

COLORADO OPERATIONS Henderson Mine P.O. Box 68 Empire, CO 80438 Phone (303) 569-3221 Fax (303) 569-2830

May 31, 2024

Submitted via email:

Nikie Gagnon Colorado Division of Reclamation, Mining and Safety 1313 Sherman Street, Room 215 Denver, Colorado 80203

Re: Permit M-1977-341, Submittal of Annual Water Monitoring Report – Henderson Operations Groundwater Management Plan

Dear Nikie:

Climax Molybdenum Company (Climax) is submitting this Annual Water Monitoring Report to the Division of Reclamation, Mining and Safety (DRMS) pursuant to the requirements in Section 7.1 of the Henderson Operations Groundwater Management Plan (GWMP) approved on July 25, 2012 as Technical Revision 16 to Reclamation Permit No. M-1977-342.

Included in this annual report are:

- Data tables and graphs from triannual DRMS sampling events for Point of Compliance (POC) and non-POC wells for both the Henderson Mine and Henderson Mill.
- Explanation of outliers, trends, and Numeric Protection Limits (NPL) exceedances (where applicable).

If you have any questions or need additional information, please do not hesitate to contact me at <u>bbates1@fmi.com</u>, or (970) 433-0894, Geoff Niggeler at <u>gniggele@fmi.com</u>, or (720) 671-2248, or Miguel Hamarat at <u>mhamarat@fmi.com</u>, or (720) 942-3255.

Sincerely,

Ben Bates Senior Environmental Engineer Climax Molybdenum Company Henderson Operations

Attachments:

1. Annual Water Monitoring Report

Cc (via email):

Miguel Hamarat, Climax Geoff Niggeler, Climax



2023 Annual Water Monitoring Report Division of Reclamation, Mining and Safety

Climax Molybdenum Company Henderson Operations P.O. Box 68 Empire, CO 80438

May 2024

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Executive Summary

This report provides a summary of the 2023 water monitoring data collected pursuant to the Climax Molybdenum Company (CMC) – Henderson Operations (Henderson) Technical Revision 16 (TR-16) to Permit M-1977-342 Groundwater Management Plan (GWMP). The Division of Reclamation, Mining and Safety (DRMS) approved the Henderson GWMP in July 2012. The focus of this report is 2023 data. However, historical data is included from the 2019-2023 monitoring periods to allow for the assessment of trends over time. All sampling was conducted at the required locations in accordance with the GWMP and each sample was analyzed for the required parameters.

In a memorandum dated April 14, 2015, the DRMS preliminarily accepted new proposed Numeric Protection Limits (NPLs) for indicator parameters at Mill Point of Compliance (POC) locations. Given that the NPLs were only preliminarily accepted, the 2023 report will again be using the original NPLs of pH 6.5 to 8.5 until the new limits are formally accepted. Proposed POC wells MLGW-15 and MLGW-17 are also being monitored and results presented in this report.

Mine Water Monitoring

Henderson observed pH values during 2023 that were below the NPL limits at POC location MNGW-1. No deviations or anomalies were observed at non-POC locations at the Mine.

Mine water monitoring data for POC well MNGW-1 and non-POC long-term surface water locations BG-20, CC-10 and CC-30 are included in this report and presented both in a table and trend evaluation graphs.

Mill Water Monitoring

Henderson continues to observe heightened dissolved iron and manganese values at MLGW-ACR following a change in property ownership, sampling methods, and rehabilitation efforts. The well construction report indicates that MLGW-ACR has an unconventional construction. A detailed summary is provided in section 2.2.4.

Mill water monitoring data for POC wells MLGW-ACR and MLGW-7, proposed POC wells MLGW-15 and MLGW-17, and non-POC long-term surface water monitoring locations WFR-20 and WFR-40 are included in this report and presented both in a table and trend evaluation graphs.

<u>Changes Over the Preceding Year Regarding any Disturbances to the Prevailing Hydrologic</u> <u>Balance</u>

Henderson has not identified any changes over the preceding year (2023) regarding any disturbances to the prevailing hydrologic balance within the permitted affected area.

<u>Changes Over the Preceding Year Regarding any Disturbances of the Quality and Quantity</u> of Water in Surface and Groundwater Systems

Except for the ongoing pH exceedances observed at MNGW-1 (discussed below in 2.1.1), Henderson has not identified any changes over the preceding year (2023) regarding any disturbances to the quality and quantity of water in surface and groundwater systems within the permitted affected area.

