDS @ 180 C	198	mg/L		20		A2540 C	06/19/24 12:55 / dpw		-124 (14410200)_240619B : 3		TDS20240619A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	49	mg/L		4		A2320 B	06/18/24 09:59 / SR		PHSC_101-H_240618A : 16		R195837
Bicarbonate as HCO3	60	mg/L		4		A2320 B	06/18/24 09:59 / SR		PHSC_101-H_240618A : 16		R195837
Carbonate as CO3	ND	mg/L		4		A2320 B	06/18/24 09:59 / SR		PHSC_101-H_240618A : 16		R195837
Chloride	ND	mg/L		1		E300.0	06/19/24 23:18 / SR		C METROHM_240618A : 159		R195887
Sulfate	2	mg/L		1		E300.0	06/19/24 23:18 / SR		C METROHM_240618A : 159		R195887
Hardness as CaCO3	45	mg/L		1		A2340 B	06/24/24 00:14 / JCS		CALC_240627A : 14		R196201
METALS, DISSOLVED											
Aluminum	0.16	mg/L		0.03		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Arsenic	ND	mg/L		0.003		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Cadmium	ND	mg/L		0.00008		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Calcium	10	mg/L		1		E200.7	06/24/24 00:14 / slj	06/20/24 16:14	ICP2-HE_240623A : 210		R196039
Copper	0.002	mg/L		0.001		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Iron	0.10	mg/L		0.05		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Lead	ND	mg/L		0.0005		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Magnesium	5	mg/L		1		E200.7	06/24/24 00:14 / slj	06/20/24 16:14	ICP2-HE_240623A : 210		R196039
Manganese	0.007	mg/L		0.005		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Potassium	1	mg/L		1		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157
Sodium J+	2	mg/L		1		E200.7	06/24/24 00:14 / slj	06/20/24 16:14	ICP2-HE_240623A : 210		R196039
Zinc	ND	mg/L		0.01		E200.8	06/26/24 13:31 / dck	06/20/24 16:14	ICPMS206-H_240625A : 106		R196157

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

(UBMC Surface Water)

SDG#:	H24090913
Number of Samples:	12
Sample Matrix:	(12) Surface Water
Applicable Analytes:	(12) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Total and Dissolved Metals
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
BRSW-309	H24090913-001	Equipment Blank	Surface Water	09/23/24	SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/02/24
					SM2340 B	09/27/24
					EPA 200.7	09/26/24
BRSW-307	H24090913-002	Field Duplicate of BRSW-12	Surface Water	09/23/24	EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/02/24
					SM2340 B	09/26/24
BRSW-12	H24090913-003	Field Sample	Surface Water	09/23/24	EPA 200.7	09/26/24
					EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/03/24
BRSW-10	H24090913-004	Field Sample	Surface Water	09/23/24	SM2340 B	09/30/24
					EPA 200.7	09/30/24
					EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
BRSW-33	H24090913-005	Field Sample	Surface Water	09/23/24	SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/03/24
					SM2340 B	09/26/24
					EPA 200.7	09/26/24 & 09/30/24
BRSW-36	H24090913-006	Field Sample	Surface Water	09/23/24	EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/03/24
					SM2340 B	09/26/24
BRSW-308	H24090913-007	Field Sample	Surface Water	09/23/24	EPA 200.7	09/26/24 & 09/30/24
					EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/03/24
BRSW-003A	H24090913-008	Field Blank	Surface Water	09/23/24	SM2340 B	09/27/24
					EPA 200.7	09/26/24
					EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/26/24*
					SM 2510 B	09/26/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
BRSW-29	H24090913-009	Field Sample	Surface Water	09/23/24	EPA 300.0	10/03/24
					SM2340 B	09/27/26
					EPA 200.7	09/26/24
					EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/27/24*
					SM 2510 B	09/27/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
BRSW-304	H24090913-010	Field Sample	Surface Water	09/23/24	SM 2320 B	09/30/24
					EPA 300.0	10/03/24
					SM2340 B	09/27/24
					EPA 200.7	09/26/24
					EPA 200.8	10/05/24 & 10/09/24
					SM 4500-H B	09/27/24*
					SM 2510 B	09/27/24
					SM 2540 D	09/26/24
S35-SW-08	H24090913-011	Field Sample	Surface Water	09/24/24	SM 4500-H B	09/27/24*

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
					SM 2510 B	09/27/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/03/24
					SM2340 B	09/26/24
					EPA 200.7	09/26/24 & 09/30/24
					EPA 200.8	10/05/24 & 10/09/24
S35-SW-06	H24090913-012	Field Sample	Surface Water	09/24/24	SM 4500-H B	09/27/24*
					SM 2510 B	09/27/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/30/24
					EPA 300.0	10/03/24
					SM2340 B	09/26/26
					EPA 200.7	09/26/24 & 09/30/24
					EPA 200.8	10/05/24 & 10/09/24

*Indicates missed holding time

2. Reviewer Preliminary Comments
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications. Twelve (12) surface water samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, anions, hardness, total metals, and dissolved metals. The samples were received intact by the laboratory on 09/25/24 properly cooled to 1.3°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}$ C aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}$ C).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were <u>no</u> significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for samples were analyzed on 09/26/24 and 09/27/24, between 2 and 3 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation			Y	N	NA
Are preparation logs for all samples present in the data package?					
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?			X		
Identify the preparation method(s) used:			X		
	Matrix	Method(s) (record # or NA)			
	Water	200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7 and 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		

8. ICP/MS Calibration	Y	N	NA
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at	X		

10. Blanks	Y	N	NA
least 10% of the total number of samples, or as otherwise required?			
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?	X		

Reviewer Comments: Positive detections were noted in field blank (BRSW-308) and equipment blank (BRSW-309) for conductivity and in the preparation blank for arsenic, potassium, and sodium. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- Conductivity in samples BRSW-308 and BRSW-309 have been qualified with a 'J+' validation flag as the sample results were >QL, but <10x the blank concentration.
 - o The remaining conductivity results were wither >10x the blank concentration or non-detect. No further qualifications necessary.
- The arsenic, potassium, and sodium results have been left unqualified as the sample results were >QL, and $\geq 10x$ the blank concentration.
- The remaining method blank, and field blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional

Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x PQL$, or $\pm PQL$ when results are between PQL and $5x PQL$)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?	X		
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 30\%$? (Per Project QAPP)	X		

Reviewer Comments: BRSW-12 and BRSW-307 were the field duplicate pair for this SDG. The field duplicate results were within the 20% RPD for aqueous samples. No qualifications necessary.

Analyte	Sample	Duplicate	RPD
pH	7.8	7.7	1.29%
Conductivity	312	311	0.32%
TSS	ND	ND	0.00%
TDS	192	187	2.64%
Total Alkalinity	77	77	0.00%
Bicarbonate	93	93	0.00%
Carbonate	ND	ND	0.00%

Analyte	Sample	Duplicate	RPD
Chloride	ND	ND	0.00%
Sulfate	75	71	5.48%
Hardness	145	144	0.69%
Aluminum	ND	ND	0.00%
Calcium	33	33	0.00%
Magnesium	15	15	0.00%
Potassium	1	1	0.00%
Sodium	6	6	0.00%
Arsenic	ND	ND	0.00%
Cadmium	0.00033	0.00033	0.00%
Copper	0.002	0.002	0.00%
Iron	0.07	0.06	15.4%
Lead	ND	ND	0.00%
Manganese	0.057	0.058	1.74%
Zinc	0.08	0.08	0.00%

$$RPD = [|S-D| / (S+D)] \times 200\%$$

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations >50x MDL, was the serial dilution %D <20%?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.

18. Sample Result Verification (EPA Level IV Validation only)	
3.	Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4.	Were results from diluted samples corrected for the dilution factor? NA
5.	If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6.	Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results. Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.	

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Field Sample ID	Analyte	Qualifiers	Reason*
All	pH	J-	Exceeded HT
BRSW-308 and BRSW-309	Conductivity	J+	Field and Equipment Blank

