MONTANA RESOURCES LLP

DATA REPORT FOR TSP AND PM_{10} MONITORING STATION AT GREELEY SCHOOL IN BUTTE, MONTANA

QUARTER 3, 2023

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CERTIFICATION OF DATA INTEGRITY

Bison Engineering, Inc. certifies the data in this report is an accurate summary of the air quality and meteorological conditions measured at the Greeley School ambient monitoring site. Every reasonable effort was made to obtain accurate and representative data and to comply with the procedures set forth in the project-specific *Quality Assurance Project Plan (QAPP)*, *State of Montana Ambient Air Monitoring Program Quality Assurance Project Plan (April 2013)*, and the Environmental Protection Agency's *Volume II: Ambient Air Quality Program (January 2017) and Volume IV: Meteorological Measurements.*

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1.0 INTRODUCTION

Particulate monitoring has been conducted in the Greeley School area for many years, since the days of the Anaconda Company operation during the 1970s. Montana Department of Environmental Quality (MDEQ) and Butte-Silver Bow (BSB) County are currently performing the following monitoring:

- Continuous monitoring for PM_{10} using a Met One Model 1020 Beta Attenuation Monitor (BAM-1020).

- Continuous monitoring for $PM_{2.5}$ using a second Met One BAM-1020.

- Episodic monitoring for $PM_{2.5}$ using a BGI Model PQ-200 sampler. This sampler collects particulate matter on a filter over a 24-hour period, which is subsequently analyzed gravimetrically to determine the average airborne $PM_{2.5}$ concentration during the sampling period. The filter is then analyzed by an EPA laboratory for trace elements and mineralized compounds. This episodic sampling is performed every six days, concurrent with EPA's national one-in-six-day sampling schedule.

- The Greeley School site includes meteorological instruments that measure wind speed, wind direction and temperature.

MDEQ/BSB's monitoring provides continuous, real-time hourly $PM_{2.5}$ and PM_{10} concentrations, as well as $PM_{2.5}$ chemical composition data. In March 2019 and at Montana Resources' (MR) request, Bison Engineering Inc. (Bison) installed additional collocated monitoring equipment at the Greeley School:

- Total Suspended Particulate Sampler: A Met One E-Sampler that continuously measures hourly total suspended particulate (TSP) concentrations using a nephelometric technique that relates light scattering to ambient particulate concentration. Additionally, the sampler includes a filter that is analyzed for total particulate mass and trace elements. Prior to this study, no ongoing TSP monitoring was being performed,

- PM_{10} Particulate Sampler: A BGI Model PQ-200 sampler that collects 24-hour inhalable particulate (PM_{10}) samples on a filter, concurrent with the EPA one-in-six-day sampling schedule. The filter is analyzed for particulate mass and for selected trace elements. The MDEQ BAM-1020 that is used for PM_{10} hourly monitoring does not produce a filter suitable for chemical analysis.

This report presents and analyzes the data collected during the third quarter of 2023. In addition, a description of the monitoring system operations is presented, together with summaries of quality assurance activities including calibrations and performance audits. Tabular summaries of data completeness and periods of missing and/or invalid data also are presented.

Figure 1: Greeley School / Montana Resources LLP Vicinity

2.0 MONITORING SYSTEM OPERATIONS

At MR's request, Bison currently operates two particulate monitors at the Greeley School site:[1]

- PM_{10} sampling is accomplished with a BGI PQ-2000 sampler using filters that collect particulate matter for a 24-hour period based on the EPA national one-in-six-day schedule. Those filters are analyzed gravimetrically, and for selected trace elements. The 24-hour PM_{10} averages from the filters also will be compared against concurrent hourly data from the MDEQ/BSB BAM-1020 monitor, to provide a check on data comparability.

- TSP measurements are accomplished with a Met One AC-powered E-Sampler. It includes an external relative humidity sensor, as well as ambient temperature and pressure sensors housed within the sampler. The TSP sampler is not an EPA Reference or Equivalent Method[2] sampler, and this monitoring does not attempt to determine compliance with the historic TSP standard that was superseded by a PM_{10} standard in 1987. However, the E-Sampler provides hourly estimated TSP measurements that may be compared with on-site wind data to indicate primary TSP source areas. Additionally, it includes a particulate filter suitable for gravimetric and chemical analysis. Because the E-Sampler operates at a flowrate of only 2.0 liters per minute, sampling filters were exposed for periods ranging from 5-8 days so that sufficient particulate mass was collected for chemical analysis. Additionally, the E-Sampler includes a cellular modem to enable remote data downloading. Bison downloads and reviews hourly data collected by the E-Sampler at least once per week.

In addition to the monitoring described above, MDEQ/BSB operates a meteorological station at the Greeley site. That information is also summarized in this report. This meteorological data may prove useful for interpretation of the particulate data. More specifically:

- Wind speed and wind direction data collected by MDEQ/BSB at the Greeley School site may, from time to time, be compared to hourly TSP readings to aid in the identification of TSP (which includes the smaller PM_{10} and $PM_{2.5}$ fractions) source areas. Additionally, the ambient temperature data collected by MDEQ/BSB may also be used for data interpretation and analysis. In particular, the temperature data is used to identify relative humidity thresholds that indicate the presence of fog.

The MR samplers are visited approximately every five to eight days by BSB personnel. They remove the exposed particulate filters from both samplers and install pre-weighed clean filters for the next sampling episode. The primary operational difference between the two

[1] In July 2023 additional monitoring was initiated at two new locations in the Greeley area. Those monitoring results are being reported separately.

[2] Reference and Equivalent Methods are defined in 40 CFR 50.1.

samplers is that the E-Sampler (TSP) filter is exposed continuously from the time of installation until the time of removal, while the BGI PM_{10} sampler filter is exposed for only a single 24-hour episode. The difference in filter exposure periods is necessary because the BGI unit operates at approximately 16.7 liters per minute (lpm) while the E-Sampler operates at 2.0 lpm. This operating scheme results in comparable air sample volumes between the two instruments: approximately 24 cubic meters (m^3) for the BGI sampler versus roughly 14 m^3 to 22 m^3 for the E-Sampler (based on five to eight days between filter exchanges during the third quarter). After retrieval, BSB mails the exposed filters to Bison's Billings office for gravimetric analysis. Following particulate mass determination, Bison submits the weighed filters to Energy Laboratories, Inc. (ELI) in Billings for chemical analysis.

Once per month, Bison conducts calibration checks on both samplers; results of the calibrations are presented in Section 6.0. Once in each calendar quarter, Bison conducts a performance audit of both samplers. The audits are performed by a different person than the monthly calibration checks, using separate NIST-traceable flow standards. The audit performed in July 2023 is documented in this report.

Appendix A presents hourly data for all relevant monitoring parameters, including:

- Hourly TSP data collected by Bison Engineering;
- Hourly relative humidity data collected by Bison Engineering;[3]
- Hourly temperature and wind data collected by BSB/MDEQ; these data are integral to the reporting and analysis of the hourly TSP data being collected by Bison.

The hourly PM_{10} and $PM_{2.5}$ and meteorological data collected by BSB/MDEQ were downloaded by Bison from a new GIS-based website that was activated by MDEQ in late 2022.

[3] The E-Sampler also collects hourly values of temperature and barometric pressure, but those values are not reported herein. The barometric pressure data are not relevant to the analyses in this report, and the ambient temperature data collected by the MDEQ/BSB monitor are superior to those collected by the E-Sampler.

3.0 PM_{10} SAMPLING DATA

The National Ambient Air Quality Standards (NAAQS) for PM_{10} were first promulgated in 1987 and have been modified several times since (1997, 2000 and 2006). The current form of the standard is found at 40 CFR 50.6. The form of the standard is ambient concentration measured and reported at local temperature and pressure (LTP). Although Bison employs typical PM_{10} monitoring procedures and instrumentation, this monitoring is not being performed as a formal demonstration of compliance with the PM_{10} NAAQS; rather, the monitoring aims to provide PM_{10} samples suitable for chemical analysis. Such samples are not necessarily being collected under the existing monitoring program.

Table 1 briefly summarizes the PM_{10} data collected during the third quarter of 2023. For comparison it also shows concurrent 24-hour PM_{10} averages calculated from the hourly values reported by the MDEQ/BSB BAM-1020 monitor. These results show good consistency between the two PM_{10} measurement methods on most days. Although not the focus of this study, these results show that the maximum 24-hour PM_{10} concentrations (41 µg/m^3 for the BGI sampler and 40 µg/m^3 for the BAM-1020 monitor, both on August 16) were well below the 24-hour standard of 150 µg/m^3.[4] The quarterly PM_{10} averages from both samplers (17 µg/m^3 and 18 µg/m^3) were well below the Montana Annual PM_{10} standard of 50 µg/m^3.[5]

Data used to calculate average PM_{10} concentrations from gravimetric analysis are presented in Appendix B. Chemical analysis results for Bison's PM_{10} filters are presented in Section 5.0 of this report.

[4] 40 CFR 50.6.

[5] The NAAQS annual PM_{10} standard was repealed October 17, 2006. Montana, however, has retained an annual PM_{10} standard of 50 µg/m^3. *(ARM17.8.223)*

Table 1: Summary of PM_{10} Monitoring Data for Quarter 3, 2023

Sample Collection Date (2023)	BGI PM10[1] (µg/m³)	BAM-1020[1] (µg/m³)	Arithmetic Difference (µg/m³)	Relative Difference (%)
Jul 05	16.9	16.5	0.4	3
Jul 11	12.5	12.1	0.4	3
Jul 17	26.4	25.8	0.6	2
Jul 23	26.1	26.8	-0.7	3
Jul 29	12.2[2]	14.0	-1.8	14
Aug 04	23.3[2]	18.8	4.5	21
Aug 10	6.3	12.8	-6.5	68
Aug 16	41.4	40.1	1.3	3
Aug 22	No Data[3]	9.0	No Data	No Data
Aug 28	No Data[3]	16.3	No Data	No Data
Sep 03	10.2	9.7	0.5	5
Sep 09	9.9	11.5	-1.6	15
Sep 15	16.7	17.6	-0.9	5
Sep 21	3.5	4.8	-1.3	30
Sep 27	13.5	17.1	-3.6	24
Average[4]	**16.8**	**17.5**	**-0.7**	**4[5]**

[1]All values at local temperature and pressure (LTP).
[2]Total sample volume was 11.52 m³ on 07/29, and 7.44 m³ on 08/04.
[3]Sampler did not run due to battery power problem.
[4]Averages only include dates with data from both samplers.
[5]Denotes relative percent difference of the quarterly averages.

4.0 TSP SAMPLING DATA

Hourly TSP data were collected by the Bison E-Sampler beginning on March 1, 2019, at 1500 MST. Data were also collected continuously throughout the third quarter of 2023, although significant amounts of hourly TSP were lost due to a sampler malfunction that developed in August.

As noted previously, the E-Sampler does not make a direct TSP measurement. It measures the visual light scattering (90^{o} to the light beam) of the sampled air, and then calculates hourly TSP averages based on a user-entered calibration multiplier. The appropriate multiplier varies by location depending on the nature of the airborne particulate and can also vary seasonally. For this project, the multiplier is determined approximately once per week using the gravimetrically obtained data from the TSP filter (used for metals analysis) as a means of calibration. The sample filter used during monitoring is analyzed gravimetrically to determine an *empirical* correction factor; those results then are used to appropriately calibrate (correct) all collected TSP data prior to reporting.

As noted previously, the purpose of this monitoring is not to obtain rigorous TSP measurements to ascertain compliance with published (or historical) standards. While the E-Sampler is not a Reference Method monitor, it provides unique dual capabilities to satisfy important objectives of this project:

- Obtain hourly TSP values that can be compared to other particulate data (PM_{10} and $PM_{2.5}$). It may also be used to investigate diurnal patterns along with specific episodic conditions. The hourly data may also prove useful in source contribution investigations by comparing the results with on-site wind speed and direction data to identify potential sources of airborne particulate, and

- Collect TSP material on filters that may be analyzed gravimetrically, and for selected trace elements. The material collected on the TSP filters includes all airborne particle sizes, in contrast to the PM_{10} sampler filters which exclude all material of greater than 10-micron diameter.

One limitation of this nephelometric method is that false high TSP readings can occur during periods of fog. For this reason, all hourly data collected during periods with an ambient relative humidity above 90 percent of the possible value[6] have been excluded from the reported data. A total of 56 hours of E-Sampler data were excluded from analysis during the third quarter for that reason.

[6] The maximum possible reading from an ambient relative humidity sensor varies with temperature. At temperatures of 0°C or greater it is 100 percent. At subfreezing temperatures, it decreases by 0.8 percent relative humidity for every 1°C drop in temperature. For example, at a temperature of -20°C the maximum possible reported relative humidity is 84%. At that temperature, all TSP data associated with a reported relative humidity of 75.6 % (calculated as 0.9 x 84%) or higher would be excluded from analysis due to possible fog effects.

4.1 TSP Data Summary

Monthly and quarterly average TSP data for the third quarter are summarized in Table 2 and are compared with concurrent PM_{10} and $PM_{2.5}$ data from the MDEQ/BSB monitors. Daily average concentrations for each parameter are presented in Tables 2a through 2c.[7] To facilitate direct comparability with the TSP data, hourly PM_{10} and $PM_{2.5}$ values during suspected fog periods (and whenever TSP data were missing for other reasons) have been excluded from the calculations below although the PM_{10} and $PM_{2.5}$ monitors in use at the Greeley School are generally unaffected by fog.

Overall, the daily TSP averages from the E-Sampler TSP monitor were marginally lower than the PM_{10} values from the BAM-1020 PM_{10} monitor. This indicates that most of the airborne particulate was smaller than 10 microns. It should be noted that the TSP measurements are made using a nephelometric technique while the hourly PM_{10} measurements are made using beta attenuation. The fraction of $PM_{2.5}$ averaged approximately 35 percent.

Temperatures were near normal all three months. Precipitation was below normal in July, but well above normal in August and September. Smoke impacts during the summer of 2023 were less than in recent years.

Table 2: TSP, PM_{10} and $PM_{2.5}$ Averages for Quarter 3, 2023

Period 2023	TSP (µg/m³)	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)
July	22	19	7.6
August	22	19	9.5
September	13	15	4.1
Quarter 3	**19**	**18**	**6.7**

[7] Monthly and quarterly average values shown in Tables 2, 2a, 2b and 2c are calculated using all hourly values for time periods shown. Any apparent inconsistencies among monthly and quarterly averages reflect differences in data recovery among the three months, as shown in Section 8.0.

Table 2a: TSP, PM_{10} and $PM_{2.5}$ Daily Averages for July 2023

Date 2023	TSP (µg/m³)	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)
Jul 1	31	29	8.6
Jul 2	13	11	3.9
Jul 3	12	14	4.2
Jul 4	42	32	19.7
Jul 5	31	17	8.7
Jul 6	24	15	5.3
Jul 7	17	12	3.9
Jul 8	23	15	6.8
Jul 9	21	14	6.7
Jul 10	15	15	5.6
Jul 11	9	13	4.7
Jul 12	9	12	5.5
Jul 13	10	17	5.8
Jul 14	21	16	7.4
Jul 15	49	27	15.6
Jul 16	13	16	6.0
Jul 17	13	26	5.5
Jul 18	9	16	3.7
Jul 19	11	14	5.0
Jul 20	20	22	6.4
Jul 21	31	20	9.4
Jul 22	38	27	11.1
Jul 23	38	27	10.9
Jul 24	34	22	10.7
Jul 25	24	22	6.3
Jul 26	25	20	8.4
Jul 27	21	20	8.2
Jul 28	17	14	6.9
Jul 29	17	14	6.8
Jul 30	22	19	8.2
Jul 31	20	18	7.1
Average	**22**	**19**	**7.6**

Table 2b: TSP, PM_{10} and $PM_{2.5}$ Daily Averages for August 2023

Date 2023	TSP (µg/m³)	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)
Aug 1	64	33	18.4
Aug 2	35	27	13.0
Aug 3	16	24	10.4
Aug 4	16	19	10.6
Aug 5	12	10	6.6
Aug 6	7	9	4.4
Aug 7	6	10	4.5
Aug 8	7	9	4.0
Aug 9	10	10	2.9
Aug 10	No Data	No Data	No Data
Aug 11	No Data	No Data	No Data
Aug 12	No Data	No Data	No Data
Aug 13	No Data	No Data	No Data
Aug 14	No Data	No Data	No Data
Aug 15	No Data	No Data	No Data
Aug 16	No Data	No Data	No Data
Aug 17	No Data	No Data	No Data
Aug 18	No Data	No Data	No Data
Aug 19	No Data	No Data	No Data
Aug 20	No Data	No Data	No Data
Aug 21	No Data	No Data	No Data
Aug 22	No Data	No Data	No Data
Aug 23	No Data	No Data	No Data
Aug 24	No Data	No Data	No Data
Aug 25	No Data	No Data	No Data
Aug 26	No Data	No Data	No Data
Aug 27	No Data	No Data	No Data
Aug 28	No Data	No Data	No Data
Aug 29	No Data	No Data	No Data
Aug 30	No Data	No Data	No Data
Aug 31	No Data	No Data	No Data
Average	**22**	**19**	**9.5**

Table 2c: TSP, PM_{10} and $PM_{2.5}$ Daily Averages for September 2023

Date 2023	TSP (µg/m³)	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)
Sep 1	No Data	No Data	No Data
Sep 2	No Data	No Data	No Data
Sep 3	No Data	No Data	No Data
Sep 4	No Data	No Data	No Data
Sep 5	No Data	No Data	No Data
Sep 6	8	8	3.6
Sep 7	8	9	4.0
Sep 8	7	8	2.8
Sep 9	10	12	4.7
Sep 10	12	10	4.7
Sep 11	18	18	4.9
Sep 12	18	27	5.1
Sep 13	10	16	2.8
Sep 14	11	15	2.8
Sep 15	14	17	3.6
Sep 16	18	18	4.9
Sep 17	18	21	5.0
Sep 18	23	No Data	5.4
Sep 19	No Data	No Data	No Data
Sep 20	No Data	No Data	No Data
Sep 21	No Data	No Data	No Data
Sep 22	No Data	No Data	No Data
Sep 23	No Data	No Data	No Data
Sep 24	No Data	No Data	No Data
Sep 25	11	12	3.4
Sep 26	20	32	5.4
Sep 27	11	17	3.2
Sep 28	10	11	3.3
Sep 29	13	13	4.2
Sep 30	9	9	3.4
Average	**13**	**15**	**4.1**

It is also instructive to examine variations in TSP concentration with wind speed and direction:

- Figure 2 presents a wind rose for all hours in the third quarter.

- Figure 3 presents a wind rose for only those periods when the reported hourly TSP concentration was at or above 30 μg/m^3; this represents the upper 16 percent of valid TSP values.

- Figure 4 presents a wind rose for only those periods when the hourly TSP concentration was at or below 10 μg/m^3; this represents the lower 33 percent of valid TSP values.

- Appendix C presents the corresponding tables for these wind roses, which show exact numerical frequencies and averages. The discussions below rely on data from those tables.

Figure 2 shows a strong emphasis for northwesterly through northerly winds. Easterly winds were considerably less common than in most previous quarters. The average wind speed was 1.3 m/s (2.9 mph).

Figure 3 shows a wind rose for high[8] (≥30 μg/m^3) TSP concentrations. Wind directions during these periods showed a stronger emphasis for winds from the northwest quadrant. Historically, northwest winds have often been associated with lower TSP concentrations. Wind speeds were minimally lower than for the quarter overall, averaging 1.2 m/s (2.7 mph).

Figure 4 shows a wind rose for low (≤10 μg/m^3) TSP concentrations. Interestingly, these periods also showed an emphasis for winds from the northwest quadrant. Wind speeds during low-TSP periods were somewhat higher, averaging 1.6 m/s (3.6 mph), similar to the quarter overall.

4.2 TSP vs PM_{10}

A comparison was made between the gravimetrically-determined TSP data and the concurrent hourly data for PM_{10}. Unlike the data presented in Section 4.1, the TSP gravimetric data was collected over periods typically ranging from 5–8 days.[9] The reason for the long sampling period was explained in Section 2.0 and relates to the volumetric collection needs for a valid mass sample. For interest, the gravimetric TSP sample results were compared against the hourly PM_{10} data obtained from beta attenuation over concurrent periods. Table 3 provides this comparison.

[8] The descriptor "high" is used only in a relative sense, as all the TSP data presented in this analysis indicate concentrations far below any historical standards.

[9] It is noted that one sample – from April 17 to April 19 – was collected over only two days.

The table shows that overall, the gravimetrically determined TSP concentrations from the E-Sampler were slightly higher than the concurrent PM_{10} concentrations from the BAM-1020 monitor. Approximately 90 percent of the airborne particulate was smaller than 10 microns; this is consistent with the analysis presented in Section 4.1.

Table 3: Summary: Gravimetric TSP vs Hourly PM_{10} for Quarter 3, 2023

Sampling Period (2023)	Average Gravimetric TSP ($\mu g/m^3$)	Average BAM-1020 PM_{10} ($\mu g/m^3$)
06/27-07/03	21.2	16.3
07/03-07/10	25.0	17.6
07/10-07/18	16.8	17.8
07/18-07/26	26.9	21.2
07/26-08/02	28.4	20.5
08/02-08/09	12.0	13.9
08/14-08/21	30.9	28.0
08/21-08/23	11.6	9.4
08/23-08/30	13.9	16.4
08/30-09/06	11.2	12.4
09/06-09/13	12.1	13.9
09/13-09/18	15.4	16.3
09/18-09/25	2.0*	12.8*
Average	**18.8**	**17.0**

*TSP result unrealistically low, possibly due to leak around filter. Data excluded from averages.

Figure 2. Quarterly Wind Rose, Greeley School (All Hours)

Third Quarter 2023 (direction wind was from)

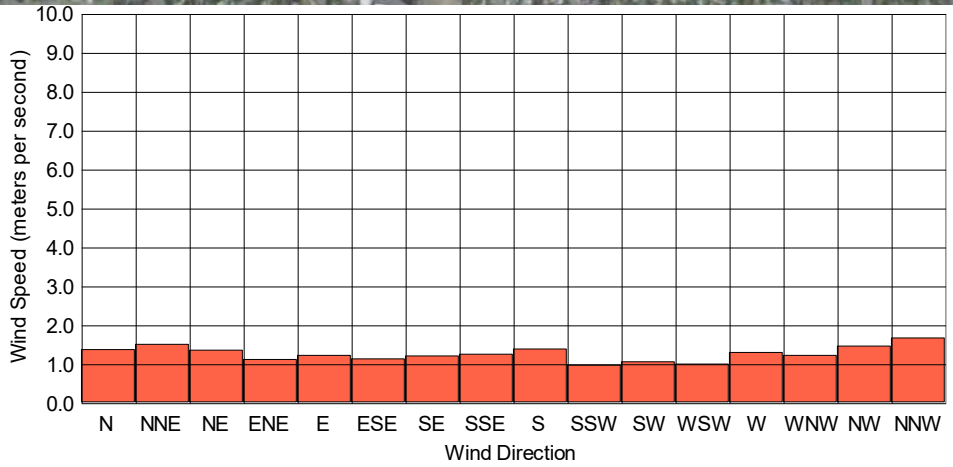


Figure 3. Quarterly Wind Rose, Greeley School (TSP ≥30 µg/m³)

Third Quarter 2023 (direction wind was from)

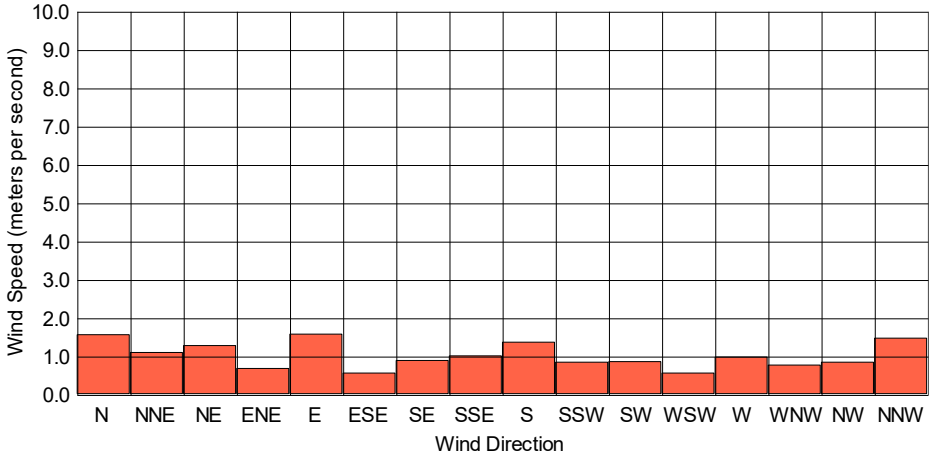
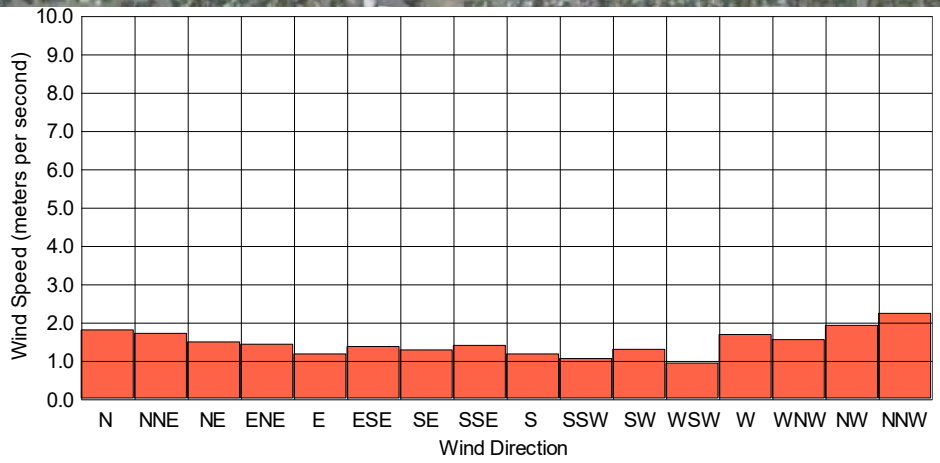


Figure 4. Quarterly Wind Rose, Greeley School (TSP ≤10 µg/m³)

Third Quarter 2023 (direction wind was from)



5.0 CHEMICAL ANALYSIS DATA

Following gravimetric analysis, the particulate samples were submitted to Energy Laboratories, Inc. (ELI) in Billings, Montana, for elemental analysis including arsenic, cadmium, copper, lead, manganese, molybdenum and zinc. This analyte list is subject to modification as results from this monitoring are obtained, and as other information becomes available.

All samples were digested and then analyzed by ICP-MS using EPA Method E200.8. Laboratory results are presented in Appendix D and are reported in units of micrograms (µg) per filter. Fourteen TSP samples and thirteen PM_{10} samples collected during the third quarter were analyzed for trace elements, as well as three Field Blanks and four filter lot blanks (Lab Blanks). Several problems were encountered with collection of filter samples during the third quarter:

- The TSP sample scheduled for August 9-14 was not collected due to failure of the sampler to restart after a filter change.

- The TSP sample collected from September 18-25 was possibly affected by leakage around the filter. The analytical results are presented herein for completeness (all were non-detect).

- The PM_{10} samples collected on July 29 and August 4 did not meet standard sample volume criteria due to large variations in the sample flow rate. However, the analytical results themselves were valid.

- The PM_{10} samples scheduled for August 22 and August 28 were not collected due to a battery power problem.

Tables 4a and 4b summarize the total particulate mass and ELI analytical results for samples collected during the third quarter. Detectable results were usually obtained for copper, while results for other elements (particularly arsenic, cadmium and zinc) were often non-detectable. Table 4c shows the Field Blank and Lab Blank results associated with the third quarter samples. The bottom row of Table 4c shows the laboratory's maximum Method Blank (MB) Method Detection Limit (MDL) during the quarter, which represents the minimum detectable amount of each trace element per filter. Lab (filter) blank and MB concentrations for the third quarter were all non-detectable. However, the Field Blank for analysis batch B23110469 had minor detections for copper (0.6 µg), manganese (0.3 µg) and zinc (2 µg). On a standard PM_{10} sample basis, these amounts translate to airborne concentrations that are roughly 1% of the Guideline value for copper, 26% of the guideline value for manganese and less than 1% of the Guideline value for zinc.

Tables 5a and 5b show the calculated airborne concentration of each trace element over the indicated sampling periods. To facilitate data interpretation, the number of leading zeroes in

the results has been minimized by expressing results in units of ***nanograms*** (ng) per cubic meter rather than micrograms.

- All trace element concentrations in the TSP samples were below the applicable Guideline values. The closest approach was for manganese in the sample collected from August 14-21, with a concentration of 25.6 ng/m^3, or 51% of the lifetime exposure Guideline value of 50 ng/m^3.

- The PM_{10} sample for September 9 had a manganese concentration of 83.3 ng/m^3, or 167% of the manganese Guideline of 50 ng/m^3 (which is a ***Lifetime*** exposure value). All other manganese results for the PM_{10} samples were 42% or less of the Guideline value.

Table 6 shows the sources of the "Guideline" values used for these analyses, and their derivations.[10] Additionally, Table 6 shows the approximate airborne concentration corresponding to each MDL listed in Table 4c. The detectable airborne concentrations are different for TSP and PM_{10} due to differences in typical sample volumes. A detailed table showing commonly accepted values from regulatory agencies and reputable private organizations is provided in Appendix E.

[10] The guideline values were updated (starting with the 4th quarter report 2020) to be consistent with those from the Montana Department of Public Health and Human Services (MDPHHS). Guidelines for copper and molybdenum are lower than those used in previous quarterly reports. Although MDPHHS suggested a higher guideline for manganese, the lower previously reported value was retained. Guidelines for arsenic, cadmium, lead and zinc are unchanged.

Table 4a: Summary of Analytical Results – TSP

DATE	PART MASS (µg)	As (µg)	Cd (µg)	Cu (µg)	Mn (µg)	Mo (µg)	Pb (µg)	Zn (µg)
06/27-07/03	352	ND	ND	2	ND	0.4	0.1	ND
07/03-07/10	491	ND	ND	2	0.4	0.4	0.1	ND
07/10-07/18	370	0.1	ND	2	ND	0.5	ND	ND
07/18-07/26	575	ND	ND	2	0.4	0.1	0.09	ND
07/26-08/02	550	ND	ND	2	0.3	0.1	ND	ND
08/02-08/09	230	ND	ND	0.5	ND	ND	ND	ND
08/09-08/14	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
08/14-08/21	605	ND	ND	2	0.5	0.09	ND	ND
08/21-08/23	65	ND	ND	ND	ND	ND	ND	ND
08/23-08/30	268	ND	ND	0.8	ND	0.2	ND	ND
08/30-09/06	212	ND	ND	0.4	ND	ND	ND	ND
09/06-09/13	233	ND	ND	0.5	ND	ND	ND	ND
09/13-09/18	211	ND	ND	0.7	ND	ND	ND	ND
09/18-09/25	39	ND	ND	ND	ND	ND	ND	ND
09/25-10/02	232	ND	ND	ND	ND	ND	0.1	ND

All values expressed as micrograms per filter. ND denotes not detected.
(1) No sample collected due to startup failure.