Introduction

The GWMP establishes a plan for groundwater monitoring at the Henderson Mine and Mill for the protection of groundwater quality pursuant to Rule 3.1.7(5) of the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for Hard Rock, Metal, and Designated Mining Operations and the Colorado Water Quality Control Commission (WQCC) standards. Henderson has prepared this report in accordance with the requirements of Section 7.1 of the GWMP to summarize results of 2023 water monitoring activities.

1.0 Discussion of Annual Water Monitoring Data

This section provides a summary of the annual water monitoring data collected in 2023 in accordance with the GWMP for each permit-identified POC well and non-POC long-term surface water monitoring location at the Henderson Mine and Mill. Monitoring is conducted three times per year as stipulated in the GWMP as follows:

- During the April through June spring run-off period;
- During the summer months of July and August; and
- During the September through December low-flow period.

To provide a better data set for trending purposes, the 2023 water quality data has been appended to the previous four years of data. This data can be seen in trend evaluation graphs as well as in the data tables. Note that for trending the analytical data, results reported below the laboratory detection limit are shown as a value of zero. All monitoring locations are depicted in Figures 1 and 2.

Outliers are identified, as needed, using either the Dixon's or the Rosner's statistical method depending on the available number of data points. Although data from prior reporting years is presented herein for trending and discussion purposes, outlier and NPL assessments/discussions are limited to current reporting year data.

2.1 Henderson Mine

Henderson Mine monitoring locations include POC well MNGW-1 and surface water locations BG-20, CC-10, and CC-30. Graphical trends for MNGW-1, BG-20, CC-10, and CC-30 are presented as Trend Evaluations 1-16 of this report.

2.1.1 Point of Compliance Sampling Location: MNGW-1

MNGW-1 is a shallow alluvial well located downgradient of the Henderson Mine operations. Values of pH below the established NPLs were observed during monitoring events in 2023: 6.1 standard units (s.u.) on 6/13/23, 5.9 s.u. on 8/9/23, and 6.1 s.u. on 12/7/23. No new trends or deviations were observed in 2023.

Henderson requested reverting the monitoring schedule back to a Triannual basis as stated in the GWMP. Due to an increase in pH exceedances relative to historical data, DRMS requested that Henderson continue to monitor pH at MNGW-1 on a monthly basis while Henderson continues to investigate the relationship between the low pH at No Name Gulch and the groundwater chemistry at MNGW-1. In accordance with the GWMP, Henderson has provided notification to the DRMS upon reoccurring pH exceedances for POC wells during the ongoing monthly monitoring or when necessary.

Henderson has provided updates for the ongoing evaluations and mitigation solutions for No Name Gulch through technical memorandums and correspondence; most recently, the December 7, 2023 correspondence with DRMS regarding the installation of a new well within the same geohydrologic setting due to the questionable construction of MNGW-1.

Henderson completed the new well in the fall of 2023 that meets modern standards with an appropriate screened interval and surface seal. Henderson intends to monitor the water quality data from the new well to determine what additional mitigation strategies are necessary.

Tabular data for MNGW-1, along with applicable NPLs, is presented in Table 1. Accompanying graphs are provided in Trend Evaluations 1-4.

2.1.2 Surface Water Sampling Location: BG-20

BG-20 is located upgradient of the Henderson Mine in Butler Gulch and serves as an indicator of background surface water quality. No apparent trends or anomalies were observed in 2023.

Tabular data for BG-20 are presented in Table 1 with accompanying Trend Evaluations 5-8.

2.1.3 Surface Water Sampling Location: CC-10

CC-10 is also located upgradient of the Henderson Mine in the West Fork of Clear Creek and serves as another indicator of background surface water quality. No apparent trends or anomalies were observed in 2023.

Tabular data for CC-10 are presented in Table 1 with accompanying Trend Evaluations 9-12.

2.1.4 Surface Water Sampling Location: CC-30

CC-30 is located downgradient of the Henderson Mine in the West Fork of Clear Creek and serves as an indicator of surface water quality downstream of Mine development. No apparent trends or anomalies were observed in 2023.

Tabular data for CC-30 are presented in Table 1 with accompanying Trend Evaluations 13-16

2.2 Henderson Mill

The Henderson Mill monitoring locations include POC wells MLGW-7, MLGW-ACR, MLGW-15, and MLGW-17, as well as non-POC surface water locations WFR-20 and WFR-40. Graphical trends are presented as Trend Evaluations 17-40 of this report.

2.2.1 Point of Compliance Sampling Location: MLGW-7

MLGW-7 is a shallow alluvial well nested with MLGW-15 located downgradient of 1-Dam.