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/12/2024	Date: 11/13/24



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-309
Lab ID: H24090913-001
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 12:25 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.3	s.u.	H	0.1		A4500-H B	09/26/24 10:20 / dpw		PHSC_101-H_240926A : 37		R198890
pH Measurement Temp	14.9	°C				A4500-H B	09/26/24 10:20 / dpw		PHSC_101-H_240926A : 37		R198890
Conductivity @ 25 C J+	5	umhos/cm		5		A2510 B	09/26/24 10:20 / dpw		PHSC_101-H_240926A : 38		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:55 / eer		ius-BCA124-1S_240926B : 29		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	09/26/24 11:27 / ctl		ius-BCA124-1S_240926A : 29		TDS20240926A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	ND	mg/L		4		A2320 B	09/30/24 12:01 / dpw		PHSC_101-H_240930A : 16		R198975
Bicarbonate as HCO ₃	ND	mg/L		4		A2320 B	09/30/24 12:01 / dpw		PHSC_101-H_240930A : 16		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:01 / dpw		PHSC_101-H_240930A : 16		R198975
Chloride	ND	mg/L		1		E300.0	10/02/24 13:20 / eer		IC METROHM_241001A : 102		R199079
Sulfate	ND	mg/L		1		E300.0	10/02/24 13:20 / eer		IC METROHM_241001A : 102		R199079
Hardness as CaCO ₃	ND	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 1		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 09:59 / dck		ICPMS205-H_241008A : 79		R199288
Calcium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
Magnesium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
Sodium	ND	mg/L		1		E200.7	09/26/24 15:54 / slj		ICP2-HE_240926A : 68		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 20:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 52		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-307
Lab ID: H24090913-002
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 13:21 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.7	s.u.	H	0.1		A4500-H B	09/26/24 10:22 / dpw		PHSC_101-H_240926A : 39		R198890
pH Measurement Temp	14.7	°C				A4500-H B	09/26/24 10:22 / dpw		PHSC_101-H_240926A : 39		R198890
Conductivity @ 25 C	311	umhos/cm		5		A2510 B	09/26/24 10:22 / dpw		PHSC_101-H_240926A : 40		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:56 / eer		ius-BCA124-1S_240926B : 30		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	187	mg/L		20		A2540 C	09/26/24 11:28 / ctl		ius-BCA124-1S_240926A : 30		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	77	mg/L		4		A2320 B	09/30/24 12:05 / dpw		PHSC_101-H_240930A : 18		R198975
Bicarbonate as HCO3	93	mg/L		4		A2320 B	09/30/24 12:05 / dpw		PHSC_101-H_240930A : 18		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:05 / dpw		PHSC_101-H_240930A : 18		R198975
Chloride	ND	mg/L		1		E300.0	10/02/24 13:35 / eer		IC METROHM_241001A : 103		R199079
Sulfate	71	mg/L		1		E300.0	10/02/24 13:35 / eer		IC METROHM_241001A : 103		R199079
Hardness as CaCO3	144	mg/L		1		A2340 B	09/26/24 16:16 / SR		CALC_241007B : 498		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:11 / dck		ICPMS205-H_241008A : 83		R199288
Calcium	33	mg/L		1		E200.7	09/26/24 16:16 / slj		ICP2-HE_240926A : 74		R198905
Magnesium	15	mg/L		1		E200.7	09/26/24 16:16 / slj		ICP2-HE_240926A : 74		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:17 / slj		ICP2-HE_240930A : 37		R199004
Sodium	6	mg/L		1		E200.7	09/26/24 16:16 / slj		ICP2-HE_240926A : 74		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Cadmium	0.00033	mg/L		0.00008		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Copper	0.002	mg/L		0.001		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Iron	0.06	mg/L		0.03		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Manganese	0.058	mg/L		0.005		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163
Zinc	0.08	mg/L		0.01		E200.8	10/05/24 20:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 54		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-12
Lab ID: H24090913-003
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 13:50 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.8	s.u.	H	0.1		A4500-H B	09/26/24 10:24 / dpw		PHSC_101-H_240926A : 41		R198890
pH Measurement Temp	14.3	°C				A4500-H B	09/26/24 10:24 / dpw		PHSC_101-H_240926A : 41		R198890
Conductivity @ 25 C	312	umhos/cm		5		A2510 B	09/26/24 10:24 / dpw		PHSC_101-H_240926A : 42		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:56 / eer		ius-BCA124-1S_240926B : 31		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	192	mg/L		20		A2540 C	09/26/24 11:32 / ctl		ius-BCA124-1S_240926A : 31		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	77	mg/L		4		A2320 B	09/30/24 12:11 / dpw		PHSC_101-H_240930A : 20		R198975
Bicarbonate as HCO3	93	mg/L		4		A2320 B	09/30/24 12:11 / dpw		PHSC_101-H_240930A : 20		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:11 / dpw		PHSC_101-H_240930A : 20		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 10:31 / eer		IC METROHM_241001A : 181		R199079
Sulfate	75	mg/L		1		E300.0	10/03/24 10:31 / eer		IC METROHM_241001A : 181		R199079
Hardness as CaCO3	145	mg/L		1		A2340 B	09/30/24 12:39 / SR		CALC_241007B : 509		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:15 / dck		ICPMS205-H_241008A : 84		R199288
Calcium	33	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
Magnesium	15	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
Potassium	1	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
Sodium	6	mg/L		1		E200.7	09/30/24 12:39 / slj		ICP2-HE_240930A : 43		R199004
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Cadmium	0.00033	mg/L		0.00008		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Copper	0.002	mg/L		0.001		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Iron	0.07	mg/L		0.03		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Manganese	0.057	mg/L		0.005		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163
Zinc	0.08	mg/L		0.01		E200.8	10/05/24 20:45 / dck 09/27/24 10:34		ICPMS206-H_241005A : 56		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-10
Lab ID: H24090913-004
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 14:42 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.2	s.u.	H	0.1		A4500-H B	09/26/24 10:30 / dpw		PHSC_101-H_240926A : 45		R198890
pH Measurement Temp	14.9	°C				A4500-H B	09/26/24 10:30 / dpw		PHSC_101-H_240926A : 45		R198890
Conductivity @ 25 C	137	umhos/cm		5		A2510 B	09/26/24 10:30 / dpw		PHSC_101-H_240926A : 46		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:56 / eer		ius-BCA124-1S_240926B : 32		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	76	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 32		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	63	mg/L		4		A2320 B	09/30/24 12:17 / dpw		PHSC_101-H_240930A : 22		R198975
Bicarbonate as HCO3	77	mg/L		4		A2320 B	09/30/24 12:17 / dpw		PHSC_101-H_240930A : 22		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:17 / dpw		PHSC_101-H_240930A : 22		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 10:45 / eer		IC METROHM_241001A : 182		R199079
Sulfate	4	mg/L		1		E300.0	10/03/24 10:45 / eer		IC METROHM_241001A : 182		R199079
Hardness as CaCO3	68	mg/L		1		A2340 B	09/30/24 12:43 / SR		CALC_241007B : 520		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:18 / dck		ICPMS205-H_241008A : 85		R199288
Calcium	16	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
Magnesium	7	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
Potassium	ND	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
Sodium	2	mg/L		1		E200.7	09/30/24 12:43 / slj		ICP2-HE_240930A : 44		R199004
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Cadmium	0.00010	mg/L		0.00008		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Copper	0.003	mg/L		0.001		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 20:52 / dck 09/27/24 10:34		ICPMS206-H_241005A : 58		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-33
Lab ID: H24090913-005
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 15:11 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.6	s.u.	H	0.1		A4500-H B	09/26/24 10:32 / dpw		PHSC_101-H_240926A : 47		R198890
pH Measurement Temp	15.2	°C				A4500-H B	09/26/24 10:32 / dpw		PHSC_101-H_240926A : 47		R198890
Conductivity @ 25 C	335	umhos/cm		5		A2510 B	09/26/24 10:32 / dpw		PHSC_101-H_240926A : 48		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:57 / eer		ius-BCA124-1S_240926B : 33		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	202	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 33		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	80	mg/L		4		A2320 B	09/30/24 12:24 / dpw		PHSC_101-H_240930A : 24		R198975
Bicarbonate as HCO3	97	mg/L		4		A2320 B	09/30/24 12:24 / dpw		PHSC_101-H_240930A : 24		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:24 / dpw		PHSC_101-H_240930A : 24		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 10:59 / eer		IC METROHM_241001A : 183		R199079
Sulfate	83	mg/L		1		E300.0	10/03/24 10:59 / eer		IC METROHM_241001A : 183		R199079
Hardness as CaCO3	156	mg/L		1		A2340 B	09/26/24 16:31 / SR		CALC_241007B : 531		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:21 / dck		ICPMS205-H_241008A : 86		R199288
Calcium	36	mg/L		1		E200.7	09/26/24 16:31 / slj		ICP2-HE_240926A : 77		R198905
Magnesium	16	mg/L		1		E200.7	09/26/24 16:31 / slj		ICP2-HE_240926A : 77		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:47 / slj		ICP2-HE_240930A : 45		R199004
Sodium	7	mg/L		1		E200.7	09/26/24 16:31 / slj		ICP2-HE_240926A : 77		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Cadmium	0.00026	mg/L		0.00008		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Copper	0.001	mg/L		0.001		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Manganese	0.011	mg/L		0.005		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163
Zinc	0.06	mg/L		0.01		E200.8	10/05/24 20:59 / dck 09/27/24 10:34		ICPMS206-H_241005A : 60		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-36
Lab ID: H24090913-006
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 15:51 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.5	s.u.	H	0.1		A4500-H B	09/26/24 10:34 / dpw		PHSC_101-H_240926A : 49		R198890
pH Measurement Temp	15.2	°C				A4500-H B	09/26/24 10:34 / dpw		PHSC_101-H_240926A : 49		R198890
Conductivity @ 25 C	448	umhos/cm		5		A2510 B	09/26/24 10:34 / dpw		PHSC_101-H_240926A : 50		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:57 / eer		ius-BCA124-1S_240926B : 34		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	288	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 34		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	88	mg/L		4		A2320 B	09/30/24 12:30 / dpw		PHSC_101-H_240930A : 26		R198975
Bicarbonate as HCO3	110	mg/L		4		A2320 B	09/30/24 12:30 / dpw		PHSC_101-H_240930A : 26		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:30 / dpw		PHSC_101-H_240930A : 26		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 11:28 / eer		IC METROHM_241001A : 185		R199079
Sulfate	134	mg/L		1		E300.0	10/03/24 11:28 / eer		IC METROHM_241001A : 185		R199079
Hardness as CaCO3	213	mg/L		1		A2340 B	09/26/24 16:35 / SR		CALC_241007B : 542		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:24 / dck		ICPMS205-H_241008A : 87		R199288
Calcium	49	mg/L		1		E200.7	09/26/24 16:35 / slj		ICP2-HE_240926A : 78		R198905
Magnesium	22	mg/L		1		E200.7	09/26/24 16:35 / slj		ICP2-HE_240926A : 78		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:51 / slj		ICP2-HE_240930A : 46		R199004
Sodium	10	mg/L		1		E200.7	09/26/24 16:35 / slj		ICP2-HE_240926A : 78		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Cadmium	0.00013	mg/L		0.00008		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Copper	0.001	mg/L		0.001		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Manganese	0.017	mg/L		0.005		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163
Zinc	0.02	mg/L		0.01		E200.8	10/05/24 21:24 / dck 09/27/24 10:34		ICPMS206-H_241005A : 67		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-308
Lab ID: H24090913-007
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 16:30 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	5.7	s.u.	H	0.1		A4500-H B	09/26/24 11:55 / dpw		PHSC_101-H_240926A : 101		R198890
pH Measurement Temp	13.9	°C				A4500-H B	09/26/24 11:55 / dpw		PHSC_101-H_240926A : 101		R198890
Conductivity @ 25 C J+	6	umhos/cm		5		A2510 B	09/26/24 11:55 / dpw		PHSC_101-H_240926A : 102		R198890
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:57 / eer		ius-BCA124-1S_240926B : 35		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 35		TDS20240926A
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	ND	mg/L		4		A2320 B	09/30/24 12:36 / dpw		PHSC_101-H_240930A : 28		R198975
Bicarbonate as HCO ₃	ND	mg/L		4		A2320 B	09/30/24 12:36 / dpw		PHSC_101-H_240930A : 28		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:36 / dpw		PHSC_101-H_240930A : 28		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 11:14 / eer		IC METROHM_241001A : 184		R199079
Sulfate	ND	mg/L		1		E300.0	10/03/24 11:14 / eer		IC METROHM_241001A : 184		R199079
Hardness as CaCO ₃	ND	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 2		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:28 / dck		ICPMS205-H_241008A : 88		R199288
Calcium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
Magnesium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
Sodium	ND	mg/L		1		E200.7	09/26/24 16:39 / slj		ICP2-HE_240926A : 79		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 21:31 / dck 09/27/24 10:34		ICPMS206-H_241005A : 69		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-003A
Lab ID: H24090913-008
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 16:39 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	8.0	s.u.	H	0.1		A4500-H B	09/27/24 12:40 / dpw		PHSC_101-H_240927A : 11		R198937
pH Measurement Temp	14.0	°C				A4500-H B	09/27/24 12:40 / dpw		PHSC_101-H_240927A : 11		R198937
Conductivity @ 25 C	233	umhos/cm		5		A2510 B	09/27/24 12:40 / dpw		PHSC_101-H_240927A : 12		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:58 / eer		ius-BCA124-1S_240926B : 36		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	118	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 36		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	98	mg/L		4		A2320 B	09/30/24 12:41 / dpw		PHSC_101-H_240930A : 30		R198975
Bicarbonate as HCO3	120	mg/L		4		A2320 B	09/30/24 12:41 / dpw		PHSC_101-H_240930A : 30		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:41 / dpw		PHSC_101-H_240930A : 30		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 12:40 / eer		IC METROHM_241001A : 190		R199079
Sulfate	13	mg/L		1		E300.0	10/03/24 12:40 / eer		IC METROHM_241001A : 190		R199079
Hardness as CaCO3	115	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 3		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:31 / dck		ICPMS205-H_241008A : 89		R199288
Calcium	26	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
Magnesium	12	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
Sodium	2	mg/L		1		E200.7	09/26/24 16:43 / slj		ICP2-HE_240926A : 80		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Cadmium	0.00023	mg/L		0.00008		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163
Zinc	0.05	mg/L		0.01		E200.8	10/05/24 21:38 / dck 09/27/24 10:34		ICPMS206-H_241005A : 71		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-29
Lab ID: H24090913-009
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 17:25 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.8	s.u.	H	0.1		A4500-H B	09/27/24 12:43 / dpw		PHSC_101-H_240927A : 13		R198937
pH Measurement Temp	14.6	°C				A4500-H B	09/27/24 12:43 / dpw		PHSC_101-H_240927A : 13		R198937
Conductivity @ 25 C	233	umhos/cm		5		A2510 B	09/27/24 12:43 / dpw		PHSC_101-H_240927A : 14		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:58 / eer		ius-BCA124-1S_240926B : 37		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	128	mg/L		20		A2540 C	09/26/24 11:33 / ctl		ius-BCA124-1S_240926A : 37		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	100	mg/L		4		A2320 B	09/30/24 12:47 / dpw		PHSC_101-H_240930A : 32		R198975
Bicarbonate as HCO3	120	mg/L		4		A2320 B	09/30/24 12:47 / dpw		PHSC_101-H_240930A : 32		R198975
Carbonate as CO3	ND	mg/L		4		A2320 B	09/30/24 12:47 / dpw		PHSC_101-H_240930A : 32		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 12:55 / eer		IC METROHM_241001A : 191		R199079
Sulfate	17	mg/L		1		E300.0	10/03/24 12:55 / eer		IC METROHM_241001A : 191		R199079
Hardness as CaCO3	120	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 4		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:34 / dck		ICPMS205-H_241008A : 90		R199288
Calcium	26	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
Magnesium	13	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
Sodium	2	mg/L		1		E200.7	09/26/24 16:47 / slj		ICP2-HE_240926A : 81		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Cadmium	0.00009	mg/L		0.00008		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163
Zinc	0.02	mg/L		0.01		E200.8	10/05/24 22:06 / dck 09/27/24 10:35		ICPMS206-H_241005A : 79		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSW-304
Lab ID: H24090913-010
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/23/24 18:14 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	8.0	s.u.	H	0.1		A4500-H B	09/27/24 12:46 / dpw		PHSC_101-H_240927A : 15		R198937
pH Measurement Temp	15.0	°C				A4500-H B	09/27/24 12:46 / dpw		PHSC_101-H_240927A : 15		R198937
Conductivity @ 25 C	245	umhos/cm		5		A2510 B	09/27/24 12:46 / dpw		PHSC_101-H_240927A : 16		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:58 / eer		ius-BCA124-1S_240926B : 38		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	128	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 38		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	110	mg/L		4		A2320 B	09/30/24 12:53 / dpw		PHSC_101-H_240930A : 34		R198975
Bicarbonate as HCO ₃	130	mg/L		4		A2320 B	09/30/24 12:53 / dpw		PHSC_101-H_240930A : 34		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 12:53 / dpw		PHSC_101-H_240930A : 34		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 13:09 / eer		IC METROHM_241001A : 192		R199079
Sulfate	15	mg/L		1		E300.0	10/03/24 13:09 / eer		IC METROHM_241001A : 192		R199079
Hardness as CaCO ₃	126	mg/L		1		A2340 B	09/27/24 08:36 / slj		WATERCALC_240927A : 5		R198933
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:44 / dck		ICPMS205-H_241008A : 93		R199288
Calcium	29	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
Magnesium	13	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
Potassium	ND	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
Sodium	ND	mg/L		1		E200.7	09/26/24 16:50 / slj		ICP2-HE_240926A : 82		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Cadmium	0.00109	mg/L		0.00008		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Copper	0.010	mg/L		0.001		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Lead	0.0024	mg/L		0.0005		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Manganese	0.010	mg/L		0.005		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163
Zinc	0.16	mg/L		0.01		E200.8	10/05/24 22:13 / dck 09/27/24 10:35		ICPMS206-H_241005A : 81		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-08
Lab ID: H24090913-011
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/24/24 09:35 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.4	s.u.	H	0.1		A4500-H B	09/27/24 12:49 / dpw		PHSC_101-H_240927A : 17		R198937
pH Measurement Temp	14.8	°C				A4500-H B	09/27/24 12:49 / dpw		PHSC_101-H_240927A : 17		R198937
Conductivity @ 25 C	236	umhos/cm		5		A2510 B	09/27/24 12:49 / dpw		PHSC_101-H_240927A : 18		R198937
Solids, Total Suspended TSS @ 105 C	79	mg/L		20		A2540 D	09/26/24 11:59 / eer		ius-BCA124-1S_240926B : 39		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	139	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 39		TDS20240926A
INORGANICS											
Alkalinity, Total as CaCO ₃	110	mg/L		4		A2320 B	09/30/24 13:00 / dpw		PHSC_101-H_240930A : 36		R198975
Bicarbonate as HCO ₃	140	mg/L		4		A2320 B	09/30/24 13:00 / dpw		PHSC_101-H_240930A : 36		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 13:00 / dpw		PHSC_101-H_240930A : 36		R198975
Chloride	ND	mg/L		1		E300.0	10/03/24 13:24 / eer		IC METROHM_241001A : 193		R199079
Sulfate	7	mg/L		1		E300.0	10/03/24 13:24 / eer		IC METROHM_241001A : 193		R199079
Hardness as CaCO ₃	120	mg/L		1		A2340 B	09/26/24 16:54 / SR		CALC_241007B : 597		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:47 / dck		ICPMS205-H_241008A : 94		R199288
Calcium	27	mg/L		1		E200.7	09/26/24 16:54 / slj		ICP2-HE_240926A : 83		R198905
Magnesium	13	mg/L		1		E200.7	09/26/24 16:54 / slj		ICP2-HE_240926A : 83		R198905
Potassium	1	mg/L		1		E200.7	09/30/24 12:55 / slj		ICP2-HE_240930A : 47		R199004
Sodium	3	mg/L		1		E200.7	09/26/24 16:54 / slj		ICP2-HE_240926A : 83		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Iron	0.47	mg/L		0.03		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Manganese	0.051	mg/L		0.005		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 22:20 / dck	09/27/24 10:35	ICPMS206-H_241005A : 83		74163

