COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

May 3, 2022

Daniel Takami
Grand Island Resources LLC
12567 West Cedar Dr.
Lakewood, CO 80228

RE: Response to Request to Remove Cease and Desist Order, Cross Gold Mine, Permit No. M-1977-410

Mr. Takami:

On April 29, 2022 the Operator, Grand Island Resources, LLC (GIR), submitted a request to the Division of Reclamation, Mining and Safety (Division) to remove the Cease and Desist Order put in place by the Mined Land Reclamation Board (Board) for violation MV-2021-017. The Division has completed its review of your submittal and will deny the request to remove the Cease and Desist Order with the following comments:

1. In the second to last paragraph, GIR states they remain in full compliance with its reporting with the Water Quality Control Division (WQCD) for the month of March 2022. While it is true GIR has submitted its report to WQCD, the sample results have not been in full compliance with the discharge permit. The Division was informed by WQCD the sample results for the second half of March 2022 were not in compliance. GIR submitted to WQCD that the samples for the 2nd half of March 2022 were outliers and the result of improper sampling practices (see attached report). As far as the Division is aware, GIR did not submit the sample results including which analytes were outliers. WQCD has requested GIR submit the results so monthly averages can be calculated. The WQCD permit requires that they report all data collected regardless of circumstances. The Division is not aware of the results having been submitted yet.

2. The Division will require the operator to provide proof that sampling can be completed with consistency and in accordance with approved methods for the site for one complete quarter (April through June 2022).

3. The Division will require the operator to provide proof of compliance with the approved discharge permit for one complete quarter (April through June 2022).

At the end of June 2022, GIR may provide a demonstration of compliance with the items stated above and reconsideration for the Division to remove the Cease and Desist Order placed by the Board.

If you need additional information or have any questions, please contact me at Division of Reclamation, Mining and Safety, 1313 Sherman Street, Room 215, Denver, CO 80203, by telephone at **303-866-3567 x8114**, or by email at patrick.lennberg@state.co.us.

Sincerely,

Patrick Lennberg
Environmental Protection Specialist

Attachment: Special Report Attachment, Discharge Monitoring Report for March 2022, Cross Gold Mine CO0032751

ec: Daniel Takami, Grand Island Resources LLC
Richard Mittasch, Grand Island Resources LLC
Jared Ebert, DRMS
Amy Eschberger, DRMS

Attachments

1508 Ridge Road
Nederland, CO 80466
Phone (315) 414-6986
www.blackfoxmining.com

April 28, 2022

Permits and Enforcement Section
Water Quality Control Division
CPDHE
4300 Cherry Creek Dr. South
Denver, CO 80246-1530

Subject: Special Report Attachment
Discharge Monitoring Report for March 2022
Cross Gold Mine CO0032751

To whom it may concern,

During the month of March 2022 there were no exceedances for the 1st half of monthly sampling at Outfall-001. These samples were taken on 3/15/2022. All of the analytes came back with expected results that have been trending well below the discharge limits since the pilot water treatment plant began running 24/7 on 1/10/2022. The 2nd half of the monthly sampling, taken on 3/25/2022, provided extremely odd and an outliner result. This report will go into the specifics of the operations, compliance results, quality assurance/quality control methods, test results since 3/25/2022, completed/future improvements and conclusion of the findings that potentially led to the outlying results.

Background/Operations

Grand Island Resources, LLC (GIR) implemented a pilot water treatment system back in November 2021. This system was run periodically over the last few weeks in November and throughout December 2021. Once the system was optimized and results were taken in December, they showed promising results. Beginning in January of 2022, the system was fully automated and began running 24/7. This allowed all water onsite to be treated to within the discharge limits set by the permit.

The system contains an influent submersible pump that is located in Pond 1 where both the Cross and Caribou source waters drain for treatment. This water is pumped to a filtration bank of four bag canister filters. The bag filters are run in parallel to remove any suspended particulate prior to active treatment. 5-mircon filters were used based on a filtration study completed in conjunction with GIR, Graver and Environmental Site Solutions. The study showcased that 5-mircon sufficed to remove the primary shows of contamination leaving the polishing step to remove the remaining metal concentrations that remained. After the filtration process, the water is fed into a pressure vessel loaded with MetSorb media. This granular media strips the water of the metals of concern: Zinc, Cadmium and Lead.

From January 10th, 2022, when the system began running 24/7, the operations process has been consistent. Additional improvements to documentation, training of personnel, automation, sampling program and mechanical equipment have been introduced to optimize the efficiency of water treatment at the site.

Compliance Results

Per the permit requirement, samples are taken twice a month for various analytes. Some of which are twice a month while others are only once due to their limited or non-detect concentrations in the source water. Beginning in the 2nd half of the month sampling for December 2021 through the March 15th, 2022 compliance samples, each report has proven the concept of the pilot treatment system. GIR has produced results that are far below the discharge limits with many of the resulting analytes coming back with non-detect values. All of the compliant data has been submitted via the NetDMR server and compiles all of the results from late December 2021 to early March 2022. These values are consistent in the remove of the contaminants listed in the permit with no exceedances present.

Quality Assurance/Quality Control (QA/QC)

As GIR implemented the pilot water treatment system at the site, numerous source water, influent to the water treatment plant (WTP), post filtration, and post Metsorb media were taken to ensure the system was performing per design. This not only enabled a vast database of historic data to improve operation of the system but allowed trending of performance based on various factors whether that be pressure differential across the bag canister filters or increased flow from one source water or another. The treatment system proved to handle multiple variations in operational conditions. Table 1 shows the internal sampling that was completed as part of the QA/QC program.