No new apparent trends, deviations, or exceedances were observed in 2023.

Tabular data for MLGW-7 along with applicable NPLs are presented in Table 2. Accompanying graphs are provided in Trend Evaluations 17-20.

2.2.2 Proposed Point of Compliance Sampling Location: MLGW-15

MLGW-15 is a deeper well nested with MLGW-7 located just downgradient of 1-Dam. Henderson observed significant increases in dissolved iron values during the second and third triannual sampling events in 2023 although these levels were below the NPL value. These values coincide

with the installation of new dedicated pumps between the first and second triannual events in 2023. Henderson does not believe these values reflect changes to the groundwater quality but are the result of nuances with a new sampling strategy. These triannual events have been reviewed and adjustments to the sampling method have been addressed with the sampling technicians.

Henderson observed a slightly increasing trend in sulfate values since 2019. Henderson will continue to monitor this trend. No other apparent trends, deviations, or exceedances were observed in 2023.

Tabular data for MLGW-15 along with applicable NPLs are presented in Table 2. Accompanying graphs are provided in Trend Evaluations 21-24.

2.2.3 Proposed Point of Compliance Sampling Location: MLGW-17

MLGW-17 is a shallow alluvial well located downgradient of 3-Dam. No new trends, deviations, or exceedances were observed in 2023.

Tabular data for MLGW-17 along with applicable NPLs are presented in Table 2. Accompanying graphs are provided in Trend Evaluations 25-28.

2.2.4 Point of Compliance Sampling Location: MLGW-ACR

MLGW-ACR is a drinking water parameter POC well located in the Aspen Canyon Ranch area.

Beginning in the third trimester of 2019 Triannual sampling, changes to the MLGW-ACR sampling method likely caused disturbances to the solid-wall well construction indicated by the increase in iron and sulfate concentrations starting in August 2019 and justified the need for the well to undergo rehabilitation. Rehabilitation took place in September 2022. The rehabilitation was performed using standard methods of brush swabbing and acid-based treatment. Iron and manganese concentrations observed from the third Triannual event of 2022 following the rehabilitation were substantially higher than previous years. It is likely that the abrasiveness of the swabbing and acid-based chemical treatment exacerbated the existing poor well condition and the resulting Triannual concentrations were a consequence of the rehabilitation.

Henderson maintains that the unconventional well construction continues to influence Triannual sampling results. There is no screened section indicated in the well construction report. Therefore, it is difficult for groundwater to permissibly flow through the well casing causing prolonged stagnation and deterioration.

Despite the increased iron and manganese concentrations, sulfate remained similar to past sampling events. This supports the understanding that the heightened metal concentrations are a consequence of the rehabilitation process rather than upstream impacts from the Henderson Mill.

Altogether, this has been an effort to establish an accurate representation of ambient water quality conditions for water supply downstream of Henderson operations. Henderson will continue to evaluate the data collected at MLGW-ACR following future sampling events to better understand these data. No new trends, deviations, or exceedances were observed in 2023.

evaluate the data collected at MLGW-ACR following future sampling events to better understand these data. No new trends, deviations, or exceedances were observed in 2023.

Tabular data for MLGW-ACR along with applicable NPLs are presented in Table 2. Accompanying graphs are provided in Trend Evaluations 29-32.

2.2.5 Surface Water Sampling Location: WFR-20

WFR-20 is located upgradient of the Henderson Mill in the Williams Fork River and serves as an indicator of background surface water quality. No new trends, deviations, or exceedances were observed in 2023.

Tabular data for WFR-20 are presented in Table 2 with accompanying Trend Evaluations 33-36.

2.2.6 Surface Water Sampling Location: WFR-40

WFR-40 is located downgradient of the Henderson Mill in the Williams Fork River. No new trends, deviations, or exceedances were observed in 2023.

Tabular data for WFR-40 are presented in Table 2 with accompanying Trend Evaluations 37-40.

3.0 Conclusion

This report summarizing annual water monitoring data collected for each POC well and non-POC long-term surface water monitoring location meets the conditions of the Henderson GWMP reporting requirements. In accordance with the GWMP, Henderson has provided a summary of 2023 water monitoring data, a comparison to NPLs (where applicable), evaluation of water quality trends, and outlier identification for each permit-required parameter for POC and non-POC surface water locations.