Table 4b: Summary of Analytical Results – PM_{10}

DATE	PART MASS (µg)	As (µg)	Cd (µg)	Cu (µg)	Mn (µg)	Mo (µg)	Pb (µg)	Zn (µg)
07/05	407	ND	ND	1	ND	0.1	ND	ND
07/11	300	0.1	ND	2	ND	0.2	0.09	ND
07/17	635	0.1	ND	3	0.5	0.6	0.1	ND
07/23	627	ND	ND	1	0.3	0.1	ND	ND
07/29	141	ND	ND	0.3	ND	0.09	ND	ND
08/04	173	ND	ND	3	ND	ND	ND	ND
08/10	151	ND	ND	0.6	ND	ND	ND	ND
08/16	998	ND	ND	0.6	0.5	ND	ND	ND
08/22	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
08/28	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
09/03	244	ND	ND	0.5	ND	ND	ND	ND
09/09	237	ND	ND	0.6	2	ND	ND	ND
09/15	401	ND	ND	1	ND	ND	ND	ND
09/21	85	ND	ND	ND	ND	0.3	ND	ND
09/27	324	ND	ND	0.9	ND	ND	ND	ND

All values expressed as micrograms per filter. ND denotes not detected.
(1) No sample collected due to battery power issue.

Table 4c: Summary of Analytical Results – Blanks

DATE	PART MASS (µg)	As (µg)	Cd (µg)	Cu (µg)	Mn (µg)	Mo (µg)	Pb (µg)	Zn (µg)
08/16-LB	2	ND	ND	ND	ND	ND	ND	ND
08/14-FFB	-2	ND	ND	ND	ND	ND	ND	ND
09/11-LB	3	ND	ND	ND	ND	ND	ND	ND
10/03-LB	-6	ND	ND	ND	ND	ND	ND	ND
08/30-FFB	5	ND	ND	ND	ND	ND	ND	ND
11/14-LB	5	ND	ND	ND	ND	ND	ND	ND
09/27-FFB	10	ND	ND	0.6	0.3	ND	ND	2
Lab Method Blank MDL		0.08	0.009	0.3	0.2	0.07	0.09	0.8

All values expressed as micrograms per filter. ND denotes not detected.
LB denotes laboratory filter blank. FFB denotes field filter blank.

Table 5a: Summary of Airborne Trace Element Concentrations – TSP

DATE	Sample Volume (m^3)	As (ng/m^3)	Cd (ng/m^3)	Cu (ng/m^3)	Mn (ng/m^3)	Mo (ng/m^3)	Pb (ng/m^3)	Zn (ng/m^3)
06/27-07/03	16.59	ND	ND	121	ND	24.1	6.03	ND
07/03-07/10	19.68	ND	ND	102	20.3	20.3	5.08	ND
07/10-07/18	21.96	4.55	ND	91.1	ND	22.8	ND	ND
07/18-07/26	21.39	ND	ND	93.5	18.7	4.67	4.21	ND
07/26-08/02	19.33	ND	ND	103	15.5	5.17	ND	ND
08/02-08/09	19.10	ND	ND	26.2	ND	ND	ND	ND
08/09-08/14	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
08/14-08/21	19.56	ND	ND	102	25.6	4.60	ND	ND
08/21-08/23	5.61	ND	ND	ND	ND	ND	ND	ND
08/23-08/30	19.22	ND	ND	41.6	ND	10.4	ND	ND
08/30-09/06	18.99	ND	ND	21.1	ND	ND	ND	ND
09/06-09/13	19.22	ND	ND	26.0	ND	ND	ND	ND
09/13-09/18	13.73	ND	ND	51.0	ND	ND	ND	ND
09/18-09/25	19.22	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)
09/25-10/02	19.10	ND	ND	ND	ND	ND	5.23	ND
Maximum (ng/m^3)		4.55	<0.55	121	25.6	24.1	6.03	<48.6
Guideline (ng/m^3) *		15	10	2,000	50	400	150	47,619
Max as Pct. Of Guideline		**30%**	**<6%**	**6%**	**51%**	**6%**	**4%**	**<1%**

(1) No sample collected due to startup failure.
(2) Suspect leakage in sample train. Results are considered questionable.
*The guideline values, except lead (Pb), are applicable to a lifetime or chronic exposure. The lead (Pb) guideline is an ambient air quality standard applicable to a 3-month average. The quarterly average lead concentration of 3.42 ng/m^3 was 2 percent of the guideline value; non-detect lead concentrations were set at ½ of the typical lead detection limit of 5.46 ng/m^3 for this calculation.

Table 5b: Summary of Airborne Trace Element Concentrations – PM_{10}

DATE	Sample Volume (m^3)	As (ng/m^3)	Cd (ng/m^3)	Cu (ng/m^3)	Mn (ng/m^3)	Mo (ng/m^3)	Pb (ng/m^3)	Zn (ng/m^3)
07/05	24.03	ND	ND	41.6	ND	4.16	ND	ND
07/11	24.02	4.16	ND	83.3	ND	8.33	3.75	ND
07/17	24.02	4.16	ND	125	20.8	25.0	4.16	ND
07/23	24.02	ND	ND	41.6	12.5	4.16	ND	ND
07/29	11.52 (1)	ND	ND	26.0	ND	7.81	ND	ND
08/04	7.44 (1)	ND	ND	403	ND	ND	ND	ND
08/10	24.07	ND	ND	24.9	ND	ND	ND	ND
08/16	24.09	ND	ND	24.9	20.8	ND	ND	ND
08/22	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
08/28	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
09/03	24.02	ND	ND	20.8	ND	ND	ND	ND
09/09	24.01	ND	ND	25.0	83.3	ND	ND	ND
09/15	24.02	ND	ND	41.6	ND	ND	ND	ND
09/21	24.02	ND	ND	ND	ND	12.5	ND	ND
09/27	24.00	ND	ND	37.5	ND	ND	ND	ND
Maximum (ng/m^3)		4.16	<0.38	403	83.3	25.0	4.16	<33.3
Guideline (ng/m^3) *		15	10	2,000	50	400	150	47,619
Max as Pct. Of Guideline		**28%**	**<4%**	**20%**	**167%**	**63%**	**3%**	**<1%**

(1) Standard sample volume not collected due to intermittent pump operation. Pump replaced on 08/08.
(2) No sample collected due to battery power issue.
*The guideline values, except lead (Pb), are applicable to a lifetime or chronic exposure. The lead (Pb) guideline is an ambient air quality standard applicable to a 3-month average.

Table 6: Summary of Airborne Trace Element Concentration Guidelines (ng/m³)

Analyte	Dose/ Risk[A]	Source	Description	Time Period	Detectable TSP[D]	Detectable PM_{10}[E]
Arsenic (inorganic)	15	EPA / DPHHS[G]	RfC[B]	Lifetime	4.86	3.33
Cadmium	10	ATSDR / DPHHS[G]	Non-cancer / CV[G]	Chronic	0.55	0.38
	200	IRIS	Cancer	Chronic		
Copper	2,000	DPHHS[G] / Michigan DEQ	RfC[B]	Chronic	18.2	12.5
Lead	150	EPA / ATSDR / DPHHS[G]	National Ambient Air Quality Standard [C]	3-month	5.46	3.75
Manganese	50	EPA	RfC[B]	Lifetime	18.2	12.5
Molybdenum	11,905 (=500,000/42) [F]	CAL/OSHA, ACGIH	CAL/OSHA, ACGIH	Chronic [F]	6.07	4.17
	400	DPHHS[G] / Michigan DEQ	CV	Chronic		
Zinc	47,619 (=2,000,000/42) [F]	ACGIH TLV	ACGIH TLV	Chronic [F]	48.6	33.3

[A] See Appendix E for definitions and listing of dose and risk assessment values reviewed to produce this summary table.
[B] RfC = Reference Concentration (EPA) is an estimate (with uncertainty added) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.
[C] This standard is based on a three-month average.
[D] Based on average 6-day sampling period and total sample volume of 16.47 m³.
[E] Based on 24-hour sampling period and total sample volume of 24 m³.
[F] This value derived by dividing the OSHA/NIOSH exposure limit by 42. This was done to include a factor of 10 to account for a general population, not just healthy adults and then including another factor of 4.2 to include a year-long exposure as opposed to 8 hours per day, 5 days a week and 52 weeks per year.
[G] Reference information from letter and analysis by DPHHS (regarding Greeley School ambient data) to Butte-Silver Bow Health Department dated October 28,2020.

EPA = Environmental Protection Agency
ATSDR = Agency for Toxic Substances & Disease Registry
CV = "Comparison Value" – a term used by DPHHS (10/28/20 letter) to indicate an ATSDR (or other) guideline or reference value
DPHHS = Montana Department of Health and Human Services
RfC = Reference Concentration (see above)
RSL = EPA Regional Screening Levels (https://www.epa.gov.gov/risk/regional-screening-levels-rsls-generic-tables)
OSHA = Occupational Safety and Health Administration
ACGIH = American Congress of Governmental Industrial Hygienists
NIOSH= National Institute of Occupational Safety and Health
TLV = Threshold limit value

6.0 CALIBRATION DATA

Calibration checks of the BGI PM_{10} sampler and the Met One E-Sampler are performed in at least two months of each quarter. In the third month, an audit is performed by a different person using different calibration standards. Monthly verification checks were performed on the PM_{10} sampler on July 18 and September 7. A check was attempted on August 24, but could not be performed due to a battery power issue. Verification checks were performed on the E-Sampler on July 18, August 24, September 2, and September 27.[11]

Table 7 summarizes the verification checks performed each month and the applicable acceptance criteria. In the event of unsatisfactory results, corrective actions are performed as specified in the rightmost column of Table 7. Note that the E-Sampler flow rate, temperature, pressure and relative humidity sensors can only be checked and adjusted at a single point.

Table 8 summarizes the results of the calibration checks performed during the third quarter, as well as any corrective actions. Detailed verification check results are shown in Appendix F. Appendix G presents certifications for flow calibration standards used during the quarter.

Table 7: Summary of Montana Resources – Greeley School Site Calibration/ Audit Activities and Acceptance Criteria

Activity	**Acceptance Criteria / Actions**	
PM_{10} Sampler Calibration Checks		
Flow Verification	±4%	Multipoint recalibration if flow error exceeds ±2%
Leak Check	Investigate / correct if vacuum drop exceeds 4 cm of water in 2 minutes	
Temperature Verification	±2.0°C	Multipoint recalibration if error exceeds ±2.0°C
Pressure	±10 mmHg	Adjust calibration if error exceeds ±10 mmHg
E-Sampler Calibration Checks		
Flow Verification	±5%	Adjust calibration if error exceeds ±4%
Leak Check	≤0.3 LPM	Investigate / correct leak problem
Temperature Verification	±2.0°C	Adjust calibration if error exceeds ±2.0°C
Pressure	±10 mmHg	Adjust calibration if error exceeds ±10 mmHg
Relative Humidity	≤7% RH	Adjust calibration if error exceeds ±7% RH
Other		
PM_{10} Inlet Head	Disassemble and clean	
TSP Inlet Head	Disassemble and clean	

[11] The calibration checks performed on October 31, 2023, also are shown to demonstrate data validity through the end of the quarter.
A rental E-Sampler was temporarily installed from September 2 to September 27, and calibration checks were performed when it was installed and removed.

Table 8: Summary of Quarter 3, 2023 Calibration Verification Results

Date	Calibration Check	Results	Limits	Actions
07/18/2023	BGI PM_{10} Flow Verification (A)	-1.6%	±4%	
	BGI PM_{10} Flow Verification (B)	+1.7%	±4%	
	BGI Ambient Temperature	-0.1°C	±2.0°C	
	BGI Filter Temperature	0.0°C	±2.0°C	
	BGI Ambient Pressure	-3.0 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	0 cm H_2O	≤4 cm H_20	
	E-Sampler Flow Verification (A)	-0.5%	±5%	
	E-Sampler Flow Verification (B)	+0.5%	±5%	
	E-Sampler Ambient Temperature	-0.1°C	±2.0°C	
	E-Sampler Ambient Pressure	-107 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	-3.8% RH	±7% RH	
08/24/2023	BGI Sampler	N/A	N/A	C
	E-Sampler Flow Verification (A)	-0.5%	±5%	
	E-Sampler Flow Verification (B)	+0.5%	±5%	
	E-Sampler Ambient Temperature	+0.2°C	±2.0°C	
	E-Sampler Ambient Pressure	+145 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	-2.0% RH	±7% RH	
09/02/2023	E-Sampler Flow Verification (A)	-2.9%	±5%	
Site Sampler	E-Sampler Flow Verification (B)	+3.0%	±5%	
	E-Sampler Ambient Temperature	+1.0°C	±2.0°C	
	E-Sampler Ambient Pressure	+186 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	-3.0% RH	±7% RH	
09/02/2023	E-Sampler Flow Verification (A)	-1.0%	±5%	
Rental Samp.	E-Sampler Flow Verification (B)	+1.0%	±5%	
	E-Sampler Ambient Temperature	+1.0°C	±2.0°C	D
	E-Sampler Ambient Pressure	+187 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	-4.6% RH	±7% RH	D
09/07/2023	BGI PM_{10} Flow Verification (A)	-2.9%	±4%	
	BGI PM_{10} Flow Verification (B)	+3.1%	±4%	
	BGI Ambient Temperature	-0.1°C	±2.0°C	
	BGI Filter Temperature	-0.5°C	±2.0°C	
	BGI Ambient Pressure	-3.0 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	2 cm H_2O	≤4 cm H_20	
09/27/2023	E-Sampler Flow Verification (A)	-2.0%	±5%	
Rental Samp.	E-Sampler Flow Verification (B)	+2.0%	±5%	
	E-Sampler Ambient Temperature	+0.9°C	±2.0°C	
	E-Sampler Ambient Pressure	+187 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	+2.5% RH	±7% RH	

Date	Calibration Check	Results	Limits	Actions
09/27/2023	E-Sampler Flow Verification (A)	-1.5%	±5%	
Site Sampler	E-Sampler Flow Verification (B)	+1.5%	±5%	
	E-Sampler Ambient Temperature	+0.2°C	±2.0°C	
	E-Sampler Ambient Pressure	+98 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	+1.3% RH	±7% RH	
10/31/2023	BGI PM_{10} Flow Verification (A)	-1.7%	±4%	
	BGI PM_{10} Flow Verification (B)	+1.9%	±4%	
	BGI Ambient Temperature	-1.0°C	±2.0°C	
	BGI Filter Temperature	-1.1°C	±2.0°C	
	BGI Ambient Pressure	-3.5 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	
	E-Sampler Flow Verification (A)	+1.0%	±5%	
	E-Sampler Flow Verification (B)	-1.0%	±5%	
	E-Sampler Ambient Temperature	+0.7°C	±2.0°C	
	E-Sampler Ambient Pressure	+101 Pa	±1333 Pa	
	E-Sampler Leak Test	0.0 LPM	≤0.3 LPM	
	E-Sampler Relative Humidity	-3.0% RH	±7% RH	

Codes:
A = Difference of reported flow from reference standard flow.
B = Difference of reference standard flow from design flow (16.7 LPM for BGI, 2.0 LPM for E-Sampler).
C = Could not check BGI sampler due to battery power issue.
D = Temperature and humidity checks performed on 09/07.

7.0 QUARTERLY AUDIT/CALIBRATION RESULTS

An audit is performed once in each full calendar quarter. The checks and acceptance criteria are identical to those for monthly calibrations (see Table 7). The primary difference is that the audits are performed by a different person, using different calibration standards. Calibration adjustments then are made as necessary, based on the as-found audit results. The third quarter audit was performed on July 18, 2023. Results for the PM_{10} sampler were satisfactory, and no adjustments were required. Results for the TSP sampler were also satisfactory.

Table 9: Quarter 3, 2023 Audit Results

BGI PQ200 PM10 Sampler – Performance Audit			
Date: 07/18/2023	Time: 0942-0954 MST	Sampler Serial Number: 1622 / Greeley School	
Performed By: Daniel Bitz		Observer: Steve Heck	
Ref Standard and S/N: Tetra Cal SN 149645		Certification Date: 07-28-2022	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Audit (b)	Difference (a - b) (must be ≤ ±10)
Ambient Pressure	623	626.0	-3.0
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Audit (b)	Difference (a - b) (must be ≤ ±2ºC)
Ambient Temperature	20.3 C	20.9 C	-0.6 C
Filter Temperature	21.6 C	22.4 C	-0.8 C
Leak Check			
Vacuum Readings (mm Hg)	Start 94	End 94	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Audit (b)	% Difference 100*(a – b)/b (must be ≤ ±4%)
Operating flow rate check	16.70	17.18	-2.8%
Reading (liters per minute)	Audit (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.67)/16.67 (must be ≤ ±5%)
Design flow rate calculation	17.18	16.7	+2.9%
Comments: No adjustments made. Removed exposed filter during audit.			

Met One E-Sampler – ~~Monthly Calibration Check~~ / Quarterly Audit			
Date: 07/18/2023	Time: 0950-1005 MST	Sampler Serial Number: X24429	
Performed By: Daniel Bitz		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Tetra Cal SN 149645		Certification Date: 1) 07-28-2022	
Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ±1333 Pa)
Ambient Pressure	83,546 Pa	626.5 mmHg =83,526 Pa	+20 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ±2ºC)
Ambient Temperature	26.4 C	25.5 C	+0.9 C
Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ±5%)
Audit standard flow rate check	2.0	2.00	0.0%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ±5%)
Design flow rate check	2.00	2.0	0.0%
Relative Humidity Verification (checked with Assmann Psychrometer)			
Dry Bulb Temp. °C	N/A	Calculated RH (a)	N/A
Wet Bulb Temp. °C	N/A	Sampler RH (b)	N/A
BP Inches Hg	N/A	Difference = a – b (must be ≤7% RH)	N/A

8.0 DATA COMPLETENESS

The percentages of data recovery for each Greeley School monitoring parameter reported by MR during the third quarter of 2023 are given in Table 10. The quarterly data recovery goal for hourly TSP is ≥80 percent,[12] and for relative humidity is ≥90 percent. The net data recovery was 63.9 percent for TSP and 99.9 percent for relative humidity. The hourly TSP data loss was caused by the following factors:

- After the TSP filter was changed on August 9, the sample pump failed to restart. This resulted in no TSP readings from August 9 through August 14.

- The E-Sampler started producing zero errors on August 18. A rental sampler was obtained from Clean Air Engineering and used in place of the Greeley E-Sampler from September 2-27. This problem resulted in the loss of hourly E-Sampler data from August 14 through September 6, because TSP correction factors could not be calculated by comparing the gravimetric filter results against hourly concentration data. Note that this problem had no impact on the gravimetric filter particulate results, nor on the trace element analyses.

- The TSP (E-Sampler) filter collected from September 18 through September 25 produced an unrealistically low average TSP concentration of 2.0 $\mu g/m^3$ when gravimetrically analyzed. This indicated leakage in the sampling train and precluded calculation of a valid TSP correction factor for that period.

Data recovery statistics for the particulate filter samples are presented in Table 11. The quarterly data recovery goal for TSP and PM_{10} filter samples is ≥80 percent for both the gravimetric and trace element analyses. The actual data recovery was 86.7 percent for the TSP gravimetric and trace element analyses, and 86.7 percent for the PM_{10} gravimetric and trace element analyses. Particulate filter data loss was caused by the following factors:

- As noted above, no TSP sample was collected from August 9 through August 14 due to failure of the sample pump to restart after a filter change.

- No PM_{10} samples were collected on August 22 and August 28, due to a battery power problem.

- As noted above, a sampling train leak was suspected in the TSP sample collected from September 18 through September 25. The analytical results are therefore considered invalid.

[12] The number of possible hourly TSP values counts only hours when the ambient relatively humidity was less than 90 percent of the possible maximum. This determination is discussed in Section 4.0.

Table 10: Quarterly Data Completeness Summary – Hourly Data

Montana Resources LLP – Greeley School					
Parameter	Readings Possible[A]	Valid Readings	Percent Recovery	QA/QC Hours[B]	Net Percent Recovery
July 2023					
TSP	739	732	99.1	6	99.9
Relative Humidity	744	744	100.0	0	100.0
Total	1483	1476	99.5	6	99.9
August 2023					
TSP	675	165	24.4	8	25.6
Relative Humidity	744	744	100.0	0	100.0
Total	1419	909	64.1	8	64.6
September 2023					
TSP	642	397	61.8	6	62.8
Relative Humidity	720	718	99.7	0	99.7
Total	1362	1115	81.9	6	82.3
Quarter 3, 2023					
TSP	2056	1294	62.9	20	63.9
Relative Humidity	2208	2206	99.9	0	99.9
Total	4264	3500	82.1	20	82.6

[A] Only hours with relative humidity <90 percent of maximum value are counted as ***possible*** TSP data hours. See discussion in Section 4.1.
[B] Includes hours affected by filter changes, which usually occur every 5 to 7 days.

Table 11: Quarterly Data Completeness Summary – Filter Analysis Data

Montana Resources LLP – Greeley School			
Parameter	Readings Possible	Valid Readings	Percent Recovery
July 2023			
TSP – Gravimetric	5	5	100.0
TSP – Trace Elements	35	35	100.0
PM_{10} – Gravimetric	5	5	100.0
PM_{10} – Trace Elements	35	35	100.0
Total	80	80	100.0
August 2023			
TSP – Gravimetric	5	4	80.0
TSP – Trace Elements	35	28	80.0
PM_{10} – Gravimetric	5	3	60.0
PM_{10} – Trace Elements	35	21	60.0
Total	80	56	70.0
September 2023			
TSP – Gravimetric	5	4	80.0
TSP – Trace Elements	35	28	80.0
PM_{10} – Gravimetric	5	5	100.0
PM_{10} – Trace Elements	35	35	100.0
Total	80	72	90.0
Quarter 3, 2023			
TSP – Gravimetric	15	13	86.7
TSP – Trace Elements	105	91	86.7
PM_{10} – Gravimetric	15	13	86.7
PM_{10} – Trace Elements	105	91	86.7
Total	240	208	86.7

9.0 COMPARISON TO AMBIENT AIR QUALITY STANDARDS

This study is not intended to determine compliance with the NAAQS[13] or the Montana ambient air quality standards[14] (MAAQS). Nonetheless, a generalized comparison is possible. The filter-based PM_{10} data collected by MR indicate ambient PM_{10} concentrations far below the 24-hour standard of 150 μg/m³ that otherwise applies to the NAAQS and MAAQS.

Similarly, the lead concentrations analyzed from the exposed TSP filters indicate quarterly average airborne concentrations well below the 0.15 μg/m³ ambient NAAQS based on a 3-month average of the 24-hour samples. The MAAQS is 1.5 μg/m³ and is based on a 90-day rolling average of 24-hour samples. The TSP samples presented herein were typically collected over 5- to 8-day periods, at a much lower sampling rate (2.0 liters per minute) compared to the standard method (≥40 standard cubic feet per minute). Nonetheless, the results indicate quarterly average ambient lead concentrations below the MAAQS and NAAQS. Table 12 summarizes these comparisons through the third quarter of 2023.

Additionally, the analyses presented in Section 5.0 indicate that airborne concentrations of the other six trace elements are well below guidelines presented in Table 6, except for PM_{10} manganese result for September 9.

Table 12: Summary of Airborne Concentration vs. NAAQS

Analyte	Observed Concentration (μg/m³)	Averaging Period	Ambient Standard (μg/m³)	Authority
PM_{10}	41[1]	24-hour (max)	150	NAAQS & MAAQS
Pb	0.006[2] 0.003[3]	90-day	1.50	MAAQS
		3-month	0.15	NAAQS
TSP	19[4]	Annual	75[4]	NAAQS & MAAQS

[1] Denotes maximum value from BGI filter-based PM_{10} sampler. Maximum value from MDEQ BAM-1020 sampler on sixth-day runs was 40 μg/m³.

[2] This value was the maximum from the filter-based TSP sampler, collected over a 6-day sampling period.

[3] This value was the quarterly average from the filter-based TSP sampler. Non-detect results were set to ½ of the typical detection limit when calculating the average.

[4] Historical TSP standard shown for comparison purposes is no longer in effect. NAAQS standard for TSP was based on geometric mean and MAAQS on arithmetic average. Value shown represents arithmetic average for monitoring period of Quarter 3, 2023, based on gravimetric filter analysis.

[13] 40 CFR 50 *et seq.*
[14] ARM 17.8.223

APPENDIX A: VALIDATED AMBIENT MONITORING DATA BY MONTH, THIRD QUARTER 2023

TABLE A-1: MISSING DATA CODES[1]			
Letter Code	**Mnemonic Code**	**Description**	**Number Code**
AF	Sc	Scheduled but Not Collected	9972
AH	Fl	Sample Flow Rate Out of Limits / Flow Fail Alarm	9974
AK	Lk	Filter Leak	9977
AM	Mi	Miscellaneous Void	9979
AN	ND	Machine Malfunction	9980
AO	Wx	Bad Weather[2]	9981
AQ	Co	Collection Error	9983
AV	Pw	Power Failure	9988
AZ	Au	QC Audit (internal audit)	9992
BA	Ma	Maintenance[3]	9993
BC	Ca	Multipoint Calibration	9995
BF	Pz	Zero / Span / Precision Check (used for single-point calibration checks and leak checks)	9998

[1]The list of codes in this table is not exhaustive but includes those most commonly used for this site (and includes all codes applicable to the data collected during the current quarter).

[2]For this project, denotes that hourly TSP value is considered unreliable due to ambient relative humidity exceeding 90 percent of the maximum value.

[3]Includes routine changeout of sampling filters in TSP monitor.

Montana Resources LLP
Greeley School Air Monitoring Summary
TSP - Met One E-Sampler (micrograms per cubic meter)
July 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	24	26	24	27	22	29	30	30	43	43	26	103	19	11	13	10	9	13	13	9	13	58	72	70	31	103	9
2	30	21	17	18	15	16	14	31	23	10	7	5	7	6	5	3	6	7	10	12	11	13	17	13	13	31	3
3	10	9	8	9	10	13	12	10	13	BA	14	10	9	8	9	17	11	14	14	10	12	15	23	20	12	23	8
4	19	26	24	13	13	14	17	22	26	29	35	30	26	27	27	35	26	27	30	39	61	215	168	67	42	215	13
5	38	38	36	34	36	38	43	45	44	41	36	24	23	24	23	29	22	21	22	21	26	27	31	33	31	45	21
6	27	27	29	26	26	27	34	36	43	42	32	27	23	27	23	27	18	12	13	13	13	12	14	14	24	43	12
7	14	14	14	13	14	15	15	26	27	23	20	20	19	19	18	17	14	9	17	16	17	18	14	14	17	27	9
8	17	21	20	20	20	23	26	30	33	27	27	19	18	20	19	20	17	23	22	20	25	26	27	20	23	33	17
9	23	22	22	22	22	20	23	27	36	28	20	20	17	17	19	17	19	14	17	19	13	17	18	20	21	36	13
10	21	20	20	33	27	33	26	19	23	20	19	10	11	BA	16	10	7	3	3	5	5	9	5	6	15	33	3
11	8	6	AO	AO	AO	AO	12	16	19	12	7	7	6	7	7	7	6	8	7	7	8	8	8	8	9	19	6
12	7	7	7	7	9	11	11	14	18	11	8	9	9	8	7	8	7	8	8	9	10	9	10	8	9	18	7
13	10	10	11	10	11	11	14	19	18	11	16	13	10	8	9	8	8	9	6	8	10	8	7	4	10	19	4
14	8	7	6	6	7	7	7	10	9	6	5	4	3	5	4	5	8	21	34	55	78	83	62	61	21	83	3
15	69	76	77	79	80	83	86	105	99	95	49	29	29	32	29	21	19	16	18	17	15	18	18	18	49	105	15
16	18	17	18	18	17	18	18	18	29	16	7	5	6	6	5	6	5	7	7	8	10	16	14	14	13	29	5
17	12	12	13	13	12	17	17	23	38	20	27	6	8	7	6	7	7	9	15	15	10	12	7	6	13	38	6
18	6	5	6	6	7	7	10	18	12	AZ	BF	4	4	BA	7	10	9	8	7	9	11	14	12	10	9	18	4
19	7	8	8	8	11	16	11	17	25	23	11	6	7	5	6	6	7	8	8	12	15	15	11	12	11	25	5
20	13	15	20	23	31	33	38	30	27	32	28	16	16	13	13	14	18	12	46	8	6	11	9	14	20	46	6
21	14	12	14	11	14	14	18	18	27	27	18	17	22	29	23	25	30	59	51	62	60	56	57	56	31	62	11
22	52	54	43	44	42	42	43	57	56	66	52	31	19	22	21	21	19	23	43	43	31	32	30	37	38	66	19
23	38	36	34	34	33	32	33	50	43	49	55	37	32	30	33	33	32	70	37	30	39	34	33	28	38	70	28
24	29	30	28	29	30	35	37	46	43	43	26	29	40	81	92	60	27	19	18	20	18	10	18	12	34	92	10
25	14	14	11	12	15	18	15	21	34	38	34	32	30	21	18	18	21	29	30	33	32	28	25	22	24	38	11
26	25	25	23	24	25	27	27	30	BA	29	26	26	25	25	26	23	26	24	25	25	21	21	21	21	25	30	21
27	19	19	19	18	18	21	23	25	29	24	24	22	21	22	22	28	20	16	17	17	18	AV	20	19	21	29	16
28	19	18	19	AO	18	15	17	18	18	17	15	15	17	18	21	17	16	18	18	18	17	18	17	16	17	21	15
29	17	16	15	15	15	18	20	24	20	19	19	18	13	11	9	11	8	10	13	17	18	24	28	30	17	30	8
30	36	34	31	24	26	30	26	26	29	31	31	34	18	9	18	11	10	11	13	17	13	15	16	15	22	36	9
31	13	15	13	15	15	15	18	18	28	23	19	9	7	7	7	7	9	15	15	12	16	32	59	88	20	88	7
Avg	21	21	21	21	21	23	24	28	31	29	24	21	17	18	18	17	15	18	19	20	21	29	28	25	22	50	10
Max	69	76	77	79	80	83	86	105	99	95	55	103	40	81	92	60	32	70	51	62	78	215	168	88	49	215	28
Min	6	5	6	6	7	7	7	10	9	6	5	4	3	5	4	3	5	3	3	5	5	8	5	4	9	18	3