Table 1: QA/QC Results

Sample	Sampled	Analyte	Result	Units	Type
280-157649-1	1/12/22 10:30	Chromium, trivalent	ND	mg/L	TR
280-157649-1	1/12/22 10:30	Iron	ND	ug/L	TR
280-157649-1	1/12/22 10:30	Arsenic	ND	ug/L	TR
280-157649-1	1/12/22 10:30	Cadmium	ND	ug/L	TR
280-157649-1	1/12/22 10:30	Chromium	ND	ug/L	TR
280-157649-1	1/12/22 10:30	Copper	ND	ug/L	TR
280-157649-1	1/12/22 10:30	Lead	0.72	ug/L	TR

280-157649-1	1/12/22 10:30	Zinc	2.4	ug/L	TR
280-157649-1	1/12/22 10:30	Chromium, hexavalent	ND	mg/L	Tot
280-157649-1	1/12/22 10:30	Specific Conductance	230	umhos/cm	Tot
280-157649-1	1/12/22 10:30	Mercury	ND	ug/L	Tot
280-157649-1	1/12/22 10:30	Mercury	3.1	ng/L	Tot
280-157649-1	1/12/22 10:30	pH adj. to 25 deg C	7.7	SU	Tot
280-157649-1	1/12/22 10:30	Temperature	21.9	Degrees C	Tot
280-157649-1	1/12/22 10:30	T Suspended Solids	6	mg/L	Tot
280-157649-1	1/12/22 10:30	Sulfide	ND	mg/L	Tot
280-157649-1	1/12/22 10:30	Un-ionized Hydrogen Sulfide	ND	mg/L	Tot
280-157649-1	1/12/22 10:30	Field pH	7.7	SU	Tot
280-157649-1	1/12/22 10:30	Field Temperature	22	Celsius	Tot
280-157649-1	1/12/22 10:30	Specific Conductance	230	umhos/cm	Tot
280-157649-1	1/12/22 10:30	Sulfide	ND	mg/L	Tot
280-157649-1	1/12/22 10:30	Chromium, trivalent (D)	ND	mg/L	PD
280-157649-1	1/12/22 10:30	Cadmium	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Copper	0.79	ug/L	PD
280-157649-1	1/12/22 10:30	Lead	0.77	ug/L	PD

280-157649-1	1/12/22 10:30	Silver	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Zinc	8.2	ug/L	PD
280-157649-1	1/12/22 10:30	Nickel	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Arsenic	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Selenium	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Manganese	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Chromium	ND	ug/L	PD
280-157649-1	1/12/22 10:30	Chromium, hexavalent	ND	mg/L	D
280-157760-2	1/13/22 9:45	Cadmium	ND	ug/L	PD
280-157760-2	1/13/22 9:45	Copper	0.73	ug/L	PD
280-157760-2	1/13/22 9:45	Lead	0.39	ug/L	PD
280-157760-2	1/13/22 9:45	Silver	ND	ug/L	PD
280-157760-2	1/13/22 9:45	Zinc	11	ug/L	PD
280-157760-2	1/13/22 9:45	Cadmium	ND	ug/L	TR
280-157760-2	1/13/22 9:45	Copper	ND	ug/L	TR
280-157760-2	1/13/22 9:45	Lead	0.49	ug/L	TR
280-157760-2	1/13/22 9:45	Zinc	ND	ug/L	TR
280-157760-4	1/14/22 8:45	Cadmium	ND	ug/L	PD

280-157760-4	1/14/22 8:45	Copper	ND	ug/L	PD
280-157760-4	1/14/22 8:45	Lead	0.35	ug/L	PD
280-157760-4	1/14/22 8:45	Silver	ND	ug/L	PD
280-157760-4	1/14/22 8:45	Zinc	6.4	ug/L	PD
280-157760-4	1/14/22 8:45	Cadmium	ND	ug/L	TR
280-157760-4	1/14/22 8:45	Copper	ND	ug/L	TR
280-157760-4	1/14/22 8:45	Lead	0.43	ug/L	TR
280-157760-4	1/14/22 8:45	Zinc	ND	ug/L	TR
280-157829-4	1/17/22 15:15	Cadmium	ND	ug/L	PD
280-157829-4	1/17/22 15:15	Copper	0.76	ug/L	PD
280-157829-4	1/17/22 15:15	Lead	0.48	ug/L	PD
280-157829-4	1/17/22 15:15	Silver	ND	ug/L	PD
280-157829-4	1/17/22 15:15	Zinc	11	ug/L	PD
280-157829-4	1/17/22 15:15	Cadmium	ND	ug/L	TR
280-157829-4	1/17/22 15:15	Copper	ND	ug/L	TR
280-157829-4	1/17/22 15:15	Lead	0.45	ug/L	TR
280-157829-4	1/17/22 15:15	Zinc	2	ug/L	TR
280-157829-2	1/18/22 11:00	Cadmium	ND	ug/L	PD