LSB 11/14/24

Report RL - Analyte Reporting Limit
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LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SW-06
Lab ID: H24090913-012
Matrix: Aqueous

Project: UBMC Surface Water
Collection Date: 09/24/24 10:18 **DateReceived:** 09/25/24
Report Date: 10/10/24

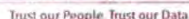
Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.6	s.u.	H	0.1		A4500-H B	09/27/24 12:52 / dpw		PHSC_101-H_240927A : 19		R198937
pH Measurement Temp	14.9	°C				A4500-H B	09/27/24 12:52 / dpw		PHSC_101-H_240927A : 19		R198937
Conductivity @ 25 C	592	umhos/cm		5		A2510 B	09/27/24 12:52 / dpw		PHSC_101-H_240927A : 20		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 11:59 / eer		ius-BCA124-1S_240926B : 40		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	388	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 40		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	190	mg/L		4		A2320 B	09/30/24 13:07 / dpw		PHSC_101-H_240930A : 38		R198975
Bicarbonate as HCO ₃	230	mg/L		4		A2320 B	09/30/24 13:07 / dpw		PHSC_101-H_240930A : 38		R198975
Carbonate as CO ₃	ND	mg/L		4		A2320 B	09/30/24 13:07 / dpw		PHSC_101-H_240930A : 38		R198975
Chloride	5	mg/L		1		E300.0	10/03/24 13:38 / eer		IC METROHM_241001A : 194		R199079
Sulfate	106	mg/L		1		E300.0	10/03/24 13:38 / eer		IC METROHM_241001A : 194		R199079
Hardness as CaCO ₃	314	mg/L		1		A2340 B	09/26/24 17:17 / SR		CALC_241007B : 608		R199248
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 10:50 / dck		ICPMS205-H_241008A : 95		R199288
Calcium	89	mg/L		1		E200.7	09/26/24 17:17 / slj		ICP2-HE_240926A : 89		R198905
Magnesium	22	mg/L		1		E200.7	09/26/24 17:17 / slj		ICP2-HE_240926A : 89		R198905
Potassium	2	mg/L		1		E200.7	09/30/24 12:59 / slj		ICP2-HE_240930A : 48		R199004
Sodium	6	mg/L		1		E200.7	09/26/24 17:17 / slj		ICP2-HE_240926A : 89		R198905
METALS, TOTAL RECOVERABLE											
Arsenic	ND	mg/L		0.003		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163
Cadmium	ND	mg/L		0.00008		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163
Copper	ND	mg/L		0.001		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163
Iron	ND	mg/L		0.03		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163
Lead	ND	mg/L		0.0005		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163
Manganese	ND	mg/L		0.005		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163
Zinc	ND	mg/L		0.01		E200.8	10/05/24 22:27 / dck	09/27/24 10:35	ICPMS206-H_241005A : 85		74163

LSB 11/14/24

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Page 2 of 2

Report Information (if different than Account Information)

Comments

Company/Name _____

Contact _____

Phone _____

Mailing Address _____

City, State, Zip _____

Email _____

Receive Report ☐ Hard Copy ☐ Email

Special Report/Formats:

☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

please copy results to:
popp@northwindgrp.com

Matrix Codes

A - Air
W- Water
S - Soils/
Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking
Water

Analysis Requested

[illegible]

All turnaround times are standard unless marked as RUSH.

Energy Laboratories
MUST be contacted prior to
RUSH sample submittal for
charges and scheduling –
See Instructions Page

[illegible]

ELI is **REQUIRED** to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print) <i>PCSOB/ J. App</i>	Date/Time <i>9/25/24 15:48</i>	Signature <i>[Signature]</i>		Received by (print)	Date/Time	Signature		
	Relinquished by (print)	Date/Time	Signature		Received by Laboratory (print) <i>PCSOB/ J. App</i>	Date/Time <i>9-25-24 1548</i>	Signature <i>[Signature]</i>		
LABORATORY USE ONLY									
Shipped By <i>[Signature]</i>	Cooler ID(s) <i>3</i>	Custody Seats <i>Y (N) C B</i>	Intact <i>Y N</i>	Receipt Temp <i>Room</i>	Temp Blank <i>Y N</i>	On Ice <i>Y N</i>	Payment Type CC Cash Check	Amount \$	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

(UBMC Ground Water)

SDG#:	H24090914
Number of Samples:	2
Sample Matrix:	(2) Ground Water
Applicable Analytes:	(2) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Dissolved Metals: (Al, As, Cd, Ca, Cu, Fe, Pb, Mg, Mn, K, Na, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
S35-MW-03	H24090914-001	Field Sample	Groundwater	09/24/24	SM 4500-H B	09/27/24*
					SM 2510 B	09/27/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/27/24
					EPA 300.0	10/02/24
					SM2340 B	09/27/24
					EPA 200.7	09/26/24
					EPA 200.8	09/26/24
S35-MW-01	H24090914-002	Field Sample	Groundwater	09/24/24	SM 4500-H B	09/27/24*
					SM 2510 B	09/27/24
					SM 2540 D	09/26/24
					SM 2540 C	09/26/24
					SM 2320 B	09/27/24
					EPA 300.0	10/02/24
					SM2340 B	09/27/24
					EPA 200.7	09/26/24
					EPA 200.8	09/26/24

*Indicates missed holding time

2. Reviewer Preliminary Comments	
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.	
Two (2) groundwater samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, acidity, anions, hardness, and dissolved metals by the methods listed above. The samples were received intact by the laboratory on 09/25/24 properly cooled to 0.2°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).	

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}\text{C}$ aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}\text{C}$).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were <u>no</u> significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for the samples were analyzed on 09/27/24, 3 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation			Y	N	NA
Are preparation logs for all samples present in the data package?					
For metals , if water samples are not digested, were they filtered and then acidified, in the field or lab?			X		
Identify the preparation method(s) used:			X		
	Matrix	Method(s) (record # or NA)			
	<i>Water</i>	EPA 200.2/200.7/200.8			
	<i>Soil/Solid</i>				
	<i>Oil</i>				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7, 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)?	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the

associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?	X		
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?	X		

Reviewer Comments: Positive detections were noted in the preparation blanks for sodium. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- The sodium results were >QL and >10x the blank concentration. No qualifications necessary.
- The remaining method blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x PQL$, or $\pm PQL$ when results are between PQL and $5x PQL$)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 20\%$? (Per Project)			X

15. Field Duplicate	Y	N	NA
QAPP)			

Reviewer Comments: Field duplicates were collected at a frequency of 1 per every 20 primary samples. A field duplicate was not included in this SDG. No qualification necessary.