4.0 References

- Climax Molybdenum Company (CMC) Henderson Operations and Aquionix. Technical Revision (TR-16) to Permit M-1977-342 Groundwater Management Plan. April, 2012.
- Climax Molybdenum Company (CMC) Henderson Operations. Mine Groundwater NPL Exceedance Notification, Permit M-1977-342. December, 2015.
- Division of Reclamation, Mining and Safety. Review of Numeric Protection Limits (NPLs) Proposed by Climax Molybdenum for Indicator Parameters at the Henderson Operations, Memorandum, 2015.

Figures









Tables



Table 1 Annual Water Monitoring Data **Henderson Mine**

Location	Sample Date	Sample Time	Analytical Laboratory	lron, Dissolved ¹ (μg/L as Fe)	Manganese, Dissolved ² (μg/L as Mn)	Selenium, Dissolved ² (μg/L as Se)	Zinc, Dissolved ² (μg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
MNGW-1	5/20/2019	11:37	ACZ	<5	19.7	<0.10	19.0	257.3	6.0	74.4
MNGW-1	8/20/2019	11:04	ACZ	7.0	17.1	<0.10	24.0	199.9	5.9	73.8
MNGW-1	12/3/2019	10:40	ACZ	23.0	143.0	<0.10	44.0	304.3	6.2	82.0
MNGW-1	5/14/2020	10:50	ACZ	<7	0.9	<0.10	16.0	267.3	6.3	79.1
MNGW-1	8/20/2020	11:00	ACZ	<7	<0.4	<0.10	16.0	195.5	6.0	7.2
MNGW-1	12/14/2020	9:58	ACZ	<7	12.0	<0.10	48.2	370.5	6.2	137.0
MNGW-1	6/2/2021	10:46	ACZ	<7	0.4	<0.10	22.8	240.3	6.3	71.9
MNGW-1	8/13/2021	11:44	ACZ	<7	0.5	<0.10	19.6	213.2	6.2	69.4
MNGW-1	11/30/2021	13:03	ACZ	<7	6.8	<0.10	49.9	319.8	6.3	120.0
MNGW-1	5/24/2022	10:45	ACZ	<7	<0.4	<0.10	21.3	210.6	6.2	77.5
MNGW-1	8/15/2022	11:22	ACZ	<7	2.4	<0.10	26.0	206.7	5.9	79.8
MNGW-1	12/12/2022	12:17	ACZ	<7	2.0	<0.10	35.8	316.2	6.0	125.0
MNGW-1	6/13/2023	10:37	ACZ	30.6	1.5	<0.10	25.5	224.3	6.1	80.5
MNGW-1	8/9/2023	11:46	ACZ	<7	1.2	<0.10	57.8	178.9	5.9	71.2
MNGW-1	12/7/2023	10:48	ACZ	41.0	31.7	<0.10	46.2	288.3	6.1	135.0
Numeric Prot	ection Limit (N	NPL)		5,000	790	20	2,000	N/A (report)	6.5 - 8.5	N/A (report)

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (μg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
BG-20	5/20/2019	15:15	ACZ	26.0	7.6	<0.10	18.0	80.1	7.0	12.5
BG-20	8/20/2019	12:50	ACZ	<5.0	1.5	<0.10	9.0	58.8	7.0	12.7
BG-20	12/3/2019	12:45	ACZ	<5.0	11.4	<0.10	13.0	84.3	6.8	15.8
BG-20	5/14/2020	12:30	ACZ	48.0	5.9	<0.10	17.0	63.2	7.4	11.9
BG-20	8/18/2020	12:25	ACZ	<7	1.7	<0.10	8.0	63.9	7.4	11.8
BG-20	12/14/2020	11:17	ACZ	<7	2.4	<0.10	11.0	78.2	7.5	22.1
BG-20	6/14/2021	9:15	ACZ	12.9	1.1	<0.10	18.3	36.9	8.0	10.2
BG-20	8/13/2021	12:35	ACZ	<7	1.4	<0.10	9.3	69.1	7.3	14.2
BG-20	12/1/2021	12:10	ACZ	<7	1.1	<0.10	15.4	78.4	6.5	19.6
BG-20	5/24/2022	13:05	ACZ	16.4	2.5	0.13	14.5	43.6	6.9	10.3
BG-20	8/15/2022	12:16	ACZ	<7	3.5	<0.10	22.7	68.9	7.1	14.7
BG-20	12/12/2022	9:20	ACZ	<7	1.1	<0.10	17.5	78.2	7.0	20.2
BG-20	6/13/2023	11:08	ACZ	13.7	2.1	<0.10	18.4	44.8	6.8	9.1
BG-20	8/7/2023	12:20	ACZ	<7	1.1	<0.10	11.2	66.2	7.3	13.0
BG-20	12/7/2023	14:19	ACZ	<7	1.8	<0.10	15.7	76.3	6.6	25.0

Notes:

RED = Resulting concentration falls outside of the Numeric Protection Limit (NPL).