280-157829-2	1/18/22 11:00	Copper	ND	ug/L	PD
280-157829-2	1/18/22 11:00	Lead	0.45	ug/L	PD
280-157829-2	1/18/22 11:00	Silver	0.048	ug/L	PD
280-157829-2	1/18/22 11:00	Zinc	4.8	ug/L	PD
280-157829-2	1/18/22 11:00	Cadmium	ND	ug/L	TR
280-157829-2	1/18/22 11:00	Copper	ND	ug/L	TR
280-157829-2	1/18/22 11:00	Lead	0.47	ug/L	TR
280-157829-2	1/18/22 11:00	Zinc	ND	ug/L	TR
280-157953-2	1/19/22 12:30	Cadmium	ND	ug/L	PD
280-157953-2	1/19/22 12:30	Copper	ND	ug/L	PD
280-157953-2	1/19/22 12:30	Lead	0.38	ug/L	PD
280-157953-2	1/19/22 12:30	Silver	ND	ug/L	PD
280-157953-2	1/19/22 12:30	Zinc	24	ug/L	PD
280-157953-2	1/19/22 12:30	Cadmium	ND	ug/L	TR
280-157953-2	1/19/22 12:30	Copper	ND	ug/L	TR
280-157953-2	1/19/22 12:30	Lead	0.49	ug/L	TR
280-157953-2	1/19/22 12:30	Zinc	4.6	ug/L	TR
280-157953-4	1/20/22 10:10	Cadmium	ND	ug/L	PD

280-157953-4	1/20/22 10:10	Copper	1.1	ug/L	PD
280-157953-4	1/20/22 10:10	Lead	1.2	ug/L	PD
280-157953-4	1/20/22 10:10	Silver	ND	ug/L	PD
280-157953-4	1/20/22 10:10	Zinc	12	ug/L	PD
280-157953-4	1/20/22 10:10	Cadmium	ND	ug/L	TR
280-157953-4	1/20/22 10:10	Copper	ND	ug/L	TR
280-157953-4	1/20/22 10:10	Lead	0.48	ug/L	TR
280-157953-4	1/20/22 10:10	Zinc	5	ug/L	TR
280-157953-6	1/21/22 8:30	Cadmium	ND	ug/L	PD
280-157953-6	1/21/22 8:30	Copper	0.71	ug/L	PD
280-157953-6	1/21/22 8:30	Lead	0.37	ug/L	PD
280-157953-6	1/21/22 8:30	Silver	ND	ug/L	PD
280-157953-6	1/21/22 8:30	Zinc	15	ug/L	PD
280-157953-6	1/21/22 8:30	Cadmium	ND	ug/L	TR
280-157953-6	1/21/22 8:30	Copper	ND	ug/L	TR
280-157953-6	1/21/22 8:30	Lead	0.54	ug/L	TR
280-157953-6	1/21/22 8:30	Zinc	6.8	ug/L	TR
280-158125-2	1/24/22 9:25	Cadmium	ND	ug/L	PD

280-158125-2	1/24/22 9:25	Copper	1	ug/L	PD
280-158125-2	1/24/22 9:25	Lead	0.65	ug/L	PD
280-158125-2	1/24/22 9:25	Silver	ND	ug/L	PD
280-158125-2	1/24/22 9:25	Zinc	16	ug/L	PD
280-158125-2	1/24/22 9:25	Cadmium	ND	ug/L	TR
280-158125-2	1/24/22 9:25	Copper	ND	ug/L	TR
280-158125-2	1/24/22 9:25	Lead	0.37	ug/L	TR
280-158125-2	1/24/22 9:25	Zinc	ND	ug/L	TR
280-158125-4	1/25/22 9:50	Cadmium	ND	ug/L	PD
280-158125-4	1/25/22 9:50	Copper	ND	ug/L	PD
280-158125-4	1/25/22 9:50	Lead	0.93	ug/L	PD
280-158125-4	1/25/22 9:50	Silver	ND	ug/L	PD
280-158125-4	1/25/22 9:50	Zinc	7.5	ug/L	PD
280-158125-4	1/25/22 9:50	Cadmium	ND	ug/L	TR
280-158125-4	1/25/22 9:50	Copper	ND	ug/L	TR
280-158125-4	1/25/22 9:50	Lead	0.86	ug/L	TR
280-158125-4	1/25/22 9:50	Zinc	3.6	ug/L	TR
280-158125-6	1/26/22 8:00	Cadmium	ND	ug/L	PD

280-158125-6	1/26/22 8:00	Copper	ND	ug/L	PD
280-158125-6	1/26/22 8:00	Lead	0.75	ug/L	PD
280-158125-6	1/26/22 8:00	Silver	ND	ug/L	PD
280-158125-6	1/26/22 8:00	Zinc	15	ug/L	PD
280-158125-6	1/26/22 8:00	Cadmium	ND	ug/L	TR
280-158125-6	1/26/22 8:00	Copper	ND	ug/L	TR
280-158125-6	1/26/22 8:00	Lead	0.7	ug/L	TR
280-158125-6	1/26/22 8:00	Zinc	5.3	ug/L	TR
280-158235-2	1/28/22 8:45	Cadmium	ND	ug/L	PD
280-158235-2	1/28/22 8:45	Copper	1.3	ug/L	PD
280-158235-2	1/28/22 8:45	Lead	0.91	ug/L	PD
280-158235-2	1/28/22 8:45	Silver	0.09	ug/L	PD
280-158235-2	1/28/22 8:45	Zinc	12	ug/L	PD
280-158235-2	1/28/22 8:45	Cadmium	ND	ug/L	TR
280-158235-2	1/28/22 8:45	Copper	0.81	ug/L	TR
280-158235-2	1/28/22 8:45	Lead	0.58	ug/L	TR
280-158235-2	1/28/22 8:45	Zinc	4.6	ug/L	TR
280-158295-3	1/31/22 15:30	Cadmium	ND	ug/L	PD