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations >50x MDL, was the serial dilution %D <20%?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000, Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results. Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Lab ID	Field Sample ID	Analyte	Qualifiers	Reason*
All	All	pH	J-	Exceeded holding time

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/11/2024	Date: 11/13/24



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-03
Lab ID: H24090914-001
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 09/24/24 12:28 **DateReceived:** 09/25/24
Report Date: 10/07/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.9	s.u.	H	0.1		A4500-H B	09/27/24 12:54 / dpw		PHSC_101-H_240927A : 21		R198937
pH Measurement Temp	15.2	°C				A4500-H B	09/27/24 12:54 / dpw		PHSC_101-H_240927A : 21		R198937
Conductivity @ 25 C	548	umhos/cm		5		A2510 B	09/27/24 12:54 / dpw		PHSC_101-H_240927A : 22		R198937
Solids, Total Suspended TSS @ 105 C	14	mg/L		10		A2540 D	09/26/24 11:59 / eer		ius-BCA124-1S_240926B : 41		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	326	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 41		TDS20240926A
INORGANICS											
Alkalinity, Total as CaCO3	230	mg/L		4		A2320 B	09/27/24 23:45 / dpw		PHSC_101-H_240927A : 154		R198937
Bicarbonate as HCO3	280	mg/L		4		A2320 B	09/27/24 23:45 / dpw		PHSC_101-H_240927A : 154		R198937
Carbonate as CO3	ND	mg/L		4		A2320 B	09/27/24 23:45 / dpw		PHSC_101-H_240927A : 154		R198937
Chloride	25	mg/L		1		E300.0	10/02/24 21:48 / eer		C METROHM_241001A : 128		R199079
Sulfate	10	mg/L		1		E300.0	10/02/24 21:48 / eer		C METROHM_241001A : 128		R199079
Hardness as CaCO3	266	mg/L		1		A2340 B	09/27/24 11:16 / slj		WATERCALC_240927C : 9		R198948
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Arsenic	0.004	mg/L		0.003		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Cadmium	ND	mg/L		0.00008		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Calcium	77	mg/L		1		E200.7	09/26/24 17:20 / slj		ICP2-HE_240926A : 90		R198905
Copper	ND	mg/L		0.001		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Iron	ND	mg/L		0.05		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Lead	ND	mg/L		0.0005		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Magnesium	18	mg/L		1		E200.7	09/26/24 17:20 / slj		ICP2-HE_240926A : 90		R198905
Manganese	ND	mg/L		0.005		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Potassium	2	mg/L		1		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945
Sodium	12	mg/L		1		E200.7	09/26/24 17:20 / slj		ICP2-HE_240926A : 90		R198905
Zinc	ND	mg/L		0.01		E200.8	09/26/24 17:24 / dck		ICPMS205-H_240926A : 69		R198945

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-MW-01
Lab ID: H24090914-002
Matrix: Aqueous

Project: UBMC Ground Water
Collection Date: 09/24/24 15:02 **DateReceived:** 09/25/24
Report Date: 10/07/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.6	s.u.	H	0.1		A4500-H B	09/27/24 12:57 / dpw		PHSC_101-H_240927A : 23		R198937
pH Measurement Temp	15.4	°C				A4500-H B	09/27/24 12:57 / dpw		PHSC_101-H_240927A : 23		R198937
Conductivity @ 25 C	235	umhos/cm		5		A2510 B	09/27/24 12:57 / dpw		PHSC_101-H_240927A : 24		R198937
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/26/24 12:00 / eer		ius-BCA124-1S_240926B : 42		TSS20240926A
Solids, Total Dissolved TDS @ 180 C	134	mg/L		20		A2540 C	09/26/24 11:34 / ctl		ius-BCA124-1S_240926A : 42		TDS20240926A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	120	mg/L		4		A2320 B	09/27/24 23:51 / dpw		PHSC_101-H_240927A : 156		R198937
Bicarbonate as HCO3	140	mg/L		4		A2320 B	09/27/24 23:51 / dpw		PHSC_101-H_240927A : 156		R198937
Carbonate as CO3	ND	mg/L		4		A2320 B	09/27/24 23:51 / dpw		PHSC_101-H_240927A : 156		R198937
Chloride	ND	mg/L		1		E300.0	10/02/24 22:02 / eer		C METROHM_241001A : 129		R199079
Sulfate	5	mg/L		1		E300.0	10/02/24 22:02 / eer		C METROHM_241001A : 129		R199079
Hardness as CaCO3	121	mg/L		1		A2340 B	09/27/24 11:16 / slj		WATERCALC_240927C : 10		R198948
METALS, DISSOLVED											
Aluminum	0.04	mg/L		0.03		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Arsenic	ND	mg/L		0.003		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Cadmium	ND	mg/L		0.00008		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Calcium	27	mg/L		1		E200.7	09/26/24 17:24 / slj		ICP2-HE_240926A : 91		R198905
Copper	ND	mg/L		0.001		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Iron	ND	mg/L		0.05		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Lead	ND	mg/L		0.0005		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Magnesium	13	mg/L		1		E200.7	09/26/24 17:24 / slj		ICP2-HE_240926A : 91		R198905
Manganese	ND	mg/L		0.005		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Potassium	1	mg/L		1		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945
Sodium	2	mg/L		1		E200.7	09/26/24 17:24 / slj		ICP2-HE_240926A : 91		R198905
Zinc	ND	mg/L		0.01		E200.8	09/26/24 17:27 / dck		ICPMS205-H_240926A : 70		R198945

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



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Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

Account Information (Billing Information)

Company/Name <u>MT OEG</u>		
Contact <u>Amber Nichols</u>		
Phone <u>(406) 444-6569</u>		
Mailing Address		
City, State, Zip		
Email <u>amber.nichols@mt.gov</u>		
Receive Invoice	☐ Hard Copy	☒ Email
Receive Report	☐ Hard Copy	☒ Email
Purchase Order	Quote <u>1361</u>	Bottle Order <u>49366</u>

Report Information (If different than Account Information)

Company/Name		
Contact		
Phone		
Mailing Address		
City, State, Zip		
Email		
Receive Report ☐ Hard Copy ☐ Email		
Special Report/Formats:		
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other		

Comments

Please copy result to:
popp@northwindgrp.com

Project Information

Project Name, PWSID, Permit, etc. <u>UBMC Groundwater</u>	
Sampler Name <u>P.opp</u>	Sampler Phone <u>(406) 461-3660</u>
Sample Origin State <u>MT</u>	EPA/State Compliance ☐ Yes ☐ No
URANIUM MINING CLIENTS MUST indicate sample type	
☐ Unprocessed Ore	
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING	
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)	

Matrix Codes

- A - Air
- W - Water
- S - Soils/Solids
- V - Vegetation
- B - Bioassay
- O - Oil
- DW - Drinking Water

Analysis Requested

See Attached

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)		Collection		Number of Containers	Matrix (See Codes Above)	Analysis Requested										See Attached	RUSH TAT	ELI LAB ID Laboratory Use Only
Date	Time																	
1	S35-MW-03	9/24/24	12:28	2	W											X		1424090914
2	S35-MW-01	9/24/24	15:02	2	W											X		
3																		
4																		
5																		
6																		
7																		
8																		
9																		

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print) <u>Pebble Cpp</u>	Date/Time <u>9/25/24 15:48</u>	Signature <u>[Signature]</u>	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) <u>Leanne Todd</u>	Date/Time <u>9-25-24 1548</u>	Signature <u>[Signature]</u>
LABORATORY USE ONLY						
Shipped By <u>hand</u>	Cooler ID(s) <u>Y</u>	Custody Seals Y <u>(N)</u> C B	Intact Y N	Receipt Temp <u>0.2</u> °C	Temp Blank Y N	On Ice Y N
Payment Type CC Cash Check				Amount \$	Receipt Number (cash/check only)	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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(UBMC Sediment)

SDG#:	H24090916
Number of Samples:	3
Sample Matrix:	(3) Sediment
Applicable Analytes:	(3) Metals: (Al, As, Cd, Cu, Fe, Pb, Mg, Mn, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
BRSD-307	H24090916-001	Field Duplicate (BRSD-12)	Sediment	09/23/24	EPA 6010D/6020B	10/02/24 & 10/03/24
BRSD-12	H24090916-002	Field Sample	Sediment	09/23/24	EPA 6010D/6020B	10/02/24 & 10/03/24
S35-SD-08	H24090916-005	Field Sample	Sediment	09/23/24	EPA 6010D/6020B	10/02/24 & 10/03/24

*Indicates missed holding time

2. Reviewer Preliminary Comments
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a) Confirm that narrative is present and complete; note overall initial indications.
Three (3) Sediment samples were submitted to Energy Laboratories for analysis of metals. The samples were received intact by the laboratory on 09/25/24 properly cooled to 0.2°C. The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis: ND Analyte was not detected above the reporting and/or detection limit (RL/DL).

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at $\leq 6^{\circ}$ C aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at $\leq 4^{\circ}$ C).	X		
Metals: Were aqueous samples preserved to a pH < 2 ; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?			X
Were samples prepared and analyzed within the required holding time per the analytical method?	X		
Inspect narrative, receipt logs, etc. Does the information indicate that there were no significant problems with sample handling/naming? Were soils $< 50\%$ moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

6. Sample Preparation		Y	N	NA
Are preparation logs for all samples present in the data package?				
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?		X		
Identify the preparation method(s) used:		X		
	Matrix	Method(s) (record # or NA)		
	Water	NA		
	Soil/Solid	3050B		
	Oil	NA		
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.				

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 6010D and 6020B. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using	X		

8. ICP/MS Calibration	Y	N	NA
the same standards as the calibration standards?			
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?			X

10. Blanks	Y	N	NA
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?			X

Reviewer Comments: The blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?		X	
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?		X	
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample was obtained from project field samples. The matrix spike (MS) recoveries for manganese (131%) and zinc (136%) were outside of the 75-125% acceptance criteria. All manganese and zinc results have been qualified with a 'J+' validation flag as the sample results were >MDL and the MS/MSD %R was >125%. The remaining MS/MSD recoveries were within the prescribed acceptance criteria.

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X

13. Laboratory Control Sample	Y	N	NA
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x PQL$, or $\pm PQL$ when results are between PQL and $5x PQL$)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 20\%$? (Per Project QAPP)			X

Reviewer Comments: BRSD-12 and BRSD-307 were the field duplicate pair for this SDG. The field duplicate results were within the 35% RPD for solid samples. No qualifications necessary.