Montana Resources LLP
Greeley School Air Monitoring Summary
TSP - Met One E-Sampler (micrograms per cubic meter)
August 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	91	87	89	71	75	82	89	102	106	101	58	60	63	65	57	50	37	33	32	33	38	38	46	44	64	106	32
2	51	56	60	61	63	61	60	58	65	BA	32	30	27	24	15	15	13	13	14	15	16	15	15	19	35	65	13
3	16	16	13	14	15	15	14	17	21	19	19	19	19	17	14	14	19	13	13	12	14	16	16	14	16	21	12
4	14	14	14	14	14	14	14	15	31	20	24	21	17	18	17	16	15	16	17	15	14	15	14	9	16	31	9
5	8	AO	AO	AO	AO	AO	AO	AO	10	11	11	10	11	14	16	17	16	15	10	15	AO	AO	4	AO	12	17	4
6	AO	AO	AO	AO	AO	AO	AO	AO	8	8	9	8	7	8	7	5	5	6	7	5	4	4	AO	AO	7	9	4
7	AO	AO	AO	AO	AO	AO	AO	8	11	8	6	7	6	6	6	5	6	6	7	5	3	4	5	3	6	11	3
8	AO	5	3	AO	AO	AO	5	4	7	6	8	7	8	8	10	8	8	8	8	11	6	6	7	6	7	11	3
9	6	8	8	AO	AO	AO	11	15	BA	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	10	15	6
10	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF			
11	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF			
12	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF			
13	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF			
14	AF	AF	AF	AF	AF	AF	AF	AF	AF	BA	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
15	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
16	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
17	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
18	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
19	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
20	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
21	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	BA	BA	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
22	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
23	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	BA	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
24	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	BF	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
25	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
26	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
27	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
28	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
29	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
30	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	BA	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
31	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
Avg	31	31	31	40	42	43	32	31	32	25	21	20	20	20	18	16	15	14	14	14	14	14	15	16	22	32	10
Max	91	87	89	71	75	82	89	102	106	101	58	60	63	65	57	50	37	33	32	33	38	38	46	44	64	106	32
Min	6	5	3	14	14	14	5	4	7	6	6	7	6	6	6	5	5	6	7	5	3	4	4	3	6	9	3

Montana Resources LLP
Greeley School Air Monitoring Summary
TSP - Met One E-Sampler (micrograms per cubic meter)
September 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
2	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	BF	AN	AN	AN	AN	AN	AN	AN			
3	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
4	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
5	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN			
6	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	BA	7	8	7	9	12	13	12	6	4	5	8	13	4
7	7	7	5	5	7	5	7	9	8	15	7	8	8	8	9	11	9	8	8	8	8	9	10	7	8	15	5
8	7	AO	AO	4	3	7	7	5	4	7	7	9	9	9	7	7	8	8	6	6	7	8	9	12	7	12	3
9	10	AO	AO	AO	AO	AO	AO	12	18	19	12	8	7	8	7	8	10	7	8	9	9	9	10	11	10	19	7
10	9	10	AO	AO	AO	AO	AO	17	15	21	15	12	12	9	9	8	9	10	10	9	9	13	13	12	12	21	8
11	12	11	30	31	23	21	38	41	30	33	17	12	14	9	10	9	9	11	14	16	14	15	11	12	18	41	9
12	12	12	12	12	14	18	46	55	28	62	31	13	10	10	11	10	12	12	11	8	11	8	7	7	18	62	7
13	7	6	7	9	9	AO	30	24	16	20	8	5	5	BA	5	6	9	6	7	7	10	6	8	6	10	30	5
14	6	6	5	7	7	9	16	16	24	23	16	13	9	8	5	7	9	10	9	12	10	14	18	10	11	24	5
15	10	12	13	13	12	AO	AO	20	31	33	27	10	9	9	6	7	6	7	11	13	16	13	15	16	14	33	6
16	15	12	13	14	12	17	21	13	17	31	34	14	13	10	8	8	9	10	20	21	24	23	23	39	18	39	8
17	25	27	17	24	19	24	19	15	25	31	31	17	13	12	9	9	9	8	13	18	17	16	17	16	18	31	8
18	13	14	16	16	20	25	33	33	44	36	14	11	21	BA	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	23	44	11
19	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK			
20	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK			
21	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK			
22	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK			
23	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK			
24	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK			
25	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	AK	BA	11	11	10	13	10	13	11	10	8	8	11	13	8
26	10	10	17	17	27	35	42	39	36	15	9	8	7	9	6	8	12	23	37	30	26	21	19	15	20	42	6
27	14	12	10	8	9	12	17	15	21	27	24	AV	BF	11	14	12	6	3	5	4	5	7	8	8	11	27	3
28	8	10	7	7	9	23	31	17	17	23	8	7	6	6	7	6	5	5	7	10	7	9	7	6	10	31	5
29	7	8	17	10	11	24	12	14	21	23	19	8	9	8	9	10	6	18	14	11	12	17	15	14	13	24	6
30	13	10	12	14	16	11	10	11	10	8	9	8	7	10	8	7	7	8	9	11	6	6	6	AO	9	16	6
Avg	11	11	13	13	13	18	24	21	21	25	17	10	10	9	8	8	8	10	12	12	12	12	12	12	13	28	6
Max	25	27	30	31	27	35	46	55	44	62	34	17	21	12	14	12	12	23	37	30	26	23	23	39	23	62	11
Min	6	6	5	4	3	5	7	5	4	7	7	5	5	6	5	6	5	3	5	4	5	6	4	5	7	12	3

Montana Resources LLP
Greeley School Air Monitoring Summary
Relative Humidity (% RH)
July 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	69	74	79	81	82	82	73	65	50	34	30	36	61	66	49	43	35	33	28	22	26	39	54	68	53	82	22
2	76	82	83	85	88	85	64	59	39	24	22	19	19	17	16	15	16	18	21	22	25	30	30	32	41	88	15
3	42	55	61	67	73	73	61	55	48	39	32	29	29	28	25	25	25	24	26	26	27	36	45	48	42	73	24
4	53	50	59	67	77	80	70	69	62	58	54	42	38	34	35	32	30	33	35	40	44	49	57	60	51	80	30
5	67	73	78	82	85	84	70	62	53	44	35	27	25	25	27	29	32	27	26	31	37	43	51	62	49	85	25
6	64	66	67	69	76	79	68	61	51	40	38	28	24	34	32	41	52	40	42	46	50	57	68	75	53	79	24
7	78	82	84	85	87	86	74	62	54	38	31	30	29	25	24	27	36	36	38	39	45	56	65	72	53	87	24
8	76	76	81	83	84	84	67	59	49	38	33	26	24	21	21	23	23	27	31	31	36	42	46	49	47	84	21
9	54	63	71	74	77	76	67	53	44	33	27	22	21	24	27	23	23	20	25	30	34	37	51	58	43	77	20
10	65	69	67	58	59	60	71	70	57	50	38	27	25	25	32	63	61	50	52	58	64	76	81	80	57	81	25
11	86	88	90	92	94	92	78	73	67	49	26	21	19	15	13	13	16	17	17	19	25	33	41	49	47	94	13
12	59	67	69	73	79	79	65	56	48	30	22	21	19	18	19	18	18	19	19	23	25	28	39	45	40	79	18
13	54	62	66	69	72	71	64	58	48	39	37	35	34	34	37	33	33	30	27	29	35	36	38	38	45	72	27
14	56	68	73	78	82	80	62	56	45	34	28	24	24	22	20	20	21	25	27	29	30	37	48	56	44	82	20
15	61	62	67	73	76	78	63	54	46	33	27	22	22	23	23	21	19	20	23	26	29	37	46	53	42	78	19
16	58	60	64	69	73	76	62	50	42	25	17	16	16	16	16	15	14	16	17	21	29	34	38	46	37	76	14
17	50	56	62	65	68	68	58	48	45	39	33	30	27	25	24	23	21	18	18	21	22	28	32	40	38	68	18
18	47	55	63	67	70	72	58	45	36	28	21	18	16	14	14	14	16	17	18	21	22	23	27	37	34	72	14
19	43	52	57	60	66	67	54	44	37	28	21	16	15	12	12	13	13	15	16	19	20	25	26	32	32	67	12
20	38	44	49	56	56	63	48	39	36	30	25	18	15	13	13	13	15	16	29	46	41	52	61	66	37	66	13
21	71	72	76	77	79	80	68	57	46	35	26	22	19	16	15	16	16	16	17	21	30	36	41	48	42	80	15
22	54	58	62	65	69	70	57	46	38	31	23	17	11	9	9	10	10	12	14	16	16	16	21	32	32	70	9
23	38	44	47	53	57	60	50	39	34	27	23	17	15	14	14	14	13	21	26	29	36	44	55	54	34	60	13
24	57	61	64	66	70	68	60	45	38	26	18	18	20	22	22	27	27	26	26	30	35	39	46	53	40	70	18
25	60	66	68	70	72	74	62	52	45	35	31	24	17	17	17	16	17	21	27	33	36	38	44	52	41	74	16
26	59	66	70	73	76	78	70	60	52	40	35	31	28	25	25	23	24	25	26	27	28	27	32	42	43	78	23
27	46	51	57	60	63	63	57	46	38	29	25	24	25	26	27	35	36	34	39	43	49	64	71	82	45	82	24
28	89	87	88	90	78	70	69	63	51	41	39	35	33	32	56	49	41	37	38	50	54	64	71	77	58	90	32
29	82	83	85	87	88	89	76	66	59	46	41	35	23	21	16	14	15	16	18	19	23	27	34	36	46	89	14
30	39	47	53	52	52	54	53	48	44	35	31	30	20	15	19	22	17	16	19	21	18	17	30	38	33	54	15
31	45	52	56	59	60	64	52	38	34	23	16	12	12	11	9	10	10	10	13	19	23	22	25	28	29	64	9
Avg	59	64	68	71	74	74	64	55	46	36	29	25	23	23	23	24	24	24	26	29	33	38	46	52	43	77	19
Max	89	88	90	92	94	92	78	73	67	58	54	42	61	66	56	63	61	50	52	58	64	76	81	82	58	94	32
Min	38	44	47	52	52	54	48	38	34	23	16	12	11	9	9	10	10	10	13	16	16	16	21	28	29	54	9

Montana Resources LLP
Greeley School Air Monitoring Summary
Relative Humidity (% RH)
August 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	35	41	47	54	60	65	57	43	37	30	22	17	16	15	14	12	10	12	16	18	23	25	33	37	31	65	10
2	44	48	51	54	56	58	57	48	37	35	32	29	27	27	26	25	29	29	30	33	37	39	46	53	40	58	25
3	51	53	63	64	70	71	66	62	57	44	43	40	39	37	32	35	46	49	47	48	52	57	61	63	52	71	32
4	65	65	65	64	66	67	67	68	71	72	70	64	56	49	46	44	43	44	51	55	60	68	79	87	62	87	43
5	87	90	92	93	93	93	92	91	89	87	89	87	83	76	79	77	70	71	72	87	93	94	88	92	86	94	70
6	93	93	93	94	95	95	94	90	78	67	61	53	45	43	52	45	41	55	78	85	87	89	92	92	75	95	41
7	91	94	91	91	93	93	91	80	74	60	49	39	37	36	37	32	34	37	45	73	83	84	86	89	67	94	32
8	91	89	85	91	91	91	89	86	81	70	61	56	45	38	51	40	32	32	36	46	55	66	76	83	66	91	32
9	86	87	89	91	92	93	88	75	62	48	39	32	26	21	23	26	28	34	57	63	71	87	89	93	63	93	21
10	94	95	95	96	96	96	95	89	61	46	31	26	25	23	22	21	20	21	23	26	28	34	40	49	52	96	20
11	54	63	70	72	79	81	74	59	47	36	30	28	27	23	19	18	19	21	23	26	30	39	51	51	43	81	18
12	53	60	68	72	77	78	77	70	60	51	40	30	25	23	20	19	20	23	26	30	32	34	39	42	45	78	19
13	46	52	65	70	76	79	77	62	49	39	33	27	26	24	24	23	20	21	24	27	29	34	41	52	43	79	20
14	57	62	66	70	74	76	74	52	42	33	25	23	19	17	17	15	14	13	14	15	19	30	39	43	38	76	13
15	47	52	56	59	59	63	61	43	34	26	20	16	17	16	15	13	15	17	19	22	30	38	43	51	35	63	13
16	57	62	65	69	73	73	72	52	39	31	22	19	19	20	16	15	15	16	18	25	31	35	41	48	39	73	15
17	52	58	63	67	69	71	73	51	44	36	26	16	14	13	13	12	11	13	17	25	29	31	32	37	36	73	11
18	37	38	42	48	56	60	69	61	48	29	27	25	23	28	45	45	39	26	34	38	43	54	60	65	43	69	23
19	68	71	73	77	79	81	78	64	51	43	39	36	34	32	31	36	63	89	86	89	88	90	89	85	66	90	31
20	81	83	82	79	81	77	81	81	80	78	85	86	84	80	76	76	77	79	84	89	91	92	94	94	83	94	76
21	94	95	94	95	95	95	95	94	90	81	73	57	44	40	35	35	33	32	34	36	36	52	60	61	65	95	32
22	63	66	71	76	83	85	81	66	52	42	38	35	31	33	34	33	31	35	37	40	49	65	75	73	54	85	31
23	77	87	85	81	87	89	87	67	52	47	39	38	35	29	26	26	27	28	34	55	63	69	75	79	58	89	26
24	83	87	88	89	91	91	91	73	61	49	33	30	25	23	23	24	23	25	28	31	35	38	48	57	52	91	23
25	65	74	77	80	79	79	74	67	55	38	33	29	30	27	25	29	54	77	76	86	88	87	77	78	62	88	25
26	87	91	94	94	95	96	95	83	72	60	48	39	33	27	24	26	24	22	28	33	38	60	66	74	59	96	22
27	78	78	80	79	81	83	79	65	60	57	41	25	24	25	23	22	24	28	31	43	52	60	69	73	53	83	22
28	77	79	81	81	83	83	84	67	53	41	34	29	24	24	22	27	31	29	31	34	40	51	54	40	50	84	22
29	37	42	53	62	62	67	77	56	39	36	32	25	19	16	16	17	17	17	29	34	62	70	71	84	43	84	16
30	88	91	93	93	93	88	71	58	48	43	39	33	33	29	32	34	38	41	45	47	52	53	54	55	56	93	29
31	56	55	54	55	65	73	74	59	50	42	37	32	27	24	22	21	21	19	23	35	41	48	58	62	44	74	19
Avg	68	71	74	76	79	80	79	67	57	48	42	36	33	30	30	30	31	34	39	45	51	57	62	66	54	83	27
Max	94	95	95	96	96	96	95	94	90	87	89	87	84	80	79	77	77	89	86	89	93	94	94	94	86	96	76
Min	35	38	42	48	56	58	57	43	34	26	20	16	14	13	13	12	10	12	14	15	19	25	32	37	31	58	10

Montana Resources LLP
Greeley School Air Monitoring Summary
Relative Humidity (% RH)
September 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	57	62	65	66	71	75	74	58	44	33	26	26	24	21	22	23	24	26	27	30	37	44	45	48	43	75	21
2	51	56	64	66	67	72	72	56	43	37	33	33	33	30	29	AV	25	27	30	38	48	56	62	65	48	72	25
3	70	73	75	78	80	78	75	72	54	53	45	49	74	90	82	74	70	79	86	84	76	84	89	89	74	90	45
4	91	92	93	93	94	94	93	92	91	89	88	86	76	69	69	86	81	76	82	87	92	92	92	94	87	94	69
5	94	93	95	94	95	95	95	90	84	75	65	61	52	48	51	46	45	49	53	59	68	70	77	80	72	95	45
6	84	89	92	93	94	94	95	81	65	52	37	31	31	31	27	27	27	29	36	40	51	69	65	80	59	95	27
7	86	79	87	86	83	89	88	85	79	75	51	46	42	38	38	48	42	44	50	62	71	77	85	87	67	89	38
8	89	93	92	82	87	87	87	81	74	72	72	62	57	52	56	42	42	49	48	54	61	71	78	84	70	93	42
9	88	91	92	93	94	94	95	88	70	61	53	39	28	36	50	42	45	47	51	57	57	59	65	73	65	95	28
10	85	88	90	92	92	94	94	82	64	59	54	46	40	27	21	21	28	35	38	40	43	55	63	70	59	94	21
11	72	79	83	86	86	86	88	73	58	49	36	30	28	23	24	26	26	32	40	48	58	64	68	75	56	88	23
12	78	81	83	85	87	88	88	78	55	48	34	27	24	17	17	17	22	26	33	41	48	53	61	69	53	88	17
13	71	77	83	86	89	90	89	86	74	56	41	36	34	32	33	34	33	35	37	40	53	61	69	74	59	90	32
14	77	80	82	84	86	88	88	80	60	51	42	35	32	30	25	24	29	31	33	37	52	63	73	77	57	88	24
15	81	84	86	87	89	90	90	79	61	49	38	29	25	22	17	14	15	17	32	39	48	61	64	72	54	90	14
16	76	80	81	83	85	86	87	78	52	45	35	23	20	17	15	16	16	15	17	27	41	49	55	61	48	87	15
17	65	67	69	72	75	77	77	67	43	37	31	20	14	12	12	15	15	15	20	32	40	48	57	61	43	77	12
18	65	67	72	75	74	77	79	69	42	28	23	20	20	20	20	21	23	27	34	36	41	56	63	70	47	79	20
19	75	78	78	76	81	84	86	77	57	46	36	31	24	14	14	18	23	25	28	31	35	46	54	52	49	86	14
20	58	60	65	70	75	78	79	71	57	43	37	34	31	27	26	26	28	31	37	40	44	48	59	59	49	79	26
21	67	88	92	86	80	81	82	79	78	80	84	88	88	87	86	86	86	89	90	92	94	94	94	94	86	94	67
22	93	94	94	94	95	94	94	92	90	90	88	87	82	79	79	73	76	88	93	94	95	94	94	94	89	95	73
23	92	93	93	93	93	93	92	89	70	57	53	47	44	38	33	31	30	32	44	51	66	77	78	86	66	93	30
24	87	87	88	91	91	90	91	83	74	71	53	43	33	28	28	28	28	33	39	54	56	58	61	70	61	91	28
25	77	79	85	88	88	89	91	82	58	49	43	30	22	20	21	19	23	25	24	30	29	27	27	31	48	91	19
26	35	44	54	59	58	59	73	67	39	27	23	21	17	17	15	17	21	27	33	36	39	48	53	58	39	73	15
27	60	66	72	79	83	86	88	82	71	62	58	AV	33	25	26	47	54	52	55	57	55	53	61	72	61	88	25
28	77	81	84	86	88	89	89	84	65	52	40	38	33	29	27	25	25	32	36	51	56	65	70	74	58	89	25
29	78	81	83	85	85	86	85	80	65	54	46	35	32	29	28	25	26	30	39	47	52	59	66	72	57	86	25
30	77	74	73	78	85	83	86	89	76	69	67	60	54	50	48	49	54	63	74	80	80	81	83	90	72	90	48
Avg	75	79	82	83	84	86	86	79	64	56	48	42	38	35	35	35	36	40	45	50	56	63	68	73	60	88	30
Max	94	94	95	94	95	95	95	92	91	90	88	88	88	90	86	86	86	89	93	94	95	94	94	94	89	95	73
Min	35	44	54	59	58	59	72	56	39	27	23	20	14	12	12	14	15	15	17	27	29	27	27	31	39	72	12

Montana Resources LLP
Greeley School Air Monitoring Summary
Temperature - MDEQ monitor (degrees Celsius)
July 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	14.1	12.8	11.6	10.8	10.2	10.5	12.6	14.9	19.2	24.0	26.2	20.7	15.7	16.4	19.9	21.4	24.2	25.5	25.4	24.1	21.9	17.7	14.9	12.7	17.8	26.2	10.2
2	11.4	10.1	9.3	8.5	7.7	7.5	11.1	14.9	18.8	21.3	22.9	25.4	26.5	27.3	27.9	28.3	28.0	27.1	25.6	24.1	22.3	20.6	19.8	18.9	19.4	28.3	7.5
3	15.9	12.6	11.1	9.5	8.6	8.5	11.1	13.3	15.3	17.3	19.7	21.6	22.7	22.9	23.8	22.9	22.3	21.5	20.0	19.7	18.3	16.4	15.0	13.9	16.8	23.8	8.5
4	12.7	12.0	10.0	9.1	7.7	7.1	8.9	10.1	11.5	12.2	13.3	15.9	16.7	17.9	18.2	19.0	19.0	18.3	17.8	16.3	15.0	13.7	12.0	10.8	13.5	19.0	7.1
5	9.4	8.1	7.4	6.5	5.6	5.6	8.3	11.3	13.5	16.0	19.3	21.1	21.9	22.4	22.5	21.5	21.1	22.2	21.9	20.3	18.4	16.5	14.7	12.5	15.3	22.5	5.6
6	11.7	11.6	11.3	11.1	9.5	8.7	10.8	13.1	15.9	19.3	19.5	23.2	22.0	21.1	21.5	18.3	16.7	17.9	17.5	16.7	15.4	13.7	11.3	9.8	15.3	23.2	8.7
7	8.7	7.5	6.7	6.0	5.5	5.6	7.8	11.9	14.9	18.9	20.7	21.3	22.2	23.5	22.9	21.3	19.0	19.1	18.9	18.9	16.9	14.6	12.6	11.0	14.9	23.5	5.5
8	10.3	10.0	8.7	8.0	7.2	7.4	10.6	13.8	16.9	20.1	21.8	23.6	24.3	25.6	26.4	25.0	26.4	24.9	23.4	22.5	20.1	18.3	17.7	16.0	17.9	26.4	7.2
9	15.5	12.9	11.1	10.4	9.6	9.7	11.4	15.8	19.0	22.4	24.4	26.1	27.5	26.9	26.0	27.7	27.2	27.8	26.9	23.9	22.0	21.1	17.7	16.0	20.0	27.8	9.6
10	14.4	13.4	13.9	16.3	15.9	16.1	15.6	16.2	18.4	20.3	23.9	26.5	28.0	29.1	25.7	17.5	18.1	19.6	19.3	18.7	17.7	16.3	14.8	14.9	18.8	29.1	13.4
11	14.1	13.1	12.4	11.4	10.7	10.5	13.3	15.7	17.2	19.8	22.0	23.3	24.3	25.2	25.7	26.1	25.1	24.5	23.3	22.3	20.4	18.6	15.9	13.8	18.7	26.1	10.5
12	11.7	9.8	9.0	8.1	6.9	6.7	9.6	13.0	16.0	20.4	22.5	23.5	25.3	26.3	26.2	25.7	26.0	25.8	25.4	24.1	22.6	21.2	17.8	15.8	18.3	26.3	6.7
13	13.8	12.2	11.2	10.1	9.5	9.4	11.5	13.2	15.2	17.7	19.3	20.8	21.0	21.5	21.2	21.9	23.4	24.3	24.1	22.8	20.7	19.7	18.7	17.7	17.5	24.3	9.4
14	13.7	11.0	9.6	8.2	7.3	7.2	10.6	14.0	17.4	20.3	21.7	21.7	22.6	23.5	24.4	25.5	25.5	24.6	23.6	22.4	21.0	18.5	15.7	13.6	17.7	25.5	7.2
15	12.3	11.4	10.3	9.1	8.4	8.0	10.8	14.2	16.9	21.4	24.2	24.9	25.9	26.2	27.1	28.0	27.6	27.3	26.2	25.0	23.3	20.1	16.9	15.0	19.2	28.0	8.0
16	13.9	13.3	12.2	11.3	10.2	9.5	12.1	15.6	19.1	24.1	26.8	27.6	28.9	29.0	30.3	31.3	32.1	30.6	29.8	28.3	24.6	22.6	20.7	18.3	21.8	32.1	9.5
17	16.9	15.3	13.9	13.3	12.4	12.3	14.6	18.2	19.4	21.1	23.0	24.7	26.7	27.5	27.3	27.8	28.3	28.6	26.6	24.5	22.9	20.8	18.6	15.5	20.8	28.6	12.3
18	13.1	11.5	9.9	8.7	8.0	7.4	10.5	15.0	17.7	19.7	21.9	23.3	24.2	25.5	26.7	26.3	25.9	25.7	24.6	23.1	21.5	20.7	19.0	14.9	18.5	26.7	7.4
19	12.9	10.7	9.7	8.4	7.4	7.1	9.7	13.5	16.9	19.9	22.8	24.7	25.6	26.8	27.6	28.4	29.1	28.4	26.8	25.1	23.4	21.7	20.2	17.2	19.3	29.1	7.1
20	15.2	14.0	13.1	12.1	12.1	10.9	14.9	18.1	20.2	22.6	24.4	26.9	29.0	29.4	29.4	29.4	28.3	28.0	23.1	19.1	19.4	17.1	15.1	13.7	20.2	29.4	10.9
21	12.4	11.4	10.3	9.8	9.3	8.8	11.4	15.1	18.6	22.0	25.3	27.6	29.6	30.8	31.0	30.3	30.4	30.1	29.3	27.7	24.2	21.3	19.0	16.9	20.9	31.0	8.8
22	15.3	14.1	13.0	12.1	11.2	10.8	13.5	17.4	21.1	24.1	27.6	30.5	32.4	33.0	33.0	33.4	32.9	31.8	31.2	29.2	27.9	26.8	24.3	19.2	23.6	33.4	10.8
23	16.9	15.2	14.1	12.7	11.7	10.9	13.1	17.4	20.7	23.7	25.1	28.5	30.9	32.5	32.8	33.3	33.3	29.0	27.0	25.8	23.1	20.4	18.4	17.4	22.2	33.3	10.9
24	16.5	15.5	14.6	13.8	12.7	13.0	14.9	19.4	22.4	26.7	31.4	30.8	29.0	27.9	27.7	25.8	26.3	26.5	25.5	23.8	21.7	20.3	18.5	16.3	21.7	31.4	12.7
25	14.6	13.1	12.3	11.6	11.1	10.6	12.8	16.1	18.8	21.9	24.2	27.2	28.1	28.1	28.9	29.4	29.1	28.0	25.6	23.4	21.9	20.5	18.4	16.2	20.5	29.4	10.6
26	14.2	12.7	11.6	10.7	9.9	9.4	11.2	14.3	17.0	19.9	22.5	24.3	25.6	26.7	26.8	27.8	27.0	26.7	25.5	23.5	22.1	21.5	19.1	16.3	19.4	27.8	9.4
27	14.7	13.1	11.8	10.7	9.7	9.4	10.8	14.4	18.0	20.7	23.7	25.3	25.8	26.1	25.3	22.3	22.1	23.4	21.4	20.1	18.8	16.5	15.4	13.9	18.1	26.1	9.4
28	12.5	12.4	11.9	10.9	12.4	12.9	12.8	14.6	17.3	19.6	21.2	23.5	25.5	25.2	19.8	21.4	22.8	23.3	22.9	20.6	19.0	17.1	15.9	14.7	17.9	25.5	10.9
29	13.1	12.1	11.1	10.5	9.8	9.2	11.9	15.6	18.4	21.4	22.9	25.5	28.8	29.4	29.7	29.4	28.3	27.4	26.7	26.3	24.2	22.5	20.8	19.9	20.6	29.7	9.2
30	19.0	16.2	14.7	14.1	14.3	14.5	14.5	16.3	18.1	21.6	23.8	24.6	28.6	29.8	28.7	28.4	30.4	30.3	28.8	27.4	25.1	23.5	18.6	15.4	21.9	30.4	14.1
31	13.4	11.6	10.1	8.9	8.1	7.3	9.5	13.4	17.1	22.0	26.1	29.7	29.8	29.9	30.9	30.9	30.9	31.1	29.1	27.4	25.3	25.2	23.8	21.8	21.4	31.1	7.3
Avg	13.7	12.3	11.2	10.4	9.7	9.4	11.7	14.8	17.6	20.7	23.0	24.7	25.6	26.2	26.3	26.0	26.0	25.8	24.6	23.1	21.3	19.5	17.5	15.5	19.0	27.6	9.2
Max	19.0	16.2	14.7	16.3	15.9	16.1	15.6	19.4	22.4	26.7	31.4	30.8	32.4	33.0	33.0	33.4	33.3	31.8	31.2	29.2	27.9	26.8	24.3	21.8	23.6	33.4	14.1
Min	8.7	7.5	6.7	6.0	5.5	5.6	7.8	10.1	11.5	12.2	13.3	15.9	15.7	16.4	18.2	17.5	16.7	17.9	17.5	16.3	15.0	13.7	11.3	9.8	13.5	19.0	5.5