BLUE=Rosner/Dixon Statistical outlier

¹Analyzed by EPA Method 200.7 or 200.8.

²Analyzed by EPA Method 200.8.

³Analyzed using field instrumentation.

⁴Analyzed by EPA Method 300.0.

< = not detected at concentrations exceeding the laboratory method detection limit mg/L = milligrams per liter µg/L = micrograms per liter µS/cm = micro Siemens per centimeter EPA = Environmental Protection Agency (Blank Field)=No data was required for this parameter during monthly pH assessment monitoring



Table 1 Annual Water Monitoring Data **Henderson Mine**

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (µg/L as Fe)	Manganese, Dissolved ² (μg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
CC-10	5/20/2019	14:45	ACZ	236	22.8	<0.10	67	64	6.4	14.8
CC-10	8/20/2019	12:25	ACZ	11	2.3	<0.10	8	38.6	7.0	4.9
CC-10	12/3/2019	11:35	ACZ	10	4.8	<0.10	13	69.7	6.6	9
CC-10	5/14/2020	12:00	ACZ	363	34.5	<0.10	80	51.8	7.2	9.6
CC-10	8/18/2020	11:58	ACZ	<7	1.7	<0.10	6	46.3	7.5	4.4
CC-10	12/14/2020	10:38	ACZ	9	15.9	<0.10	16.4	71.3	7.34	17.2
CC-10	6/14/2021	9:50	ACZ	31	2.94	<0.10	<6	23.8	7.5	2.8
CC-10	8/13/2021	13:20	ACZ	10.2	1.47	<0.10	8.1	44.2	7.6	<1
CC-10	12/1/2021	13:50	ACZ	13.8	5	<0.10	18.8	62.5	7.2	8.2
CC-10	5/24/2022	12:40	ACZ	43.2	7.69	<0.10	22.8	29.7	6.8	4.6
CC-10	8/15/2022	11:54	ACZ	22.4	2.72	<0.10	9.1	40.1	6.7	5.1
CC-10	12/12/2022	9:45	ACZ	16.6	2.01	<0.10	18.1	57.8	7.0	8.3
CC-10	6/13/2023	11:28	ACZ	37.5	6.87	<0.10	13.7	27.6	7.3	<1
CC-10	8/7/2023	11:50	ACZ	9.7	2.45	<0.10	8.1	30.4	7.4	4.1
CC-10	12/7/2023	14:53	ACZ	12.3	3.63	<0.10	14.3	52.8	6.6	9

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (µg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (μg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
CC-30	5/20/2019	15:45	ACZ	80.0	424	<0.10	178	171.6	7.1	27.5
CC-30	8/20/2019	11:50	ACZ	22.0	114	<0.10	52.0	73.6	6.6	13.7
CC-30	12/3/2019	13:15	ACZ	12.0	141	<0.10	66.0	123.0	6.7	18.8
CC-30	5/14/2020	11:30	ACZ	214	334	<0.10	167	140.9	7.2	25.4
CC-30	8/18/2020	11:20	ACZ	19.0	132	<0.10	60.0	87.5	7.2	16.3
CC-30	12/14/2020	11:53	ACZ	10.0	142	<0.10	77.0	118.7	7.3	25.6
CC-30	6/14/2021	10:35	ACZ	37.1	153	<0.10	56.3	40.7	6.9	21
CC-30	8/13/2021	14:25	ACZ	31.1	192	<0.10	75.6	99.9	7.6	18.8
CC-30	12/1/2021	13:15	ACZ	25.6	185	<0.10	90.0	116.5	6.9	20.8
CC-30	5/24/2022	12:10	ACZ	54.6	218	<0.10	102	67.8	6.8	14.8
CC-30	8/15/2022	12:50	ACZ	37.7	206	<0.10	83.3	96.6	7.2	19.2
CC-30	12/12/2022	10:41	ACZ	20.0	306	<0.10	137	124.6	7.0	28.2
CC-30	6/13/2023	11:54	ACZ	38.3	262	0.1	91.5	52.4	7.1	10.7
CC-30	8/7/2023	13:10	ACZ	18.7	170	<0.10	76.9	64.7	7.6	16.3
CC-30	12/7/2023	15:40	ACZ	18.0	187	<0.10	99.2	109.7	6.7	26.4

Notes:

RED = Resulting concentration falls outside of the Numeric Protection Limit (NPL).