Analyte	Sample	Duplicate	RPD
Al	9330	8340	11.2%
As	20	24	18.2%
Cd	7.24	7.7	6.16%
Cu	220	233	5.74%
Fe	22800	22300	2.22%
Pb	559	563	0.71%
Mn	2620	2490	5.09%
Zn	1480	1440	2.74%

$$RPD = [|S-D| / (S+D)] \times 200\%$$

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations >50x MDL, was the serial dilution %D <20%?	X		

Reviewer Comments: The serial dilution results were within the 10%D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000 , Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results.
Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Field Sample ID	Analyte	Qualifiers	Reason*
All	Mn and Zn	J+	High MS/MSD Recovery

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/12/2024	Date: 11/13/24



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSD-307
Lab ID: H24090916-001
Matrix: Sediment

Project: UBMC Sediment
Collection Date: 09/23/24 13:21 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
METALS, TOTAL - EPA SW846											
Aluminum	8340	mg/kg		30		SW6010B	10/03/24 15:44 / slj	10/01/24 07:26	ICP2-HE_241003B : 83		74197
Arsenic	24	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Cadmium	7.70	mg/kg		0.05		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Copper	233	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Iron	22300	mg/kg		200		SW6010B	10/03/24 15:44 / slj	10/01/24 07:26	ICP2-HE_241003B : 83		74197
Lead	563	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Manganese J+	2490	mg/kg		1		SW6020	10/02/24 16:44 / dck	10/01/24 07:26	ICPMS206-H_241002B : 38		74197
Zinc J+	1440	mg/kg		5		SW6010B	10/03/24 15:44 / slj	10/01/24 07:26	ICP2-HE_241003B : 83		74197

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: BRSD-12
Lab ID: H24090916-002
Matrix: Sediment

Project: UBMC Sediment
Collection Date: 09/23/24 13:50 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
METALS, TOTAL - EPA SW846											
Aluminum	9330	mg/kg		30		SW6010B	10/03/24 15:48 / slj	10/01/24 07:26	ICP2-HE_241003B : 84		74197
Arsenic	20	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Cadmium	7.24	mg/kg		0.05		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Copper	220	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Iron	22800	mg/kg		200		SW6010B	10/03/24 15:48 / slj	10/01/24 07:26	ICP2-HE_241003B : 84		74197
Lead	559	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Manganese J+	2620	mg/kg		1		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197
Zinc J+	1480	mg/kg		2		SW6020	10/02/24 16:47 / dck	10/01/24 07:26	ICPMS206-H_241002B : 39		74197

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: S35-SD-08
Lab ID: H24090916-003
Matrix: Sediment

Project: UBMC Sediment
Collection Date: 09/23/24 09:35 **DateReceived:** 09/25/24
Report Date: 10/10/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
METALS, TOTAL - EPA SW846											
Aluminum	3550	mg/kg		30		SW6010B	10/03/24 15:52 / slj	10/01/24 07:26	ICP2-HE_241003B : 85		74197
Arsenic	3	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Cadmium	ND	mg/kg		0.05		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Copper	7	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Iron	9390	mg/kg		200		SW6010B	10/03/24 15:52 / slj	10/01/24 07:26	ICP2-HE_241003B : 85		74197
Lead	4	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Manganese J+	137	mg/kg		1		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197
Zinc J+	21	mg/kg		2		SW6020	10/02/24 16:50 / dck	10/01/24 07:26	ICPMS206-H_241002B : 40		74197

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



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Page 1 of 1

Report Information (if different than Account Information)

Account Information (Billing Information)			
Company/Name MT DEQ			
Contact Amber Nichols			
Phone (406) 444-6569			
Mailing Address			
City, State, Zip			
Email amber.nichols@mt.gov			
Receive Invoice ☐ Hard Copy ☒ Email		Receive Report ☐ Hard Copy ☒ Email	
Purchase Order		Quote 1361	Bottle Order 49366 Po

Report Information (if different than Account Information)

Company/Name

Contact

Phone

Mailing Address

City, State, Zip

Email

Receive Report ☐ Hard Copy ☐ Email

Special Report/Formats:

☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Please copy results to:
popp@northwindgrp.com

Matrix Codes

Project Name, PWSID, Permit, etc. UBMC Sediment	
Sampler Name P. Opp	Sampler Phone (404) 461-3668
Sample Origin State MT	EPA/State Compliance ☐ Yes ☐ No
URANIUM MINING CLIENTS MUST indicate sample type ☐ Unprocessed Ore ☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING ☐ 11e(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)	

A - Air
W- Water
S - Soils/
Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking
Water

X X X See Attached

All turnaround times are standard unless marked as RUSH.

Energy Laboratories
MUST be contacted prior to
RUSH sample submittal for
charges and scheduling –
See Instructions Page

Sample Identification (Name, Location, Interval, etc.)		Collection		Number of Containers	Matrix (See Codes Above)	See RUSH TAT	ELI LAB ID Laboratory Use Only
		Date	Time				
1	BRSD - 307	9/23/24	13:21	1	S	X	H2409091
2	BRSD - 12	9/23/24	13:50	1	S	X	
3	S35 - SD-08	9/23/24	9:35	1	S	X	
4							
5							
6							
7							
8							
9							

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print) <i>Peblis CAPP</i>		Date/Time <i>9/25/24 15:48</i>		Signature <i>Peblis CAPP</i>		Received by (print)		Date/Time		Signature	
	Relinquished by (print)		Date/Time		Signature		Received by Laboratory (print) <i>Peblis CAPP</i>		Date/Time <i>9-25-24 1548</i>		Signature <i>Peblis CAPP</i>	
LABORATORY USE ONLY												
Shipped By <i>Peblis CAPP</i>	Cooler ID(s) <i>1</i>	Custody Seals Y ☒ N ☐ C ☐ B ☐	Intact Y ☐ N ☐	Receipt Temp <i>0.2°C</i>	Temp Blank ☐ Y ☒ N ☐	On Ice ☐ Y ☒ N ☐	Payment Type CC ☐ Cash ☐ Check ☐		Amount \$	Receipt Number (cash/check only)		

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

(UBMC Ground Water)

SDG#:	H24100152
Number of Samples:	9
Sample Matrix:	(9) Ground Water
Applicable Analytes:	(9) pH, Conductivity, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity: (Total Alkalinity, Bicarbonate, and Carbonate), Chloride, Sulfate, Hardness, Dissolved Metals: (Al, As, Cd, Ca, Cu, Fe, Pb, Mg, Mn, K, Na, & Zn)
Reporting Tier:	3
Laboratory:	Energy Laboratories
Validation Level:	EPA Level III
Validator Affiliation:	North Wind Portage
Project#:	UBMC
Project SAP/QUAPP:	Final Sampling and Analysis Plan for Environmental Monitoring of Upper Blackfoot Mining Complex Lewis and Clark County, Montana; Portage Inc., Current Revision

Data Review

This review is based on Project requirements, the requirements of the analytical methods, quality assurance project plan (QAPP), and validator technical judgment. The validation of this data was performed according to:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006, January 2020.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, Document Number ILM04.0, January 2000.
- USEPA Office of Research and Development., 1993 and Updates, Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600-R-93-100, August.

The findings of this validation effort are summarized in the Overall Assessment (Section 16) at the end of this report. Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
MHMW-10	H24100152-001	Field Blank	Ground Water	09/26/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
MHMW-11	H24100152-002	Equipment Blank	Ground Water	09/26/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
MW-2018-01	H24100152-003	Field Sample	Ground Water	09/26/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
MW-2018-03	H24100152-004	Field Sample	Ground Water	09/26/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24

1. Samples Submitted and Analyses Requested						
Sample ID	Lab ID	Type	Matrix	Sample Date	Method(s)	Analysis Date
MW-2019-04	H24100152-005	Field Sample	Ground Water	09/27/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
MW-2019-05	H24100152-006	Field Sample	Ground Water	09/27/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
LCMW-5	H24100152-007	Field Sample	Ground Water	10/01/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
LCMW-1	H24100152-008	Field Blank	Ground Water	10/01/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24
MHMW-9	H24100152-009	Field Duplicate (LCMW-1)	Ground Water	10/01/24	SM 4500-H B	10/03/24*
					SM 2510 B	10/03/24
					SM 2540 D	10/03/24
					SM 2540 C	10/03/24
					SM 2320 B	10/09/24
					EPA 300.0	10/10/24
					SM2340 B	10/13/24
					EPA 200.7	10/03/24
					EPA 200.8	10/09/24 & 10/10/24

*Indicates missed holding time

2. Reviewer Preliminary Comments
Review Type: ☐ Level IV (Level 3 or 4) ☒ Level III (Level 2b) ☐ Level II (Level 2a)
Confirm that narrative is present and complete; note overall initial indications.
Nine (9) groundwater samples were submitted to Energy Laboratories for analysis of pH, conductivity, TSS, TDS, alkalinity, acidity, anions, hardness, and dissolved metals by the methods listed above. The samples were received intact by the laboratory on 10/02/24 properly cooled to 0.2°C.
The following qualifier(s) was(were) used by the laboratory on the laboratory's Certificate of Analysis:
ND Analyte was not detected above the reporting and/or detection limit (RL/DL).

NQ = No Qualification

3. Data Package/Project Review	Y	N	NA
Where all laboratory quality control procedures complied with?	X		
Are the reported units appropriate for the sample matrix (i.e. at or below screening levels)?	X		
Do the analytical methods comply with project requirements: (i.e. in the SAP, work plan, or QAPP)	X		
What laboratory qualifier(s) was (were) used by the laboratory on the laboratory's Certificate of Analysis? (List Below)			
U Analyte was not detected above the reporting and/or detection limit (RL/DL).			

Reviewer's Comments: All acceptable. No qualifications warranted.

4. Custody of Samples	Y	N	Q
Are samples traceable through inspection of signature records on field and laboratory chains of custody?	X		NQ
Do the laboratory reports include all constituents requested to be analyzed on the chain-of-custody, or under the sampling plan, or other applicable document?	X		
Action: For any samples not traceable upon inspection of verification report and chains of custody, indicate the identities and where the break in traceability occurred. Qualify samples not traceable "R." Indicate which samples were affected in validation comments.			

Reviewer's Comments: Field and internal custody forms appear to be complete and are traceable.

5. Holding Times and Sample Preservation	Y	N	NA
Metals & Wet Chemistry: Were samples maintained at ≤6° C aqueous or solid matrices? (Note: Some wet chemistry methods require the samples to be cooled at ≤4° C).	X		
Metals: Were aqueous samples preserved to a pH <2; if required per the analytical method?	X		
Wet Chemistry: Were samples preserved in accordance with the analytical method?		X	
Were samples prepared and analyzed within the required holding time per the analytical method?	X		

5. Holding Times and Sample Preservation	Y	N	NA
Inspect narrative, receipt logs, etc. Does the information indicate that there were no significant problems with sample handling/naming? Were soils <50% moisture?	X		
Action: Indicate affected samples in validation comments.			

Reviewer's Comments: Receipt logs indicate that samples were received intact, and cooler temperatures were acceptable upon receipt for metals samples. Holding times were met for all preparatory and analytical processes with the exception of pH. No qualifications were appended to the remaining associated sample results due to holding time and preservation considerations.

The pH results for the samples were analyzed on 10/03/24, between 2 and 7 days from collection and outside of the collection to analysis holding time. In the professional judgment of the validator, all pH results have been qualified with a 'J-' validation flag as the holding time was exceeded.

6. Sample Preparation			Y	N	NA
Are preparation logs for all samples present in the data package?					
For metals, if water samples are not digested, were they filtered and then acidified, in the field or lab?			X		
Identify the preparation method(s) used:			X		
	Matrix	Method(s) (record # or NA)			
	Water	EPA 200.2/200.7/200.8			
	Soil/Solid				
	Oil				
Action: Contact laboratory for clarifications, as needed; use professional judgment to determine any effects on the sample results as reported.					

Reviewer's Comments: The metals and mercury results were prepared in accordance with EPA Methods 200.2, 200.7, 200.8. A review of the Case narrative and associated prep logs did not indicate any anomalies during the preparatory process. No qualifications were appended to the associated sample results due to review and evaluation of preparatory information.