280-158295-3	1/31/22 15:30	Copper	ND	ug/L	PD
280-158295-3	1/31/22 15:30	Lead	0.8	ug/L	PD
280-158295-3	1/31/22 15:30	Silver	ND	ug/L	PD
280-158295-3	1/31/22 15:30	Zinc	8.9	ug/L	PD
280-158295-3	1/31/22 15:30	Arsenic	ND	ug/L	TR
280-158295-3	1/31/22 15:30	Chromium	ND	ug/L	TR
280-158295-3	1/31/22 15:30	Cadmium	0.1	ug/L	TR
280-158295-3	1/31/22 15:30	Copper	0.72	ug/L	TR
280-158295-3	1/31/22 15:30	Lead	0.64	ug/L	TR
280-158295-3	1/31/22 15:30	Zinc	4.4	ug/L	TR
280-158295-6	2/1/22 9:25	Arsenic	ND	ug/L	TR
280-158295-6	2/1/22 9:25	Cadmium	ND	ug/L	TR
280-158295-6	2/1/22 9:25	Chromium	ND	ug/L	TR
280-158295-6	2/1/22 9:25	Copper	ND	ug/L	TR
280-158295-6	2/1/22 9:25	Lead	0.55	ug/L	TR
280-158295-6	2/1/22 9:25	Zinc	3.3	ug/L	TR
280-158295-6	2/1/22 9:25	Cadmium	ND	ug/L	PD
280-158295-6	2/1/22 9:25	Copper	ND	ug/L	PD

280-158295-6	2/1/22 9:25	Lead	0.59	ug/L	PD
280-158295-6	2/1/22 9:25	Silver	ND	ug/L	PD
280-158295-6	2/1/22 9:25	Zinc	13	ug/L	PD
280-158386-2	2/2/22 15:20	Cadmium	ND	ug/L	PD
280-158386-2	2/2/22 15:20	Copper	ND	ug/L	PD
280-158386-2	2/2/22 15:20	Lead	0.5	ug/L	PD
280-158386-2	2/2/22 15:20	Silver	ND	ug/L	PD
280-158386-2	2/2/22 15:20	Zinc	5.7	ug/L	PD
280-158386-2	2/2/22 15:20	Cadmium	0.11	ug/L	TR
280-158386-2	2/2/22 15:20	Copper	0.87	ug/L	TR
280-158386-2	2/2/22 15:20	Lead	0.58	ug/L	TR
280-158386-2	2/2/22 15:20	Zinc	ND	ug/L	TR
280-158386-5	2/3/22 11:40	Cadmium	0.12	ug/L	PD
280-158386-5	2/3/22 11:40	Copper	ND	ug/L	PD
280-158386-5	2/3/22 11:40	Lead	0.68	ug/L	PD
280-158386-5	2/3/22 11:40	Silver	ND	ug/L	PD
280-158386-5	2/3/22 11:40	Zinc	6.9	ug/L	PD
280-158386-5	2/3/22 11:40	Cadmium	ND	ug/L	TR

280-158386-5	2/3/22 11:40	Copper	2.7	ug/L	TR
280-158386-5	2/3/22 11:40	Lead	0.77	ug/L	TR
280-158386-5	2/3/22 11:40	Zinc	4	ug/L	TR
280-158386-9	2/4/22 8:15	Cadmium	ND	ug/L	TR
280-158386-9	2/4/22 8:15	Copper	ND	ug/L	TR
280-158386-9	2/4/22 8:15	Lead	1.9	ug/L	TR
280-158386-9	2/4/22 8:15	Zinc	ND	ug/L	TR
280-158386-9	2/4/22 8:15	Cadmium	ND	ug/L	PD
280-158386-9	2/4/22 8:15	Copper	0.84	ug/L	PD
280-158386-9	2/4/22 8:15	Lead	0.43	ug/L	PD
280-158386-9	2/4/22 8:15	Silver	ND	ug/L	PD
280-158386-9	2/4/22 8:15	Zinc	5.4	ug/L	PD
280-158386-10	2/4/22 9:50	Cadmium	ND	ug/L	TR
280-158386-10	2/4/22 9:50	Copper	ND	ug/L	TR
280-158386-10	2/4/22 9:50	Lead	0.79	ug/L	TR
280-158386-10	2/4/22 9:50	Zinc	ND	ug/L	TR
280-158386-10	2/4/22 9:50	Cadmium	ND	ug/L	PD
280-158386-10	2/4/22 9:50	Copper	1.1	ug/L	PD

280-158386-10	2/4/22 9:50	Lead	0.7	ug/L	PD
280-158386-10	2/4/22 9:50	Silver	ND	ug/L	PD
280-158386-10	2/4/22 9:50	Zinc	7.6	ug/L	PD
280-158763-1	2/15/22 12:30	Chromium, trivalent	ND	mg/L	TR
280-158763-1	2/15/22 12:30	Iron	ND	ug/L	TR
280-158763-1	2/15/22 12:30	Arsenic	ND	ug/L	TR
280-158763-1	2/15/22 12:30	Cadmium	0.19	ug/L	TR
280-158763-1	2/15/22 12:30	Chromium	ND	ug/L	TR
280-158763-1	2/15/22 12:30	Copper	ND	ug/L	TR
280-158763-1	2/15/22 12:30	Lead	0.9	ug/L	TR
280-158763-1	2/15/22 12:30	Zinc	10	ug/L	TR
280-158763-1	2/15/22 12:30	Chromium, hexavalent	0.0049	mg/L	Tot
280-158763-1	2/15/22 12:30	Specific Conductance	240	umhos/cm	Tot
280-158763-1	2/15/22 12:30	Mercury	ND	ug/L	Tot
280-158763-1	2/15/22 12:30	Mercury	3.2	ng/L	Tot
280-158763-1	2/15/22 12:30	pH adj. to 25 deg C	8	SU	Tot
280-158763-1	2/15/22 12:30	Temperature	21.4	Degrees C	Tot
280-158763-1	2/15/22 12:30	T Suspended Solids	ND	mg/L	Tot