Montana Resources LLP
Greeley School Air Monitoring Summary
Temperature - MDEQ monitor (degrees Celsius)
August 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	18.5	16.3	14.6	13.0	11.6	10.6	11.9	16.3	19.3	22.5	25.2	27.5	28.0	28.6	29.5	30.6	30.2	29.7	28.4	27.5	24.5	23.0	19.4	17.7	21.8	30.6	10.6
2	15.9	14.7	14.0	13.4	12.9	12.2	12.8	15.5	18.5	20.5	21.7	22.9	24.6	25.2	26.1	26.6	25.2	24.4	24.2	21.8	20.1	19.5	17.6	16.2	19.4	26.6	12.2
3	17.1	15.6	13.0	12.5	11.5	11.0	12.1	13.6	15.4	18.5	19.5	20.4	20.8	21.2	21.9	21.9	19.1	18.2	18.4	18.0	17.3	16.3	15.7	15.3	16.8	21.9	11.0
4	14.8	14.8	14.7	14.9	14.4	14.3	14.4	14.4	14.3	14.4	15.2	16.0	17.6	18.6	19.3	19.8	20.0	19.6	18.8	18.1	17.1	16.0	14.6	13.2	16.2	20.0	13.2
5	12.4	12.0	12.0	11.9	11.7	11.6	11.6	12.0	12.6	12.8	12.8	13.2	13.7	14.9	14.8	15.9	16.9	16.7	15.7	13.9	12.8	12.5	12.0	11.5	13.2	16.9	11.5
6	11.5	11.3	11.3	11.2	10.8	10.7	10.9	11.5	13.0	15.1	16.3	17.9	19.6	19.8	19.2	19.9	20.6	17.6	13.1	11.8	11.6	11.4	10.9	10.9	14.1	20.6	10.7
7	10.2	9.5	9.2	8.8	8.1	7.4	8.1	10.7	13.3	15.8	17.6	19.9	21.0	21.4	21.7	23.3	22.5	21.2	19.5	14.6	13.2	13.0	12.8	12.3	14.8	23.3	7.4
8	12.2	12.4	12.3	11.4	11.0	11.0	11.2	11.6	13.2	15.4	16.8	18.8	21.2	22.4	19.9	22.1	23.4	23.6	21.8	19.8	17.8	15.9	14.5	12.9	16.4	23.6	11.0
9	11.8	11.0	10.3	9.7	9.1	8.7	9.7	12.8	16.9	19.5	21.7	23.9	24.7	25.8	25.8	24.9	24.1	22.2	17.9	16.6	15.4	13.6	12.9	12.2	16.7	25.8	8.7
10	11.2	10.6	9.9	9.2	8.6	8.4	8.3	9.3	15.6	18.3	20.5	22.2	23.0	24.1	24.6	25.2	25.0	24.2	22.5	20.7	19.4	17.5	15.9	13.4	17.0	25.2	8.3
11	12.2	10.8	9.4	8.3	7.1	6.6	7.8	11.5	16.0	18.9	21.3	22.7	24.1	25.4	26.9	27.3	26.8	25.9	24.1	22.9	21.2	18.0	15.1	14.8	17.7	27.3	6.6
12	13.9	12.1	10.5	9.4	8.4	7.9	8.3	10.2	13.3	16.6	19.4	22.5	23.0	24.2	24.8	25.0	24.6	23.6	22.5	21.0	20.3	19.4	17.5	16.5	17.3	25.0	7.9
13	15.1	13.7	11.0	9.9	8.5	7.7	8.2	11.4	15.0	17.7	20.3	21.8	22.9	23.7	24.0	24.8	25.4	24.9	23.0	20.8	19.3	17.3	14.8	12.9	17.3	25.4	7.7
14	11.5	10.3	9.2	8.0	7.1	6.6	7.3	11.4	15.9	19.3	22.3	24.6	26.7	28.6	29.7	30.9	30.7	31.3	29.8	26.1	22.6	19.1	16.4	14.5	19.2	31.3	6.6
15	13.2	12.1	11.0	10.2	9.7	9.2	9.7	14.0	19.0	23.5	27.3	30.7	32.4	33.1	33.9	34.5	33.9	33.0	31.2	29.0	25.8	22.1	19.9	18.1	22.4	34.5	9.2
16	16.7	15.3	14.3	13.6	12.7	11.9	12.4	16.6	21.7	25.4	28.7	29.3	29.2	29.0	30.8	31.6	31.4	30.7	29.8	27.2	24.1	21.0	18.7	17.0	22.5	31.6	11.9
17	15.6	14.1	12.7	11.8	10.9	10.3	10.1	14.6	18.5	21.7	26.4	29.3	30.8	32.0	33.5	34.5	34.1	33.1	30.5	27.2	25.4	23.4	22.9	21.3	22.7	34.5	10.1
18	21.3	21.2	22.1	21.1	19.5	18.8	18.5	19.7	22.1	25.7	26.8	27.5	28.4	26.5	22.1	21.2	22.7	24.7	22.6	21.2	19.7	16.8	15.5	14.3	21.7	28.4	14.3
19	13.4	12.6	12.4	11.4	10.8	10.3	11.0	13.9	17.4	19.7	21.4	22.9	24.5	25.9	26.4	24.0	18.6	13.8	14.1	13.8	13.8	13.7	13.9	14.3	16.4	26.4	10.3
20	14.5	14.3	14.3	14.3	14.0	14.3	14.1	14.4	14.9	15.4	14.4	14.5	14.4	14.9	15.1	15.1	15.4	15.2	14.4	13.7	13.4	12.8	12.6	12.6	14.3	15.4	12.6
21	12.7	12.7	12.6	12.6	12.8	12.8	12.8	13.2	14.3	16.0	17.7	21.9	24.0	25.3	26.1	26.0	26.5	26.1	24.4	23.6	23.6	20.8	19.5	19.1	19.0	26.5	12.6
22	18.7	18.1	17.1	15.9	14.0	12.8	13.0	16.1	19.3	22.4	23.1	24.2	25.4	25.0	24.6	24.3	25.1	23.8	22.1	20.7	19.6	16.7	15.0	14.6	19.7	25.4	12.8
23	14.2	13.1	12.5	12.7	11.8	10.7	10.9	13.7	16.4	18.7	20.7	20.5	21.4	22.7	22.8	23.5	23.8	23.4	21.7	17.2	15.0	13.6	12.1	11.1	16.8	23.8	10.7
24	10.0	9.1	8.3	7.7	7.0	6.8	6.9	10.2	14.5	18.0	21.3	23.3	24.6	25.4	25.7	25.8	25.8	25.1	23.8	21.6	19.8	18.3	16.1	14.2	17.1	25.8	6.8
25	12.5	10.7	9.7	8.8	8.7	8.7	9.8	11.3	13.9	17.2	19.0	21.4	22.5	25.0	26.3	24.7	18.5	15.1	15.2	14.3	13.9	14.1	15.0	14.3	15.4	26.3	8.7
26	12.9	11.9	11.0	10.5	9.7	9.1	9.2	11.5	14.6	17.9	20.9	22.7	25.2	25.9	26.2	25.5	25.8	26.7	24.3	21.9	19.8	16.7	14.8	13.0	17.8	26.7	9.1
27	11.6	10.8	10.3	9.9	9.4	8.6	9.3	12.5	14.7	16.1	19.7	22.8	25.0	25.8	26.4	26.6	26.1	24.1	23.2	19.7	17.1	15.5	13.7	12.6	17.1	26.6	8.6
28	11.5	10.7	10.0	10.0	9.5	9.6	9.4	12.5	16.3	20.1	22.0	24.1	26.2	27.1	28.2	27.1	24.4	25.5	24.3	22.0	19.9	17.5	16.6	18.7	18.5	28.2	9.4
29	18.8	17.5	14.7	13.3	13.4	12.0	10.2	14.2	19.3	21.6	23.6	27.3	29.2	29.9	30.2	30.0	29.2	28.0	23.2	21.4	16.0	15.0	14.7	13.0	20.2	30.2	10.2
30	12.0	11.4	10.6	9.9	9.4	9.5	11.0	13.6	14.6	14.3	14.8	16.1	15.7	17.0	16.7	16.2	15.4	14.4	13.6	13.4	12.7	12.5	12.2	12.1	13.3	17.0	9.4
31	12.0	12.1	12.2	11.2	9.0	7.2	7.6	10.7	12.8	15.2	17.2	19.2	21.1	22.3	23.6	23.9	24.2	24.2	22.6	17.4	15.1	13.0	11.2	10.2	15.6	24.2	7.2
Avg	13.9	13.0	12.2	11.5	10.7	10.2	10.6	13.1	16.0	18.5	20.5	22.3	23.6	24.4	24.7	24.9	24.4	23.5	22.0	20.0	18.3	16.6	15.3	14.3	17.7	25.6	9.9
Max	21.3	21.2	22.1	21.1	19.5	18.8	18.5	19.7	22.1	25.7	28.7	30.7	32.4	33.1	33.9	34.5	34.1	33.1	31.2	29.0	25.8	23.4	22.9	21.3	22.7	34.5	14.3
Min	10.0	9.1	8.3	7.7	7.0	6.6	6.9	9.3	12.6	12.8	12.8	13.2	13.7	14.9	14.8	15.1	15.4	13.8	13.1	11.8	11.6	11.4	10.9	10.2	13.2	15.4	6.6

Montana Resources LLP
Greeley School Air Monitoring Summary
Temperature - MDEQ monitor (degrees Celsius)
September 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	11.7	10.1	9.4	9.2	8.3	7.8	8.1	11.2	15.3	19.2	22.5	22.6	25.3	27.6	27.5	27.5	26.9	25.9	24.8	22.6	20.0	19.0	19.4	18.8	18.4	27.6	7.8
2	18.1	16.6	14.9	14.4	14.2	13.0	13.4	17.1	20.4	22.7	23.9	24.5	25.3	26.2	26.2	26.4	27.4	26.6	25.4	22.0	19.2	17.4	15.8	14.8	20.2	27.4	13.0
3	13.8	12.8	12.3	11.7	11.1	11.6	12.4	13.5	17.3	18.4	20.6	20.0	16.2	14.0	15.8	16.9	17.0	14.8	13.4	13.6	13.5	12.5	12.1	12.2	14.5	20.6	11.1
4	12.1	11.9	11.7	11.3	11.2	11.0	10.8	10.6	10.8	11.4	11.9	12.2	13.5	13.7	14.3	11.9	12.6	13.9	12.8	11.4	11.0	10.7	9.8	9.0	11.7	14.3	9.0
5	9.2	9.1	8.3	8.3	7.6	8.0	7.9	9.3	11.0	12.6	14.7	16.2	17.9	19.3	18.5	18.8	19.2	17.8	16.7	15.7	14.2	13.5	11.8	10.7	13.2	19.3	7.6
6	10.3	9.0	7.9	7.1	6.6	5.8	5.5	8.0	13.1	17.0	19.6	20.4	21.2	21.4	22.6	22.4	22.7	21.2	19.8	18.3	16.2	13.3	13.3	10.9	14.7	22.7	5.5
7	10.1	10.8	9.2	9.1	10.1	9.2	9.7	10.6	11.5	13.2	16.6	17.4	19.1	20.8	21.2	18.6	20.2	20.0	19.0	16.2	14.2	13.1	11.9	11.5	14.3	21.2	9.1
8	10.8	10.3	10.7	11.0	10.0	10.2	10.2	11.2	13.4	13.8	14.5	16.9	17.8	19.0	18.0	19.8	19.8	17.9	16.8	15.6	14.1	12.2	10.6	9.0	13.9	19.8	9.0
9	7.9	7.1	6.5	5.9	5.4	5.0	4.7	6.5	10.7	13.6	15.9	18.6	20.9	20.7	17.2	18.9	18.1	17.9	16.8	15.2	14.7	13.8	12.6	11.1	12.7	20.9	4.7
10	8.5	7.5	6.6	6.1	5.5	5.1	4.8	7.5	12.5	14.8	16.3	18.6	20.0	21.7	23.1	23.7	22.9	21.1	18.9	17.4	16.2	13.9	11.8	10.4	14.0	23.7	4.8
11	9.6	8.1	7.1	6.3	5.8	5.2	4.9	7.8	12.5	15.5	19.0	20.8	22.3	23.0	24.2	23.6	23.5	22.0	19.6	17.2	14.9	13.2	11.8	10.4	14.5	24.2	4.9
12	9.6	8.8	8.3	7.8	7.2	6.6	6.5	9.0	14.3	17.2	20.7	22.7	24.6	25.0	25.3	25.7	23.4	22.0	20.1	18.0	17.0	16.5	15.2	14.3	16.1	25.7	6.5
13	13.5	12.2	10.3	9.4	8.5	8.2	8.1	8.7	11.1	15.3	17.0	17.8	18.8	19.4	19.2	18.7	18.7	17.7	16.6	15.4	12.8	10.4	8.8	7.4	13.5	19.4	7.4
14	6.4	5.7	5.0	4.4	3.7	3.2	3.0	5.3	10.3	13.2	15.5	17.1	18.1	19.1	20.5	20.5	20.4	19.3	17.7	15.6	12.8	10.6	8.7	7.4	11.8	20.5	3.0
15	6.2	5.4	4.6	3.6	2.9	2.4	2.3	5.0	10.1	13.7	17.1	19.4	20.7	22.3	23.7	24.5	24.2	23.4	19.8	16.9	14.2	11.5	10.0	8.2	13.0	24.5	2.3
16	7.1	6.2	5.1	4.5	3.7	3.2	2.7	5.1	11.1	14.8	18.5	22.0	24.4	25.2	25.9	26.1	25.6	24.6	21.4	17.3	14.1	12.0	10.4	8.9	14.2	26.1	2.7
17	7.8	6.7	6.0	5.2	4.4	3.9	3.6	5.8	12.3	15.2	19.4	23.5	25.3	25.6	25.6	24.7	24.5	24.4	21.5	16.6	14.0	11.8	10.0	8.7	14.4	25.6	3.6
18	8.0	7.2	6.2	5.6	5.7	4.9	4.5	6.6	14.4	18.9	20.9	21.9	22.8	23.0	22.0	22.0	21.3	20.0	17.6	16.8	15.0	11.6	10.1	8.4	14.0	23.0	4.5
19	7.0	6.2	5.8	5.6	4.6	3.6	3.0	5.3	9.8	13.5	15.6	17.5	19.8	21.1	20.5	19.1	17.9	17.2	14.9	13.4	12.0	9.0	7.0	7.1	11.5	21.1	3.0
20	5.3	4.3	3.4	2.1	1.0	0.5	0.4	2.3	6.3	9.6	12.0	13.9	14.3	15.2	15.4	15.4	15.8	14.8	12.8	11.9	11.3	10.6	9.0	8.6	9.0	15.8	0.4
21	7.5	5.1	4.9	5.1	5.3	4.9	4.5	4.5	4.4	4.3	3.7	3.4	3.7	4.1	4.9	5.6	5.3	5.1	5.1	5.0	5.2	5.2	5.1	5.3	4.9	7.5	3.4
22	5.2	5.3	5.4	5.2	5.2	5.2	5.2	5.5	5.9	6.1	6.6	7.2	8.5	8.8	8.9	9.9	9.3	8.3	7.8	7.6	7.4	7.3	7.3	7.2	6.9	9.9	5.2
23	7.1	7.0	6.9	6.3	5.9	5.5	5.6	6.1	8.9	10.1	11.6	13.2	14.5	15.7	17.3	18.1	18.5	17.7	14.4	12.3	9.5	7.0	5.8	4.2	10.4	18.5	4.2
24	3.2	2.7	1.9	1.1	1.0	0.8	0.5	3.0	6.2	7.6	11.8	14.3	17.1	18.8	18.8	18.9	19.2	18.0	15.6	12.1	11.6	11.2	10.1	8.1	9.7	19.2	0.5
25	6.4	5.4	3.9	3.2	2.9	2.5	2.0	4.4	10.3	13.5	15.9	20.6	22.9	23.6	23.5	23.5	22.6	20.4	19.5	16.7	17.1	18.3	18.3	16.2	13.9	23.6	2.0
26	14.9	12.0	9.8	8.6	8.4	8.1	5.5	6.8	14.5	18.5	20.4	22.5	23.7	23.3	24.6	23.2	21.6	19.5	16.5	15.3	14.1	12.0	11.0	10.3	15.2	24.6	5.5
27	10.0	8.9	7.5	5.6	4.3	3.5	3.0	4.3	7.3	9.8	11.5	14.4	17.0	19.2	18.4	13.3	11.3	10.9	9.7	8.7	8.3	7.8	5.8	3.3	9.3	19.2	3.0
28	2.2	1.2	0.2	-0.5	-1.0	-1.5	-1.8	-0.5	4.2	7.8	9.6	11.1	12.6	13.8	14.4	15.1	14.6	12.5	11.2	8.2	6.7	4.8	3.4	2.3	6.3	15.1	-1.8
29	1.3	0.5	-0.3	-0.8	-0.6	-1.0	-0.6	0.8	4.5	7.7	10.4	11.6	13.3	15.4	15.7	16.9	16.3	15.0	12.1	9.9	8.6	7.5	6.1	4.9	7.3	16.9	-1.0
30	4.1	4.7	5.5	5.6	5.5	6.3	5.5	5.6	7.8	9.5	10.2	12.4	13.2	13.9	14.8	14.5	12.8	10.2	7.1	5.6	5.8	5.8	5.6	5.0	8.2	14.8	4.1
Avg	8.5	7.6	6.8	6.3	5.8	5.4	5.2	6.9	10.7	13.3	15.5	17.2	18.5	19.3	19.6	19.5	19.1	18.0	16.2	14.3	12.9	11.4	10.3	9.2	12.4	20.4	4.8
Max	18.1	16.6	14.9	14.4	14.2	13.0	13.4	17.1	20.4	22.7	23.9	24.5	25.3	27.6	27.5	27.5	27.4	26.6	25.4	22.6	20.0	19.0	19.4	18.8	20.2	27.6	13.0
Min	1.3	0.5	-0.3	-0.8	-1.0	-1.5	-1.8	-0.5	4.2	4.3	3.7	3.4	3.7	4.1	4.9	5.6	5.3	5.1	5.1	5.0	5.2	4.8	3.4	2.3	4.9	7.5	-1.8

Montana Resources LLP
Greeley School Air Monitoring Summary
Wind Direction - MDEQ monitor (degrees)
July 2023

	<< Hour >>																								
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Prev
1	242	210	324	289	176	142	318	309	338	354	12	349	322	155	338	16	45	185	314	326	321	161	248	71	318
2	242	115	357	70	278	259	315	356	40	57	30	315	306	275	270	308	308	322	329	330	337	343	337	338	329
3	235	161	186	82	205	234	208	250	332	330	337	358	303	345	318	337	337	349	341	344	10	37	48	50	331
4	18	355	23	250	152	166	121	96	132	254	203	172	343	113	64	3	3	56	80	86	65	286	265	161	83
5	21	325	287	310	326	344	234	354	3	8	17	43	94	342	130	7	75	36	353	6	49	240	327	232	356
6	206	226	180	203	281	235	65	322	357	325	326	104	319	216	168	40	75	33	27	34	68	120	92	154	60
7	179	236	165	317	344	67	71	1	311	335	92	118	119	101	102	159	186	345	35	51	32	182	200	154	94
8	166	51	147	9	342	77	267	319	336	11	336	322	322	320	217	341	273	331	35	51	66	95	27	37	1
9	70	251	254	241	292	150	330	353	337	355	344	2	325	162	60	20	6	4	246	13	53	84	124	263	350
10	219	217	337	14	32	351	156	173	355	171	178	197	196	122	216	350	38	64	52	113	222	10	132	332	117
11	159	282	177	307	262	259	6	351	17	13	260	281	277	294	294	293	320	325	325	325	334	349	275	210	302
12	173	240	113	151	151	246	172	313	10	23	60	29	45	283	331	308	313	324	329	342	356	46	170	214	338
13	253	257	239	251	158	187	205	346	341	314	348	348	335	291	326	305	190	269	308	330	352	348	343	345	302
14	199	221	227	238	294	250	313	297	20	51	332	341	340	337	350	334	329	343	343	336	346	197	183	170	309
15	226	193	192	230	217	287	212	354	350	356	5	309	259	329	17	322	325	328	332	338	345	187	180	217	292
16	235	107	157	192	271	187	142	310	333	20	8	46	64	23	67	346	328	335	331	320	311	328	302	213	337
17	187	266	137	135	69	190	249	307	312	23	290	234	228	235	286	264	283	303	321	323	328	334	294	210	275
18	202	207	250	120	177	141	162	328	344	331	317	218	338	311	291	325	330	327	331	341	358	353	315	187	303
19	204	252	222	160	201	226	146	327	345	333	334	4	326	307	325	222	168	115	92	79	44	32	24	271	306
20	318	354	103	55	70	78	64	279	79	3	353	16	21	316	317	335	316	120	230	142	346	149	126	230	22
21	195	192	290	216	165	13	173	345	332	333	332	1	195	263	307	317	337	332	340	341	27	188	230	220	294
22	259	204	240	186	242	161	237	337	337	344	331	317	279	296	288	273	276	329	331	351	8	358	17	266	297
23	229	261	213	259	223	185	124	313	313	1	336	345	280	200	173	143	151	158	135	257	327	194	170	156	218
24	254	162	253	266	283	306	253	328	334	335	169	210	222	188	191	169	172	212	225	216	227	117	259	214	229
25	198	216	172	205	201	197	229	326	18	5	358	284	267	258	258	270	299	322	339	333	342	334	279	180	277
26	164	215	179	243	251	163	168	323	318	324	21	347	297	306	295	313	330	323	338	344	6	359	276	207	300
27	200	224	248	231	241	147	171	344	304	331	343	319	9	295	337	5	23	347	10	15	277	84	62	305	322
28	335	343	353	262	288	23	105	7	342	336	334	349	175	131	28	47	73	97	304	98	107	315	225	199	5
29	143	152	257	360	233	20	37	7	357	337	10	344	146	176	229	229	237	226	254	218	31	307	355	249	288
30	315	294	218	289	3	312	247	307	252	8	337	347	26	214	175	170	157	226	162	327	2	340	213	283	287
31	282	211	298	189	68	142	145	322	354	357	347	104	122	151	172	182	169	324	5	354	356	352	354	313	352
Prev	218	228	222	239	244	197	187	330	346	352	347	343	312	270	298	321	327	337	339	354	2	5	280	224	312

Montana Resources LLP
Greeley School Air Monitoring Summary
Wind Direction - MDEQ monitor (degrees)
August 2023

	<< Hour >>																								
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Prev
1	284	240	236	141	114	179	113	336	325	339	347	336	25	42	168	355	346	316	329	356	150	69	196	261	334
2	247	255	256	275	209	136	156	218	333	252	351	283	333	58	73	6	189	155	142	207	160	153	271	330	232
3	354	267	161	91	1	150	290	266	260	294	247	5	329	22	36	94	148	139	225	304	304	280	216	260	286
4	294	188	333	184	226	194	107	179	170	191	353	9	289	313	320	323	266	273	270	117	264	237	153	260	250
5	227	156	184	170	164	154	106	91	214	325	239	273	283	294	291	287	322	300	333	262	253	163	221	226	239
6	68	224	146	225	212	210	217	193	39	42	4	351	355	198	230	342	8	308	334	40	180	216	207	190	242
7	206	206	189	89	158	193	114	74	34	334	346	307	332	308	358	210	154	88	21	172	320	14	163	178	131
8	335	352	335	188	243	267	250	270	264	265	300	339	53	28	24	21	39	218	320	266	107	169	57	177	308
9	266	34	258	302	262	296	242	261	324	341	306	228	236	288	311	293	320	261	353	6	19	153	49	243	295
10	176	275	246	235	258	267	241	300	351	311	284	289	302	303	307	308	308	320	323	324	344	13	287	88	297
11	107	37	125	128	353	334	39	101	333	28	52	47	70	14	313	305	320	330	339	341	340	176	250	192	13
12	174	232	234	231	11	179	267	133	48	214	347	260	336	347	330	328	335	351	352	352	356	6	29	355	327
13	74	103	261	261	199	176	157	121	337	356	2	355	339	69	130	149	23	360	116	88	116	157	48	223	88
14	282	253	250	266	351	307	293	35	350	337	343	342	336	271	188	340	348	46	58	176	130	328	296	326	320
15	273	241	282	174	274	166	177	74	27	17	355	349	14	329	336	303	323	325	326	334	338	175	248	291	314
16	267	296	9	186	170	13	161	27	28	32	304	305	312	326	310	310	322	331	329	334	278	216	336	279	317
17	235	235	314	178	136	162	199	10	2	353	8	15	16	4	132	294	270	291	342	336	319	132	12	356	334
18	331	338	174	346	300	353	30	6	23	288	277	257	223	267	330	330	338	300	327	325	280	210	237	257	306
19	174	121	241	298	4	323	246	346	345	350	359	340	269	4	345	302	205	69	217	58	212	317	28	150	323
20	32	171	271	274	230	186	259	270	199	329	222	211	202	266	291	281	318	299	255	278	233	208	252	284	255
21	294	220	248	247	314	266	259	290	303	275	313	244	179	158	178	178	178	173	179	167	183	315	288	334	241
22	288	319	349	7	44	153	68	29	348	199	185	177	177	184	183	176	179	162	162	179	194	253	279	10	190
23	159	155	49	79	300	49	50	20	337	339	239	289	270	253	260	276	295	311	313	233	242	236	170	143	281
24	34	236	103	263	338	245	291	71	345	349	345	261	276	300	305	324	333	329	341	14	50	59	148	184	328
25	272	208	263	262	191	169	135	294	19	312	341	340	73	49	10	98	326	204	55	140	5	1	148	304	335
26	355	34	77	174	286	220	205	69	342	337	4	2	348	351	323	344	338	306	351	33	45	189	251	265	341
27	315	325	230	4	107	347	64	181	335	162	360	353	104	126	153	268	254	221	142	217	288	226	273	244	255
28	264	290	25	335	35	162	336	132	345	351	351	330	343	114	150	76	47	60	62	230	305	291	345	168	2
29	193	272	339	16	52	82	192	63	13	4	5	182	182	185	163	141	137	143	233	208	330	322	268	211	186
30	322	233	203	234	201	39	74	207	237	253	252	275	248	264	259	262	265	255	262	266	324	308	270	251	258
31	274	289	304	359	64	28	73	91	57	32	45	251	268	234	241	146	160	211	205	208	51	128	216	157	185
Prev	277	250	256	239	264	198	181	46	346	328	331	309	313	321	296	310	312	295	322	288	304	223	254	245	294

Montana Resources LLP
Greeley School Air Monitoring Summary
Wind Direction - MDEQ monitor (degrees)
September 2023

	<< Hour >>																								
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Prev
1	248	159	173	215	103	196	133	351	344	351	299	334	333	147	152	152	151	124	127	122	292	306	335	349	176
2	337	326	331	5	360	57	36	359	18	51	358	349	250	239	255	283	296	287	294	296	201	206	229	301	316
3	206	265	310	148	349	299	35	158	354	295	308	296	283	170	191	192	232	290	227	8	41	219	229	273	266
4	229	191	230	273	271	278	275	276	294	297	279	289	311	314	330	318	229	214	169	56	221	189	184	307	264
5	183	280	193	307	165	61	88	8	279	295	319	328	270	173	166	182	153	188	294	358	217	348	250	199	244
6	299	54	161	292	261	345	322	273	325	5	25	229	205	186	202	206	204	219	333	341	212	18	78	104	277
7	201	354	163	26	74	119	35	86	42	354	339	342	325	359	339	5	36	51	47	257	245	191	160	162	27
8	187	201	215	156	155	107	169	173	228	268	260	278	21	326	323	153	17	3	20	27	103	134	182	175	182
9	202	270	260	334	319	308	321	271	348	14	349	335	4	158	142	338	351	41	57	72	49	56	54	169	355
10	209	184	357	174	329	353	307	346	49	330	10	10	338	18	36	87	142	102	106	171	161	26	155	119	49
11	96	353	287	59	8	52	337	107	335	338	341	355	354	343	42	180	30	63	35	99	171	168	178	262	24
12	249	27	178	312	170	353	24	176	331	339	19	13	209	268	280	282	325	348	148	175	29	263	253	205	294
13	186	162	174	142	188	145	145	179	23	13	325	327	324	315	323	330	330	335	333	335	271	171	216	195	273
14	192	263	173	250	290	279	322	153	359	23	340	1	6	29	302	343	318	327	331	57	155	250	261	214	308
15	263	321	312	359	343	343	351	352	338	345	352	343	351	8	108	109	98	155	183	131	203	206	259	213	335
16	177	327	49	31	356	17	5	142	15	349	332	348	61	217	244	222	333	309	328	114	67	171	185	266	350
17	190	38	308	86	3	9	5	86	39	346	349	49	249	269	266	285	261	242	284	67	214	312	311	120	329
18	170	46	205	51	148	39	147	101	36	359	302	270	264	264	280	298	319	325	333	330	233	201	206	245	285
19	107	57	79	105	359	60	22	124	71	14	332	359	307	261	272	267	328	350	313	339	289	182	159	32	6
20	176	145	274	186	278	284	305	242	7	356	342	47	178	313	352	336	20	28	28	35	34	20	24	33	353
21	16	157	151	70	45	12	23	7	15	27	64	164	129	140	154	189	231	235	136	183	168	233	236	195	137
22	230	255	219	224	199	245	249	256	233	255	244	220	245	286	110	289	307	235	221	226	213	169	179	219	233
23	230	120	182	272	208	204	278	267	351	5	30	15	4	336	310	331	235	256	253	188	232	156	313	298	276
24	292	301	330	314	334	296	323	296	258	36	356	332	251	185	183	175	178	173	241	42	54	62	59	181	300
25	103	15	331	331	352	336	344	333	354	351	357	295	173	173	180	171	160	171	183	276	148	160	153	36	335
26	355	35	64	33	37	77	68	349	15	2	340	299	263	321	299	289	315	334	349	348	336	246	185	182	346
27	176	186	166	94	102	75	337	228	266	342	40	22	41	222	282	333	338	329	334	353	330	329	257	207	325
28	214	155	219	316	278	289	328	230	5	354	35	68	78	11	25	328	307	328	339	198	165	41	184	183	322
29	296	263	312	292	328	273	291	237	21	337	359	343	331	314	341	320	196	270	252	335	138	174	163	256	296
30	208	232	245	153	85	131	205	211	69	269	242	262	270	295	264	276	273	242	233	233	241	238	239	220	236
Prev	211	275	229	348	344	357	346	249	355	346	341	335	306	281	278	276	294	295	306	20	201	202	207	212	302

Montana Resources LLP
Greeley School Air Monitoring Summary
Standard Deviation of Wind Direction - MDEQ monitor (degrees)
July 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	43	59	56	40	51	52	75	56	44	45	66	19	38	40	36	18	25	43	35	19	34	77	61	65	46	77	18
2	62	79	89	76	61	33	56	42	19	43	38	43	33	37	29	27	26	20	12	15	18	17	16	17	38	89	12
3	49	20	32	55	43	51	32	53	52	36	37	35	46	30	27	16	17	15	16	15	16	18	16	18	31	55	15
4	46	35	17	51	17	32	29	30	72	57	49	73	57	70	59	50	45	27	26	34	44	56	60	42	45	73	17
5	64	69	43	30	32	75	67	57	24	24	56	39	62	67	49	31	21	37	19	33	37	77	69	61	48	77	19
6	62	58	44	63	60	50	52	62	33	81	59	72	16	52	45	20	36	19	19	18	17	44	62	43	45	81	16
7	56	41	63	63	47	72	58	33	57	60	36	19	24	37	43	38	33	41	31	26	35	44	37	79	45	79	19
8	85	79	87	84	62	73	66	40	39	62	32	37	41	35	59	26	42	33	18	15	26	52	21	49	48	87	15
9	37	29	53	49	43	57	52	67	33	22	27	29	52	37	33	33	27	50	53	24	16	21	47	64	40	67	16
10	57	52	47	55	29	60	63	35	44	30	62	58	54	79	70	33	17	42	17	43	58	47	30	44	47	79	17
11	49	58	42	70	13	16	60	62	42	51	29	33	37	28	28	30	17	12	11	12	14	23	26	40	33	70	11
12	24	53	45	49	55	59	62	61	53	59	54	36	50	36	25	35	27	19	13	14	14	24	47	27	39	62	13
13	31	36	63	60	51	54	61	25	13	56	28	19	15	58	57	34	38	41	33	14	16	16	15	15	35	63	13
14	34	39	54	67	75	60	78	60	52	70	52	28	42	30	24	32	27	19	15	13	18	35	24	56	42	78	13
15	41	36	44	47	38	60	83	30	13	43	64	58	58	45	40	33	16	16	11	12	17	48	44	59	40	83	11
16	45	60	36	45	52	36	42	38	25	34	54	50	54	38	43	50	63	13	9	60	47	55	50	67	44	67	9
17	58	68	66	54	59	55	77	42	43	53	31	37	24	24	31	28	28	25	13	12	11	16	27	71	40	77	11
18	40	36	64	80	53	62	38	49	45	48	52	55	48	51	40	22	17	14	13	14	17	16	38	30	39	80	13
19	42	36	30	57	67	45	27	54	32	28	50	54	55	45	52	66	66	49	23	26	21	20	59	48	44	67	20
20	67	88	56	76	60	62	54	46	72	38	20	33	43	33	40	18	45	49	29	51	54	59	58	64	51	88	18
21	41	44	64	69	57	63	64	53	44	17	14	22	76	49	50	24	17	11	15	17	84	53	35	54	43	84	11
22	60	38	49	48	57	38	54	27	41	23	19	65	61	32	33	38	43	11	9	14	13	14	44	33	36	65	9
23	37	36	41	46	32	65	62	62	52	34	16	39	67	76	56	64	78	36	58	48	46	29	40	37	48	78	16
24	60	51	41	59	43	60	55	61	57	26	61	25	22	21	16	21	23	21	27	46	35	62	40	65	42	65	16
25	81	78	67	78	38	51	47	33	46	35	29	38	26	29	28	30	25	15	15	11	15	16	23	29	37	81	11
26	27	66	39	49	51	34	47	50	43	41	44	50	32	26	35	23	14	16	14	15	17	18	43	32	34	66	14
27	45	27	27	35	54	46	51	37	49	19	29	57	26	42	24	21	22	19	20	18	47	36	29	62	35	62	18
28	25	43	79	40	56	56	33	19	38	36	17	43	52	51	25	19	30	27	42	45	40	41	31	51	39	79	17
29	67	54	72	54	59	58	46	61	61	73	29	28	50	49	38	38	46	23	34	26	61	69	54	59	50	73	23
30	44	68	66	43	73	68	69	46	52	56	45	22	62	61	39	21	38	24	49	13	16	46	31	52	46	73	13
31	52	41	64	64	54	44	35	44	28	27	24	42	22	24	26	32	30	26	18	38	45	16	19	32	35	64	16
Avg	49	51	53	57	50	53	55	46	43	43	39	41	43	43	39	31	32	26	23	25	31	38	39	47	41	74	15
Max	85	88	89	84	75	75	83	67	72	81	66	73	76	79	70	66	78	50	58	60	84	77	69	79	51	89	23
Min	24	20	17	30	13	16	27	19	13	17	14	19	15	21	16	16	14	11	9	11	11	14	15	15	31	55	9