7. ICP Calibration	Y	N	NA
Are calibration data for ICP present in the data submittal?	X		
Is a calibration curve generated each time the instrument is used for sample analysis?	X		
At a minimum, are a single standard and blank run to calibrate the instrument?	X		
Alternatively is a calibration curve, consisting of at least a blank and 3 non-zero standards, developed? (Fewer standards may be used provided low-level verification criteria are met.)	X		
If a calibration curve is used, is the linear correlation coefficient ≥ 0.998 ?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification (LLICV, PQL, or CRDL) standard run?	X		
Are the LLICV (PQL/CRDL) standard recoveries within $\pm 30\%$ of the reference values?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard run after every 10 samples?	X		
Are the mid-level CCV standard recoveries within $\pm 10\%$ of reference values?	X		
Is an LLCCV (PQL/CRDL) standard run at the end of each analytical sequence?			X

7. ICP Calibration	Y	N	NA
Are the LLCCV (PQL/CRDL) standard recoveries within $\pm 30\%$ of reference values?			X
Is a standard at the upper limit of the linear dynamic range (LDR) analyzed in the sequence?			X
Are the LDR standard recoveries within $\pm 10\%$ of the true values?			X
Are samples that exceed the established calibration range or LDR for one or more target analytes diluted and re-analyzed?			X
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

8. ICP/MS Calibration	Y	N	NA
Are calibration data for ICP/MS present in the data submittal?	X		
Does the instrument have a mass range from at least 6 to 240 amu?	X		
Are mass calibration checks conducted in the mass regions of interest using tuning solutions?	X		
Does mass calibration differ more than 0.1 amu from true value?	X		
Is the resolution less than 0.9 amu full-width at 10% peak height?	X		
Is a single standard and blank run as a minimum to calibrate the instrument?	X		
Alternatively , is a calibration curve developed?	X		
If a calibration curve is used, is the coefficient of correlation ≥ 0.998 ?	X		
If a second-order equation is used for initial calibration, are the recoveries of each standard within $\pm 10\%$ of reference value ($\pm 30\%$ for the low standard)	X		
Is no greater than a second-order equation used to generate the initial calibration curve?	X		
Is the ICV prepared from a source differing from that used to calibrate the instrument?	X		
Is the ICV recovery within $\pm 10\%$ of reference value?	X		
Is a low-level initial calibration verification standard (e.g., CRDL standard) run?	X		
Are CRDL standard %Rs within $\pm 30\%$ of the reference values?	X		
Is a lower limit of quantitation check sample run at the end of an analytical sequence? (EPA 6020 only)	X		
Is the lower limit of quantitation check sample recovery within $\pm 30\%$ of reference value?	X		
Is a mid-level Continuing Calibration Verification (CCV) standard prepared in the same matrix using the same standards as the calibration standards?	X		
Is a mid-level CCV standard run for every 10 samples?			X
Is the mid-level CCV standard recovery within $\pm 10\%$ of reference value?			X
Are samples that exceed the linear dynamic range diluted or reanalyzed on an alternate mass?	X		
Is the upper limit of the calibration range verified by running a standard at the upper limit of the dynamic range and are recoveries within 10% of the true values?	X		
If a calibration curve is generated for initial calibration, are results reported below the calibration range defined by the lowest standard in the calibration curve?	X		
Are sample results reported above the calibration range defined by the highest concentration standard in the calibration curve?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

9. Calibration for Wet Chemistry Analyses (if Applicable)	Y	N	NA
Are initial and continuing calibration results included in the data package?	X		
Were at least 4 standards used to calibrate the instrument?	X		
Were the initial calibration standards run in order of decreasing concentration?	X		
Were appropriate initial calibration standard concentrations used?	X		
Is the initial calibration correlation coefficient (linear regression) ≥ 0.995 ?	X		
Was an ICV standard (second source) run immediately after initial calibration?	X		
Was the target analyte recovery in the ICV within $\pm 10\%$ of reference value?	X		
Was a CCV run after every 10 samples, or at least once every two hours?	X		
Were CCV recoveries within $\pm 10\%$ of the reference value?	X		
Was the system recalibrated and affected samples re-analyzed if the ICV or a CCV was outside acceptance criteria?	X		

Reviewer Comments: All ICV/CCV recovery results were acceptable. No other qualifications were appended to the associated sample results due to calibration considerations.

10. Blanks	Y	N	NA
Are method/preparation blank (MB/PB) and calibration blank (CCB) data present in the data submittal?	X		
Was an MB/PB prepared for each batch of up to 20 samples?	X		
Was the MB/PB the same matrix as the analytical samples?	X		
Was the MB/PB taken through the same process as the associated samples?	X		
Were any target analytes detected above the RL or MDL in the MB/PB?	X		
Was a CCB run after every 10 samples in each analytical sequence?	X		
Were any target analytes detected above the RL or MDL in the CCBs?		X	
Was reported blank contamination confirmed in the raw data?	X		
Were sample results verified as uncorrected for blank concentrations?	X		
Equipment/Trip or Field Blanks			
If required by the QAPP, is the number of sample blanks (i.e. equipment, trip or field blanks) equal to at least 10% of the total number of samples, or as otherwise required?	X		
Were any target analytes detected above the RL or MDL in the equipment, trip, or field blanks?	X		

Reviewer Comments: Positive detections were noted in the preparation blanks for potassium and copper. Data assessment was performed in accordance with the USEPA Functional guidelines and associated methods and is as follows:

- The potassium have been left unqualified as the sample results were either $>QL$ and $\geq 10x$ the blank concentration or non-detect. No qualifications necessary.
- Copper in samples MW-2019-04 and MW-2019-05 have been qualified with a 'J+' validation flag as the sample results were $>QL$, but $<10x$ the blank concentration.
- The remaining method blank results were non-detect at a level less than their respective MDLs and no qualification is warranted.

11. Interference Check Sample (Metals Only)	Y	N	NA
Are interference check standard (ICSA/ICSAB) data present in the data submittal?	X		
Are interelement correction factors verified and updated every 6 months?	X		
Is an ICSA/ICSAB pair analyzed on a daily basis, at the beginning of each analysis sequence?	X		
Were the ICSAB recoveries within acceptance criteria of 80-120%?	X		
Were absolute values of ICSA results for unspiked analytes less than half of the practical quantitation limit (PQL)? <i>Note: if the laboratory identifies known contaminants in the ICSA solution, the acceptance limit should be increased to 0.5PQL plus the known contaminant concentration.</i>	X		

Reviewer Comments: Interference check standard recovery results were acceptable. No qualifications were appended to the associated sample results as a result of review and evaluation of these QC standards.

12. Pre-digestion Spike (Matrix Spike)	Y	N	NA
Are matrix spike (MS) data present in the data submittal?	X		
Have field or equipment blanks been used for the MS or MS/MSD analyses?	X		
Was an MS or MS/MSD included with each batch of samples prepared (i.e. 1 for every 20 samples)?	X		
Is the MS or MS/MSD taken through a process identical to that of the associated samples?	X		
Are spiking levels at approximately mid-point on the calibration curve?	X		
Metals			
Were target analyte recoveries in the MS within $\pm 25\%$ ($\pm 20\%$ for Hg) of known value?	X		
If recoveries are not within $\pm 25\%$ (or $\pm 20\%$) was a post-digestion spike analyzed?	X		
Were target analyte recoveries within $\pm 20\%$ of reference value in the post-digestion spike?	X		
If the post-digest spike recovery fails, was a dilution test run on the sample?	X		
Wet Chemistry			
Did the MS recoveries meet the laboratory-generated or method-specified acceptance criteria?	X		

Reviewer Comments: MS/MSD sample were obtained from project field samples. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries and precision criteria were met per the associated analytical methods and USEPA Functional Guidelines

13. Laboratory Control Sample	Y	N	NA
Are laboratory control sample (LCS) data present in the data submittal?	X		
Was a laboratory control sample prepared with each sample batch?	X		
Was an aqueous LCS prepared for aqueous sample batches?	X		
Was a solid LCS prepared for solid sample batches?			X
Is the LCS taken through a process identical to that of the associated samples?	X		
Were recoveries within acceptance criteria? (80-120% for aqueous and manufacturer's control limits for solids)?	X		

Reviewer Comments: All LCS recoveries were within the acceptance criteria. No qualifications were appended to the associated sample results.

14. Laboratory Duplicate (or MSD)	Y	N	NA
Are duplicate or duplicate spiked (MSD) sample results reported?	X		
Have field or equipment blanks been used for the duplicate analysis?		X	
Was the laboratory duplicate (or MSD) prepared for each batch of up to 20 samples?	X		
Is the laboratory duplicate (MSD) taken through a process identical to that of the associated samples?	X		
Were reported precision estimates within acceptance criteria ($RPD \leq 20\%$ for water and $\leq 35\%$ for soils when results are $\geq 5x$ PQL, or $\pm PQL$ when results are between PQL and $5x$ PQL)?	X		

Reviewer Comments: All laboratory duplicate results were within the RPD criteria and were run at the proper frequency (1 duplicate per 20 samples) as prescribed by the USEPA Functional Guidelines and the analytical methods.

15. Field Duplicate	Y	N	NA
Was field duplicate pair collected for this SDG?		X	
Were field duplicate samples collected at a frequency of one for every 20 primary samples? (Per Project QAPP)	X		
Were reported precision estimates within project acceptance criteria $RPD \leq 20\%$? (Per Project QAPP)			X

Reviewer Comments: MHMW-9 and LCMW-1 were the field duplicate pair for this SDG. The field duplicate result for conductivity (26.2%) and sodium (22.2%) were outside of the 20% acceptance criteria. Qualifications are as follows:

- Conductivity in samples MHMW-9 and LCMW-1 have been qualified with a 'J' validation flag as the sample and/or duplicate results were $>5x$ the RL.
- Sodium has been left unqualified as the sample and/or duplicate were $<5x$ the PQL and the absolute difference between the sample and duplicate was $<PQL$.
- The remaining field duplicate results were within the 20% RPD for aqueous samples. No qualifications necessary.

Analyte	Sample	Duplicate	RPD
pH	6.8	6.8	0.00%
Conductivity	302	232	26.2%
TSS	ND	ND	0.00%
TDS	157	147	6.58%
Total Alkalinity	55	56	1.80%
Bicarbonate	67	67	0.00%
Carbonate	ND	ND	0.00%
Chloride	1	1	0.00%
Sulfate	53	52	1.90%
Hardness	97	100	3.05%
Aluminum	ND	ND	0.00%
Arsenic	ND	ND	0.00%
Cadmium	0.00164	0.00161	1.85%
Calcium	21	22	4.65%

Analyte	Sample	Duplicate	RPD
Copper	0.016	0.016	0.00%
Iron	0.18	0.19	5.41%
Lead	ND	ND	0.00%
Magnesium	10	11	9.52%
Manganese	0.032	0.031	3.17%
Potassium	1	1	0.00%
Sodium	4	5	22.2%
Zinc	0.09	0.09	0.00%

$$RPD = [|S-D| / (S+D)] \times 200\%$$

16. Serial Dilution Analysis (Metals/Hg Only)	Y	N	NA
Are serial dilution data present in the data submittal?	X		
Have field or equipment blanks been used for the serial dilution analysis?	X		
Is one serial dilution analysis performed for each matrix in every batch with a minimum of one serial dilution per twenty samples?	X		
For analytes at initial concentrations >50x MDL, was the serial dilution %D <20%?	X		

Reviewer Comments: The SDS results were within the 10 %D acceptance criteria.