280-158763-1	2/15/22 12:30	Sulfide	ND	mg/L	Tot
280-158763-1	2/15/22 12:30	Un-ionized Hydrogen Sulfide	ND	mg/L	Tot
280-158763-1	2/15/22 12:30	Field pH	8	SU	Tot
280-158763-1	2/15/22 12:30	Field Temperature	21	Celsius	Tot
280-158763-1	2/15/22 12:30	Specific Conductance	240	umhos/cm	Tot
280-158763-1	2/15/22 12:30	Sulfide	ND	mg/L	Tot
280-158763-1	2/15/22 12:30	Chromium, trivalent (D)	ND	mg/L	PD
280-158763-1	2/15/22 12:30	Arsenic	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Cadmium	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Chromium	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Copper	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Lead	0.86	ug/L	PD
280-158763-1	2/15/22 12:30	Manganese	4.7	ug/L	PD
280-158763-1	2/15/22 12:30	Nickel	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Selenium	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Silver	ND	ug/L	PD
280-158763-1	2/15/22 12:30	Zinc	16	ug/L	PD
280-158763-1	2/15/22 12:30	Chromium, hexavalent	0.0051	mg/L	D

280-159154-1	2/28/22 11:15	Copper	ND	ug/L	TR
280-159154-1	2/28/22 11:15	Lead	0.86	ug/L	TR
280-159154-1	2/28/22 11:15	Cadmium	ND	ug/L	PD
280-159154-1	2/28/22 11:15	Copper	1.3	ug/L	PD
280-159154-1	2/28/22 11:15	Lead	3.3	ug/L	PD
280-159154-1	2/28/22 11:15	Silver	0.056	ug/L	PD
280-159154-1	2/28/22 11:15	Zinc	12	ug/L	PD
280-159720-1	3/15/22 12:00	Iron	23	ug/L	TR
280-159720-1	3/15/22 12:00	Arsenic	ND	ug/L	TR
280-159720-1	3/15/22 12:00	Cadmium	0.19	ug/L	TR
280-159720-1	3/15/22 12:00	Chromium	ND	ug/L	TR
280-159720-1	3/15/22 12:00	Copper	0.84	ug/L	TR
280-159720-1	3/15/22 12:00	Lead	0.95	ug/L	TR
280-159720-1	3/15/22 12:00	Zinc	22	ug/L	TR
280-159720-1	3/15/22 12:00	Chromium, trivalent	ND	mg/L	TR
280-159720-1	3/15/22 12:00	Mercury	ND	ug/L	Total/NA
280-159720-1	3/15/22 12:00	Specific Conductance	230	umhos/cm	Total/NA
280-159720-1	3/15/22 12:00	Total Suspended Solids	ND	mg/L	Total/NA

280-159720-1	3/15/22 12:00	Chromium, hexavalent	0.01	mg/L	Total/NA
280-159720-1	3/15/22 12:00	pH adj. to 25 deg C	7.3	SU	Total/NA
280-159720-1	3/15/22 12:00	Temperature	21.8	Degrees C	Total/NA
280-159720-1	3/15/22 12:00	Sulfide	ND	mg/L	Total/NA
280-159720-1	3/15/22 12:00	Un-ionized Hydrogen Sulfide	ND	mg/L	Total/NA
280-159720-1	3/15/22 12:00	Field pH	7.3	SU	Total/NA
280-159720-1	3/15/22 12:00	Field Temperature	22	Celsius	Total/NA
280-159720-1	3/15/22 12:00	Specific Conductance	230	umhos/cm	Total/NA
280-159720-1	3/15/22 12:00	Sulfide	ND	mg/L	Total/NA
280-159720-1	3/15/22 12:00	Arsenic	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Cadmium	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Chromium	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Copper	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Lead	0.98	ug/L	PD
280-159720-1	3/15/22 12:00	Manganese	12	ug/L	PD
280-159720-1	3/15/22 12:00	Nickel	0.56	ug/L	PD
280-159720-1	3/15/22 12:00	Selenium	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Silver	ND	ug/L	PD

280-159720-1	3/15/22 12:00	Zinc	31	ug/L	PD
280-159720-1	3/15/22 12:00	Chromium, trivalent (dissolved)	ND	mg/L	PD
280-159720-1	3/15/22 12:00	Chromium, hexavalent	ND	mg/L	D
280-159720-1	3/15/22 12:00	Iron	23	ug/L	TR
280-159720-1	3/15/22 12:00	Arsenic	ND	ug/L	TR
280-159720-1	3/15/22 12:00	Cadmium	0.19	ug/L	TR
280-159720-1	3/15/22 12:00	Chromium	ND	ug/L	TR
280-159720-1	3/15/22 12:00	Copper	0.84	ug/L	TR
280-159720-1	3/15/22 12:00	Lead	0.95	ug/L	TR
280-159720-1	3/15/22 12:00	Zinc	22	ug/L	TR
280-159720-1	3/15/22 12:00	Chromium, trivalent	ND	mg/L	TR
280-159720-1	3/15/22 12:00	Mercury	ND	ug/L	Total/NA
280-159720-1	3/15/22 12:00	Specific Conductance	230	umhos/cm	Total/NA
280-159720-1	3/15/22 12:00	Total Suspended Solids	ND	mg/L	Total/NA
280-159720-1	3/15/22 12:00	Chromium, hexavalent	0.01	mg/L	Total/NA
280-159720-1	3/15/22 12:00	pH adj. to 25 deg C	7.3	SU	Total/NA
280-159720-1	3/15/22 12:00	Temperature	21.8	Degrees C	Total/NA
280-159720-1	3/15/22 12:00	Sulfide	ND	mg/L	Total/NA