Montana Resources LLP
Greeley School Air Monitoring Summary
Standard Deviation of Wind Direction - MDEQ monitor (degrees)
August 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	55	62	74	53	58	62	44	57	42	36	31	59	50	36	68	40	30	40	11	18	40	68	44	35	46	74	11
2	34	47	38	50	74	56	58	34	21	42	28	39	69	40	65	42	19	30	35	28	43	51	36	45	43	74	19
3	49	50	18	27	45	22	52	36	47	40	52	44	77	51	27	25	25	34	34	33	47	59	55	72	43	77	18
4	54	47	69	28	64	42	55	47	75	60	71	38	59	30	32	61	61	30	37	54	52	21	54	28	49	75	21
5	15	77	59	54	23	39	36	52	54	39	32	57	48	26	13	18	18	49	35	21	13	47	58	37	38	77	13
6	37	53	29	9	10	10	17	45	58	31	42	31	28	52	39	21	41	49	19	26	26	27	13	9	30	58	9
7	18	15	19	40	42	47	48	42	40	40	41	44	51	53	47	54	47	37	35	22	57	17	41	48	39	57	15
8	45	18	25	31	16	14	10	9	13	16	25	43	46	42	18	26	52	53	28	35	61	39	52	49	32	61	9
9	49	46	48	52	39	19	31	75	27	21	60	47	47	48	47	33	30	36	16	21	62	44	48	49	41	75	16
10	66	44	20	17	13	31	27	24	58	59	26	34	31	39	36	35	32	18	12	15	19	54	51	44	34	66	12
11	45	40	46	35	57	42	62	48	52	25	48	49	45	48	59	44	30	15	16	22	30	53	78	56	44	78	15
12	23	45	71	55	61	70	59	46	69	83	50	49	32	32	20	19	14	18	17	18	15	16	19	73	41	83	14
13	31	42	44	47	57	60	45	50	57	65	55	55	56	56	46	53	54	47	16	54	62	60	56	40	50	65	16
14	40	52	33	67	58	56	51	49	34	27	21	35	52	74	71	73	37	53	33	27	34	49	29	34	45	74	21
15	31	56	56	57	52	43	59	44	19	33	18	46	61	55	38	36	22	17	11	10	57	41	58	77	42	77	10
16	71	74	82	63	71	72	62	45	56	29	41	31	28	18	34	28	15	9	11	26	42	45	54	59	44	82	9
17	26	53	72	58	38	71	65	45	66	23	28	31	35	47	53	48	33	31	12	21	48	44	41	78	44	78	12
18	84	73	44	33	66	70	49	51	40	32	29	26	22	25	14	16	16	36	13	12	57	56	61	59	41	84	12
19	55	65	62	52	50	53	36	63	61	47	30	16	59	44	60	49	48	30	43	30	30	54	25	50	46	65	16
20	63	53	58	28	66	63	21	35	47	55	34	34	23	50	28	20	31	16	16	17	18	36	45	46	38	66	16
21	19	52	36	49	33	50	32	30	29	22	15	21	20	19	18	17	18	19	18	21	23	61	44	29	29	61	15
22	27	60	60	70	67	71	40	36	23	77	19	22	24	24	20	20	17	18	25	21	31	27	59	42	38	77	17
23	33	37	39	51	58	65	58	44	51	64	31	30	27	34	30	45	35	30	23	42	52	33	54	33	42	65	23
24	69	73	63	54	64	80	78	57	61	25	53	54	33	42	32	26	30	16	14	20	45	16	55	31	45	80	14
25	34	57	51	75	78	91	68	67	51	43	21	60	59	65	46	43	24	74	32	39	35	30	50	63	52	91	21
26	30	69	57	30	47	36	68	29	29	40	33	36	57	42	26	17	36	40	16	17	44	31	53	50	39	69	16
27	50	68	62	58	59	54	50	62	41	35	37	24	39	42	60	50	47	42	30	59	32	45	50	47	48	68	24
28	68	56	56	64	56	46	47	63	46	42	22	19	54	52	68	26	21	26	37	55	64	59	76	63	49	76	19
29	76	51	53	54	21	47	72	34	50	32	25	64	29	20	22	21	21	19	34	27	61	40	51	49	41	76	19
30	35	44	59	67	58	35	59	17	22	30	30	30	26	31	24	25	25	23	25	24	20	28	41	39	34	67	17
31	32	55	49	44	75	56	71	52	46	60	49	48	54	73	71	53	41	66	30	25	69	49	49	29	52	75	25
Avg	44	53	50	47	51	51	49	45	45	41	35	39	43	42	40	35	31	33	24	28	42	42	48	47	42	73	16
Max	84	77	82	75	78	91	78	75	75	83	71	64	77	74	71	73	61	74	43	59	69	68	78	78	52	91	25
Min	15	15	18	9	10	10	10	9	13	16	15	16	20	18	13	16	14	9	11	10	13	16	13	9	29	57	9

Montana Resources LLP
Greeley School Air Monitoring Summary
Standard Deviation of Wind Direction - MDEQ monitor (degrees)
September 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	78	80	56	73	63	88	74	69	32	46	73	16	48	60	25	26	23	18	16	18	41	41	69	62	50	88	16
2	59	67	46	68	64	46	45	20	51	61	38	59	29	42	28	26	24	26	23	52	36	30	45	55	43	68	20
3	52	56	62	68	55	58	66	62	46	22	32	31	31	35	67	23	34	43	51	47	26	41	33	50	45	68	22
4	34	30	22	19	22	25	24	22	23	21	20	22	15	15	44	29	33	31	29	66	68	55	39	64	32	68	15
5	50	52	32	41	61	49	50	52	18	14	29	32	76	39	21	32	36	25	39	34	39	33	70	61	41	76	14
6	44	53	82	75	65	63	67	59	70	45	53	36	28	42	29	31	30	22	25	36	35	23	20	44	45	82	20
7	35	53	22	44	60	34	18	53	34	27	18	20	43	60	24	15	18	14	18	64	34	45	37	12	33	64	12
8	10	20	16	33	50	58	51	56	46	11	17	45	55	58	52	43	65	24	21	15	59	34	28	54	38	65	10
9	59	39	58	60	53	58	23	44	56	35	22	31	42	39	62	63	19	16	16	19	21	20	39	39	39	63	16
10	90	79	64	73	53	64	71	51	66	58	30	36	30	42	54	67	40	18	18	51	60	75	67	64	55	90	18
11	61	83	51	63	55	71	33	43	50	23	44	32	28	29	59	69	50	21	38	57	34	45	57	66	48	83	21
12	61	50	74	73	61	52	27	51	51	31	24	49	67	48	36	39	26	45	30	40	46	41	39	57	47	74	24
13	29	44	52	30	74	63	77	61	54	54	18	20	23	32	15	14	13	13	13	10	57	30	56	42	37	77	10
14	68	69	78	57	45	58	41	57	65	42	44	52	44	61	60	49	20	14	12	48	31	47	35	44	48	78	12
15	66	46	39	56	46	37	57	29	50	34	28	30	43	43	65	65	61	45	19	33	52	74	52	38	46	74	19
16	47	35	44	62	53	73	49	70	62	42	24	30	34	74	64	79	31	45	41	63	47	65	67	71	53	79	24
17	66	63	46	70	65	43	64	55	51	62	50	65	33	33	34	32	29	24	54	59	55	75	64	74	53	75	24
18	66	56	90	91	83	69	79	55	37	33	61	32	29	29	32	28	18	14	13	32	54	62	73	78	51	91	13
19	74	68	66	71	58	70	68	70	43	41	18	32	49	33	27	31	26	36	38	35	44	62	61	54	49	74	18
20	54	48	51	45	44	40	34	52	70	54	67	77	65	57	28	24	18	16	21	18	25	42	28	31	42	77	16
21	49	29	53	46	35	20	29	66	29	42	37	42	16	38	41	24	38	56	29	44	33	51	54	29	39	66	16
22	34	65	47	28	60	36	42	33	24	36	43	21	47	76	41	34	46	25	23	22	19	24	17	22	36	76	17
23	37	54	56	30	68	32	45	48	31	27	29	44	39	27	44	42	54	28	42	26	51	41	46	61	42	68	26
24	56	66	46	74	48	46	76	47	39	40	31	29	55	21	20	21	24	21	40	55	65	77	54	74	47	77	20
25	64	59	58	52	60	39	50	68	52	39	24	59	45	20	19	21	20	26	27	51	33	20	21	48	41	68	19
26	73	60	73	68	32	68	77	65	26	21	27	49	40	45	37	41	38	19	16	17	25	30	23	22	41	77	16
27	25	19	21	46	42	56	50	72	57	34	48	29	59	34	26	15	18	18	18	25	17	18	37	52	35	72	15
28	59	74	54	56	47	65	68	53	49	50	38	38	48	60	53	53	30	16	30	31	32	44	42	30	47	74	16
29	59	60	42	52	52	55	48	62	47	38	62	21	29	60	20	47	36	29	44	57	53	37	62	60	47	62	20
30	72	71	71	54	44	47	31	71	56	53	51	63	41	31	31	23	25	26	33	34	28	25	30	77	45	77	23
Avg	54	55	52	56	54	53	51	54	46	38	37	38	41	43	39	37	31	26	28	39	41	44	46	51	44	74	18
Max	90	83	90	91	83	88	79	72	70	62	73	77	76	76	67	79	65	56	54	66	68	77	73	78	55	91	26
Min	10	19	16	19	22	20	18	20	18	11	17	16	15	15	15	14	13	13	12	10	17	18	17	12	32	62	10

Montana Resources LLP
Greeley School Air Monitoring Summary
Wind Speed - MDEQ monitor (meters per second)
July 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	0.6	0.6	0.4	0.5	0.6	0.9	0.8	0.7	0.9	1.0	1.7	4.4	3.3	1.6	1.7	2.0	1.7	1.3	1.7	2.1	1.5	0.6	0.5	0.5	1.3	4.4	0.4
2	0.5	0.4	0.6	0.4	0.6	0.7	0.5	0.8	1.5	1.5	1.6	1.7	2.3	2.3	2.7	2.4	2.5	2.7	3.3	2.6	2.4	2.5	2.5	2.0	1.7	3.3	0.4
3	1.3	1.1	0.8	0.4	0.3	0.6	1.0	1.0	1.2	1.5	1.4	1.7	1.9	2.1	2.7	4.0	3.7	4.2	3.7	3.4	3.0	3.0	3.9	3.5	2.1	4.2	0.3
4	2.2	3.4	5.2	1.4	1.1	1.2	2.1	1.9	1.2	1.1	1.5	1.2	1.8	1.8	1.7	1.4	1.9	1.9	2.3	1.9	1.4	0.8	0.8	0.7	1.7	5.2	0.7
5	0.5	0.4	0.4	0.5	0.6	0.3	0.4	0.7	1.3	1.7	1.3	1.8	1.8	1.6	1.8	2.1	2.1	1.6	1.4	0.9	0.9	0.6	0.6	0.3	1.1	2.1	0.3
6	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.9	0.7	1.0	1.4	2.2	2.0	3.1	3.2	2.4	3.4	3.0	2.0	2.2	1.0	0.6	0.7	1.4	3.4	0.4
7	0.7	0.6	0.4	0.4	0.7	0.7	0.7	1.0	1.0	1.3	3.1	3.6	3.0	2.6	2.2	1.9	1.9	1.6	2.5	1.4	1.2	1.0	1.0	0.8	1.5	3.6	0.4
8	0.9	0.7	0.6	0.6	0.5	0.5	0.5	0.8	1.1	1.1	1.6	1.6	1.9	1.9	1.9	1.6	1.7	2.5	2.7	1.8	1.1	0.6	1.0	0.9	1.3	2.7	0.5
9	0.8	0.6	0.4	0.3	0.4	0.5	0.5	0.5	1.0	1.5	1.8	2.1	1.8	1.8	2.7	2.1	1.6	1.1	1.3	3.1	2.2	1.8	0.7	0.5	1.3	3.1	0.3
10	0.6	0.6	1.2	1.4	1.2	1.2	1.2	1.5	1.1	1.6	1.3	1.7	1.7	1.6	2.1	3.7	4.3	2.2	1.7	1.0	0.9	1.0	1.2	0.9	1.5	4.3	0.6
11	0.7	0.6	0.7	0.5	1.0	1.2	0.6	0.6	1.2	1.6	2.7	2.6	2.5	2.8	2.8	2.6	3.2	3.6	4.2	3.7	2.6	2.4	1.1	0.8	1.9	4.2	0.5
12	1.0	0.6	0.8	0.5	0.4	0.4	0.5	0.6	1.0	1.3	1.5	2.0	1.8	1.8	2.3	1.9	2.0	2.3	2.1	2.5	2.4	1.6	1.1	0.8	1.4	2.5	0.4
13	0.6	0.5	0.5	0.4	0.8	0.8	0.9	1.3	1.3	0.6	1.3	1.6	2.6	1.4	1.8	1.6	2.0	1.5	1.8	2.9	3.4	3.2	3.0	2.0	1.6	3.4	0.4
14	1.2	0.7	0.5	0.4	0.4	0.4	0.4	0.6	0.7	1.1	1.4	2.4	2.3	2.4	2.4	2.3	2.5	3.1	2.8	2.8	1.9	1.1	0.9	0.7	1.5	3.1	0.4
15	0.6	0.7	0.5	0.4	0.5	0.3	0.3	0.9	1.5	1.1	1.2	1.9	1.5	2.1	2.1	2.4	3.0	2.9	2.8	2.4	1.9	0.9	0.8	0.5	1.4	3.0	0.3
16	0.5	0.6	0.4	0.4	0.4	0.5	0.8	0.7	1.0	1.1	1.3	1.8	1.7	2.4	1.9	1.8	1.8	2.5	2.0	1.0	0.9	0.7	0.6	0.4	1.1	2.5	0.4
17	0.6	0.4	0.4	0.6	0.6	0.6	0.5	0.7	1.2	1.4	1.7	2.0	3.3	3.3	2.1	2.9	2.5	2.5	3.2	4.1	3.8	2.9	1.1	0.5	1.8	4.1	0.4
18	0.6	0.6	0.4	0.3	0.5	0.4	0.5	0.7	1.2	1.5	1.4	1.4	1.9	1.5	2.0	2.8	3.1	2.9	2.9	2.9	2.6	2.2	1.7	1.1	1.5	3.1	0.3
19	0.7	0.4	0.6	0.5	0.4	0.4	0.7	0.7	1.1	1.4	1.3	1.5	1.6	1.6	1.6	1.7	1.5	2.1	2.5	2.3	2.7	2.7	1.4	0.9	1.3	2.7	0.4
20	0.6	0.6	0.5	0.5	0.5	0.4	0.9	1.0	0.8	1.5	1.9	1.8	2.1	2.5	2.2	3.2	2.3	1.3	2.9	2.9	1.7	0.8	0.7	0.6	1.4	3.2	0.4
21	0.5	0.7	0.3	0.4	0.6	0.3	0.5	0.6	1.0	1.5	2.0	2.1	1.5	1.8	2.1	2.4	2.6	3.4	2.3	1.1	0.6	0.8	0.7	0.6	1.3	3.4	0.3
22	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.8	0.9	1.4	1.6	1.7	1.7	2.2	2.3	2.2	2.2	2.7	3.1	2.9	3.4	3.0	1.6	0.8	1.6	3.4	0.4
23	0.9	0.8	0.8	0.4	0.5	0.4	0.6	0.8	0.8	1.2	1.6	1.5	1.3	1.6	1.9	1.6	1.7	2.8	1.7	0.8	0.8	0.8	0.8	0.7	1.1	2.8	0.4
24	0.5	0.5	0.6	0.5	0.5	0.4	0.9	0.8	1.3	1.5	1.3	2.6	2.9	3.3	3.8	3.3	3.0	2.5	1.7	1.0	0.8	0.8	0.8	0.7	1.5	3.8	0.4
25	0.7	0.5	0.6	0.6	0.6	0.7	0.6	0.9	1.0	1.4	1.8	2.4	3.6	2.8	3.2	2.9	2.4	2.9	3.2	3.3	2.6	2.4	1.5	0.8	1.8	3.6	0.5
26	0.9	0.4	0.6	0.5	0.5	0.7	0.6	0.7	1.0	1.3	1.5	1.8	2.1	2.3	2.0	2.6	3.1	3.0	3.3	3.2	2.8	2.6	1.0	1.2	1.7	3.3	0.4
27	0.9	0.8	0.5	0.5	0.5	0.6	0.7	0.8	1.0	1.7	1.6	1.5	2.9	1.5	2.2	3.7	2.8	2.8	3.2	3.4	1.7	1.4	0.9	0.5	1.6	3.7	0.5
28	0.5	0.5	0.5	0.9	1.9	1.9	1.2	1.6	1.0	1.5	2.1	1.6	2.2	2.1	4.1	3.3	2.4	3.0	1.3	1.6	0.9	0.8	1.1	0.7	1.6	4.1	0.5
29	0.4	0.7	0.5	0.6	0.4	0.3	0.5	0.8	0.8	1.2	1.7	2.1	1.6	1.6	2.1	2.8	2.3	2.2	1.1	1.5	0.9	0.5	0.5	0.9	1.2	2.8	0.3
30	0.9	0.5	0.5	1.1	1.1	0.9	0.9	0.8	1.0	0.7	0.9	1.4	1.4	1.5	3.4	3.4	2.1	1.8	1.1	2.6	2.6	1.5	1.0	0.5	1.4	3.4	0.5
31	0.6	0.6	0.5	0.8	0.5	0.5	0.7	0.8	1.1	1.3	1.6	2.4	3.1	3.6	3.0	2.2	2.0	2.1	1.4	1.1	1.4	2.2	2.1	1.0	1.5	3.6	0.5
Avg	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.9	1.1	1.3	1.6	2.0	2.2	2.1	2.4	2.5	2.4	2.5	2.4	2.3	1.9	1.6	1.2	0.9	1.5	3.4	0.4
Max	2.2	3.4	5.2	1.4	1.9	1.9	2.1	1.9	1.5	1.7	3.1	4.4	3.6	3.6	4.1	4.0	4.3	4.2	4.2	4.1	3.8	3.2	3.9	3.5	2.1	5.2	0.7
Min	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.7	0.6	0.9	1.2	1.3	1.4	1.6	1.4	1.5	1.1	1.1	0.8	0.6	0.5	0.5	0.3	1.1	2.1	0.3

Montana Resources LLP
Greeley School Air Monitoring Summary
Wind Speed - MDEQ monitor (meters per second)
August 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	0.7	0.6	0.4	0.5	0.6	0.4	0.6	0.5	0.8	1.2	1.3	1.2	1.8	2.0	1.7	1.7	2.1	2.1	2.1	1.4	0.9	1.1	1.1	0.8	1.2	2.1	0.4
2	0.6	0.3	0.4	0.4	0.5	0.4	0.4	0.8	1.5	1.1	1.2	1.0	0.8	1.3	1.1	1.3	3.1	2.5	2.3	1.9	1.1	1.3	0.8	0.6	1.1	3.1	0.3
3	1.3	0.6	1.3	0.7	0.4	0.9	0.4	0.4	0.7	1.1	0.8	0.9	1.2	1.3	2.1	2.7	2.4	2.2	1.6	0.9	0.8	0.5	0.8	0.7	1.1	2.7	0.4
4	0.5	0.8	0.8	1.2	0.9	0.6	0.5	0.9	0.9	0.6	0.4	0.7	0.6	1.0	1.1	1.0	0.7	0.8	0.8	0.9	0.6	0.9	1.2	1.6	0.8	1.6	0.4
5	1.9	0.5	0.6	0.6	1.1	0.7	0.8	0.6	0.8	0.7	0.9	0.7	0.8	1.9	2.0	2.5	1.3	1.3	2.1	2.1	2.1	1.3	1.0	0.8	1.2	2.5	0.5
6	0.5	1.0	0.7	1.0	1.0	1.4	1.5	1.0	0.8	1.4	1.4	1.7	1.7	1.3	1.8	3.3	2.1	1.7	2.5	1.5	1.3	0.7	0.8	1.4	1.4	3.3	0.5
7	0.9	0.9	1.0	0.5	0.5	0.5	0.5	0.6	0.9	1.2	1.7	1.6	1.7	1.6	1.8	1.7	1.5	1.8	2.2	2.3	0.7	1.4	1.2	0.8	1.2	2.3	0.5
8	0.6	0.8	1.1	1.2	1.3	1.4	1.8	1.7	2.1	2.2	2.0	1.5	1.4	1.7	2.5	1.9	1.2	1.1	1.3	1.5	0.9	0.8	0.7	0.5	1.4	2.5	0.5
9	0.4	0.4	0.4	0.5	0.4	0.7	0.7	0.4	1.1	1.6	1.8	2.0	2.0	2.0	1.6	2.1	1.3	1.6	3.0	2.8	1.1	0.8	0.6	0.5	1.2	3.0	0.4
10	0.4	0.6	0.7	0.7	0.9	0.8	1.0	1.0	0.8	1.7	2.3	2.2	2.4	2.2	2.1	2.0	2.2	2.7	3.0	2.7	2.7	1.0	0.9	0.7	1.6	3.0	0.4
11	0.7	0.5	0.4	0.6	0.4	0.4	0.5	0.7	0.9	1.5	1.5	1.7	1.9	1.9	1.8	1.7	2.2	2.5	2.7	1.8	1.3	0.8	0.6	0.9	1.2	2.7	0.4
12	1.3	0.5	0.4	0.4	0.4	0.4	0.4	0.6	0.5	0.5	0.8	1.6	2.1	2.4	2.8	3.1	3.1	3.5	3.3	3.2	3.2	3.0	3.0	1.7	1.8	3.5	0.4
13	2.5	1.6	0.7	0.9	0.4	0.4	0.6	0.7	0.9	1.1	1.1	1.2	1.5	1.6	2.1	1.8	1.5	1.6	2.6	1.3	1.0	0.8	0.5	0.6	1.2	2.6	0.4
14	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.5	1.0	1.2	1.6	1.8	1.4	1.3	1.3	1.2	1.7	1.0	1.2	1.0	1.2	0.6	0.6	0.4	0.9	1.8	0.4
15	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.6	1.1	1.0	1.6	1.4	1.4	1.7	1.8	1.9	2.4	2.4	2.7	1.9	0.8	0.7	0.6	0.6	1.1	2.7	0.4
16	0.6	0.5	0.6	0.5	0.6	0.4	0.5	1.0	0.8	1.4	1.8	2.1	2.1	2.5	2.0	2.5	3.0	3.0	2.7	1.4	1.3	0.9	0.8	0.7	1.4	3.0	0.4
17	0.8	0.7	0.6	0.6	0.7	0.5	0.4	0.6	0.7	1.0	1.2	1.4	1.8	1.7	1.9	2.0	2.3	2.0	2.1	1.0	1.1	1.0	0.8	0.8	1.2	2.3	0.4
18	1.1	0.8	1.1	0.6	0.5	0.7	0.5	0.6	0.9	2.3	2.7	2.7	4.2	4.9	5.3	4.0	3.4	2.3	2.5	2.2	1.1	0.6	0.8	0.6	1.9	5.3	0.5
19	0.6	0.4	0.4	0.4	0.4	0.3	0.4	0.5	0.8	1.1	1.5	1.9	1.4	1.4	1.6	2.1	1.6	1.9	1.9	0.8	0.6	0.8	0.8	1.8	1.1	2.1	0.3
20	1.2	1.5	1.1	2.1	0.6	0.8	1.1	0.9	1.0	0.9	0.9	1.1	1.6	0.8	1.2	1.5	1.1	1.1	1.1	0.9	0.8	0.9	0.6	0.5	1.1	2.1	0.5
21	0.6	1.3	1.3	0.8	0.8	0.9	1.3	0.8	1.3	1.3	1.9	3.5	4.1	4.4	5.1	5.1	4.5	4.2	2.9	2.9	3.4	1.1	1.1	1.0	2.3	5.1	0.6
22	1.0	0.8	0.8	0.8	0.5	0.5	0.6	0.8	1.4	1.3	3.5	3.8	3.5	3.6	3.4	3.6	4.0	3.3	1.8	1.8	2.2	1.4	1.3	1.3	2.0	4.0	0.5
23	0.8	1.3	0.8	0.9	0.7	0.6	0.8	1.1	1.1	1.2	2.2	1.9	2.4	2.2	2.5	1.7	1.7	1.6	1.5	1.6	0.7	0.5	0.5	0.5	1.3	2.5	0.5
24	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.7	1.2	1.3	1.6	2.4	2.1	2.0	2.0	1.7	2.0	2.2	2.2	2.1	2.6	1.3	1.6	1.3	2.6	0.4
25	0.9	0.7	0.7	0.6	0.7	0.5	0.5	0.5	0.8	1.1	1.8	1.3	1.3	1.2	1.6	1.6	3.9	1.5	2.5	1.3	0.8	0.9	1.6	0.8	1.2	3.9	0.5
26	0.7	0.4	0.4	0.8	0.4	0.6	0.5	0.9	1.1	1.1	1.3	1.3	1.1	2.0	2.2	2.2	1.2	1.3	1.8	1.5	1.2	1.0	0.8	0.5	1.1	2.2	0.4
27	0.4	0.4	0.5	0.5	0.3	0.4	0.7	0.6	0.9	1.1	1.1	1.3	1.4	2.0	1.4	1.5	1.5	1.3	1.1	0.5	0.7	0.6	0.5	0.5	0.9	2.0	0.3
28	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.8	0.9	1.4	1.7	1.6	1.5	1.5	2.7	2.9	2.2	1.5	0.8	0.8	0.8	0.8	1.3	1.1	2.9	0.4
29	1.2	1.2	0.6	0.5	0.8	0.5	0.4	0.5	0.7	1.1	1.7	1.6	3.4	4.1	3.9	3.5	3.8	3.8	2.8	2.9	2.0	0.9	1.1	0.7	1.8	4.1	0.4
30	0.6	0.7	0.7	0.8	0.7	0.8	0.8	1.8	1.9	2.1	2.2	2.3	2.6	3.3	3.1	3.0	3.1	3.2	2.5	2.1	1.4	0.8	0.7	0.8	1.8	3.3	0.6
31	0.9	0.9	0.9	0.6	0.5	0.4	0.5	0.6	0.7	0.9	1.3	2.0	1.7	1.7	1.5	1.7	1.9	1.0	1.5	1.6	0.6	0.7	0.9	1.2	1.1	2.0	0.4
Avg	0.8	0.7	0.7	0.7	0.6	0.6	0.7	0.7	1.0	1.2	1.6	1.7	1.9	2.1	2.2	2.3	2.3	2.1	2.1	1.7	1.3	1.0	0.9	0.9	1.3	2.9	0.4
Max	2.5	1.6	1.3	2.1	1.3	1.4	1.8	1.8	2.1	2.3	3.5	3.8	4.2	4.9	5.3	5.1	4.5	4.2	3.3	3.2	3.4	3.0	3.0	1.8	2.3	5.3	0.6
Min	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.4	0.7	0.6	0.8	1.1	1.0	0.7	0.8	0.8	0.5	0.6	0.5	0.5	0.4	0.8	1.6	0.3

Montana Resources LLP
Greeley School Air Monitoring Summary
Wind Speed - MDEQ monitor (meters per second)
September 2023