BLUE=Rosner/Dixon Statistical outlier

¹Analyzed by EPA Method 200.7 or 200.8.

²Analyzed by EPA Method 200.8.

³Analyzed using field instrumentation.

⁴Analyzed by EPA Method 300.0.

< = not detected at concentrations exceeding the laboratory method detection limit mg/L = milligrams per liter µg/L = micrograms per liter μ S/cm = micro Siemens per centimeter EPA = Environmental Protection Agency (Blank Field)=No data was required for this parameter during monthly pH assessment monitoring



Table 2 Annual Water Monitoring Data Henderson Mill

Location	Sample Date	Sample Time	Analytical Laboratory	lron, Dissolved ¹ (μg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (μg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
MLGW-7	5/14/2019	10:32	ACZ	14	<0.4	0.3	<4.0	151.1	6.5	18.7
MLGW-7	8/13/2019	08:30	ACZ	25	0.6	0.2	<4.0	144	6	12.9
MLGW-7	11/13/2019	12:47	ACZ	17	0.7	0.1	<4.0	138.5	6.7	10.3
MLGW-7	5/7/2020	10:25	ACZ	14	<0.4	0.1	<6.0	130.6	6.6	10.4
MLGW-7	8/27/2020	9:40	ACZ	8	0.6	0.1	<6.0	144	6.8	7.1
MLGW-7	12/9/2020	10:53	ACZ	21.3	0.69	<0.1	<6.0	125.8	6.7	6.7
MLGW-7	5/25/2021	11:54	ACZ	7.3	0.89	<0.1	<6.0	109.4	6.6	<1
MLGW-7	8/26/2021	10:03	ACZ	<7	1.42	<0.1	<6.0	128.9	6.6	4.2
MLGW-7	12/9/2021	11:23	ACZ	7.9	1.16	<0.1	<6.0	123.9	6.5	7.1
MLGW-7	5/17/2022	9:43	ACZ	12.4	<0.4	<0.1	<6.0	114.9	6.5	8.4
MLGW-7	8/25/2022	12:29	ACZ	8.7	0.66	0.13	15.3	125.1	6.6	5.8
MLGW-7	12/19/2022	15:24	ACZ	12.8	<0.4	<0.2	<6.0	114.4	6.5	5
MLGW-7	6/6/2023	9:34	ACZ	11.2	<0.4	<0.1	<6.0	126.4	6.8	9.1
MLGW-7	8/14/2023	9:58	ACZ	15.3	1.41	<0.1	<6.0	166.4	6.6	6
MLGW-7	12/14/2023	11:02	ACZ	36.7	0.92	<0.1	<6.0	101.6	6.6	4.9
Numeric Protect	ction Limit (NP	L)		5,000	420	20	2,000	N/A (report)	6.5 - 8.5	N/A (report)

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (µg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
MLGW-15	5/14/2019	09:53	ACZ	<5.0	<0.4	<0.1	<4.0	1250	6.5	526
MLGW-15	8/13/2019	10:20	ACZ	<5.0	<0.4	0.1	<4.0	1264	6.7	528
MLGW-15	11/13/2019	13:15	ACZ	<5.0	<0.4	<0.1	<4.0	1293	6.8	551
MLGW-15	5/7/2020	12:05	ACZ	<7.0	<0.4	<0.1	<6.0	1327	6.5	559
MLGW-15	8/27/2020	11:10	ACZ	<7.0	1.7	0.1	<6.0	1369	6.6	563
MLGW-15	12/9/2020	11:35	ACZ	12.9	<0.4	0.11	<6.0	1334	6.7	563
MLGW-15	5/25/2021	11:01	ACZ	<7.0	<0.4	<0.1	<6.0	1182	6.7	576
MLGW-15	8/26/2021	11:39	ACZ	<7.0	<0.4	0.11	<6.0	1229	6.6	585
MLGW-15	12/9/2021	12:17	ACZ	<7.0	0.55	0.11	<6.0	1289	6.6	501
MLGW-15	5/17/2022	11:02	ACZ	<7.0	<0.4	<0.1	<6.0	1242	6.5	582
MLGW-15	8/23/2022	14:25	ACZ	<7.0	<0.4	<0.1	19.8	1367	6.7	646
MLGW-15	12/19/2022	15:32	ACZ	<7.0	<0.4	<0.2	<6.0	1279	6.5	608
MLGW-15	6/6/2023	10:25	ACZ	<7.0	<0.4	<0.1	<6.0	1423	6.7	635
MLGW-15	8/14/2023	9:05	ACZ	1660	12.8	<0.1	9.6	1818	6.9	652
MLGW-15	12/14/2023	11:31	ACZ	1570	12.1	0.12	<6.0	1333	6.9	662

Notes:

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BLUE=Rosner Statistical outlier

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²Analyzed by EPA Method 200.8.