280-159720-1	3/15/22 12:00	Un-ionized Hydrogen Sulfide	ND	mg/L	Total/NA
280-159720-1	3/15/22 12:00	Field pH	7.3	SU	Total/NA
280-159720-1	3/15/22 12:00	Field Temperature	22	Celsius	Total/NA
280-159720-1	3/15/22 12:00	Specific Conductance	230	umhos/cm	Total/NA
280-159720-1	3/15/22 12:00	Sulfide	ND	mg/L	Total/NA
280-159720-1	3/15/22 12:00	Arsenic	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Cadmium	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Chromium	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Copper	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Lead	0.98	ug/L	PD
280-159720-1	3/15/22 12:00	Manganese	12	ug/L	PD
280-159720-1	3/15/22 12:00	Nickel	0.56	ug/L	PD
280-159720-1	3/15/22 12:00	Selenium	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Silver	ND	ug/L	PD
280-159720-1	3/15/22 12:00	Zinc	31	ug/L	PD
280-159720-1	3/15/22 12:00	Chromium, trivalent (dissolved)	ND	mg/L	PD
280-159720-1	3/15/22 12:00	Chromium, hexavalent	ND	mg/L	D

Results Since 3/25/2022

GIR learned of the outlying data results on 4/6/2022. Due to the obscure results not within the consistent datasets that had been documented over the previous months, multiple laboratories were contacted that could provide the same analytical methods for the metals of concern with a rush turnaround. Bottle orders were placed and an aggressive sampling program was implemented starting on 4/9/2022. Seacrest and Colorado Analytical were chosen as the additionally laboratories. Table 2 lists the analytical results received from the accelerated testing. Each result is below the discharge limits.

Sample	Sampled	Analyte	Result	Units	Type
220411007-02	4/9/22 15:00	Cadmium	0.1	ug/L	PD
220411007-02	4/9/22 15:00	Copper	1.5	ug/L	PD
220411007-02	4/9/22 15:00	Lead	2	ug/L	PD
220411007-02	4/9/22 15:00	Silver	ND	ug/L	PD
220411007-02	4/9/22 15:00	Zinc	14	ug/L	PD
220411007-02	4/9/22 15:00	Copper	1.5	ug/L	TR
220411007-02	4/9/22 15:00	Lead	2.4	ug/L	TR
422155.A	4/9/22 15:00	Cadmium	ND	ug/L	PD
422155.A	4/9/22 15:00	Copper	4.21	ug/L	Tot
422155.A	4/9/22 15:00	Copper	ND	ug/L	PD
422155.A	4/9/22 15:00	Lead	1.79	ug/L	Tot
422155.A	4/9/22 15:00	Lead	1.01	ug/L	PD
422155.A	4/9/22 15:00	Silver	ND	ug/L	PD

422155.A	4/9/22 15:00	Zinc	ND	ug/L	PD
220411007-03	4/10/22 15:00	Cadmium	ND	ug/L	PD
220411007-03	4/10/22 15:00	Copper	1.5	ug/L	PD
220411007-03	4/10/22 15:00	Lead	2.4	ug/L	PD
220411007-03	4/10/22 15:00	Silver	ND	ug/L	PD
220411007-03	4/10/22 15:00	Zinc	13	ug/L	PD
220411007-03	4/10/22 15:00	Copper	2	ug/L	TR
220411007-03	4/10/22 15:00	Lead	2.4	ug/L	TR
422156.A	4/10/22 15:00	Cadmium	ND	ug/L	PD
422156.A	4/10/22 15:00	Copper	4.26	ug/L	Tot
422156.A	4/10/22 15:00	Copper	4.1	ug/L	PD
422156.A	4/10/22 15:00	Lead	0.71	ug/L	Tot
422156.A	4/10/22 15:00	Lead	1.3	ug/L	PD
422156.A	4/10/22 15:00	Silver	ND	ug/L	PD
422156.A	4/10/22 15:00	Zinc	4.94	ug/L	PD
422157.A	4/11/22 15:00	Cadmium	0.21	ug/L	PD
422157.A	4/11/22 15:00	Copper	1.7	ug/L	Tot
422157.A	4/11/22 15:00	Copper	2.53	ug/L	PD

422157.A	4/11/22 15:00	Lead	1.9	ug/L	Tot
422157.A	4/11/22 15:00	Lead	1.72	ug/L	PD
422157.A	4/11/22 15:00	Silver	ND	ug/L	PD
422157.A	4/11/22 15:00	Zinc	ND	ug/L	PD
220412013-01	4/11/22 15:00	Cadmium	0.1	ug/L	PD
220412013-01	4/11/22 15:00	Copper	2.2	ug/L	PD
220412013-01	4/11/22 15:00	Lead	3.8	ug/L	PD
220412013-01	4/11/22 15:00	Silver	ND	ug/L	PD
220412013-01	4/11/22 15:00	Zinc	17	ug/L	PD
220412013-01	4/11/22 15:00	Copper	2.3	ug/L	TR
220412013-01	4/11/22 15:00	Lead	3.9	ug/L	TR
422158.A	4/12/22 15:00	Cadmium	ND	ug/L	PD
422158.A	4/12/22 15:00	Copper	0.6	ug/L	Tot
422158.A	4/12/22 15:00	Copper	ND	ug/L	PD
422158.A	4/12/22 15:00	Lead	ND	ug/L	Tot
422158.A	4/12/22 15:00	Lead	ND	ug/L	PD
422158.A	4/12/22 15:00	Silver	ND	ug/L	PD
422158.A	4/12/22 15:00	Zinc	ND	ug/L	PD