	<< Hour >>																										
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min
1	1.0	0.8	0.8	0.8	0.6	0.8	0.8	0.7	1.1	0.9	0.9	1.6	1.8	1.9	2.9	3.0	2.7	2.6	3.1	1.5	0.7	1.1	1.2	1.0	1.4	3.1	0.6
2	0.9	0.7	0.6	0.6	0.7	0.5	0.8	1.1	0.9	1.3	1.5	1.3	2.4	2.1	2.6	2.0	1.9	1.6	1.5	0.7	0.8	1.0	0.8	0.8	1.2	2.6	0.5
3	0.8	0.5	0.5	0.5	0.4	0.5	0.4	0.5	0.8	0.9	1.4	1.7	2.1	1.6	1.0	1.6	1.1	2.0	0.7	0.9	1.1	0.8	0.6	0.5	1.0	2.1	0.4
4	0.7	0.6	0.8	1.0	1.3	1.0	1.0	0.8	1.1	1.3	1.5	1.3	2.1	1.9	1.3	1.5	1.0	1.6	0.8	0.4	0.5	0.7	0.8	0.5	1.1	2.1	0.4
5	0.6	0.4	0.8	0.5	0.4	0.5	0.5	0.6	1.7	1.5	1.4	1.6	1.2	2.2	3.0	1.7	2.1	1.8	0.8	0.7	0.9	0.7	0.4	0.4	1.1	3.0	0.4
6	0.6	0.5	0.4	0.4	0.5	0.4	0.5	0.4	0.5	0.8	1.3	2.2	2.7	2.0	2.5	2.3	2.0	1.4	1.4	1.0	1.5	3.2	1.8	0.8	1.3	3.2	0.4
7	0.8	1.0	1.3	0.8	1.1	1.1	0.7	0.6	0.8	1.2	2.4	2.1	1.4	1.5	2.3	3.5	2.1	2.2	1.5	0.9	0.9	1.3	1.6	1.8	1.5	3.5	0.6
8	1.7	1.3	2.5	2.1	1.2	1.0	1.1	0.9	1.1	3.6	3.1	1.4	1.3	1.4	1.3	1.6	1.3	3.3	2.1	2.7	1.3	1.2	0.8	0.4	1.7	3.6	0.4
9	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.8	1.2	1.6	1.4	1.2	3.2	1.5	1.0	1.7	2.1	1.7	1.6	1.7	2.2	1.6	1.2	1.2	3.2	0.4
10	0.6	0.6	0.5	0.4	0.6	0.5	0.4	0.5	0.5	1.0	1.4	1.5	1.7	1.3	1.4	1.4	2.0	2.3	2.6	1.6	0.8	0.6	0.6	0.5	1.1	2.6	0.4
11	0.7	0.5	0.4	0.5	0.5	0.4	0.4	0.5	0.8	0.9	1.2	1.3	1.7	1.5	1.4	1.1	1.1	1.0	0.7	0.6	1.0	0.8	0.5	0.4	0.8	1.7	0.4
12	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.7	0.9	1.3	1.5	1.2	1.9	1.9	1.6	2.1	1.8	2.1	1.7	1.3	1.4	0.8	1.1	1.1	2.1	0.3
13	1.0	0.8	0.4	0.6	0.4	0.5	0.6	0.7	0.9	1.0	2.4	2.7	2.3	2.3	3.5	3.7	4.2	3.3	2.5	1.6	0.8	1.2	0.6	0.8	1.6	4.2	0.4
14	0.5	0.6	0.4	0.5	0.4	0.5	0.4	0.4	0.7	1.0	1.1	1.3	1.7	1.4	1.3	1.7	2.1	2.0	1.8	1.2	1.1	0.6	0.5	0.5	1.0	2.1	0.4
15	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.6	0.8	1.2	1.4	1.6	1.6	1.6	1.3	1.3	1.2	1.0	1.3	0.9	0.6	0.5	0.5	0.4	0.9	1.6	0.4
16	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.9	1.1	1.5	1.7	1.5	1.4	1.3	1.3	1.3	0.7	0.7	0.6	0.7	0.6	0.6	0.8	1.7	0.4
17	0.6	0.6	0.7	0.5	0.5	0.8	0.7	0.6	0.5	0.9	1.2	1.3	2.9	2.7	2.5	2.1	2.4	2.0	0.8	0.5	0.7	0.4	0.4	0.4	1.1	2.9	0.4
18	0.8	0.7	0.6	0.8	1.0	0.6	0.7	0.5	0.6	0.9	1.5	2.5	3.0	3.1	2.7	2.8	2.6	3.3	3.3	1.8	0.9	0.5	0.6	0.6	1.5	3.3	0.5
19	0.5	0.5	0.6	0.5	0.4	0.5	0.4	0.8	0.8	0.9	1.7	1.6	1.7	2.7	2.9	2.3	2.5	1.7	0.8	1.5	0.9	0.6	0.6	0.8	1.2	2.9	0.4
20	0.7	0.6	0.5	0.7	0.5	0.6	0.5	0.6	0.4	1.0	0.9	1.1	1.3	1.3	1.6	1.9	3.1	3.4	3.9	4.1	3.4	2.5	3.0	2.7	1.7	4.1	0.4
21	1.6	1.2	1.0	1.7	2.6	2.7	1.6	1.3	2.0	1.8	1.9	1.3	1.4	1.0	1.0	1.4	1.4	0.8	0.8	0.6	0.8	1.0	0.6	0.9	1.3	2.7	0.6
22	1.0	0.7	0.8	1.0	0.8	0.9	0.7	0.8	1.0	0.8	0.9	1.3	1.1	0.8	0.9	1.3	0.8	1.1	1.0	1.0	1.0	0.6	0.7	0.7	0.9	1.3	0.6
23	0.5	0.4	0.4	0.6	0.3	0.5	0.6	0.6	1.0	1.4	1.5	1.6	1.8	2.1	1.5	1.4	1.3	1.1	0.8	1.0	0.7	0.5	0.6	0.4	0.9	2.1	0.3
24	0.4	0.4	0.5	0.4	0.7	0.6	0.5	0.5	0.7	1.0	1.2	1.5	1.3	2.9	2.6	2.5	1.9	1.3	0.8	0.5	0.7	0.6	0.6	0.5	1.0	2.9	0.4
25	0.5	0.5	0.4	0.5	0.4	0.4	0.5	0.4	0.6	1.0	1.3	1.5	2.1	3.8	3.7	3.6	2.7	1.7	1.5	0.6	1.4	2.1	2.1	0.9	1.4	3.8	0.4
26	0.9	0.7	0.6	0.6	0.7	0.5	0.5	0.6	1.3	1.3	1.6	1.7	2.1	1.9	1.3	1.1	1.3	2.7	3.0	2.0	1.7	0.9	0.9	1.1	1.3	3.0	0.5
27	0.8	1.0	1.3	0.5	0.5	0.6	0.6	0.4	0.4	0.9	1.2	1.3	1.3	2.8	3.1	4.2	3.1	2.8	3.3	2.2	2.7	2.1	1.0	0.6	1.6	4.2	0.4
28	0.7	0.5	0.7	0.6	0.8	0.8	0.6	0.6	0.7	1.1	1.7	1.8	1.6	1.4	1.4	1.9	1.7	1.8	1.0	1.1	1.0	0.5	0.6	0.7	1.1	1.9	0.5
29	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.7	0.9	1.2	1.1	1.9	2.1	1.5	2.2	1.5	1.2	0.7	0.9	0.6	0.5	0.7	0.5	0.7	1.0	2.2	0.5
30	0.5	0.6	0.8	1.1	0.7	1.5	1.1	0.4	0.5	0.9	1.0	1.2	1.3	1.6	1.7	1.9	2.0	1.7	1.4	1.2	1.0	1.1	1.3	1.3	1.2	2.0	0.4
Avg	0.7	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.8	1.2	1.5	1.6	1.8	2.0	2.0	2.0	1.9	1.9	1.6	1.2	1.1	1.1	0.9	0.8	1.2	2.7	0.4
Max	1.7	1.3	2.5	2.1	2.6	2.7	1.6	1.3	2.0	3.6	3.1	2.7	3.0	3.8	3.7	4.2	4.2	3.4	3.9	4.1	3.4	3.2	3.0	2.7	1.7	4.2	0.6
Min	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.8	0.9	1.1	1.1	0.8	0.9	1.0	0.8	0.7	0.7	0.4	0.5	0.4	0.4	0.4	0.8	1.3	0.3

APPENDIX B: GRAVIMETRIC ANALYSIS DATA

Quarter 3, 2023 Filter Analysis Results - Blanks - Greeley

FILTER	TYPE	DATE*	PRE WEIGHT (MG)	PRE-WEIGHT DATE	POST WEIGHT (MG)	POST-WEIGHT DATE	PART MASS (MG)
P0908127	Lab	16-Aug	145.546	16-Jun	145.548	7-Aug	0.002
P0908149	Field	14-Aug	143.052	11-Jul	143.050	28-Aug	-0.002
P0908150	Lab	11-Sep	140.468	11-Jul	140.471	28-Aug	0.003
C1523761	Lab	3-Oct	130.274	3-Aug	130.268	19-Sep	-0.006
C1523770	Field	30-Aug	126.678	3-Aug	126.683	19-Sep	0.005
C1523781	Lab	14-Nov	126.963	26-Aug	126.968	24-Oct	0.005
C1523790	Field	27-Sep	127.239	26-Aug	127.249	24-Oct	0.010

*Denotes collection date for Field Blank, analysis date for Laboratory Blanks

Quarter 3, 2023 Filter Analysis Results - PM10 - Greeley

FILTER	DATE	AVG FLOW LPM	HOURS	SAMPLE VOLUME (M3)	PRE WEIGHT (MG)	POST WEIGHT (MG)	PART MASS (MG)	CONC (UG/M3)	DEQ (UG/M3)
P0908105	07/05	16.70	23:59	24.03	142.600	143.007	0.407	16.9	16.5
P0908128	07/11	16.70	23:59	24.02	143.627	143.927	0.300	12.5	12.1
P0908130	07/17	16.70	23:59	24.02	143.391	144.026	0.635	26.4	25.8
P0908141	07/23	16.70	23:59	24.02	145.129	145.756	0.627	26.1	26.8
P0908143	07/29	16.68	24:00	11.52	139.789	139.930	0.141	12.2	14.0
P0908145	08/04	16.70	24:00	7.44	144.231	144.404	0.173	23.3	18.8
P0908147	08/10	16.70	24:00	24.07	144.709	144.860	0.151	6.3	12.8
C1523762	08/16	16.70	24:00	24.09	128.523	129.521	0.998	41.4	40.1
C1523764	08/22	16.70	24:00	0.01	131.280	131.278	-0.002	-200.0	9.0
C1523766	08/28	16.70	24:00	0.00	131.279	131.277	-0.002	#DIV/0!	16.3
C1523768	09/03	16.70	24:00	24.02	125.641	125.885	0.244	10.2	9.7
C1523782	09/09	16.70	24:00	24.01	125.746	125.983	0.237	9.9	11.5
C1523784	09/15	16.70	24:00	24.02	128.737	129.138	0.401	16.7	17.6
C1523786	09/21	16.70	23:59	24.02	126.060	126.145	0.085	3.5	4.8
C1523788	09/27	16.70	24:00	24.00	124.780	125.104	0.324	13.5	17.1

Sampler did not run due to pump/battery problem

Quarter 3, 2023 Filter Analysis Results - TSP Greeley

FILTER	START	END	HOURS	FLOW LPM	SAMPLE VOLUME (M3)	PRE WEIGHT (MG)	POST WEIGHT (MG)	PART MASS (MG)	CONC (UG/M3)	E-S CONC (UG/M3)	TRUE E-S MULT	MDEQ PM10
P0908104	06/27 @ 10	07/03 @ 10	145	2.0	16.59	143.649	144.001	0.352	21.2	20.9	5.08	16.3
P0908126	07/03 @ 11	07/10 @ 14	172	2.0	19.68	143.280	143.771	0.491	25.0	32.9	3.79	17.6
P0908129	07/10 @ 15	07/18 @ 14	192	2.0	21.96	142.268	142.638	0.370	16.8	34.4	2.45	17.8
P0908142	07/18 @ 15	07/26 @ 09	187	2.0	21.39	145.859	146.434	0.575	26.9	29.1	4.62	21.2
P0908144	07/26 @ 10	08/02 @ 10	169	2.0	19.33	145.670	146.220	0.550	28.4	38.7	3.68	20.5
P0908146	08/02 @ 11	08/09 @ 09	167	2.0	19.10	138.669	138.899	0.230	12.0	28.4	2.12	13.9
P0908148	08/09 @ 10	08/14 @ 10	0 (DNR)	0.0	#VALUE!	138.031	138.033	0.002	#VALUE!	ND	#VALUE!	14.0
C1523763	08/14 @ 11	08/21 @ 13	171	2.0	19.56	129.498	130.103	0.605	30.9	76.4*	#VALUE!	28.0
C1523765	08/21 @ 14	08/23 @ 14	49	2.0	5.61	130.342	130.407	0.065	11.6	ND	#VALUE!	9.4
C1523767	08/23 @ 15	08/30 @ 14	168	2.0	19.22	130.487	130.755	0.268	13.9	ND	#VALUE!	16.4
C1523769	08/30 @ 15	09/06 @ 14	166	2.0	18.99	126.504	126.716	0.212	11.2	14.3*	#VALUE!	12.4
C1523783	09/06 @ 15	09/13 @ 14	168	2.0	19.22	125.871	126.104	0.233	12.1	16.7	3.63	13.9
C1523785	09/13 @ 15	09/18 @ 14	120	2.0	13.73	128.354	128.565	0.211	15.4	19.6	3.92	16.3
C1523787	09/18 @ 15	09/25 @ 14	168	2.0	19.22	126.016	126.055	0.039	2.0	8.0	1.27	12.8
C1523789	09/25 @ 15	10/02 @ 14	167	2.0	19.10	126.125	126.357	0.232	12.1	17.6	3.45	

Did not run

Gravimetric results appear unrealistically low - will exclude from analysis
Filter Leak?

Not valid due to E-Sampler malfunction

APPENDIX C: WIND ROSE TABLES

Table C-1. Quarterly Wind Rose Summary, Greeley School: All Data

Third Quarter 2023 (All Wind Data)																	
	Direction>>>	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	3.8	1.9	2.2	2.0	1.0	1.6	1.6	2.8	4.5	3.5	4.4	4.1	4.1	3.1	3.8	3.9	48.3
	1.1 - 2.0	4.3	2.5	1.6	1.2	0.5	0.6	0.8	1.9	2.0	1.4	1.6	1.0	2.0	2.0	3.1	5.7	32.2
	2.1 - 3.0	1.0	0.8	0.6	0.5	0.3	0.4	0.3	0.7	0.5	0.3	0.5	0.6	1.4	1.1	2.0	3.1	14.0
	3.1 - 4.0	0.5	0.3	0.2	0.0	0.0	0.1	0.2	0.2	0.8	0.0	0.1	0.1	0.3	0.0	0.4	1.2	4.6
	4.1 - 5.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.7
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Calm																	0.0
	Total	9.8	5.6	4.7	3.6	1.8	2.6	2.8	5.7	8.1	5.3	6.7	5.8	7.9	6.3	9.4	14.1	100.0
	Average Speed	1.4	1.5	1.4	1.1	1.2	1.2	1.2	1.3	1.4	1.0	1.1	1.0	1.3	1.2	1.5	1.7	1.3

Table C-2. Wind Rose Summary, Greeley School TSP ≥ 30

Third Quarter, 2023 (TSP ≥30 µg/m^3)																	
	Direction>>>	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	4.2	1.9	0.5	3.8	0.5	1.4	1.9	3.3	4.2	3.3	5.7	5.7	4.2	3.8	8.0	8.0	60.4
	1.1 - 2.0	7.1	2.8	0.5	0.9	0.5	0.0	0.9	0.9	0.9	1.9	0.0	0.0	0.5	0.0	0.9	8.5	26.4
	2.1 - 3.0	2.4	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.0	0.5	0.5	3.3	8.5
	3.1 - 4.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.5	0.0	0.0	1.9	4.2
	4.1 - 5.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Calm																	0.0
	Total	14.6	4.7	0.9	4.7	1.4	1.4	2.8	4.7	6.6	5.2	6.6	5.7	5.2	4.2	9.4	21.7	100.0
	Average Speed	1.6	1.1	1.3	0.7	1.6	0.6	0.9	1.0	1.4	0.9	0.9	0.6	1.0	0.8	0.9	1.5	1.2

Table C-3. Wind Rose Summary, Greeley School TSP ≤ 10

Third Quarter, 2023 (TSP ≤ 10 µg/m³)																	
	Direction>>>	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.9	0.5	1.6	0.7	0.7	1.9	0.7	2.3	3.5	2.8	3.1	4.0	2.1	1.4	1.2	0.7	28.2
	1.1 - 2.0	3.3	2.8	3.8	2.3	0.7	0.9	0.9	2.8	3.1	2.3	3.1	1.4	3.1	2.8	5.2	5.9	44.4
	2.1 - 3.0	1.2	1.2	0.9	0.2	0.2	0.9	0.2	0.9	0.7	0.5	0.5	0.2	2.3	1.6	2.3	6.8	20.9
	3.1 - 4.0	0.7	0.2	0.0	0.0	0.0	0.2	0.0	0.5	0.0	0.0	0.5	0.0	0.5	0.0	0.9	2.3	5.9
	4.1 - 5.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.7
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Calm																	0.0
	Total	6.1	4.7	6.6	3.3	1.6	4.0	1.9	6.6	7.3	5.6	7.0	5.6	8.0	5.9	9.9	16.0	100.0
	Average Speed	1.8	1.7	1.5	1.4	1.2	1.4	1.3	1.4	1.2	1.1	1.3	1.0	1.7	1.6	2.0	2.3	1.6

APPENDIX D: LABORATORY ANALYSIS REPORTS

ANALYTICAL SUMMARY REPORT

August 17, 2023

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B23080630 Quote ID: B4795

Project Name: Montana Resources/Greely School

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 8/7/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23080630-001	Particulate Filter #P0908101 PM10	06/23/23 00:00	08/07/23	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B23080630-002	Particulate Filter #P0908102 TSP 6/21-6/27	06/27/23 00:00	08/07/23	Air	Same As Above
B23080630-003	Particulate Filter #P0908103 PM10	06/29/23 00:00	08/07/23	Air	Same As Above
B23080630-004	Particulate Filter #P0908104 TSP 6/27-7/3	07/03/23 00:00	08/07/23	Air	Same As Above
B23080630-005	Particulate Filter #P0908105 PM10	07/05/23 00:00	08/07/23	Air	Same As Above
B23080630-006	Particulate Filter #P0908126 TSP 7/3-7/10	07/10/23 00:00	08/07/23	Air	Same As Above
B23080630-007	Particulate Filter #P0908127 Lab Blank	06/16/23 15:30	08/07/23	Air	Same As Above
B23080630-008	Particulate Filter #DP0908128 PM10	07/11/23 00:00	08/07/23	Air	Same As Above
B23080630-009	Particulate Filter #P0908129 TSP 7/10-7/18	07/18/23 00:00	08/07/23	Air	Same As Above
B23080630-010	Particulate Filter #P0908130 PM10	07/17/23 00:00	08/07/23	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, 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:

CLIENT: Bison Engineering
Project: Montana Resources/Greely School
Work Order: B23080630

Report Date: 08/17/23

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-001
Client Sample ID: Particulate Filter #P0908101 PM10

Report Date: 08/17/23
Collection Date: 06/23/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	08/16/23 14:19 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:19 / jks
Copper	0.5	ug/filter	J	1		E200.8	08/16/23 14:19 / jks
Lead	0.2	ug/filter	J	1		E200.8	08/16/23 14:19 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 14:19 / jks
Molybdenum	0.09	ug/filter	J	1		E200.8	08/16/23 14:19 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:19 / jks

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-002
Client Sample ID: Particulate Filter #P0908102 TSP 6/21-6/27

Report Date: 08/17/23
Collection Date: 06/27/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	08/16/23 14:25 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:25 / jks
Copper	ND	ug/filter		1		E200.8	08/16/23 14:25 / jks
Lead	ND	ug/filter		1		E200.8	08/16/23 14:25 / jks
Manganese	0.6	ug/filter	J	1		E200.8	08/16/23 14:25 / jks
Molybdenum	ND	ug/filter		1		E200.8	08/16/23 14:25 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:25 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-003
Client Sample ID: Particulate Filter #P0908103 PM10

Report Date: 08/17/23
Collection Date: 06/29/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	0.08	ug/filter	J	1		E200.8	08/16/23 14:31 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:31 / jks
Copper	1	ug/filter		1		E200.8	08/16/23 14:31 / jks
Lead	ND	ug/filter		1		E200.8	08/16/23 14:31 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 14:31 / jks
Molybdenum	0.1	ug/filter	J	1		E200.8	08/16/23 14:31 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:31 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-004
Client Sample ID: Particulate Filter #P0908104 TSP 6/27-7/3

Report Date: 08/17/23
Collection Date: 07/03/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	08/16/23 14:37 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:37 / jks
Copper	2	ug/filter		1		E200.8	08/16/23 14:37 / jks
Lead	0.1	ug/filter	J	1		E200.8	08/16/23 14:37 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 14:37 / jks
Molybdenum	0.4	ug/filter	J	1		E200.8	08/16/23 14:37 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:37 / jks

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-005
Client Sample ID: Particulate Filter #P0908105 PM10

Report Date: 08/17/23
Collection Date: 07/05/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	08/16/23 14:43 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:43 / jks
Copper	1	ug/filter		1		E200.8	08/16/23 14:43 / jks
Lead	ND	ug/filter		1		E200.8	08/16/23 14:43 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 14:43 / jks
Molybdenum	0.1	ug/filter	J	1		E200.8	08/16/23 14:43 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:43 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-006
Client Sample ID: Particulate Filter #P0908126 TSP 7/3-7/10

Report Date: 08/17/23
Collection Date: 07/10/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	08/16/23 14:49 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:49 / jks
Copper	2	ug/filter		1		E200.8	08/16/23 14:49 / jks
Lead	0.1	ug/filter	J	1		E200.8	08/16/23 14:49 / jks
Manganese	0.4	ug/filter	J	1		E200.8	08/16/23 14:49 / jks
Molybdenum	0.4	ug/filter	J	1		E200.8	08/16/23 14:49 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:49 / jks

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-007
Client Sample ID: Particulate Filter #P0908127 Lab Blank

Report Date: 08/17/23
Collection Date: 06/16/23 15:30
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks
Copper	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks
Lead	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks
Molybdenum	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 14:55 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-008
Client Sample ID: Particulate Filter #DP0908128 PM10

Report Date: 08/17/23
Collection Date: 07/11/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	0.1	ug/filter	J	1		E200.8	08/16/23 15:14 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 15:14 / jks
Copper	2	ug/filter		1		E200.8	08/16/23 15:14 / jks
Lead	0.09	ug/filter	J	1		E200.8	08/16/23 15:14 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 15:14 / jks
Molybdenum	0.2	ug/filter	J	1		E200.8	08/16/23 15:14 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 15:14 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-009
Client Sample ID: Particulate Filter #P0908129 TSP 7/10-7/18

Report Date: 08/17/23
Collection Date: 07/18/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	0.1	ug/filter	J	1		E200.8	08/16/23 15:20 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 15:20 / jks
Copper	2	ug/filter		1		E200.8	08/16/23 15:20 / jks
Lead	ND	ug/filter		1		E200.8	08/16/23 15:20 / jks
Manganese	ND	ug/filter		1		E200.8	08/16/23 15:20 / jks
Molybdenum	0.5	ug/filter	J	1		E200.8	08/16/23 15:20 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 15:20 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23080630-010
Client Sample ID: Particulate Filter #P0908130 PM10

Report Date: 08/17/23
Collection Date: 07/17/23
DateReceived: 08/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	0.1	ug/filter	J	1		E200.8	08/16/23 15:50 / jks
Cadmium	ND	ug/filter		1		E200.8	08/16/23 15:50 / jks
Copper	3	ug/filter		1		E200.8	08/16/23 15:50 / jks
Lead	0.1	ug/filter	J	1		E200.8	08/16/23 15:50 / jks
Manganese	0.5	ug/filter	J	1		E200.8	08/16/23 15:50 / jks
Molybdenum	0.6	ug/filter	J	1		E200.8	08/16/23 15:50 / jks
Zinc	ND	ug/filter		1		E200.8	08/16/23 15:50 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23080630 **Report Date:** 08/17/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS207-B_230816A	
Lab ID: QCS	7	Initial Calibration Verification Standard								08/16/23 12:30
Arsenic		0.0502	mg/L	0.0050	100	90	110			
Cadmium		0.0254	mg/L	0.0010	101	90	110			
Copper		0.0532	mg/L	0.010	106	90	110			
Lead		0.0515	mg/L	0.0010	103	90	110			
Manganese		0.258	mg/L	0.0050	103	90	110			
Molybdenum		0.0501	mg/L	0.0050	100	90	110			
Zinc		0.0533	mg/L	0.0050	107	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard								08/16/23 13:43
Arsenic		0.0502	mg/L	0.0050	100	90	110			
Cadmium		0.0517	mg/L	0.0010	103	90	110			
Copper		0.0526	mg/L	0.010	105	90	110			
Lead		0.0519	mg/L	0.0010	104	90	110			
Manganese		0.0517	mg/L	0.0050	103	90	110			
Molybdenum		0.0506	mg/L	0.0050	101	90	110			
Zinc		0.0523	mg/L	0.0050	105	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard								08/16/23 15:01
Arsenic		0.0504	mg/L	0.0050	101	90	110			
Cadmium		0.0522	mg/L	0.0010	104	90	110			
Copper		0.0526	mg/L	0.010	105	90	110			
Lead		0.0491	mg/L	0.0010	98	90	110			
Manganese		0.0507	mg/L	0.0050	101	90	110			
Molybdenum		0.0506	mg/L	0.0050	101	90	110			
Zinc		0.0530	mg/L	0.0050	106	90	110			
Method: E200.8										Batch: 180752
Lab ID: MB-180752	7	Method Blank				Run: ICPMS207-B_230816A				08/16/23 13:55
Arsenic		ND	ug/filter	0.08						
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						
Zinc		ND	ug/filter	0.8						
Lab ID: LCS-180752	7	Laboratory Control Sample				Run: ICPMS207-B_230816A				08/16/23 14:01
Arsenic		99.8	ug/filter	1.0	100	85	115			
Cadmium		53.3	ug/filter	1.0	107	85	115			
Copper		102	ug/filter	1.0	102	85	115			
Lead		96.0	ug/filter	1.0	96	85	115			
Manganese		504	ug/filter	1.0	101	85	115			
Molybdenum		107	ug/filter	1.0	107	85	115			
Zinc		101	ug/filter	1.0	101	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23080630 **Report Date:** 08/17/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**										Batch: 180752
Lab ID: **LCSD-180752**	7	Laboratory Control Sample Duplicate				Run: ICPMS207-B_230816A				08/16/23 14:07
Arsenic		100	ug/filter	1.0	100	85	115			
Cadmium		53.0	ug/filter	1.0	106	85	115			
Copper		102	ug/filter	1.0	102	85	115			
Lead		95.7	ug/filter	1.0	96	85	115			
Manganese		500	ug/filter	1.0	100	85	115			
Molybdenum		106	ug/filter	1.0	106	85	115			
Zinc		101	ug/filter	1.0	101	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B23080630

Login completed by: Yvonna E. Smith
Date Received: 8/7/2023
Reviewed by: cindy
Received by: tjg
Reviewed Date: 8/9/2023
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:	4.6°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.

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Brown-Argott
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	MTR223018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources / Greely School
Sampler Name	Sampler Phone
Sample Origin State	Montana
EPA/State Compliance	☒ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(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 - Other
DW - Drinking Water

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 Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Particulate filter #P0908101 PM10	6/23/23	24 hr composite	1	on Teflon filter	X	X	X	X	X	X	X					B230806030
2	Particulate filter #P0908102 TSP 6/21-6/27	6/21→6/27	continuous	1	on Teflon filter	X	X	X	X	X	X	X					
3	Particulate filter #P0908103 PM10	6/29/23	24 hr composite	1	on Teflon filter	X	X	X	X	X	X	X					
4	Particulate filter #P0908104 TSP 6/27-7/3	6/27→7/3	continuous	1	on Teflon filter	X	X	X	X	X	X	X					
5	Particulate filter #P0908105 PM10	7/5/23	24 hr composite	1	on Teflon filter	X	X	X	X	X	X	X					
6	Particulate filter #P0908126 TSP 7/3-7/10	7/3→7/10	continuous	1	on Teflon filter	X	X	X	X	X	X	X					
7	Particulate filter #P0908127 Lab Blank	6/16/23	1530	1	on Teflon filter	X	X	X	X	X	X	X					
8	Particulate filter #DP0908128 PM10	7/11/23	24 hr composite	1	on Teflon filter	X	X	X	X	X	X	X					
9	Particulate filter #P0908129 TSP 7/10-7/18	7/10→7/18	continuous	1	on Teflon filter	X	X	X	X	X	X	X					
10	Particulate filter #P0908130 PM10	7/17/23	24 hr composite	1	on Teflon filter	X	X	X	X	X	X	X					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	8/1/23 1543	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Elli Cassen	8/1/23 1543	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*
				4.6	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.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

September 19, 2023

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B23082739 Quote ID: B4795

Project Name: Montana Resources/Greely School

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 8/29/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23082739-001	Particulate Filter P0908141 PM10	07/23/23 0:00	08/29/23	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B23082739-002	Particulate Filter P0908142 TSP 7/18-7/26	07/26/23 0:00	08/29/23	Air	Same As Above
B23082739-003	Particulate Filter P0908143 PM10	07/29/23 0:00	08/29/23	Air	Same As Above
B23082739-004	Particulate Filter P0908144 TSP 7/26-8/2	08/02/23 0:00	08/29/23	Air	Same As Above
B23082739-005	Particulate Filter P0908145 PM10	07/05/23 0:00	08/29/23	Air	Same As Above
B23082739-006	Particulate Filter P0908146 TSP 8/2-8/9	08/09/23 0:00	08/29/23	Air	Same As Above
B23082739-007	Particulate Filter P0908147 PM10	07/11/23 0:00	08/29/23	Air	Same As Above
B23082739-008	Particulate Filter P0908148 TSP 8/9-8/14	08/14/23 0:00	08/29/23	Air	Same As Above
B23082739-009	Particulate Filter P0908149 Field Blank	08/14/23 10:08	08/29/23	Air	Same As Above
B23082739-010	Particulate Filter P0908150 PM10 Lab Blank	07/12/23 15:36	08/29/23	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, 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:

CLIENT: Bison Engineering
Project: Montana Resources/Greely School
Work Order: B23082739

Revised Date: 09/19/23
Report Date: 09/12/23

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

Revised Date: 9/19/2023

On 9/19/2023 a request was received from Don Milmine at Bison Engineering to revise this workorder by changing the project ID from Hydrometrics/Kerr-McGee to Montana Resources/Greely School.

