

Mar 25, 2022

To: Matt Kelley, Senior Planner

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Attn: Matt Kelley,

Please include these comments to the Idaho-Maryland Mine DEIR.

### SAMPLE QUALITY CONTROL REVIEW

The EPA Hazardous Waste Test Methods SW-846 Compendium establishes guidelines for sampling and analyses such as sampling containers, preservation and recommended hold times for analytes.

Recommended holding times ensure that the sample is analyzed for the requested parameter prior to any bio-degradation, oxidation, precipitation, sorption, volatilization, and other physical and chemical processes that may occur that can affect the integrity of the sample.

All metals were digested using EPA Method 3050B. The results should be defined as the "Total acid soluble/recoverable metals" fraction since this method does not use hydrofluoric acid, thus it is unable to break down silicates. (EPA SW-846 Revision VI December 2018, Chapter 3, pg 4)

Chapter 3 of the SW-846 Revision VI December 2018, pp 21-22 has the following footnotes regarding preservation and hold times:

a These recommendations are intended as guidance only. The selection of sample and digestion volumes/mass and preservation and holding times should be made based on the nature of the sample, the intended end use of the data and the data quality objectives.

1 The exact sample extract, and standard storage temperature should be based on project-specific requirements and/or manufacturer's recommendations for standards. Alternative temperatures may be appropriate based on demonstrated analyte stability within a matrix, provided the data quality objectives for a specific project are still attainable.

2 A longer holding time may be appropriate if it can be demonstrated that the reported analyte concentrations are not adversely affected by preservation, storage and analyses performed outside the recommended holding times.

SEE ATTACHED FILE: SW846 Metals

And while these guidelines are only "recommended" by the EPA, the context of data usage must be considered. The metals analyses data are being used in toxic metals leachate analyses and toxic air contaminant emissions. Also, heavy metals concentrations are known to potentiate the effects of asbestos toxicity. Since **the intended end use of the data** directly impacts public health, data quality is of utmost importance.

The recommended EPA holding times have been missed in both aqueous and solid sample categories.

#### SOLIDS-HOLD TIMES

Pages 515-516 of the *Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO shows a list of 47 samples that were sent out for “gold determinations” to ALS Laboratories in Reno, NV (pg. 93, *Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO). These samples are listed as from drill cores I-18-02\*, I-18-10, I-18-11, I-18-12 and I-19-13. DATE RECEIVED is noted as 02-20-2019.

\*NOTE\*: In Table 4-9 Barren Rock Crushed Core Sample Trace Metals Results (*Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO Pg 101)

The sample listed as I-18-02 in the *Appendices* (pg 515) is now labelled B-18-02. Sample depths of 948- 958 bgs correlate between I-18-02 and B-18-02 labelled samples.

This means that all of the rock, tailings, soil, etc. samples that were used for the metals analyses were beyond the 6 months hold time. How far beyond that window is currently unknown since exact sample dates for the individual drill cores are not available-but this date (02.20.2019) suggests expiration by at least 9 months. Where are the drill logs needed for confirmation?

ACZ Laboratories lists the sample dates as 03.05.2019 for all 47 “soil” samples for metals analyses. The laboratory received by date for all samples is 11.11.2019. Again, the samples may have been collected for shipment on 03.05.2019 but their actual sample dates were months prior.

Twenty samples were digested on 11.22.2019 and the remaining twenty-seven samples were digested on 11.26.2019. (The digestion dates would be used for endpoint hold time calculations). **All data is notated that the “samples were received and analyzed past hold time”**. (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO Inorganic Extended Qualifier Reports pp. 389-407 and 458-484, Appendix D)

The samples MA-1, MA-2, MA-3, MAA-1, MS-1 and S-1 were collected by Benchmark Resources on 10.29.2019 for the leachate studies. Samples “collected” were from I-18-10, I-18-11 and I-19-13 drill cores. (*Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO Pg 93)

ACZ Laboratories lists 10.29.2019 as the sample date for this study when again these samples were obtained prior to 02.20.2019. (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO pp 495-500)

Mercury analysis has a 28-day hold time and requires storage between 0-6°C (pg. 316 Sample Receipt form states that the cooler temperature was 18.8 °C, criteria ≤ 6.0. Wet or gel ice not present). These results are notated “Sample was received above recommended temperature” and “Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data collection.”

Sample Receipt form states: “Some parameters were received past hold time” when in fact, ALL PARAMETERS WERE RECEIVED PAST HOLD TIME.

In addition, sample L55806-02 (MA-2) was noted “sample container was broken, was placed in ziplock bag”. The type of sample containers was not provided on any COC forms. If these samples were stored in glass, then all boron analyses are invalid since it may be leached from glass containers.

