

July 8, 2024

Elliott Russell  
 Colorado Division of Reclamation, Mining, and Safety  
 1313 Sherman St, Rm 215  
 Denver, CO 80203

**RE: London Mine, File No., M-2023-015  
 Buckskin EPA Material Testing Results**

Mr. Russell

MineWater LLC has completed testing of material from the Environmental Protection Agency (EPA) managed piles near the historic Buckskin Joe mine. The results of the lab testing is summarized below, focusing on the synthetic potential leaching protocol (SPLP) and acid-neutralization potential of this waste material. SPLP measures the concentration of elements that would dissolve when the waste is exposed in an acid. Acid-neutralization potential measures the likelihood of acid being generated by the material upon its exposure to water. Acid-neutralization potential above +20 is not considered likely to generate acid-mine drainage. The complete lab results are attached: Non-Shot Material is the sample of material from Buckskin before it is run through the sorter; Sorted Material is the “waste stream” of material at the sorter output that will be used or placed onsite.

SPLP (mg/L) (Non-shot, than Sorted)								Acid Neutralization Potential (tons CaCO <sub>3</sub> /kton)
Lead	Zinc	Copper	Cadmium	Manganese	Mercury	Silver	Vanadium	
0.01	0.02	<0.01	<0.01	0.48	<0.01	<0.01	<0.01	39.3
<0.01	0.05	<0.01	<0.01	0.26	<0.01	<0.01	<0.01	110.1

The lab results show that this waste material is inert and will not be a source of acid-mine drainage or heavy metals. While some metals do show as leachable in the Sorted Material SPLP results (manganese, for example), the very high neutralization potential means that the material is highly unlikely to generate acidic enough conditions to leach out the metals.

The material will be placed in permanent storage on-site according to the current mining and reclamation plan; no revisions to the permit are needed. Please see the approved mining and reclamation plans for the details of this waste placement.

Please feel free to contact my office with any further questions on this report.

Regards,



Ben Langenfeld, P.E.  
Lewicki & Associates, PLLC  
(720) 842-5321, ex. 1  
[benl@lewicki.biz](mailto:benl@lewicki.biz)

# Attachments

Lab results



## Analysis Report

June 26, 2024

Page 1 of 3

MW Sorter LLC  
9233 Park Meadows Drive  
Suite 108  
Lone Tree, CO 80124  
USA

**Client Sample ID:** Sorted Material  
**Date Received:** 06/14/2024  
**Matrix:** Unknown

**Date Sampled :** 06/14/2024  
**Project Name/# :** London Mine  
**Sample Taken By :** E.L.

**SGS Minerals Sample ID: 072-137412-001**

### Tests

Cyanide, Total  
Sulfide, S2-

### Result Unit

<0.1 mg/kg  
0.95 %

### Method

SW9013A  
Leco CS744

SGS North America Inc.

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**SGS Minerals Sample ID: 072-137412-001**

<u>Tests</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Trace Analysis Basis	Dry		ASTM D 6357 mod
Antimony	<1	ug/g	ASTM D 6357 mod
Barium	238	ug/g	ASTM D 6357 mod
Beryllium	1.4	ug/g	ASTM D 6357 mod
Cadmium	1.4	ug/g	ASTM D 6357 mod
Cobalt	19	ug/g	ASTM D 6357 mod
Chromium	17	ug/g	ASTM D 6357 mod
Copper	41	ug/g	ASTM D 6357 mod
Manganese	2175	ug/g	ASTM D 6357 mod
Nickel	4	ug/g	ASTM D 6357 mod
Lead	121	ug/g	ASTM D 6357 mod
Silver	2.4	ug/g	ASTM D 6357 mod
Thallium	<1	ug/g	ASTM D 6357 mod
Vanadium	23	ug/g	ASTM D 6357 mod
Zinc	253	ug/g	ASTM D 6357 mod
Arsenic	3.0	ug/g	ASTM D 6357 mod
Traces Basis	Dry		ASTM D 8213 Mod
Selenium	<1	ug/g	ASTM D 8213 Mod
Mercury, Dry	0.34	ug/g	ASTM D 6722
Neutralization Potential	110.0	t/1000t	EPA 600/2-78-054 (Sobek)
Chromium, Hexavalent	<0.10	ug/g	SW7196A Mod.
Aluminum - SPLP	<0.01	mg/L	EPA 1312
AA Basis	Dry		ASTM D 6357 mod
Antimony - SPLP	0.03	mg/L	EPA 1312
Aluminum	2.87	%	ASTM D 6357 mod
Arsenic - SPLP	0.01	mg/L	EPA 1312
Barium - SPLP	0.02	mg/L	EPA 1312
Cadmium - SPLP	<0.01	mg/L	EPA 1312
Chromium - SPLP	<0.01	mg/L	EPA 1312
Copper - SPLP	<0.01	mg/L	EPA 1312
Calcium	2.76	%	ASTM D 6357 mod