The report has been revised and replaces the previously issued report dated 9/12/2023 in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-001
Client Sample ID: Particulate Filter P0908141 PM10

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 07/23/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 16:35 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 16:35 / jks
Copper	1	ug/filter		1		E200.8	09/11/23 16:35 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 16:35 / jks
Manganese	0.3	ug/filter	J	1		E200.8	09/11/23 16:35 / jks
Molybdenum	0.1	ug/filter	J	1		E200.8	09/11/23 16:35 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 16:35 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-002
Client Sample ID: Particulate Filter P0908142 TSP 7/18-7/26

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 07/26/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 16:41 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 16:41 / jks
Copper	2	ug/filter		1		E200.8	09/11/23 16:41 / jks
Lead	0.09	ug/filter	J	1		E200.8	09/11/23 16:41 / jks
Manganese	0.4	ug/filter	J	1		E200.8	09/11/23 16:41 / jks
Molybdenum	0.1	ug/filter	J	1		E200.8	09/11/23 16:41 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 16:41 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-003
Client Sample ID: Particulate Filter P0908143 PM10

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 07/29/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 16:47 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 16:47 / jks
Copper	0.3	ug/filter	J	1		E200.8	09/11/23 16:47 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 16:47 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 16:47 / jks
Molybdenum	0.09	ug/filter	J	1		E200.8	09/11/23 16:47 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 16:47 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-004
Client Sample ID: Particulate Filter P0908144 TSP 7/26-8/2

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 08/02/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 16:54 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 16:54 / jks
Copper	2	ug/filter		1		E200.8	09/11/23 16:54 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 16:54 / jks
Manganese	0.3	ug/filter	J	1		E200.8	09/11/23 16:54 / jks
Molybdenum	0.1	ug/filter	J	1		E200.8	09/11/23 16:54 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 16:54 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-005
Client Sample ID: Particulate Filter P0908145 PM10

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 07/05/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 17:01 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 17:01 / jks
Copper	3	ug/filter		1		E200.8	09/11/23 17:01 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 17:01 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 17:01 / jks
Molybdenum	ND	ug/filter		1		E200.8	09/11/23 17:01 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 17:01 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-006
Client Sample ID: Particulate Filter P0908146 TSP 8/2-8/9

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 08/09/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 17:07 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 17:07 / jks
Copper	0.5	ug/filter	J	1		E200.8	09/11/23 17:07 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 17:07 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 17:07 / jks
Molybdenum	ND	ug/filter		1		E200.8	09/11/23 17:07 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 17:07 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-007
Client Sample ID: Particulate Filter P0908147 PM10

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 07/11/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 17:14 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 17:14 / jks
Copper	0.6	ug/filter	J	1		E200.8	09/11/23 17:14 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 17:14 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 17:14 / jks
Molybdenum	ND	ug/filter		1		E200.8	09/11/23 17:14 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 17:14 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-008
Client Sample ID: Particulate Filter P0908148 TSP 8/9-8/14

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 08/14/23
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks
Copper	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks
Molybdenum	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 17:20 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-009
Client Sample ID: Particulate Filter P0908149 Field Blank

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 08/14/23 10:08
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks
Copper	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks
Molybdenum	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 17:26 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23082739-010
Client Sample ID: Particulate Filter P0908150 PM10 Lab Blank

Revised Date: 09/19/23
Report Date: 09/12/23
Collection Date: 07/12/23 15:36
DateReceived: 08/29/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks
Cadmium	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks
Copper	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks
Lead	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks
Manganese	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks
Molybdenum	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks
Zinc	ND	ug/filter		1		E200.8	09/11/23 17:45 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23082739 **Report Date:** 09/12/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS208-B_230911A	
Lab ID: QCS	7	Initial Calibration Verification Standard								09/11/23 12:11
Arsenic		0.0501	mg/L	0.0050	100	90	110			
Cadmium		0.0272	mg/L	0.0010	109	90	110			
Copper		0.0538	mg/L	0.010	108	90	110			
Lead		0.0529	mg/L	0.0010	106	90	110			
Manganese		0.254	mg/L	0.0050	102	90	110			
Molybdenum		0.0484	mg/L	0.0050	97	90	110			
Zinc		0.0544	mg/L	0.0050	109	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard								09/11/23 16:16
Arsenic		0.0498	mg/L	0.0050	100	90	110			
Cadmium		0.0513	mg/L	0.0010	103	90	110			
Copper		0.0516	mg/L	0.010	103	90	110			
Lead		0.0530	mg/L	0.0010	106	90	110			
Manganese		0.0493	mg/L	0.0050	99	90	110			
Molybdenum		0.0508	mg/L	0.0050	102	90	110			
Zinc		0.0506	mg/L	0.0050	101	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard								09/11/23 17:33
Arsenic		0.0501	mg/L	0.0050	100	90	110			
Cadmium		0.0496	mg/L	0.0010	99	90	110			
Copper		0.0524	mg/L	0.010	105	90	110			
Lead		0.0496	mg/L	0.0010	99	90	110			
Manganese		0.0500	mg/L	0.0050	100	90	110			
Molybdenum		0.0493	mg/L	0.0050	99	90	110			
Zinc		0.0508	mg/L	0.0050	102	90	110			
Method: E200.8									Batch: 182638	
Lab ID: MB-182638	7	Method Blank				Run: ICPMS208-B_230911A				09/11/23 14:05
Arsenic		ND	ug/filter	0.08						
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						
Zinc		ND	ug/filter	0.8						
Lab ID: LCS-182638	7	Laboratory Control Sample				Run: ICPMS208-B_230911A				09/11/23 14:11
Arsenic		98.5	ug/filter	1.0	99	85	115			
Cadmium		54.5	ug/filter	1.0	109	85	115			
Copper		103	ug/filter	1.0	103	85	115			
Lead		107	ug/filter	1.0	107	85	115			
Manganese		473	ug/filter	1.0	95	85	115			
Molybdenum		100	ug/filter	1.0	100	85	115			
Zinc		100	ug/filter	1.0	100	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23082739 **Report Date:** 09/12/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 182638
Lab ID: LCSD-182638	7	Laboratory Control Sample Duplicate				Run: ICPMS208-B_230911A				09/11/23 14:17
Arsenic		96.2	ug/filter	1.0	96	85	115			
Cadmium		54.6	ug/filter	1.0	109	85	115			
Copper		100	ug/filter	1.0	100	85	115			
Lead		108	ug/filter	1.0	108	85	115			
Manganese		467	ug/filter	1.0	93	85	115			
Molybdenum		99.0	ug/filter	1.0	99	85	115			
Zinc		97.2	ug/filter	1.0	97	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B23082739

Login completed by: Lyndsi E. LeProwse
Date Received: 8/29/2023
Reviewed by: cindy
Received by: lel
Reviewed Date: 9/6/2023
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:	2.7°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.

Contact and Corrective Action Comments:

None

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

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Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Argott-Brown
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MTR223018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Analyze per history

Project Information

Project Name, PWSID, Permit, etc.	Hydrometrics / Kerr-McGee
Sampler Name	Sampler Phone
Sample Origin State: Montana	EPA/State Compliance ☒ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(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 - Other
DW - Drinking Water

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 Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Particulate filter P0908141 PM10	7/23/23	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					B23082739
2	Particulate filter P0908142 TSP 7/18-7/26	7/18-26/23	continuous	1	on Teflon filter	x	x	x	x	x	x	x					
3	Particulate filter P0908143 PM10	7/29/23	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
4	Particulate filter P0908144 TSP 7/26-8/2	7/26→8/2	continuous	1	on Teflon filter	x	x	x	x	x	x	x					
5	Particulate filter P0908145 PM10	7/5/23	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
6	Particulate filter P0908146 TSP8/2-8/9	8/2-9/23	continuous	1	on Teflon filter	x	x	x	x	x	x	x					
7	Particulate filter P0908147 PM10	7/11/23	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
8	Particulate filter P0908148 TSP 8/9-8/14	8/9-14/23	continuous	1	on Teflon filter	x	x	x	x	x	x	x					
9	Particulate filter P0908149 Field Blank	8/14/23	1008	1	on Teflon filter	x	x	x	x	x	x	x					
10	Particulate filter P0908150 PM10 Lab Blank	7/12/23	1536	1	on Teflon filter	x	x	x	x	x	x	x					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	8/29/23 1043	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Wendi Warner	8/29/23 10:43	Wendi LeBrun

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*
				2.7 °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.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

October 04, 2023

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B23091741 Quote ID: B4795

Project Name: Montana Resources/Greely School

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 9/20/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23091741-001	Particulate filter #C1523761 Lab Blank	08/03/23 16:30	09/20/23	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B23091741-002	Particulate filter #C1523762 PM10 Composite	08/16/23 0:00	09/20/23	Filter	Same As Above
B23091741-003	Particulate filter #C1523763 TSP 8/14-8/21	08/21/23 0:00	09/20/23	Filter	Same As Above
B23091741-004	Particulate filter #C1523764 PM10 Composite	08/22/23 0:00	09/20/23	Filter	Same As Above
B23091741-005	Particulate filter #C1523765 TSP 8/21-8/23	08/23/23 0:00	09/20/23	Filter	Same As Above
B23091741-006	Particulate filter #C1523766 PM10 Composite	08/28/23 0:00	09/20/23	Filter	Same As Above
B23091741-007	Particulate filter #C1523767 TSP 8/23-8/30	08/30/23 0:00	09/20/23	Filter	Same As Above
B23091741-008	Particulate filter #C1523768 PM10 Composite	09/03/23 0:00	09/20/23	Filter	Same As Above
B23091741-009	Particulate filter #C1523769 TSP 8/30-9/6	09/06/23 0:00	09/20/23	Filter	Same As Above
B23091741-010	Particulate filter #C1523770 Field Blank	08/30/23 14:00	09/20/23	Filter	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, 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:

CLIENT: Bison Engineering
Project: Montana Resources/Greely School
Work Order: B23091741

Report Date: 10/04/23

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-001
Client Sample ID: Particulate filter #C1523761 Lab Blank

Report Date: 10/04/23
Collection Date: 08/03/23 16:30
DateReceived: 09/20/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem
Copper	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 11:14 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-002
Client Sample ID: Particulate filter #C1523762 PM10 Composite

Report Date: 10/04/23
Collection Date: 08/16/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 11:20 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 11:20 / aem
Copper	0.6	ug/filter	J	1		E200.8	10/03/23 11:20 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 11:20 / aem
Manganese	0.5	ug/filter	J	1		E200.8	10/03/23 11:20 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 11:20 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 11:20 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-003
Client Sample ID: Particulate filter #C1523763 TSP 8/14-8/21

Report Date: 10/04/23
Collection Date: 08/21/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 11:39 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 11:39 / aem
Copper	2	ug/filter		1		E200.8	10/03/23 11:39 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 11:39 / aem
Manganese	0.5	ug/filter	J	1		E200.8	10/03/23 11:39 / aem
Molybdenum	0.09	ug/filter	J	1		E200.8	10/03/23 11:39 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 11:39 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-004
Client Sample ID: Particulate filter #C1523764 PM10 Composite

Report Date: 10/04/23
Collection Date: 08/22/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem
Copper	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 11:46 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-005
Client Sample ID: Particulate filter #C1523765 TSP 8/21-8/23

Report Date: 10/04/23
Collection Date: 08/23/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem
Copper	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 11:52 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-006
Client Sample ID: Particulate filter #C1523766 PM10 Composite

Report Date: 10/04/23
Collection Date: 08/28/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem
Copper	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 11:58 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-007
Client Sample ID: Particulate filter #C1523767 TSP 8/23-8/30

Report Date: 10/04/23
Collection Date: 08/30/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 12:05 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 12:05 / aem
Copper	0.8	ug/filter	J	1		E200.8	10/03/23 12:05 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 12:05 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 12:05 / aem
Molybdenum	0.2	ug/filter	J	1		E200.8	10/03/23 12:05 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 12:05 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-008
Client Sample ID: Particulate filter #C1523768 PM10 Composite

Report Date: 10/04/23
Collection Date: 09/03/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 12:11 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 12:11 / aem
Copper	0.5	ug/filter	J	1		E200.8	10/03/23 12:11 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 12:11 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 12:11 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 12:11 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 12:11 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-009
Client Sample ID: Particulate filter #C1523769 TSP 8/30-9/6

Report Date: 10/04/23
Collection Date: 09/06/23
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 12:17 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 12:17 / aem
Copper	0.4	ug/filter	J	1		E200.8	10/03/23 12:17 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 12:17 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 12:17 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 12:17 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 12:17 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School
Lab ID: B23091741-010
Client Sample ID: Particulate filter #C1523770 Field Blank

Report Date: 10/04/23
Collection Date: 08/30/23 14:00
DateReceived: 09/20/23
Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem
Cadmium	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem
Copper	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem
Lead	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem
Manganese	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem
Molybdenum	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem
Zinc	ND	ug/filter		1		E200.8	10/03/23 12:27 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23091741 **Report Date:** 10/04/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**										Batch: 183350
Lab ID: **LCS-183350**	7	Laboratory Control Sample				Run: ICPMS207-B_230929A				10/01/23 02:46
Arsenic		99.9	ug/filter	1.0	100	85	115			
Cadmium		50.6	ug/filter	1.0	101	85	115			
Copper		97.7	ug/filter	1.0	98	85	115			
Lead		102	ug/filter	1.0	102	85	115			
Manganese		505	ug/filter	1.0	101	85	115			
Molybdenum		106	ug/filter	1.0	106	85	115			
Zinc		95.7	ug/filter	1.0	96	85	115			
Lab ID: **LCSD-183350**	7	Laboratory Control Sample Duplicate				Run: ICPMS207-B_230929A				10/01/23 02:52
Arsenic		99.1	ug/filter	1.0	99	85	115			
Cadmium		50.3	ug/filter	1.0	101	85	115			
Copper		97.5	ug/filter	1.0	98	85	115			
Lead		94.1	ug/filter	1.0	94	85	115			
Manganese		509	ug/filter	1.0	102	85	115			
Molybdenum		104	ug/filter	1.0	103	85	115			
Zinc		95.4	ug/filter	1.0	95	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23091741 **Report Date:** 10/04/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS208-B_231002A	
Lab ID: QCS	7	Initial Calibration Verification Standard							10/03/23 05:40	
Arsenic		0.0506	mg/L	0.0050	101	90	110			
Cadmium		0.0250	mg/L	0.0010	100	90	110			
Copper		0.0522	mg/L	0.010	104	90	110			
Lead		0.0506	mg/L	0.0010	101	90	110			
Manganese		0.258	mg/L	0.0050	103	90	110			
Molybdenum		0.0497	mg/L	0.0050	99	90	110			
Zinc		0.0523	mg/L	0.0050	105	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard							10/03/23 10:11	
Arsenic		0.0504	mg/L	0.0050	101	90	110			
Cadmium		0.0498	mg/L	0.0010	100	90	110			
Copper		0.0511	mg/L	0.010	102	90	110			
Lead		0.0497	mg/L	0.0010	99	90	110			
Manganese		0.0501	mg/L	0.0050	100	90	110			
Molybdenum		0.0488	mg/L	0.0050	98	90	110			
Zinc		0.0503	mg/L	0.0050	101	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard							10/03/23 11:27	
Arsenic		0.0511	mg/L	0.0050	102	90	110			
Cadmium		0.0495	mg/L	0.0010	99	90	110			
Copper		0.0510	mg/L	0.010	102	90	110			
Lead		0.0493	mg/L	0.0010	99	90	110			
Manganese		0.0504	mg/L	0.0050	101	90	110			
Molybdenum		0.0493	mg/L	0.0050	99	90	110			
Zinc		0.0511	mg/L	0.0050	102	90	110			
Method: E200.8									Batch: 183350	
Lab ID: MB-183350	7	Method Blank				Run: ICPMS208-B_231002A			10/03/23 08:30	
Arsenic		ND	ug/filter	0.08						
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						
Zinc		ND	ug/filter	0.8						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B23091741

Login completed by: Cindy Rohrer
Date Received: 9/20/2023
Reviewed by: gmccartney
Received by: lrs
Reviewed Date: 9/23/2023
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:	3.0°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.

Contact and Corrective Action Comments:

None

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES
Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Brown-Argott
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ■Email
Purchase Order	MTR221018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources / Greely School
Sampler Name	Sampler Phone
Sample Origin State Montana	EPA/State Compliance ☒ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(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 - Other
DW - Drinking Water

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 Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Particulate filter #C1523761 Lab Blank	8/3/23	1630	1	on Tetlon filter	x	x	x	x	x	x	x					B23091741
2	Particulate filter #C1523762 PM10	8/16/23	24 hr composite	1	on Tetlon filter	x	x	x	x	x	x	x					
3	Particulate filter #C1523763 TSP 8/14-8/21	8/14-8/21	continuous	1	on Tetlon filter	x	x	x	x	x	x	x					
4	Particulate filter #C1523764 PM10	8/22/23	24 hr composite	1	on Tetlon filter	x	x	x	x	x	x	x					
5	Particulate filter #C1523765 TSP 8/21-8/23	8/21-8/23	continuous	1	on Tetlon filter	x	x	x	x	x	x	x					
6	Particulate filter #C1523766 PM10	8/28/23	24 hr composite	1	on Tetlon filter	x	x	x	x	x	x	x					
7	Particulate filter #PC1523767 TSP 8/23-8/30	8/23-8/30	continuous	1	on Tetlon filter	x	x	x	x	x	x	x					
8	Particulate filter #C1523768 PM10	9/3/23	24 hr composite	1	on Tetlon filter	x	x	x	x	x	x	x					
9	Particulate filter #C1523769 TSP 8/30-9/6	8/30-9/6	continuous	1	on Tetlon filter	x	x	x	x	x	x	x					
10	Particulate filter #C1523770 Field Blank	8/30/23	1400	1	on Tetlon filter	x	x	x	x	x	x	x					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	9/20/23 1231	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					9/20/23 12:31	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*
				3.0 °C					

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-10/18 v.3

ENERGY LABORATORIES
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ANALYTICAL SUMMARY REPORT

November 20, 2023

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B23110469 Quote ID: B4795

Project Name: Montana Resources/Greely School DH

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 11/7/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23110469-001	Particulate Filter #C1523781 Lab Blank	08/28/23 15:30	11/07/23	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B23110469-002	Particulate Filter #C1523782 PM10	09/09/23 0:00	11/07/23	Air	Same As Above
B23110469-003	Particulate Filter #C1523783 TSP 9/6-9/13	09/13/23 0:00	11/07/23	Air	Same As Above
B23110469-004	Particulate Filter #C1523784 PM10	09/15/23 0:00	11/07/23	Air	Same As Above
B23110469-005	Particulate Filter #C1523785 TSP 9/13-9/18	09/18/23 0:00	11/07/23	Air	Same As Above
B23110469-006	Particulate Filter #C1523786 PM10	09/21/23 0:00	11/07/23	Air	Same As Above
B23110469-007	Particulate Filter #C1523787 TSP 9/18-9/25	09/25/23 0:00	11/07/23	Air	Same As Above
B23110469-008	Particulate Filter #C1523788 PM10	09/27/23 0:00	11/07/23	Air	Same As Above
B23110469-009	Particulate Filter #C1523789 TSP 9/25-10/2	10/02/23 0:00	11/07/23	Air	Same As Above
B23110469-010	Particulate Filter #C1523790 Field Blank	09/27/23 8:30	11/07/23	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, 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:

Technical Data Reviewer

Digitally signed by
Keri Conter
Date: 2023.11.20 10:09:32 -07:00

CLIENT: Bison Engineering
Project: Montana Resources/Greely School DH
Work Order: B23110469

Report Date: 11/20/23

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-001
Client Sample ID: Particulate Filter #C1523781 Lab Blank

Report Date: 11/20/23
Collection Date: 08/28/23 15:30
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem
Copper	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 22:41 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-002
Client Sample ID: Particulate Filter #C1523782 PM10

Report Date: 11/20/23
Collection Date: 09/09/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 22:47 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 22:47 / aem
Copper	0.6	ug/filter	J	1		E200.8	11/15/23 18:56 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 22:47 / aem
Manganese	2	ug/filter		1		E200.8	11/14/23 22:47 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 22:47 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 22:47 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-003
Client Sample ID: Particulate Filter #C1523783 TSP 9/6-9/13

Report Date: 11/20/23
Collection Date: 09/13/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 22:53 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 22:53 / aem
Copper	0.5	ug/filter	J	1		E200.8	11/15/23 19:02 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 22:53 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 22:53 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 22:53 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 22:53 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-004
Client Sample ID: Particulate Filter #C1523784 PM10

Report Date: 11/20/23
Collection Date: 09/15/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:00 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:00 / aem
Copper	1	ug/filter		1		E200.8	11/14/23 23:00 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 23:00 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 23:00 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 23:00 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 23:00 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-005
Client Sample ID: Particulate Filter #C1523785 TSP 9/13-9/18

Report Date: 11/20/23
Collection Date: 09/18/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:06 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:06 / aem
Copper	0.7	ug/filter	J	1		E200.8	11/15/23 19:09 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 23:06 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 23:06 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 23:06 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 23:06 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-006
Client Sample ID: Particulate Filter #C1523786 PM10

Report Date: 11/20/23
Collection Date: 09/21/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:12 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:12 / aem
Copper	ND	ug/filter		1		E200.8	11/14/23 23:12 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 23:12 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 23:12 / aem
Molybdenum	0.3	ug/filter	J	1		E200.8	11/15/23 19:15 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 23:12 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-007
Client Sample ID: Particulate Filter #C1523787 TSP 9/18-9/25

Report Date: 11/20/23
Collection Date: 09/25/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem
Copper	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 23:19 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-008
Client Sample ID: Particulate Filter #C1523788 PM10

Report Date: 11/20/23
Collection Date: 09/27/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:25 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:25 / aem
Copper	0.9	ug/filter	J	1		E200.8	11/15/23 19:34 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 23:25 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 23:25 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 23:25 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 23:25 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-009
Client Sample ID: Particulate Filter #C1523789 TSP 9/25-10/2

Report Date: 11/20/23
Collection Date: 10/02/23
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:44 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:44 / aem
Copper	ND	ug/filter		1		E200.8	11/14/23 23:44 / aem
Lead	0.1	ug/filter	J	1		E200.8	11/15/23 19:40 / aem
Manganese	ND	ug/filter		1		E200.8	11/14/23 23:44 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 23:44 / aem
Zinc	ND	ug/filter		1		E200.8	11/14/23 23:44 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School DH
Lab ID: B23110469-010
Client Sample ID: Particulate Filter #C1523790 Field Blank

Report Date: 11/20/23
Collection Date: 09/27/23 08:30
DateReceived: 11/07/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1		E200.8	11/14/23 23:50 / aem
Cadmium	ND	ug/filter		1		E200.8	11/14/23 23:50 / aem
Copper	0.6	ug/filter	J	1		E200.8	11/15/23 19:47 / aem
Lead	ND	ug/filter		1		E200.8	11/14/23 23:50 / aem
Manganese	0.3	ug/filter	J	1		E200.8	11/15/23 19:47 / aem
Molybdenum	ND	ug/filter		1		E200.8	11/14/23 23:50 / aem
Zinc	2	ug/filter		1		E200.8	11/14/23 23:50 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23110469 **Report Date:** 11/16/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS208-B_231113A	
Lab ID: QCS	7	Initial Calibration Verification Standard							11/14/23 18:48	
Arsenic		0.0512	mg/L	0.0050	102	90	110			
Cadmium		0.0245	mg/L	0.0010	98	90	110			
Copper		0.0517	mg/L	0.010	103	90	110			
Lead		0.0496	mg/L	0.0010	99	90	110			
Manganese		0.259	mg/L	0.0050	104	90	110			
Molybdenum		0.0479	mg/L	0.0050	96	90	110			
Zinc		0.0503	mg/L	0.0050	101	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard							11/14/23 22:10	
Arsenic		0.0494	mg/L	0.0050	99	90	110			
Cadmium		0.0495	mg/L	0.0010	99	90	110			
Copper		0.0508	mg/L	0.010	102	90	110			
Lead		0.0493	mg/L	0.0010	99	90	110			
Manganese		0.0506	mg/L	0.0050	101	90	110			
Molybdenum		0.0486	mg/L	0.0050	97	90	110			
Zinc		0.0483	mg/L	0.0050	97	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard							11/14/23 23:31	
Arsenic		0.0501	mg/L	0.0050	100	90	110			
Cadmium		0.0496	mg/L	0.0010	99	90	110			
Copper		0.0514	mg/L	0.010	103	90	110			
Lead		0.0481	mg/L	0.0010	96	90	110			
Manganese		0.0507	mg/L	0.0050	101	90	110			
Molybdenum		0.0483	mg/L	0.0050	97	90	110			
Zinc		0.0525	mg/L	0.0050	105	90	110			
Method: E200.8									Batch: 184816	
Lab ID: MB-184816	7	Method Blank				Run: ICPMS208-B_231113A			11/14/23 22:04	
Arsenic		ND	ug/filter	0.08						
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						
Zinc		ND	ug/filter	0.8						
Lab ID: LCS-184816	7	Laboratory Control Sample				Run: ICPMS208-B_231113A			11/14/23 22:23	
Arsenic		94.8	ug/filter	1.0	95	85	115			
Cadmium		45.0	ug/filter	1.0	90	85	115			
Copper		93.1	ug/filter	1.0	93	85	115			
Lead		86.7	ug/filter	1.0	87	85	115			
Manganese		465	ug/filter	1.0	93	85	115			
Molybdenum		87.1	ug/filter	1.0	87	85	115			
Zinc		92.6	ug/filter	1.0	93	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B23110469 **Report Date:** 11/16/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 184816
Lab ID: LCSD-184816	7	Laboratory Control Sample Duplicate				Run: ICPMS208-B_231113A				11/14/23 22:28
Arsenic		94.4	ug/filter	1.0	94	85	115			
Cadmium		44.0	ug/filter	1.0	88	85	115			
Copper		92.0	ug/filter	1.0	92	85	115			
Lead		85.4	ug/filter	1.0	85	85	115			
Manganese		462	ug/filter	1.0	92	85	115			
Molybdenum		86.4	ug/filter	1.0	86	85	115			
Zinc		91.2	ug/filter	1.0	91	85	115			
Method: E200.8										Analytical Run: ICPMS208-B_231115A
Lab ID: QCS	4	Initial Calibration Verification Standard								11/15/23 12:28
Copper		0.0521	mg/L	0.010	104	90	110			
Lead		0.0477	mg/L	0.0010	95	90	110			
Manganese		0.255	mg/L	0.0050	102	90	110			
Molybdenum		0.0471	mg/L	0.0050	94	90	110			
Lab ID: CCV	4	Continuing Calibration Verification Standard								11/15/23 17:59
Copper		0.0513	mg/L	0.010	103	90	110			
Lead		0.0482	mg/L	0.0010	96	90	110			
Manganese		0.0491	mg/L	0.0050	98	90	110			
Molybdenum		0.0462	mg/L	0.0050	92	90	110			
Lab ID: CCV	4	Continuing Calibration Verification Standard								11/15/23 19:21
Copper		0.0513	mg/L	0.010	103	90	110			
Lead		0.0490	mg/L	0.0010	98	90	110			
Manganese		0.0484	mg/L	0.0050	97	90	110			
Molybdenum		0.0463	mg/L	0.0050	93	90	110			
Method: E200.8										Batch: 184816
Lab ID: MB-184816	4	Method Blank				Run: ICPMS208-B_231115A				11/15/23 18:50
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B23110469

Login completed by: Addison A. Gilbert
Date Received: 11/7/2023

Reviewed by: ysmith
Received by: lrs

Reviewed Date: 11/11/2023
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:	3.0°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

ENERGY LABORATORIES

Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Brown-Argott
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ■Email
Purchase Order	MTR231018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources / Greely School DH
Sampler Name	Sampler Phone
Sample Origin State: Montana	EPA/State Compliance ☒ Yes ☐ No

URANIUM MINING CLIENTS MUST Indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(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 - Other
DW - Drinking Water

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 Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	Particulate filter #C1523781 Lab Blank	8/28/23	1530	1		x	x	x	x	x	x	x					B23110469
2	Particulate filter #C1523782 PM10	9/9/23	24 hr composite	1		x	x	x	x	x	x	x					
3	Particulate filter #C1523783 TSP 9/6-9/13	9/6-9/13	continuous	1		x	x	x	x	x	x	x					
4	Particulate filter #C1523784 PM10	9/15/23	24 hr composite	1		x	x	x	x	x	x	x					
5	Particulate filter #C1523785 TSP 9/13-9/18	9/13-9/18	continuous	1		x	x	x	x	x	x	x					
6	Particulate filter #C1523786 PM10	9/21/23	24 hr composite	1		x	x	x	x	x	x	x					
7	Particulate filter #C1523787 TSP 9/18-9/25	9/18-9/25	continuous	1		x	x	x	x	x	x	x					
8	Particulate filter #C1523788 PM10	9/27/23	24 hr composite	1		x	x	x	x	x	x	x					
9	Particulate filter #C1523789 TSP 9/25-10/2	9/25-10/2	continuous	1		x	x	x	x	x	x	x					
10	Particulate filter #C1523790 Field Blank	9/27/23	0830	1		x	x	x	x	x	x	x					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	11/7/23 1418	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				[illegible]	11/7/23 14:16	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*
				5.0 °C					

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-10/18 v.3

APPENDIX E: COMMON GUIDELINES FOR AIRBORNE CONTAMINANTS

Dose and Risk Assessment References

Pollutant	Organization	Standard Type	Description	Value	Units	Time Period	Reference
Arsenic							
	WHO	Air Quality Guideline		0.0015	Unit Risk	Life-time	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	NIOSH	REL		2	µg/m^3	15 min	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	ACGIH	TLV (TWA)		10	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	General - organic As	200	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	General - inorganic As	10	µg/m^3	8-hour	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	OSHA	PEL (TWA)	Construction - organic	500	µg/m^3	8-hour	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	OSHA	PEL (TWA)	Shipyard - organic	500	µg/m^3	8-hour	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	EPA	EPA- Ca	Noncancer	0.015	µg/m^3		https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	IRIS	Risk = 10^{-6} (lifetime)	0.043	µg/m^3	Life-time	https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	REL		0.20	µg/m^3	1-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RfC	Inorganic As	0.015	µg/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL	Cancer Risk @ 10^{-6}	0.65	ng/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL	HI = 1	0.016	µg/m^3		https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Cadmium							
	ACGIH	TLV (TWA)	(total)	10	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	ACGIH	TLV (TWA)	(respirable)	2	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)		5	µg/m^3		https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	EPA	ATSDR	Noncancer - Cd Compounds	0.01	µg/m^3	Chronic	https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	IRIS	Cancer - Cd Compounds	2	µg/m^3	Chronic	https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	MRL	Cd Compounds	0.03	µg/m^3	Acute	
	EPA	AEGL-1 (1-hr)	Cd Compounds	100	µg/m^3	1-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	AEGL-1 (8-hr)	Cd Compounds	41	µg/m^3	8-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RfC	Cd (water)	0.01	µg/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL: TR @ 10^{-6}	Cd (water) (Cancer Risk)	1.60	ng/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL: HI = 1	Cd (water) (Noncancer Risk)	10	ng/m^3	HI=1	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Copper							
	ACGIH	TLV (TWA)	(dust & mist)	1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)		1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)		1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
Lead (Pb)							
	ACGIH	TLV (TWA)	(inorganic)	50	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)	(inorganic+ organic salts)	50	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	(inorganic)	50	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	EPA	NAAQS		0.150	µg/m^3	3-month mean	40 CFR 50.12 (and Appendix R)
	NIOSH	IGHL/10	Lead compounds	10	mg/m^3		https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RSL: HI = 1	Pb (Noncancer Risk)	0.15	µg/m^3	HI=1	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Manganese							
	ACGIH	TLV (TWA)	(compounds + fumes)	20	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)	(compounds + fumes)	1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	(compounds + fumes)	5,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	ATSDR	Screen for Risk Assessment	Noncancer - Mn Compounds	0.30	µg/m^3	Chronic	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	NIOSH	IGHL/10	Manganese compounds	50	mg/m^3		https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	USDOE	TEEL-1	MnO, MO_2 & $MnSO_4$	4.7	mg/m^3	1-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RSL: HI = 1	Mn (non-diet) (Noncancer Risk)	0.052	µg/m^3	HI=1	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RfC	Mn (non-diet)	0.05	µg/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Molybdenum							
	ACGIH	TLV (TWA)	(soluble compounds)*	500	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)	(soluble compounds)*	N/A	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	(soluble compounds)*	5,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
			* Higher limits for insoluble compounds				

Zinc (Zn)

ACGIH	TLV (TWA)	(zinc oxide - respirable)	2,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	STEL	(zinc oxide - respirable)	10,000	µg/m^3	15 minutes	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
OSHA	PEL (TWA)	(inorganic)	5,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html

Term	Definition
ACGIH	American Congress of Governmental Industrial Hygienists
AEGL-1	Acute exposure guideline levels for mild effects: 1-hour and 8-hour
ATSDR	Agency for Toxic Substances & Disease Registry
HI (EPA)	Hazardous Index: Aggregate exposures below a HI of 1.0 will likely not result in adverse noncancer health effects over a lifetime of exposure. A respiratory HI greater than 1.0 can be best described as indicating that a potential may exist for adverse irritation to the respiratory system. https://archive.epa.gov/airtoxics/nata/web/html/gloss.html
IDHL/10	One-tenth of levels determined by NIOSH to be imminently dangerous to life and death.
IRIS	Integrated Risk Information System
NAAQS	National Ambient Air Quality Standards: 40 CFR 50.12
NIOSH	National Institute of Occupational Safety and Health (part of CDC)
PEL	Permissible Exposure Limits (expressed as 8-hour time weighted average (TWA)) 29 CFR 1910.1000 Z-1 Table
REL (NIOSH)	Recommended exposure limit: Level at which NIOSH believes protects worker safety and health over a working lifetime.
REL (Ca EPA)	California EPA concentration level at which no adverse health effect are anticipated. Includes most sensitive individuals Levels exceeding REL does not automatically indicate an adverse health impact.
RfC	Reference Concentration (EPA) is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetim https://www.epa.gov/sites/default/files/2015-08/documents/technical_appendix_a_toxicity_v2_3_3.pdf
RSL	Residential Regional Screening Level (EPA Region X) @ 10^{-6} Cancer Risk or (Noncancer) Hazardous Index (HI) = 1 (based on Hazard Quotient (HQ) of 1. https://semspub.epa.gov/work/HQ/401635.pdf Last (EPA) Table Update: November 2021
STEL	Short-Term Exposure Limit (15-minutes)
TEEL-1	Temporary emergency exposure limits for mild transient effects for 1-hour exposure
TLV	Threshold Limit Value
TWA	Time Weighted Average
WHO	World Health Organization

APPENDIX F: CALIBRATIONS

BGI PQ200 PM10 Sampler – Monthly Calibration Checks			
Date: 07/18/2023	Time: 0930 - 0942 MST	Sampler Serial Number: 1622	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Delta Cal SN 1288		Certification Date: 1) 09-20-2022	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	623 mm Hg	626.0 mmHg	-3.0
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	19.6 C	19.7 C	-0.1 C
Filter Temperature	21.3 C	21.3 C	0.0 C
Leak Check			
Vacuum Readings (mm Hg)	Start 94	End 94	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.72	16.99	-1.6%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.67)/16.67 (must be ≤ ± 5%)
Design flow rate calculation	16.99	16.7	+1.7%
No adjustments made. Exposed sample filter removed temporarily for calibration checks.			