Some general chemistry parameters (Chloride-WET DI, Nitrate/Nitrite as N -WET DI, Nitrate as N-WET DI, Sulfate)-WET DI are notated: "Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis". The Nitrate/Nitrite as N-WET DI and Nitrate as N-WET DI were also notated as "Sample was received above recommended temperature" and the Nitrate as N-WET DI had the additional notation of "Sample was received and analyzed past holding time". (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO pp 297-314)

On page, ACZ Laboratories states that "The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ": Boron (WET DI), Solids (Percent), and Sulfate (WET DI)". (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO pp. 315,355 Certification Qualifiers)

ACZ Laboratories lists 10.29.2019 as the sample date for M-1, M-2, M-3, MAA-1, MS-1 and S-1 along with sample date of 11.04.2019 for F-1, F-2, F-3 and F-4 on the Acid-Base Accounting tests when again these samples were obtained prior to 02.20.2019 (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO pp 501-504). F1-F4 samples are a composite of core tailings that were drilled prior to 02.20.2019. For some reason, these samples were not received by ACZ Laboratories until 01.29.2020.

On pp 510, (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO), Certification Qualifiers have the following statements:

"The following parameters are not offered for certification or are not covered by NELAC certification #ACZ:

- Neutralization Potential as CCO3 M600/2-78-054 NV Modified Sobek Procedure
- pH, Saturated Paste EPA 600-2-78-054 section 3.2.2
- Sulfur HCl Extractable M600-2-78-054 3.2.4 & 3.2.6 NV Modified Sobek Procedure
- Sulfur HNO3 Extractable M600-2-78-054 3.2.4 & 3.2.6 NV Modified Sobek Procedure
- Sulfur Hot H2O Extractable M600-2-78-054 3.2.4 & 3.2.6 NV Modified Sobek Procedure
- Sulfur Residual M600-2-78-054 3.2.4 & 3.2.6 NV Modified Sobek Procedure
- Sulfur Total M600-2-78-054 3.2.4 & 3.2.6 NV Modified Sobek Procedure

These were the methods used for Acid-Base Potential determinations.

## AQUEOUS SAMPLES

All coliform tests (E. coli, Fecal and Total) exceeded hold times (pg. 99, *Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*).

All pH tests exceeded hold times since this is a field test to be performed within 15 minutes.

D-1 sampled on 02.13.2018 exceeded hold times for BOD, MBAS, NO<sub>3</sub> and NO<sub>2</sub>.

ED-1 sampled 02.13.2018 exceeded hold times for BOD, MBAS, NO<sub>3</sub> AND NO<sub>2</sub>.

The data is notated as such in the Appendices, pp 83-89.

All samples in the Fish Bioassay study were notated:

"12/21/18 Only 1 10 Liter effluent sample was provided for the initiation and renewal therefore could only perform a 25% renewal on day 2." (*Appendices: Groundwater Hydrology and Water Quality Analysis Report for The Idaho-Maryland Mine Project*, EMKO pp 222-228)

Both Ben Mossman and Andrew Kopania received copies of all laboratory reports. The cover letter from ACZ states that: "This report shall be used or copied in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report."

However, the data from these analyses is used in multiple consulting reports without any notations as to the validity of the data.

Thank you,

A handwritten signature in blue ink that reads "Pam Heard RRT". The signature is written in a cursive, flowing style.

Pam Heard RRT (Registered Respiratory Therapist)

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TABLE 3-2

RECOMMENDED SAMPLE HOLDING TIMES, PRESERVATION, COLLECTION QUANTITIES,  
AND DIGESTION VOLUMES/MASS FOR SELECTED INORGANIC ANALYTE  
DETERMINATIONS IN AQUEOUS AND SOLID SAMPLES<sup>a,b</sup>

Analyte	Matrix	Fraction	Minimum Collection Volume/Mass	Preservation <sup>1</sup>	Digestion Volume	Holding Time <sup>2</sup>
Metals (except Hg and Cr <sup>6+</sup> )	Aqueous	Total/total recoverable	600 mL	HNO <sub>3</sub> to pH<2	100 mL	6 months
		Dissolved	600 mL	Filter on site; HNO <sub>3</sub> to pH<2	100 mL	6 months
		Suspended	600 mL	Filter on site;	100 mL	6 months
	Solid	Total	200 g	None	2 g	6 months
Hexavalent chromium	Aqueous		400 mL	≤6 °C	100 mL	24 hours
	Solid		100 g	≤6 °C ≤6 °C	2.5 g	30 days to extraction 7 days from extraction to analysis
Mercury	Aqueous	Total	400 mL	HNO <sub>3</sub> to pH<2	100 mL	28 days
		Dissolved	400 mL	Filter; HNO <sub>3</sub> to pH<2	100 mL	28 days
	Solid	Total	200 g	≤6 °C	0.2 g	28 days
	Solid	Species	200 g	≤6 °C	0.2 g	5 days
Chloride	Aqueous		50 mL	≤6 °C	—	28 days
Cyanide	Aqueous		500 mL	≤6 °C; NaOH to pH>12	—	14 days
	Solid		100 g	≤6 °C	—	14 days
Fluoride	Aqueous		300 mL	≤6 °C	—	28 days
Nitrate	Aqueous		1000 mL	≤6 °C	—	28 days
Hexane Extractable Material (HEM; Oil & Grease)	Aqueous		1000 mL	≤6 °C HCl or H <sub>2</sub> SO <sub>4</sub> to pH <2	—	28 days
	Solid		100 g	≤6 °C HCl or H <sub>2</sub> SO <sub>4</sub> to pH <2		28 days when practical

SW-846 Update VI

THREE - 20

Revision 6  
December 2018