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**Matrix:** Unknown

**Date Sampled :** 06/14/2024  
**Project Name/# :** London Mine  
**Sample Taken By :** E.L.

### SGS Minerals Sample ID: 072-137412-001

<u>Tests</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Lead - SPLP	<0.01	mg/L	EPA 1312
Manganese - SPLP	0.26	mg/L	EPA 1312
Mercury - SPLP	<0.01	mg/L	EPA 1312
Molybdenum - SPLP	<0.01	mg/L	EPA 1312
Selenium - SPLP	<0.01	mg/L	EPA 1312
Zinc - SPLP	0.05	mg/L	EPA 1312
Vanadium - SPLP	<0.01	mg/L	EPA 1312
Beryllium - SPLP	<0.01	mg/L	EPA 1312
Calcium - SPLP	221.31	mg/L	EPA 1312
Magnesium	1.32	%	ASTM D 6357 mod
Cobalt - SPLP	<0.01	mg/L	EPA 1312
Magnesium - SPLP	22.65	mg/L	EPA 1312
Potassium - SPLP	18.12	mg/L	EPA 1312
Silver - SPLP	<0.01	mg/L	EPA 1312
Thallium - SPLP	<0.01	mg/L	EPA 1312
Sodium - SPLP	4.67	mg/L	EPA 1312
Potassium	1.62	%	ASTM D 6357 mod
Sodium	0.43	%	ASTM D 6357 mod

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**Matrix:** Unknown

**Date Sampled :** 06/14/2024  
**Project Name/# :** London Mine  
**Sample Taken By :** E.L.

**SGS Minerals Sample ID: 072-137412-002**

### Tests

Cyanide, Total  
Sulfide, S2-

### Result Unit

<0.1 mg/kg  
0.50 %

### Method

SW9013A  
Leco CS744

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**Sample Taken By :** E.L.

**SGS Minerals Sample ID: 072-137412-002**

<u>Tests</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Trace Analysis Basis	Dry		ASTM D 6357 mod
Antimony	2	ug/g	ASTM D 6357 mod
Barium	692	ug/g	ASTM D 6357 mod
Beryllium	1.9	ug/g	ASTM D 6357 mod
Cadmium	11.2	ug/g	ASTM D 6357 mod
Cobalt	13	ug/g	ASTM D 6357 mod
Chromium	33	ug/g	ASTM D 6357 mod
Copper	133	ug/g	ASTM D 6357 mod
Manganese	754	ug/g	ASTM D 6357 mod
Nickel	14	ug/g	ASTM D 6357 mod
Lead	885	ug/g	ASTM D 6357 mod
Silver	3.1	ug/g	ASTM D 6357 mod
Thallium	<1	ug/g	ASTM D 6357 mod
Vanadium	39	ug/g	ASTM D 6357 mod
Zinc	2309	ug/g	ASTM D 6357 mod
Arsenic	58	ug/g	ASTM D 6357 mod
Traces Basis	Dry		ASTM D 8213 Mod
Selenium	<1	ug/g	ASTM D 8213 Mod
Mercury, Dry	0.18	ug/g	ASTM D 6722
Neutralization Potential	39.3	t/1000t	EPA 600/2-78-054 (Sobek)
Chromium, Hexavalent	<0.10	ug/g	SW7196A Mod.
Aluminum - SPLP	<0.01	mg/L	EPA 1312
AA Basis	Dry		ASTM D 6357 mod
Antimony - SPLP	0.04	mg/L	EPA 1312
Aluminum	2.42	%	ASTM D 6357 mod
Arsenic - SPLP	0.02	mg/L	EPA 1312
Barium - SPLP	0.02	mg/L	EPA 1312
Cadmium - SPLP	<0.01	mg/L	EPA 1312
Chromium - SPLP	<0.01	mg/L	EPA 1312
Copper - SPLP	<0.01	mg/L	EPA 1312
Calcium	0.93	%	ASTM D 6357 mod

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### SGS Minerals Sample ID: 072-137412-002

<u>Tests</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Lead - SPLP	0.01	mg/L	EPA 1312
Manganese - SPLP	0.48	mg/L	EPA 1312
Mercury - SPLP	<0.01	mg/L	EPA 1312
Molybdenum - SPLP	<0.01	mg/L	EPA 1312
Selenium - SPLP	0.02	mg/L	EPA 1312
Zinc - SPLP	0.02	mg/L	EPA 1312
Vanadium - SPLP	<0.01	mg/L	EPA 1312
Beryllium - SPLP	<0.01	mg/L	EPA 1312
Calcium - SPLP	71.44	mg/L	EPA 1312
Magnesium	0.67	%	ASTM D 6357 mod
Cobalt - SPLP	<0.01	mg/L	EPA 1312
Magnesium - SPLP	13.45	mg/L	EPA 1312
Potassium - SPLP	15.29	mg/L	EPA 1312
Silver - SPLP	<0.01	mg/L	EPA 1312
Thallium - SPLP	<0.01	mg/L	EPA 1312
Sodium - SPLP	3.06	mg/L	EPA 1312
Potassium	1.29	%	ASTM D 6357 mod
Sodium	0.25	%	ASTM D 6357 mod

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**Sample Taken By :** E.L.

**SGS Minerals Sample ID: 072-137412-001-01**

**Tests**

Cyanide, Total  
Chromium, Hexavalent

**Result Unit**

<0.01 mg/L  
<0.005 mg/L

**Method**

SW9013A  
SW7196A Mod.

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**SGS Minerals Sample ID: 072-137412-002-01**

**Tests**

Cyanide, Total  
Chromium, Hexavalent

**Result Unit**

<0.01 mg/L  
<0.005 mg/L

**Method**

SW9013A  
SW7196A Mod.

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