220413035-01	4/12/22 15:00	Cadmium	ND	ug/L	PD
220413035-01	4/12/22 15:00	Copper	1.1	ug/L	PD
220413035-01	4/12/22 15:00	Lead	1.1	ug/L	PD
220413035-01	4/12/22 15:00	Silver	ND	ug/L	PD
220413035-01	4/12/22 15:00	Zinc	2	ug/L	PD
220413035-01A	4/12/22 15:00	Copper	1.2	ug/L	TR
220413035-01A	4/12/22 15:00	Lead	1.1	ug/L	TR
220414066-01	4/13/22 15:10	Cadmium	ND	ug/L	PD
220414066-01	4/13/22 15:10	Copper	0.9	ug/L	PD
220414066-01	4/13/22 15:10	Lead	1.1	ug/L	PD
220414066-01	4/13/22 15:10	Silver	ND	ug/L	PD
220414066-01	4/13/22 15:10	Zinc	2	ug/L	PD
220414066-01A	4/13/22 15:10	Copper	1	ug/L	TR
220414066-01A	4/13/22 15:10	Lead	1.1	ug/L	TR
220415003-01	4/14/22 15:00	Cadmium	ND	ug/L	PD
220415003-01	4/14/22 15:00	Copper	0.8	ug/L	PD
220415003-01	4/14/22 15:00	Lead	0.9	ug/L	PD
220415003-01	4/14/22 15:00	Silver	ND	ug/L	PD

220415003-01	4/14/22 15:00	Zinc	ND	ug/L	PD
220415003-01A	4/14/22 15:00	Copper	0.8	ug/L	TR
220415003-01A	4/14/22 15:00	Lead	0.9	ug/L	TR
422168.A	4/14/22 15:00	Cadmium	ND	ug/L	PD
422168.A	4/14/22 15:00	Copper	0.45	ug/L	Tot
422168.A	4/14/22 15:00	Copper	2.77	ug/L	PD
422168.A	4/14/22 15:00	Lead	0.6	ug/L	Tot
422168.A	4/14/22 15:00	Lead	0.32	ug/L	PD
422168.A	4/14/22 15:00	Silver	0.28	ug/L	PD
422168.A	4/14/22 15:00	Zinc	ND	ug/L	PD
220418032-01	4/15/22 15:00	Cadmium	ND	ug/L	PD
220418032-01	4/15/22 15:00	Copper	ND	ug/L	PD
220418032-01	4/15/22 15:00	Lead	0.8	ug/L	PD
220418032-01	4/15/22 15:00	Silver	ND	ug/L	PD
220418032-01	4/15/22 15:00	Zinc	ND	ug/L	PD
220418032-01	4/15/22 15:00	Copper	0.9	ug/L	TR
220418032-01	4/15/22 15:00	Lead	0.8	ug/L	TR
422169.A	4/15/22 15:00	Cadmium	ND	ug/L	PD

422169.A	4/15/22 15:00	Copper	0.78	ug/L	Tot
422169.A	4/15/22 15:00	Copper	0.79	ug/L	PD
422169.A	4/15/22 15:00	Lead	0.71	ug/L	Tot
422169.A	4/15/22 15:00	Lead	0.68	ug/L	PD
422169.A	4/15/22 15:00	Silver	ND	ug/L	PD
422169.A	4/15/22 15:00	Zinc	ND	ug/L	PD
220418032-02	4/16/22 15:00	Cadmium	ND	ug/L	PD
220418032-02	4/16/22 15:00	Copper	0.8	ug/L	PD
220418032-02	4/16/22 15:00	Lead	0.6	ug/L	PD
220418032-02	4/16/22 15:00	Silver	ND	ug/L	PD
220418032-02	4/16/22 15:00	Zinc	ND	ug/L	PD
220418032-02	4/16/22 15:00	Copper	0.8	ug/L	TR
220418032-02	4/16/22 15:00	Lead	0.7	ug/L	TR
422170.A	4/16/22 15:00	Cadmium	ND	ug/L	PD
422170.A	4/16/22 15:00	Copper	0.94	ug/L	Tot
422170.A	4/16/22 15:00	Copper	0.79	ug/L	PD
422170.A	4/16/22 15:00	Lead	0.4	ug/L	Tot
422170.A	4/16/22 15:00	Lead	0.28	ug/L	PD

422170.A	4/16/22 15:00	Silver	0.36	ug/L	PD
422170.A	4/16/22 15:00	Zinc	ND	ug/L	PD
220418032-03	4/17/22 15:00	Cadmium	ND	ug/L	PD
220418032-03	4/17/22 15:00	Copper	ND	ug/L	PD
220418032-03	4/17/22 15:00	Lead	0.8	ug/L	PD
220418032-03	4/17/22 15:00	Silver	ND	ug/L	PD
220418032-03	4/17/22 15:00	Zinc	ND	ug/L	PD
220418032-03	4/17/22 15:00	Copper	0.9	ug/L	TR
220418032-03	4/17/22 15:00	Lead	0.8	ug/L	TR
422171.A	4/17/22 15:00	Cadmium	ND	ug/L	PD
422171.A	4/17/22 15:00	Copper	0.72	ug/L	Tot
422171.A	4/17/22 15:00	Copper	0.9	ug/L	PD
422171.A	4/17/22 15:00	Lead	0.3	ug/L	Tot
422171.A	4/17/22 15:00	Lead	0.31	ug/L	PD
422171.A	4/17/22 15:00	Silver	ND	ug/L	PD
422171.A	4/17/22 15:00	Zinc	ND	ug/L	PD
220419004-01	4/18/22 15:00	Cadmium	ND	ug/L	PD
220419004-01	4/18/22 15:00	Copper	ND	ug/L	PD