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Table 2 Annual Water Monitoring Data Henderson Mill

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (μg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
MLGW-17	5/14/2019	13:45	ACZ	46	0.5	0.1	<4.0	208.0	7.0	37
MLGW-17	8/13/2019	11:45	ACZ	<5.0	<0.4	0.1	<4.0	201.1	6.9	29.8
MLGW-17	11/13/2019	13:59	ACZ	<5.0	<0.4	0.1	<4.0	214.9	7.1	33.1
MLGW-17	5/7/2020	13:10	ACZ	<6.0	<0.4	<0.1	11	225.9	7.0	38.7
MLGW-17	8/27/2020	11:45	ACZ	<7.0	0.7	0.1	<6.0	223.3	7.1	33.5
MLGW-17	12/9/2020	12:16	ACZ	<7.0	0.41	<0.1	<6.0	218.3	7.1	36.5
MLGW-17	5/25/2021	16:45	ACZ	<7.0	0.96	<0.1	<6.0	196.6	7.1	32.1
MLGW-17	8/26/2021	15:56	ACZ	<7.0	<0.4	0.14	<6.0	202.7	7.1	36.7
MLGW-17	12/9/2021	14:27	ACZ	<7.0	<0.4	0.12	<6.0	205.8	7.0	34.1
MLGW-17	5/18/2022	9:53	ACZ	<7.0	<0.4	0.11	<6.0	197.3	6.7	37.5
MLGW-17	8/25/2022	11:42	ACZ	32.8	1.12	0.14	12.6	198.5	7.2	30.8
MLGW-17	12/21/2022	10:22	ACZ	<7.0	<0.4	<0.1	<6.0	191	6.7	32.2
MLGW-17	6/6/2023	15:01	ACZ	<7.0	<0.4	<0.1	<6.0	218.7	7.1	36.1
MLGW-17	8/14/2023	12:13	ACZ	7.2	1.8	0.11	<6.0	296.2	7.3	37.5
MLGW-17	12/13/2023	14:17	ACZ	<7.0	1.27	0.74	<6.0	239.1	6.7	43.3

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (μg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (μg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
MLGW-ACR	5/14/2019	12:15	ACZ	76	29.3	<0.1	<4.0	243.1	8.3	4.3
MLGW-ACR	8/13/2019	08:10	ACZ	71	6.2	<0.1	<4.0	209.1	8.9	2.5
MLGW-ACR	11/13/2019	11:13	ACZ	1200	39	<0.1	<4.0	502.9	6.8	139
MLGW-ACR	5/7/2020	9:00	ACZ	965	29.7	<0.1	<6.0	488.2	6.7	125
MLGW-ACR	8/28/2020	11:30	ACZ	833	25.1	<0.1	<6.0	526.1	7	121
MLGW-ACR	12/9/2020	9:05	ACZ	950	33	<0.1	<6.0	504.9	6.8	130
MLGW-ACR	5/27/2021	9:45	ACZ	1180	37.8	<0.1	<6.0	222.1	6.9	161
MLGW-ACR	8/25/2021	11:04	ACZ	1030	28.3	0.11	<6.0	487.6	6.8	156
MLGW-ACR	12/7/2021	10:25	ACZ	1030	26.3	<0.1	<6.0	481.3	6.8	128
MLGW-ACR	5/27/2022	10:42	ACZ	1180	29.7	0.12	<6.0	447.3	6.6	130
MLGW-ACR	8/23/2022	10:55	ACZ	394	50.2	<0.1	13.9	436.4	7.3	111
MLGW-ACR	12/19/2022	13:47	ACZ	5770	129	<0.2	<6.0	453.1	6.7	114
MLGW-ACR	6/7/2023	12:50	ACZ	8010	205	0.17	<6.0	511.1	7	116
MLGW-ACR	8/22/2023	11:05	ACZ	9080	143	<0.1	9.4	914	7.1	5.9
MLGW-ACR	12/14/2023	10:24	ACZ	5480	145	<0.1	<6.0	437.2	7	94.6

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< = not detected at concentrations exceeding the laboratory method detection limit

(Blank Field)=No data was required for this parameter during monthly pH assessment monitoring