17. Method Quantitation Limits	Y	N	NA
Does the method quantitation limit (established by the lowest concentration calibration standard) meet project requirements?	X		
Are only those results that fall between the lowest and highest calibration standards reported (i.e., no "J" values or values between the MDL and low standard or above the high standard)? (QSAS, Sections 5.5.2.2.1.f) and 5.5.2.2.1.g)) (Method 8000, Section 7.4)	X		

18. Sample Result Verification (EPA Level IV Validation only)
<i>For the following evaluations, some qualification of sample data may be possible. For contractual noncompliance, the validator will discuss in overall comments, and qualify if the occurrence is significant and non-correctable.</i>
1. Recalculate 2 or more selected results from raw data. NA
2. Did recalculation confirm reported results? NA If not, increase the frequency of recalculations until adequate confidence is gained in the reported results.
3. Were initial sample volumes equivalent to final digestate volumes for ICP and GFAA digestions, or were sample results corrected for differences in volumes? NA
4. Were results from diluted samples corrected for the dilution factor? NA
5. If ICPAES was used for As, Pb, Se, and Tl (formerly GFAA) were the results > 5 X the ICP IDL, and were contract required limits satisfied? (i.e., was there sufficient sensitivity for these analytes?) NA
6. Are results reported with up to three significant figures? NA
Action: Indicate instances of manual calculations not confirming reported results.
Action: Comment on any anomalies not noted up to this point and include their impact in the overall comments and qualification decisions.

Reviewer Comments: No comments.

19. Metals/Inorganics Analytical Data Flags:

The following table provides data qualifiers used in **validation**.

U	The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.
J	The analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
J+	The analyte was positively identified and the result is an estimated quantity, but the result may be biased high.
J-	The analyte was positively identified and the result is an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was positively detected in an associated blank as well as in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

20. Overall Comments:

Overall, the data meet the requirements and intent of the methods, indicate the preparatory process and analytical system were in control at the time of sample analysis, and the reported laboratory results are of sufficient quality for their intended purpose.

Lab ID	Field Sample ID	Analyte	Qualifiers	Reason*
All	All	pH	J-	Exceeded holding time
MW-2019-04 and MW-2019-05	H24100152-005 and H24100152-006	Cu	J+	Preparation Blank
MHMW-9 and LCMW-1	H24100152-008 and H24100152-009	Conductivity	J	High Field Duplicate RPD

* List the reason(s) for the qualification and if the issue bias the results high or low

Data Validator	Data Validation Reviewer
Name: Lyndsi Bourne	Name: Jennifer Norman
Title: Staff Scientist	Title: Chemist
Company: Northwind Portage	Company: Northwind Portage
Date: 11/11/2024	Date: 11/13/24



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-10
Lab ID: H24100152-001
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 14:10 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.0	s.u.	H	0.1		A4500-H B	10/03/24 11:39 / eer		PHSC_101-H_241003A : 26		R199110
pH Measurement Temp	15.5	°C				A4500-H B	10/03/24 11:39 / eer		PHSC_101-H_241003A : 26		R199110
Conductivity @ 25 C	ND	umhos/cm		5		A2510 B	10/03/24 11:39 / eer		PHSC_101-H_241003A : 27		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:07 / ctl		PHSC_101-H_241003A : 6		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	10/03/24 15:35 / ctl		PHSC_101-H_241003B : 5		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	ND	mg/L		4		A2320 B	10/09/24 18:17 / dpw		PHSC_101-H_241009A : 229		R199301
Bicarbonate as HCO ₃	ND	mg/L		4		A2320 B	10/09/24 18:17 / dpw		PHSC_101-H_241009A : 229		R199301
Carbonate as CO ₃	ND	mg/L		4		A2320 B	10/09/24 18:17 / dpw		PHSC_101-H_241009A : 229		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 13:23 / eer		IC METROHM_241010A : 15		R199422
Sulfate	ND	mg/L		1		E300.0	10/10/24 13:23 / eer		IC METROHM_241010A : 15		R199422
Hardness as CaCO ₃	ND	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 1		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Cadmium	ND	mg/L		0.00008		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Calcium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:49 / dck		ICPMS205-H_241010B : 60		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Magnesium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Sodium	ND	mg/L		1		E200.7	10/03/24 09:18 / slj		ICP2-HE_241003A : 31		R199174
Zinc	ND	mg/L		0.01		E200.8	10/09/24 18:40 / dck		ICPMS205-H_241008A : 180		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-11
Lab ID: H24100152-002
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 14:23 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.0	s.u.	H	0.1		A4500-H B	10/03/24 11:41 / eer		PHSC_101-H_241003A : 28		R199110
pH Measurement Temp	15.4	°C				A4500-H B	10/03/24 11:41 / eer		PHSC_101-H_241003A : 28		R199110
Conductivity @ 25 C	ND	umhos/cm		5		A2510 B	10/03/24 11:41 / eer		PHSC_101-H_241003A : 29		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:08 / ctl		PHSC_101-H_241003A : 7		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	L	20		A2540 C	10/03/24 15:35 / ctl		PHSC_101-H_241003B : 6		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
TDS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	ND	mg/L		4		A2320 B	10/09/24 18:21 / dpw		PHSC_101-H_241009A : 231		R199301
Bicarbonate as HCO ₃	ND	mg/L		4		A2320 B	10/09/24 18:21 / dpw		PHSC_101-H_241009A : 231		R199301
Carbonate as CO ₃	ND	mg/L		4		A2320 B	10/09/24 18:21 / dpw		PHSC_101-H_241009A : 231		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 13:38 / eer		IC METROHM_241010A : 16		R199422
Sulfate	ND	mg/L		1		E300.0	10/10/24 13:38 / eer		IC METROHM_241010A : 16		R199422
Hardness as CaCO ₃	ND	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 2		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Cadmium	ND	mg/L		0.00008		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Calcium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:53 / dck		ICPMS205-H_241010B : 61		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Magnesium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Sodium	ND	mg/L		1		E200.7	10/03/24 09:33 / slj		ICP2-HE_241003A : 35		R199174
Zinc	ND	mg/L		0.01		E200.8	10/09/24 18:43 / dck		ICPMS205-H_241008A : 181		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level
L -Lowest available reporting limit for the analytical method used and/or volume submitted

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-01
Lab ID: H24100152-003
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 15:38 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.6	s.u.	H	0.1		A4500-H B	10/03/24 11:44 / eer		PHSC_101-H_241003A : 30		R199110
pH Measurement Temp	15.5	°C				A4500-H B	10/03/24 11:44 / eer		PHSC_101-H_241003A : 30		R199110
Conductivity @ 25 C	626	umhos/cm		5		A2510 B	10/03/24 11:44 / eer		PHSC_101-H_241003A : 31		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:08 / ctl		rius-BCA124-1S_241003A : 8		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	453	mg/L		20		A2540 C	10/03/24 15:35 / ctl		rius-BCA124-1S_241003B : 7		TDS20241003A
INORGANICS											
Alkalinity, Total as CaCO3	37	mg/L		4		A2320 B	10/09/24 18:25 / dpw		PHSC_101-H_241009A : 233		R199301
Bicarbonate as HCO3	45	mg/L		4		A2320 B	10/09/24 18:25 / dpw		PHSC_101-H_241009A : 233		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:25 / dpw		PHSC_101-H_241009A : 233		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 13:52 / eer		IC METROHM_241010A : 17		R199422
Sulfate	271	mg/L		1		E300.0	10/10/24 13:52 / eer		IC METROHM_241010A : 17		R199422
Hardness as CaCO3	327	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 3		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Cadmium	0.00249	mg/L		0.00008		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Calcium	63	mg/L		1		E200.7	10/03/24 09:37 / slj		ICP2-HE_241003A : 36		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:56 / dck		ICPMS205-H_241010B : 62		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Magnesium	41	mg/L		1		E200.7	10/03/24 09:37 / slj		ICP2-HE_241003A : 36		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Potassium	ND	mg/L		1		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288
Sodium	2	mg/L		1		E200.7	10/03/24 09:37 / slj		ICP2-HE_241003A : 36		R199174
Zinc	0.75	mg/L		0.01		E200.8	10/09/24 18:46 / dck		ICPMS205-H_241008A : 182		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2018-03
Lab ID: H24100152-004
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/26/24 16:38
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.4	s.u.	H	0.1		A4500-H B	10/03/24 11:46 / eer		PHSC_101-H_241003A : 32		R199110
pH Measurement Temp	15.2	°C				A4500-H B	10/03/24 11:46 / eer		PHSC_101-H_241003A : 32		R199110
Conductivity @ 25 C	268	umhos/cm		5		A2510 B	10/03/24 11:46 / eer		PHSC_101-H_241003A : 33		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:08 / ctl		rius-BCA124-1S_241003A : 9		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	158	mg/L		20		A2540 C	10/03/24 15:35 / ctl		rius-BCA124-1S_241003B : 8		TDS20241003A
INORGANICS											
Alkalinity, Total as CaCO3	110	mg/L		4		A2320 B	10/09/24 18:32 / dpw		PHSC_101-H_241009A : 235		R199301
Bicarbonate as HCO3	130	mg/L		4		A2320 B	10/09/24 18:32 / dpw		PHSC_101-H_241009A : 235		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:32 / dpw		PHSC_101-H_241009A : 235		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 14:06 / eer		IC METROHM_241010A : 18		R199422
Sulfate	32	mg/L		1		E300.0	10/10/24 14:06 / eer		IC METROHM_241010A : 18		R199422
Hardness as CaCO3	135	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 4		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Cadmium	0.00032	mg/L		0.00008		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Calcium	28	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Copper	ND	mg/L		0.001		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 21:59 / dck		ICPMS205-H_241010B : 63		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Magnesium	16	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Sodium	1	mg/L		1		E200.7	10/03/24 09:41 / slj		ICP2-HE_241003A : 37		R199174
Zinc	0.05	mg/L		0.01		E200.8	10/09/24 18:49 / dck		ICPMS205-H_241008A : 183		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2019-04
Lab ID: H24100152-005
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/27/24 09:45
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.4	s.u.	H	0.1		A4500-H B	10/03/24 11:48 / eer		PHSC_101-H_241003A : 34		R199110
pH Measurement Temp	15.2	°C				A4500-H B	10/03/24 11:48 / eer		PHSC_101-H_241003A : 34		R199110
Conductivity @ 25 C	246	umhos/cm		5		A2510 B	10/03/24 11:48 / eer		PHSC_101-H_241003A : 35		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 10		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	141	mg/L		20		A2540 C	10/03/24 15:35 / ctl		rius-BCA124-1S_241003B : 9		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	100	mg/L		4		A2320 B	10/09/24 18:38 / dpw		PHSC_101-H_241009A : 237		R199301
Bicarbonate as HCO3	130	mg/L		4		A2320 B	10/09/24 18:38 / dpw		PHSC_101-H_241009A : 237		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:38 / dpw		PHSC_101-H_241009A : 237		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 15:18 / eer		IC METROHM_241010A : 23		R199422
Sulfate	23	mg/L		1		E300.0	10/10/24 15:18 / eer		IC METROHM_241010A : 23		R199422
Hardness as CaCO3	127	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 5		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Cadmium	0.00025	mg/L		0.00008		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Calcium	28	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Copper J+	0.001	mg/L		0.001		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 22:02 / dck		ICPMS205-H_241010B : 64		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Magnesium	14	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288
Potassium	ND	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Sodium	2	mg/L		1		E200.7	10/03/24 09:45 / slj		ICP2-HE_241003A : 38		R199174
Zinc	0.04	mg/L		0.01		E200.8	10/09/24 18:52 / dck		ICPMS205-H_241008A : 184		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MW-2019-05
Lab ID: H24100152-006
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 09/27/24 11:24
DateReceived: 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	7.4	s.u.	H	0.1		A4500-H B	10/03/24 11:49 / eer		PHSC_101-H_241003A : 36		R199110
pH Measurement Temp	15.4	°C				A4500-H B	10/03/24 11:49 / eer		PHSC_101-H_241003A : 36		R199110
Conductivity @ 25 C	418	umhos/cm		5		A2510 B	10/03/24 11:49 / eer		PHSC_101-H_241003A : 37		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 11		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	267	mg/L		20		A2540 C	10/03/24 15:35 / ctl		ius-BCA124-1S_241003B : 10		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	96	mg/L		4		A2320 B	10/09/24 18:45 / dpw		PHSC_101-H_241009A : 239		R199301
Bicarbonate as HCO3	120	mg/L		4		A2320 B	10/09/24 18:45 / dpw		PHSC_101-H_241009A : 239		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:45 / dpw		PHSC_101-H_241009A : 239		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 15:33 / eer		IC METROHM_241010A : 24		R199422
Sulfate	113	mg/L		1		E300.0	10/10/24 15:33 / eer		IC METROHM_241010A : 24		R199422
Hardness as CaCO3	191	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 6		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Cadmium	0.00110	mg/L		0.00008		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Calcium	42	mg/L		1		E200.7	10/03/24 09:58 / slj		ICP2-HE_241003A : 41		R199174
Copper J+	0.001	mg/L		0.001		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Iron	ND	mg/L		0.05		E200.8	10/10/24 22:05 / dck		ICPMS205-H_241010B : 65		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Magnesium	21	mg/L		1		E200.7	10/03/24 09:58 / slj		ICP2-HE_241003A : 41		R199174
Manganese	ND	mg/L		0.005		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Potassium	1	mg/L		1		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288
Sodium	11	mg/L		1		E200.7	10/03/24 09:58 / slj		ICP2-HE_241003A : 41		R199174
Zinc	0.14	mg/L		0.01		E200.8	10/09/24 18:56 / dck		ICPMS205-H_241008A : 185		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-5
Lab ID: H24100152-007
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 10/01/24 13:00 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.0	s.u.	H	0.1		A4500-H B	10/03/24 11:51 / eer		PHSC_101-H_241003A : 38		R199110
pH Measurement Temp	15.2	°C				A4500-H B	10/03/24 11:51 / eer		PHSC_101-H_241003A : 38		R199110
Conductivity @ 25 C	710	umhos/cm		5		A2510 B	10/03/24 11:51 / eer		PHSC_101-H_241003A : 39		R199110
Solids, Total Suspended TSS @ 105 C	11	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 12		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	541	mg/L		20		A2540 C	10/03/24 15:35 / ctl		ius-BCA124-1S_241003B : 11		TDS20241003A
INORGANICS											
Alkalinity, Total as CaCO3	14	mg/L		4		A2320 B	10/09/24 18:58 / dpw		PHSC_101-H_241009A : 243		R199301
Bicarbonate as HCO3	17	mg/L		4		A2320 B	10/09/24 18:58 / dpw		PHSC_101-H_241009A : 243		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 18:58 / dpw		PHSC_101-H_241009A : 243		R199301
Chloride	ND	mg/L		1		E300.0	10/10/24 15:47 / eer		IC METROHM_241010A : 25		R199422
Sulfate	325	mg/L		1		E300.0	10/10/24 15:47 / eer		IC METROHM_241010A : 25		R199422
Hardness as CaCO3	306	mg/L		1		A2340 B	10/10/24 14:53 / slj		WATERCALC_241010A : 8		R199369
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Cadmium	0.0120	mg/L		0.00008		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Calcium	80	mg/L		1		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Copper	0.021	mg/L		0.001		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Iron	16.1	mg/L		0.05		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Lead	0.0005	mg/L		0.0005		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Magnesium	26	mg/L		1		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Manganese	6.29	mg/L		0.005		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Potassium	3	mg/L		1		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288
Sodium	6	mg/L		1		E200.7	10/03/24 10:02 / slj		ICP2-HE_241003A : 42		R199174
Zinc	0.64	mg/L		0.01		E200.8	10/09/24 19:08 / dck		ICPMS205-H_241008A : 189		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: LCMW-1
Lab ID: H24100152-008
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 10/01/24 14:05 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J	6.8	s.u.	H	0.1		A4500-H B	10/03/24 11:53 / eer		PHSC_101-H_241003A : 40		R199110
pH Measurement Temp	15.4	°C				A4500-H B	10/03/24 11:53 / eer		PHSC_101-H_241003A : 40		R199110
Conductivity @ 25 C J	302	umhos/cm		5		A2510 B	10/03/24 11:53 / eer		PHSC_101-H_241003A : 41		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:09 / ctl		ius-BCA124-1S_241003A : 13		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	157	mg/L		20		A2540 C	10/03/24 15:36 / ctl		ius-BCA124-1S_241003B : 12		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO ₃	55	mg/L		4		A2320 B	10/09/24 19:04 / dpw		PHSC_101-H_241009A : 245		R199301
Bicarbonate as HCO ₃	67	mg/L		4		A2320 B	10/09/24 19:04 / dpw		PHSC_101-H_241009A : 245		R199301
Carbonate as CO ₃	ND	mg/L		4		A2320 B	10/09/24 19:04 / dpw		PHSC_101-H_241009A : 245		R199301
Chloride	1	mg/L		1		E300.0	10/10/24 16:02 / eer		IC METROHM_241010A : 26		R199422
Sulfate	53	mg/L		1		E300.0	10/10/24 16:02 / eer		IC METROHM_241010A : 26		R199422
Hardness as CaCO ₃	97	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 7		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Cadmium	0.00164	mg/L		0.00008		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Calcium	21	mg/L		1		E200.7	10/03/24 10:06 / slj		ICP2-HE_241003A : 43		R199174
Copper	0.016	mg/L		0.001		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Iron	0.18	mg/L		0.05		E200.8	10/10/24 22:09 / dck		ICPMS205-H_241010B : 66		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Magnesium	10	mg/L		1		E200.7	10/03/24 10:06 / slj		ICP2-HE_241003A : 43		R199174
Manganese	0.032	mg/L		0.005		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Potassium	1	mg/L		1		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288
Sodium	4	mg/L		1		E200.7	10/03/24 10:06 / slj		ICP2-HE_241003A : 43		R199174
Zinc	0.09	mg/L		0.01		E200.8	10/09/24 19:11 / dck		ICPMS205-H_241008A : 190		R199288