220419004-01	4/18/22 15:00	Lead	0.7	ug/L	PD
220419004-01	4/18/22 15:00	Silver	ND	ug/L	PD
220419004-01	4/18/22 15:00	Zinc	ND	ug/L	PD
220419004-01	4/18/22 15:00	Copper	1.4	ug/L	TR
220419004-01	4/18/22 15:00	Lead	0.8	ug/L	TR
422172.A	4/18/22 15:00	Cadmium	ND	ug/L	PD
422172.A	4/18/22 15:00	Copper	0.5	ug/L	Tot
422172.A	4/18/22 15:00	Copper	1.12	ug/L	PD
422172.A	4/18/22 15:00	Lead	0.35	ug/L	Tot
422172.A	4/18/22 15:00	Lead	0.33	ug/L	PD
422172.A	4/18/22 15:00	Silver	ND	ug/L	PD
422172.A	4/18/22 15:00	Zinc	ND	ug/L	PD
220420077-01	4/19/22 15:00	Cadmium	ND	ug/L	PD
220420077-01	4/19/22 15:00	Copper	0.9	ug/L	PD
220420077-01	4/19/22 15:00	Lead	1.6	ug/L	PD
220420077-01	4/19/22 15:00	Silver	ND	ug/L	PD
220420077-01	4/19/22 15:00	Zinc	2	ug/L	PD
220420077-01A	4/19/22 15:00	Copper	1.1	ug/L	TR

220420077-01A	4/19/22 15:00	Lead	1.6	ug/L	TR
220421015-01	4/20/22 15:00	Cadmium	ND	ug/L	PD
220421015-01	4/20/22 15:00	Copper	1.5	ug/L	PD
220421015-01	4/20/22 15:00	Lead	1.9	ug/L	PD
220421015-01	4/20/22 15:00	Silver	ND	ug/L	PD
220421015-01	4/20/22 15:00	Zinc	3	ug/L	PD
220421015-01	4/20/22 15:00	Copper	1.8	ug/L	TR
220421015-01	4/20/22 15:00	Lead	1.9	ug/L	TR
220422032-01	4/21/22 15:00	Cadmium	ND	ug/L	PD
220422032-01	4/21/22 15:00	Copper	1.6	ug/L	PD
220422032-01	4/21/22 15:00	Lead	3.2	ug/L	PD
220422032-01	4/21/22 15:00	Silver	ND	ug/L	PD
220422032-01	4/21/22 15:00	Zinc	3	ug/L	PD
220422032-01	4/21/22 15:00	Copper	1.9	ug/L	TR
220422032-01	4/21/22 15:00	Lead	3.2	ug/L	TR
220425023-01	4/22/22 15:00	Cadmium	ND	ug/L	PD
220425023-01	4/22/22 15:00	Copper	1.5	ug/L	PD
220425023-01	4/22/22 15:00	Lead	3.2	ug/L	PD

220425023-01	4/22/22 15:00	Silver	ND	ug/L	PD
220425023-01	4/22/22 15:00	Zinc	3	ug/L	PD
220425023-01	4/22/22 15:00	Copper	1.8	ug/L	TR
220425023-01	4/22/22 15:00	Lead	3.2	ug/L	TR

Completed/Future Improvements

GIR has taken proactive steps to ensure that each and every personnel has been retrained on the Standard Operating Procedures (SOPs) on operation of the WTP, sampling and continue daily meetings with all members of the GIR team to achieve results to a non-detect level and well below the permit requirements. 1-micron bags have been introduced instead of the 5-mircon bags to provide a finer level of suspended particle removal prior to the MetSorb vessels. Two MetSorb vessels now run in series to guarantee a higher level of polishing and metal removal. New plumping is being installed in the coming weeks are the discharge location with an updated sample port so improved and efficient sample collection. Increased automation will be installed to track and trend data on the pressure drop across the MetSorb vessels to provide real-time data of when a vessel needs to be exchanged. In addition, each compliance sample will be taken with duplicate laboratory samples to be able to verify if a laboratory mistake has been made.

Conclusion

GIR has analyzed every potential reason for the outlying data. There was no change in operations of the WTP that could have resulted in the outlying data. During the month of February and March 2022, GIR was conducting numerous source water samples on the Cross and Caribou. This includes taking samples back in each portal of the perspective mines where mine activity produces higher metal concentrations. These samples utilized a 500 mL, unpreserved sample bottle to grab raw water and transfer to the sample bottles needed to run potentially dissolved and total recoverable analysis. At the discharge location of Outfall-001, a 500 mL bottle is used as well. The means of collecting the samples for discharge requirement access a capped section of 8" PVC pipe located in the discharge shed. This piping drops into a section where the discharge flowmeter is located. A 500 mL, unpreserved bottle is used to collect the samples and transfer them into the sample bottle set for compliance. Previously, this bottle was located in the Cross office. Even the similar methods of sample collection for both the raw source water and the discharge compliance, GIR believes human error caused these bottles to be misused and thus, causing cross contamination.

As mentioned in the above section of completed/future improvements, a new sample port is to be installed in the coming week to eliminate the chance of cross contamination in the future. All staff have been retrained in the sampling procedures and sampling plan across the site.

GIR has received the compliance sample results from the 1st half of April 2022 and the results came back well below the discharge limits for the permit. The report has been attached to this DMR submitted along with the 1st half of March 2022 results. GIR looks forward to continued compliance results moving forward and ensuring no outlying data is seen in the future.

Please contact me with any questions.

Sincerely,

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