Table 2 Annual Water Monitoring Data Henderson Mill

Location	Sample Date	Sample Time	Analytical Laboratory	Iron, Dissolved ¹ (µg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (µg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (μS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
WFR-20	5/14/2019	13:00	ACZ	86	4.7	<0.1	<4.0	72	8.0	6.4
WFR-20	8/13/2019	12:15	ACZ	74	7.2	<0.1	<4.0	72.8	7.0	4.3
WFR-20	11/13/2019	14:35	ACZ	62	6.2	<0.1	<4.0	85.9	7.1	5.5
WFR-20	5/7/2020	13:45	ACZ	98	5.2	<0.1	<6.0	70.4	7.4	5.0
WFR-20	8/28/2020	13:10	ACZ	85	8.4	<0.1	<6.0	92.5	7.5	9.5
WFR-20	12/9/2020	12:48	ACZ	70.7	7.14	<0.1	<6.0	134.3	7.2	5.7
WFR-20	5/24/2021	11:05	ACZ	63.5	3.85	<0.1	<6.0	61.5	7.7	<1.0
WFR-20	8/23/2021	13:20	ACZ	80.8	11.1	<0.1	<6.0	81.3	7.7	<1.0
WFR-20	12/6/2021	14:38	ACZ	72	10.5	<0.1	<6.0	91.6	7.1	9.9
WFR-20	5/16/2022	10:00	ACZ	73.8	10.9	<0.1	<6.0	59.4	6.9	4.5
WFR-20	8/22/2022	9:57	ACZ	81.4	9.12	<0.1	13.2	78.7	6.9	4.7
WFR-20	12/20/2022	10:47	ACZ	57.7	10.1	<0.1	<6.0	84.6	6.5	5.9
WFR-20	6/5/2023	11:06	ACZ	44.6	3.89	<0.1	<6.0	54.4	7.6	<1
WFR-20	8/23/2023	11:08	ACZ	193	21.6	<0.1	<6.0	157.3	7.6	4.9
WFR-20	12/6/2023	10:35	ACZ	64.4	10.6	<0.1	<6.0	88.8	7.3	5.3

Location	Sample Date	Sample Time	Analytical Laboratory	lron, Dissolved ¹ (μg/L as Fe)	Manganese, Dissolved ² (µg/L as Mn)	Selenium, Dissolved ² (μg/L as Se)	Zinc, Dissolved ² (µg/L as Zn)	Specific Conductivity ³ (µS/cm)	pH ³ (Standard Units)	Sulfate ⁴ (mg/L)
WFR-40	5/14/2019	09:20	ACZ	122	6.9	<0.1	<4.0	87.5	7.2	8.7
WFR-40	8/13/2019	10:50	ACZ	72	8.7	<0.1	<4.0	86.8	7.3	7.8
WFR-40	11/13/2019	11:35	ACZ	54	7.7	<0.1	<4.0	109	6.8	10.3
WFR-40	5/7/2020	9:45	ACZ	116	12.5	<0.1	<6.0	80.5	7.5	9.0
WFR-40	8/27/2020	9:05	ACZ	86	4.9	<0.1	<6.0	123	7.8	10.5
WFR-40	12/9/2020	9:38	ACZ	41.8	2.36	<0.1	<6.0	125.8	7.7	15.0
WFR-40	5/24/2021	10:25	ACZ	148	8.26	<0.1	<6.0	66.8	7.7	<1.0
WFR-40	8/23/2021	11:55	ACZ	76.4	11.9	<0.1	<6.0	106.8	7.8	11.7
WFR-40	12/6/2021	12:00	ACZ	69.6	15.3	<0.1	<6.0	107.7	7.7	9.6
WFR-40	5/16/2022	10:40	ACZ	111	5.11	0.1	<6.0	61	7.0	4.4
WFR-40	8/22/2022	11:08	ACZ	96.5	13.4	<0.1	15.8	102.6	7.3	8.2
WFR-40	12/20/2022	11:39	ACZ	30.6	5.11	<0.1	<6.0	116.2	6.9	9
WFR-40	6/5/2023	12:00	ACZ	67.1	4.11	<0.1	<6.0	59.6	7.7	<1.0
WFR-40	8/23/2023	10:39	ACZ	60.9	8.02	<0.1	<6.0	182.5	6.7	9
WFR-40	12/6/2023	11:40	ACZ	40	7.49	<0.1	<6.0	121.8	7.6	12

Notes:

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GREEN= Newly estblished NPLs

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Trend Evaluations














































