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 07/18/2023	Time: 0940–0950 MST	Sampler Serial Number: X24429	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Delta Cal SN 1288 (Temp.) 2) Swift Meter SN 14999 (Flow/BP)		Certification Date: 1) 07-28-2022 2) 06-03-2022**	
Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	83,566 Pa	627.6 mm Hg = 83,673 Pa	-107 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	25.9 C	26.0 C	-0.1 C
Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	2.01	-0.5 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	2.01	2.0	+0.5 %
Relative Humidity Verification (checked with Assmann Psychrometer)			
Dry Bulb Temp. °C	21.0 C	Calculated RH (a)	24.8%
Wet Bulb Temp. °C	9.9 C	Sampler RH (b)	21%
BP Inches Hg	24.71	Difference = a – b (must be ≤7% RH)	-3.8%

Reinstalled exposed filter after calibration.
**Expired calibration due to delay in getting return authorization from vendor. Item shipped to vendor on July 19, 2023.

BGI PQ200 PM10 Sampler – Monthly Calibration Checks		
Date: 08/24/2023	Time: 1200 MST	Sampler Serial Number: 1622
Performed By: Steve Heck		Location (field or lab): Greeley School
Ref Standard & S/N: 1) Delta Cal SN 1288		Certification Date: 1) 09-20-2022
Major problem with pump discovered on arrival, could not get leak check or flow check to work. Will investigate and retry.		

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 08/24/2023	Time: 1228-1250 MST	Sampler Serial Number: X24429	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Delta Cal SN 1288 (Temp.) 2) Swift Meter SN 14999 (Flow/BP)		Certification Date: 1) 09-20-2022 2) 07-28-2023	
Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	83,605 Pa	626.0 mm Hg = 83,460 Pa	+145 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	27.2 C	27.0 C	+0.2 C
Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	2.01	-0.5 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	2.01	2.0	+0.5 %
Relative Humidity Verification (checked against Butte Airport)			
Dry Bulb Temp. °C	-----	Calculated RH (a)	27%
Wet Bulb Temp. °C	-----	Sampler RH (b)	25%
BP Inches Hg	-----	Difference = a – b (must be ≤7% RH)	-2%

Reinstalled exposed filter after calibration.
All calibration results good, but sampler has zero errors and is reporting invalid concentrations.
Analysis of trace elements on filters will still be valid.

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 09/02/2023	Time: 1620-1640 MST	Sampler Serial Number: X24429	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Swift Meter SN C13475 (Flow/BP) 2) BTM Airport Readings (Temp & RH)		Certification Date: 1) 07-28-2023	
Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	83,273 Pa	623.2 mm Hg = 83,087 Pa	+186 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	28.2 C	81 F = 27.2	+1.0 C
Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	2.06	-2.9 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	2.06	2.0	+3.0 %
Relative Humidity Verification (checked against Butte Airport)			
Dry Bulb Temp. °C	-----	Calculated RH (a)	28%
Wet Bulb Temp. °C	-----	Sampler RH (b)	25%
BP Inches Hg	-----	Difference = a – b (must be ≤7% RH)	-3%

Removed sampler and replaced with rental from Clean Air Engineering after calibration.
All calibration results good, but sampler has zero errors and is reporting invalid concentrations.
Analysis of trace elements on filters will still be valid.

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 09/02/2023 and 09/07/2023	Time: 1700-1725 + 1225-1240 MST	Sampler Serial Number: T25194 (CAE)	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Swift Meter SN C13475 (Flow/BP) 2) Delta Cal (Temp) 3) Assmann Psychrometer		Certification Date: 1) 07-28-2023 2) 09-20-2022	
Barometric Pressure Sensor Verification (done 09-02-2023)			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	83,260 Pa	623.1 mm Hg = 83,073 Pa	+187 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification (done 09-07-2023)			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	21.7 C	20.7	+1.0 C
Leak Check (done 09-02-2023)			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification (done 09-02-2023)			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	2.02	-1.0 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	2.02	2.0	+1.0 %
Relative Humidity Verification (done 09-07-2023)			
Dry Bulb Temp. °C	19.5	Calculated RH (a)	44.6%
Wet Bulb Temp. °C	12.1	Sampler RH (b)	40%
BP Inches Hg	24.61	Difference = a – b (must be ≤7% RH)	-4.6%

This is a startup calibration of rental from Clean Air Engineering.
All calibration results good.
Did not have Delta Cal or Assmann available on 09-02 so did temperature and RH checks on 09-07 when both were available.

BGI PQ200 PM10 Sampler – Monthly Calibration Checks			
Date: 09/07/2023	Time: 1204 - 1224 MST	Sampler Serial Number: 1622	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Delta Cal SN 1288		Certification Date: 1) 09-20-2022	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	622 mm Hg	625.0 mmHg	-3.0
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	19.1 C	19.2 C	-0.1 C
Filter Temperature	18.9 C	19.4 C	-0.5 C
Leak Check			
Vacuum Readings (mm Hg)	Start 97	End 95	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.72	17.22	-2.9%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.67)/16.67 (must be ≤ ± 5%)
Design flow rate calculation	17.22	16.7	+3.1%
No adjustments made. Unexposed sample filter removed temporarily for calibration checks.			

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 09/27/2023	Time: 1150-1215 MST	Sampler Serial Number: T25194 (CAE)	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Swift Meter SN C13475 (Flow/BP) 2) Control Company Meter SN 91255639 3) Assmann Psychrometer		Certification Date: 1) 07-28-2023 2) 04-24-2023	
Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	82,967 Pa	620.9 mm Hg = 82,780 Pa	+187 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	17.4 C	16.5	+0.9 C
Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	2.04	-2.0 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	2.04	2.0	+2.0 %
Relative Humidity Verification			
Dry Bulb Temp. °C	16.3	Calculated RH (a)	36.5%
Wet Bulb Temp. °C	8.4	Sampler RH (b)	39%
BP Inches Hg	24.44	Difference = a – b (must be ≤7% RH)	+2.5%

Calibration performed immediately before removing rental unit from service.
Removed filter cassette MTR 17 just before calibration, and reinstalled in MTR unit.

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 09/27/2023	Time: 1229-1250 MST	Sampler Serial Number: X24429	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Swift Meter SN C13475 (Flow/BP) 2) Control Company Meter SN 91255639 3) Assmann Psychrometer		Certification Date: 1) 07-28-2023 2) 04-24-2023	

Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	82,825 Pa	620.5 mm Hg = 82,727 Pa	+98 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	

Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	21.0 C	20.8	+0.2 C

Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~

Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	2.03	-1.5 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	2.03	2.0	+1.5 %

Relative Humidity Verification			
Dry Bulb Temp. °C	18.2	Calculated RH (a)	31.7%
Wet Bulb Temp. °C	9.1	Sampler RH (b)	33%
BP Inches Hg	24.43	Difference = a – b (must be ≤7% RH)	+1.3%

Startup calibration for reinstalled MTR unit following repairs. Installed filter cassette MTR 17 following cal.

BGI PQ200 PM10 Sampler – Monthly Calibration Checks			
Date: 10/31/2023	Time: 1210 - 1228 MST	Sampler Serial Number: 1622	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Delta Cal SN 1293 (CAE Rental)		Certification Date: 1) 09-30-2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	624 mm Hg	627.5 mmHg	-3.5
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	4.6 C	5.6 C	-1.0 C
Filter Temperature	2.9 C	4.0 C	-1.1 C
Leak Check			
Vacuum Readings (mm Hg)	Start 99	End 98	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.72	17.01	-1.7%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	17.01	16.7	+1.9%
No adjustments made. Exposed sample filter removed temporarily for calibration checks.			

Met One E-Sampler – Monthly Calibration Check / ~~Quarterly Audit~~			
Date: 10/31/2023	Time: 1225-1250 MST	Sampler Serial Number: X24429	
Performed By: Steve Heck		Location (field or lab): Greeley School	
Ref Standard & S/N: 1) Swift Meter SN C14999 (Flow/BP) 2) Delta Cal SN 1293 (CAE Rental) (Temp) 3) RH – BTM Airport		Certification Date: 1) 07-28-2023 2) 09-30-2023	
Barometric Pressure Sensor Verification			
Reading (Pascals)	Sampler (a)	Reference Standard (b)	Difference (a - b) (limit ≤ ± 1333 Pa)
Ambient Pressure	83,841 Pa	628.1 mm Hg = 83,740 Pa	+101 Pa
Pascals = mmHg * 133.322		Limit of ±1333 Pascals = ±10 mmHg	
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	12.0 C	11.3 C	+0.7 C
Leak Check			
Leak Check Flow Rate	0.0 LPM	(must be <0.4 LPM)	**Pass** ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 5%)
Audit standard flow rate check	2.0	1.98	+1.0 %
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–2.0)/2.0 (must be ≤ ± 5%)
Design flow rate check	1.98	2.0	-1.0 %
Relative Humidity Verification (checked against Butte Airport)			
Dry Bulb Temp. °C	-----	Calculated RH (a)	55%
Wet Bulb Temp. °C	-----	Sampler RH (b)	52%
BP Inches Hg	-----	Difference = a – b (must be ≤7% RH)	-3%

Could not determine wet bulb temperature from psychrometer due to near freezing wet bulb temp.
Used concurrent RH from Butte Airport as a check.

APPENDIX G: CALIBRATION STANDARD CERTIFICATION SHEETS

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 1288-20092022
DeltaCal Serial Number: 1288
Calibration Technician: Zabdiel Pimentel
Date: 20-Sep-2022
Recommended Recal Date: 20-Sep-2023

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20004	6 - 30.00 LPM	Calibration Due:	11-Jul-2023
TE20006	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 21.90 °C

Brand: Eutechnics
TE Number: TE12306 **Serial Number:** 308304
Std Cal Date: 8-Apr-22 **Std Cal Due Date:** 8-Apr-23

Ambient Temperature (set): 21.9 °C
Aux (filter) Temperature (set): 21.9 °C

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number: TE20204 **Serial Number:** U1220935
Std Cal Date: 21-Apr-22 **Std Cal Due Date:** 21-Apr-23

DeltaCal:

Barometric pressure (set): 620.5 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi

TE20004	Q= 4.02226	ΔP ^	0.51536	Overall Uncertainty: 0.35%
TE20006	Q= 3.95205	ΔP ^	0.52799	Overall Uncertainty: 0.35%

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	1288
Firmware Version:	4.00P

Date	Technician
20Sep2022	Zabdiel Pimentel

Ambient Pressure:	620.5	mmHg
Ambient Temperature:	21.9	°C

Range 1

Venturi	TE20004
Type	1A
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	135.35	620.5	6.529	6.507	-0.337
2	206.14	620.5	10.037	10.001	-0.359
3	268.17	620.5	13.111	13.050	-0.465
4	308.39	620.5	15.104	15.041	-0.417
5	349.07	620.5	17.120	17.036	-0.491
6	396.15	620.5	19.453	19.381	-0.370
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.406
				Result	PASS

Range 2

Venturi	TE20006
Type	2A
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	158.39	620.5	2.179	2.185	0.275
2	220.42	620.5	3.061	3.067	0.196
3	268.19	620.5	3.740	3.764	0.642
4	326.20	620.5	4.564	4.544	-0.438
5	365.29	620.5	5.122	5.113	-0.176
6	424.33	620.5	5.961	5.967	0.101
	Maximum allowable error at any flow rate is 0.75%.			Average	0.100
				Result	PASS

Performed By: Zabdiel Pimentel **Date:** 20-Sep-2022

Approved By: Casey Reitz **Date:** 20Sep2022

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As-Found data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	1288
Firmware Version:	4.00P

Date	Technician
20Sep2022	Zabdiel Pimentel

Ambient Pressure:	620.5	mmHg
Ambient Temperature:	21.9	°C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	Standard	Diff	+/- 1 mmHg	DUT	Standard	Diff	+/-1 mmHg
$Pres_{AMB}$ mmHg	618.5	620.5	-2	Fail	620.5	620.5	0	Pass
	DUT	Standard	Diff	+/- 1 °C	DUT	Standard	Diff	+/- 1 °C
$Temp_{AMB}$ °C	21.8	21.9	-0.1	Pass	21.9	21.9	0	Pass
$Temp_{Filter}$ °C	21.8	21.9	-0.1	Pass	21.9	21.9	0	Pass

	Offset	New Offset
PresAMB	1	3
TempAMB	0	0.1
Temp Filter	-0.05	0.05

Range 1

Venturi	TE20004
Type	1A
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	135.35	620.5	6.529	6.507	-0.337
2	206.14	620.5	10.037	10.001	-0.359
3	268.17	620.5	13.111	13.050	-0.465
4	308.39	620.5	15.104	15.041	-0.417
5	349.07	620.5	17.120	17.036	-0.491
6	396.15	620.5	19.453	19.381	-0.370
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.406
				Result	PASS

Range 2

Venturi	TE20006
Type	2A
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	158.39	620.5	2.179	2.185	0.275
2	220.42	620.5	3.061	3.067	0.196
3	268.19	620.5	3.740	3.764	0.642
4	326.20	620.5	4.564	4.544	-0.438
5	365.29	620.5	5.122	5.113	-0.176
6	424.33	620.5	5.961	5.967	0.101
	Maximum allowable error at any flow rate is 0.75%.			Average	0.100
				Result	PASS

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 149645-28072022
TetraCal Serial Number: 149645
Calibration Technician: Zabdiel Pimentel
Date: 28-Jul-2022
Recommended Recal Date: 28-Jul-2023

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20008	0.40 - 1.20 LPM	Calibration Due:	11-Jul-2023
TE20006	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023
TE20004	6 - 30.00 LPM	Calibration Due:	11-Jul-2023

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 21.30 °C
Brand: Eutechnics

TE Number:	TE12306	**Serial Number:**	308304
Std Cal Date:	8-Apr-22	**Std Cal Due Date:**	8-Apr-23

Ambient Temperature (set): 21.2 °C
Aux (filter) Temperature (set): 21.2 °C

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number:	TE20204	**Serial Number:**	U1220935
Std Cal Date:	21-Apr-22	**Std Cal Due Date:**	21-Apr-23

TetraCal:

Barometric pressure (set): 624.0 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi				
TE20008	Q1 = 0.21591	ΔP ^	0.52858	Overall Uncertainty: 0.35%
TE20006	Q2 = 1.15476	ΔP ^	0.53155	Overall Uncertainty: 0.35%
TE20004	Q3 = 5.40292	ΔP ^	0.51990	Overall Uncertainty: 0.35%

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Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for TetraCal

Unit Type: TetraCal TC12 (Legacy)	Date	Technician	
Flow Range: 0.40 -30.00 LPM	28Jul2022	Zabdiel Pimentel	
Serial No. : 149645	Ambient Pressure:	624.0	mmHg
Firmware Version: 3.41P	Ambient Temperature:	21.3	°C

Range 1: 0.40 - 1.20 LPM		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi	TE20008	1	232.86	624.0	0.524	0.524	0.000
Type	3A	2	365.39	624.0	0.840	0.835	-0.595
Flow range	0.40 - 1.20 LPM	3	509.97	624.0	1.184	1.185	0.084
		Maximum allowable error at any flow rate is 0.75%.				Average	-0.170
						Result	PASS

Range 2: 1.4 - 6.00 LPM		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi	TE20006	1	123.70	624.0	1.676	1.671	-0.298
Type	2A	2	246.33	624.0	3.410	3.393	-0.499
Flow range	1.40 - 6.0 LPM	3	425.61	624.0	5.944	5.960	0.269
		Maximum allowable error at any flow rate is 0.75%.				Average	-0.176
						Result	PASS

Range 3: 6.00 - 30.0 LPM		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi	TE20004	1	126.00	624.0	6.022	6.023	0.017
Type	1A	2	372.14	624.5	18.122	18.024	-0.541
Flow range	6 - 30.00 LPM	3	601.27	624.5	29.389	29.568	0.609
		Maximum allowable error at any flow rate is 0.75%.				Average	0.028
						Result	PASS

Performed By: Zabdiel Pimentel **Date:** 28-Jul-2022

Approved By: Casey Reitz **Date:** 28Jul2022

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Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228

NIST Traceable Calibration Facility

As-Found data for TetraCal

Unit Type: TetraCal TC12 (Legacy)		Date	Technician
Flow Range: 0.40 -30.00 LPM		28Jul2022	Zabdiel Pimentel
Serial No. : 149645		Ambient Pressure:	624.0 mmHg
Firmware Version:	3.41P	Ambient Temperature:	21.3 °C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	**Standard**	**Diff**	**+/- 1 mmHg**	**DUT**	**Standard**	**Diff**	**+/-1 mmHg**
$Pres_{AMB}$ mmHg	669.0	624.0	45	Fail	624.0	624.0	0	Pass
	DUT	**Standard**	**Diff**	**+/- 1 °C**	**DUT**	**Standard**	**Diff**	**+/- 1 °C**
$Temp_{AMB}$ °C	21.4	21.3	0.1	Pass	21.2	21.2	0	Pass
$Temp_{Filter}$ °C	21.5	21.3	0.2	Pass	21.2	21.2	0	Pass

	Offset	New Offset
PresAMB	-2	-47
TempAMB	0.35	0.25
Temp Filter	0.35	0.15

Range 1: 0.40 - 1.20 LPM

Venturi	TE20008
Type	3A
Flow range	0.40 - 1.20 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	238.68	624.0	0.538	0.534	-0.743
2	368.77	624.0	0.848	0.837	-1.297
3	516.54	624.0	1.199	1.193	-0.500
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.847
				Result	FAIL

Range 2: 1.4 - 6.00 LPM

Venturi	TE20006
Type	2A
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	120.69	624.0	1.632	1.607	-1.532
2	254.23	624.0	3.518	3.372	-4.150
3	428.42	624.0	5.982	5.713	-4.497
	Maximum allowable error at any flow rate is 0.75%.			Average	-3.393
				Result	FAIL

Range 3: 6.00 - 30.0 LPM

Venturi	TE20004
Type	1A
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	128.88	624.0	6.163	6.248	1.379
2	370.85	624.0	18.067	18.049	-0.100
3	601.02	624.0	29.390	29.650	0.885
	Maximum allowable error at any flow rate is 0.75%.			Average	0.721
				Result	FAIL

MesaLabs

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 1293-30092023
DeltaCal Serial Number: 1293
Calibration Technician: Elsy Lasky
Date: 30-Sep-2023
Recommended Recal Date: 30-Sep-2024

CleanAir
This certification corresponds to CleanAir asset # **209234**

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20007	1.40 - 6.0 LPM	Calibration Due:	2-Aug-2024
TE20005	6 - 30.00 LPM	Calibration Due:	1-Aug-2024

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 22.90 °C

Brand: Eutechnics
TE Number: TE12242 **Serial Number:** A11441
Std Cal Date: 5-Oct-22 **Std Cal Due Date:** 5-Oct-23

Ambient Temperature (set): 23.0 °C
Aux (filter) Temperature (set): 23.0 °C

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number: TE12311 **Serial Number:** H0850001
Std Cal Date: 6-Feb-23 **Std Cal Due Date:** 6-Feb-24

DeltaCal:

Barometric pressure (set): 617.00 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi

TE20007	Q= 3.87511	ΔP ^	0.52547	Overall Uncertainty: 0.35%
TE20005	Q= 3.83179	ΔP ^	0.52078	Overall Uncertainty: 0.35%

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	1293
Firmware Version:	4.00P

Date	Technician
30Sep2023	Elsy Lasky

Ambient Pressure:	617	mmHg
Ambient Temperature:	22.9	°C

Range 1

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	137.88	616.5	1.914	1.921	0.366
2	209.21	616.5	2.935	2.942	0.239
3	266.44	616.5	3.754	3.779	0.666
4	322.57	616.5	4.558	4.592	0.746
5	372.08	616.5	5.266	5.291	0.475
6	411.32	616.5	5.828	5.869	0.704
	Maximum allowable error at any flow rate is 0.75%.			Average	0.532
				Result	PASS

Range 2

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

CleanAir®
This certification corresponds to CleanAir asset # **209234**

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.01	616.5	6.497	6.527	0.462
2	203.26	616.5	9.933	9.879	-0.544
3	265.22	616.5	13.007	12.919	-0.677
4	326.25	616.5	16.035	15.947	-0.549
5	364.74	616.5	17.945	17.861	-0.468
6	406.24	616.5	20.004	19.864	-0.700
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.413
				Result	PASS

Performed By: Elsy Lasky **Date:** 30-Sep-2023

Approved By: Leonard Reinert, Quality Specialist **Date:** 03 OCT 2023

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As-Found data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	1293
Firmware Version:	4.00P

Date	Technician
30Sep2023	Elsy Lasky

Ambient Pressure:	617	mmHg
Ambient Temperature:	22.9	°C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	**Standard**	**Diff**	**+/- 1 mmHg**	**DUT**	**Standard**	**Diff**	**+/-1 mmHg**
$Pres_{AMB}$ mmHg	617	617.3	-0.3	Pass	616.5	616.8	-0.3	Pass
	DUT	**Standard**	**Diff**	**+/- 1 °C**	**DUT**	**Standard**	**Diff**	**+/- 1 °C**
$Temp_{AMB}$ °C	22.8	22.7	0.1	Pass	23	22.9	0.1	Pass
Temp $_{Filter}$ °C	22.8	22.7	0.1	Pass	23	22.9	0.1	Pass

	Offset	New Offset
PresAMB		0.3
TempAMB		-0.1
Temp Filter		-0.1

Range 1

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

CleanAir®
This certification corresponds to CleanAir asset # **209234**

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	141.56	617.0	1.964	1.945	-0.967
2	216.23	617.0	3.032	2.986	-1.517
3	271.79	617.0	3.826	3.778	-1.255
4	324.28	617.0	4.577	4.503	-1.617
5	381.40	617.0	5.394	5.287	-1.984
6	430.87	617.0	6.101	5.982	-1.950
Maximum allowable error at any flow rate is 0.75%.				Average	-1.548
				Result	FAIL

Range 2

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	136.11	617.0	6.592	6.450	-2.154
2	204.48	617.0	9.979	9.844	-1.353
3	266.17	617.0	13.035	12.866	-1.297
4	328.04	617.0	16.105	15.921	-1.143
5	369.17	617.0	18.138	17.943	-1.075
6	406.38	617.0	19.981	19.820	-0.806
Maximum allowable error at any flow rate is 0.75%.				Average	-1.304
				Result	FAIL

Met One Instruments, Inc.
1600 NW Washington Blvd • Grants Pass, OR 97526 • (541) 471-7111 • www.metone.com

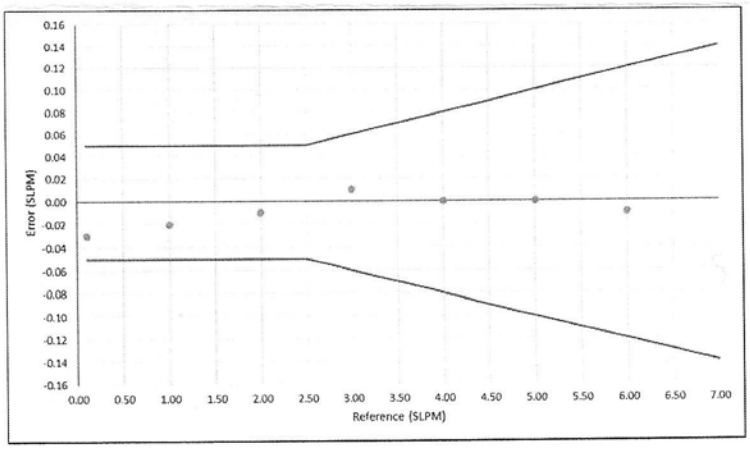
Certificate of Calibration

Model Swift 6.0

Serial Number: C14999
Firmware Version: 83373 Rev 1.0.0
Customer: BISON ENGINEERING INC
As Left [ ] As Found [X]

Calibrated By: *H.Duffy*
Calibration Date: *7/28/2023*
Next Calibration Date: *NA*

Flow Calibration			
Standard (SLPM)	Swift 6.0 (SLPM)	Acceptable Range	In Tolerance
1.000	0.98	0.95 - 1.05	Yes
2.000	1.99	1.95 - 2.05	Yes
3.000	3.01	2.94 - 3.06	Yes
4.000	4.00	3.92 - 4.08	Yes
5.000	5.00	4.90 - 5.10	Yes
6.000	5.99	5.88 - 6.12	Yes
Flow Accuracy: ±2% of reading or ±0.05 LPM, whichever is greater			



Temperature		
Standard (°C)	Swift (°C)	In Tolerance
22.6	22.1	Yes
Temperature Accuracy: ±1.0°C		

Pressure		
Standard (mbar)	Swift (mbar)	In Tolerance
986.1	985.2	Yes
Pressure Accuracy: ±16 mbar		

Calibration Procedure: Swift 6.0-6100
Recommended Calibration Interval: 12 months from the first day of use

Standards	Manufacturer	Model	SN	Cal Due Date
Air Flow Meter (Flow & Temp)	Alicat	M-50SLPM-D/5M	432090	01/27/24
Temp/Humidity/BP	Met One Instruments	597	Y13061	05/19/24

This instrument has been tested and calibrated to meet the manufacturer's published specifications at an ISO-9001 certified facility. The standards used for the calibration are on record and traceable to the National Institute of Standards and Technology (NIST) and have accuracies equal to or greater than the instrument being tested. The calibration system complies with MIL-STD-45662A. Complete test records for each unit are maintained by Met One Instruments, Inc. and are available upon request.

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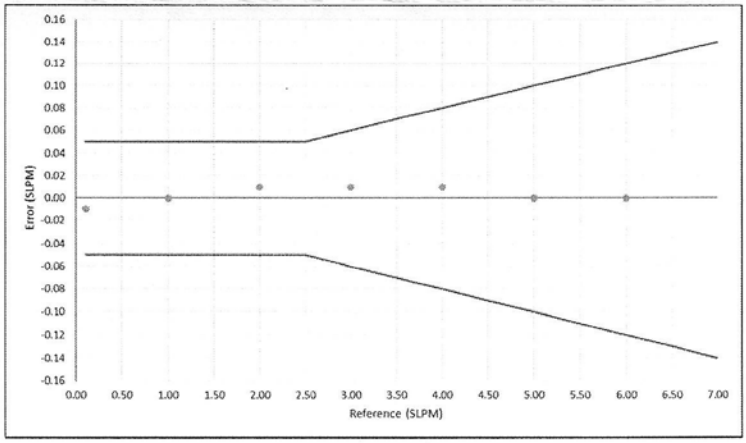
Certificate of Calibration

Model Swift 6.0

Serial Number: C14999
Firmware Version: 83373 Rev 1.0.0
Customer: BISON ENGINEERING INC
As Left [X] As Found [ ]

Calibrated By: *H.Duffy*
Calibration Date: *7/28/2023*
Next Calibration Date: *7/28/2024*

Flow Calibration			
Standard (SLPM)	**Swift 6.0 (SLPM)**	**Acceptable Range**	**In Tolerance**
1.000	1.01	0.95 - 1.05	Yes
2.000	2.01	1.95 - 2.05	Yes
3.000	3.01	2.94 - 3.06	Yes
4.000	4.01	3.92 - 4.08	Yes
5.000	5.00	4.90 - 5.10	Yes
6.000	6.00	5.88 - 6.12	Yes
Flow Accuracy: ±2% of reading or ±0.05 LPM, whichever is greater			



Temperature		
Standard (°C)	**Swift (°C)**	**In Tolerance**
22.6	22.1	Yes
Temperature Accuracy: ±1.0°C		

Pressure		
Standard (mbar)	**Swift (mbar)**	**In Tolerance**
986.1	985.2	Yes
Pressure Accuracy: ±16 mbar		

Calibration Procedure: Swift 6.0-6100
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Standards	Manufacturer	Model	SN	Cal Due Date
Air Flow Meter (Flow & Temp)	Alicat	M-50SLPM-D/5M	432090	01/27/24
Temp/Humidity/BP	Met One Instruments	597	Y13061	05/19/24

This instrument has been tested and calibrated to meet the manufacturer's published specifications at an ISO-9001 certified facility. The standards used for the calibration are on record and traceable to the National Institute of Standards and Technology (NIST) and have accuracies equal to or greater than the instrument being tested. The calibration system complies with MIL-STD-45662A. Complete test records for each unit are maintained by Met One Instruments, Inc. and are available upon request.