LSB 11/14/24

Report RL - Analyte Reporting Limit
Definitions: H - Analysis performed past the method holding time

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Client Sample ID: MHMW-9
Lab ID: H24100152-009
Matrix: Aqueous

Project: UBMC Groundwater
Collection Date: 10/01/24 14:53 **DateReceived:** 10/02/24
Report Date: 10/14/24

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH J-	6.8	s.u.	H	0.1		A4500-H B	10/03/24 11:55 / eer		PHSC_101-H_241003A : 42		R199110
pH Measurement Temp	15.8	°C				A4500-H B	10/03/24 11:55 / eer		PHSC_101-H_241003A : 42		R199110
Conductivity @ 25 C J	232	umhos/cm		5		A2510 B	10/03/24 11:55 / eer		PHSC_101-H_241003A : 43		R199110
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/03/24 15:10 / ctl		ius-BCA124-1S_241003A : 14		TSS20241003A
Solids, Total Dissolved TDS @ 180 C	147	mg/L		20		A2540 C	10/03/24 15:36 / ctl		ius-BCA124-1S_241003B : 13		TDS20241003A
TSS did not obtain the minimum residue requirement of 2.5 mg residue.											
INORGANICS											
Alkalinity, Total as CaCO3	56	mg/L		4		A2320 B	10/09/24 19:11 / dpw		PHSC_101-H_241009A : 247		R199301
Bicarbonate as HCO3	67	mg/L		4		A2320 B	10/09/24 19:11 / dpw		PHSC_101-H_241009A : 247		R199301
Carbonate as CO3	ND	mg/L		4		A2320 B	10/09/24 19:11 / dpw		PHSC_101-H_241009A : 247		R199301
Chloride	1	mg/L		1		E300.0	10/10/24 16:16 / eer		IC METROHM_241010A : 27		R199422
Sulfate	52	mg/L		1		E300.0	10/10/24 16:16 / eer		IC METROHM_241010A : 27		R199422
Hardness as CaCO3	100	mg/L		1		A2340 B	10/13/24 13:43 / slj		WATERCALC_241013A : 8		R199438
METALS, DISSOLVED											
Aluminum	ND	mg/L		0.03		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Arsenic	ND	mg/L		0.003		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Cadmium	0.00161	mg/L		0.00008		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Calcium	22	mg/L		1		E200.7	10/03/24 10:09 / slj		ICP2-HE_241003A : 44		R199174
Copper	0.016	mg/L		0.001		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Iron	0.19	mg/L		0.05		E200.8	10/10/24 22:12 / dck		ICPMS205-H_241010B : 67		R199429
Lead	ND	mg/L		0.0005		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Magnesium	11	mg/L		1		E200.7	10/03/24 10:09 / slj		ICP2-HE_241003A : 44		R199174
Manganese	0.031	mg/L		0.005		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Potassium	1	mg/L		1		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288
Sodium	5	mg/L		1		E200.7	10/03/24 10:09 / slj		ICP2-HE_241003A : 44		R199174
Zinc	0.09	mg/L		0.01		E200.8	10/09/24 19:15 / dck		ICPMS205-H_241008A : 191		R199288

LSB 11/14/24

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Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

Account Information (Billing Information)

Company/Name <u>MT DEQ</u>		
Contact <u>Amber Nichols</u>		
Phone <u>(406) 444-6569</u>		
Mailing Address		
City, State, Zip		
Email <u>amber.nichols@mt.gov</u>		
Receive Invoice	☐ Hard Copy ☐ Email	Receive Report ☐ Hard Copy ☐ Email
Purchase Order	Quote <u>1361</u>	Bottle Order <u>49366</u>

Report Information (If different than Account Information)

Company/Name		
Contact		
Phone		
Mailing Address		
City, State, Zip		
Email		
Receive Report ☐ Hard Copy ☐ Email		
Special Report/Formats:		
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other		

Comments

Please copy results to:
popp@northwindgrp.com

Project Information

Project Name, PWSID, Permit, etc. <u>UBMC Groundwater</u>	
Sampler Name <u>P. Opp</u>	Sampler Phone <u>(406) 461-3660</u>
Sample Origin State <u>MT</u>	EPA/State Compliance ☐ Yes ☐ No
URANIUM MINING CLIENTS MUST indicate sample type ☐ Unprocessed Ore ☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING ☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)	

Matrix Codes

A - Air
W - Water
S - Soils/
Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking
Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)		Collection		Number of Containers	Matrix (See Codes Above)	Analysis Requested										See Attached	RUSH TAT	ELI LAB ID Laboratory Use Only
		Date	Time															
1	MHMW-10	9/26/24	14:10	2	W											X		H24100152
2	MHMW-11	↓	14:23	↓	↓											↓		
3	MW-2018-01	↓	15:38	↓	↓											↓		
4	MW-2018-03	9/26/24	16:38	2	W											X		
5	MW-2019-04	9/27/24	9:45	2	W											X		
6	MW-2019-05	9/27/24	11:24	2	W											X		
7	LCMW-5	10/1/24	13:00	2	W											X		
8	LCMW-1	↓	14:05	↓	↓											↓		
9	MHMW-9	10/1/24	14:53	2	W											X		

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print) <u>Pebbles opp</u>	Date/Time <u>10/2/24 14:39</u>	Signature <u>Pebbles opp</u>	Received by (print)	Date/Time	Signature
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) <u>Taylor Jones</u>	Date/Time <u>10/2/24 14:39</u>	Signature <u>Taylor Jones</u>
LABORATORY USE ONLY						
Shipped By <u>Hand</u>	Cooler ID(s) <u>Y</u>	Custody Seals Y <u>N</u> C B	Intact Y N	Receipt Temp <u>0.2</u> °C	Temp Blank Y <u>N</u>	On Ice Y <u>N</u>
				Payment Type CC Cash Check	Amount \$	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.