

Lam, Alvin (DEQ)

From: Nutini, Jennifer (EAGLE) <Jennifer.Nutini@lundinmining.com>
Sent: Wednesday, October 08, 2014 3:41 PM
To: Lam, Alvin (DEQ)
Cc: Casey, Steve (DEQ); Mariuzza, Kristen (EAGLE); Humphrey, Melanie (DEQ); Conroy, Randy (DEQ); Schmitt, Glen (DEQ)
Subject: RE: Humboldt Area Hardness Data
Attachments: 1409174 FINAL Sep 24 14 0911.pdf; 1405382 FINAL Jun 10 14 1049.pdf; 1407285 FINAL Jul 31 14 1048.pdf; Water Hardness Results 100913.pdf; Humboldt WWTP Pipeline Plan-Profile (REV - 1).pdf; Outfall 002 Hardness Locations.png; Pages from Humboldt Mill 2014 SW & Sediment Monitoring Plan.pdf; Total Hardness_090514.pdf; Total Hardness_091714.pdf; Total Hardness_093014.pdf; Total Hardness_100214.pdf; Total Hardness_100114.pdf

Mr. Lam,

Steve Casey has asked that I reply directly to you with information concerning his questions below.

I wanted to inform you that although we originally applied for a direct discharge (Outfall 002) to the Escanaba River, we will not be able to construct a discharge point at the river bank due to extensive lead time in permitting which would not meet the timeframe to begin using the discharge point before next year's construction season. Instead, we designed a different discharge location for Outfall 002 which outlets along a wetland proximal to the Escanaba River. I have attached a plan/profile for the pipeline which shows the discharge location.

For your consideration in developing the permit limits, I have also attached hardness data for the Outfall 002 wetland, Outfall 001 wetland, and for effluent water from our water treatment plant which services these outfalls. Eagle also collects hardness data from surface water samples of the Middle Branch of the Escanaba River under the requirements of Part 632. Attached is a map showing the locations of MER-001 (upstream of Outfall 002), MER-002 (downstream of Outfall 002) and MER-003 (downstream of Outfall 002 and additionally downstream of the eventual discharge location of water that leaves Outfall 001). I edited the drawing to show the most likely area where water which migrates from Outfall 001 converges on the Escanaba River.

Here is a brief tabulation of hardness data discussed above:

Total Hardness – WTP Effluent

9/30/14 = 203 mg/L

10/1/14 = 211 mg/L

10/2/14 = 210 mg/L

Total Hardness – Outfall 001 Wetland EE

9/27/13 – 240 mg/L

Total Hardness – Outfall 002 Wetland Areas

9/5/14 – 60 mg/L

9/17/14 - 86 mg/L, 29 mg/L

Total Hardness – Middle Branch Escanaba River (all values reported in mg/L)

Location	5/21/14	7/16/14	9/9/14
MER-001	22	32	40
MER-002	22	38	48
MER-003	24	39	54

Please let me know if you need any additional data or information regarding our Outfall 002 revision.

Thank you,

Jen

Jennifer Nutini, P.E.
Environmental Engineer
Eagle Mine
4547 County Road 601
Champion, MI 49814, US

Direct: (906) 339-7029
Mobile: (906) 204-9867
Fax: (906) 339-7005
jennifer.nutini@lundinmining.com <http://www.eaglemine.com>

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From: Mariuzza, Kristen (EAGLE)
Sent: Monday, September 29, 2014 12:08 PM
To: Nutini, Jennifer (EAGLE)
Subject: Fwd: Humboldt Area Hardness Data

From: "Casey, Steve (DEQ)" <CASEYS@michigan.gov>
Date: September 22, 2014 at 4:05:45 PM EDT
To: "kristen.mariuzza@lundinmining.com" <kristen.mariuzza@lundinmining.com>, "Humphrey, Melanie (DEQ)" <HUMPHREYM@michigan.gov>
Cc: "Conroy, Randy (DEQ)" <CONROYR@michigan.gov>, "Schmitt, Glen (DEQ)" <SCHMITTG1@michigan.gov>
Subject: Humboldt Area Hardness Data

We are finalizing the draft effluent limits for the Humboldt Mill discharge to the Escanaba River and Humboldt marsh. Glen has reviewed the data from the Part 632 application and Section 308 request from EPA. In order to ensure that we are using all of the data available, we're wondering:

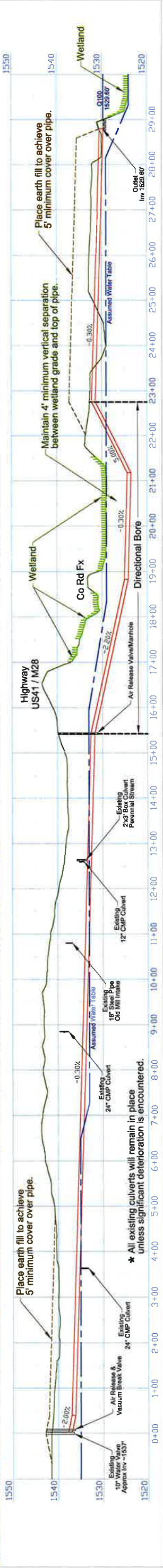
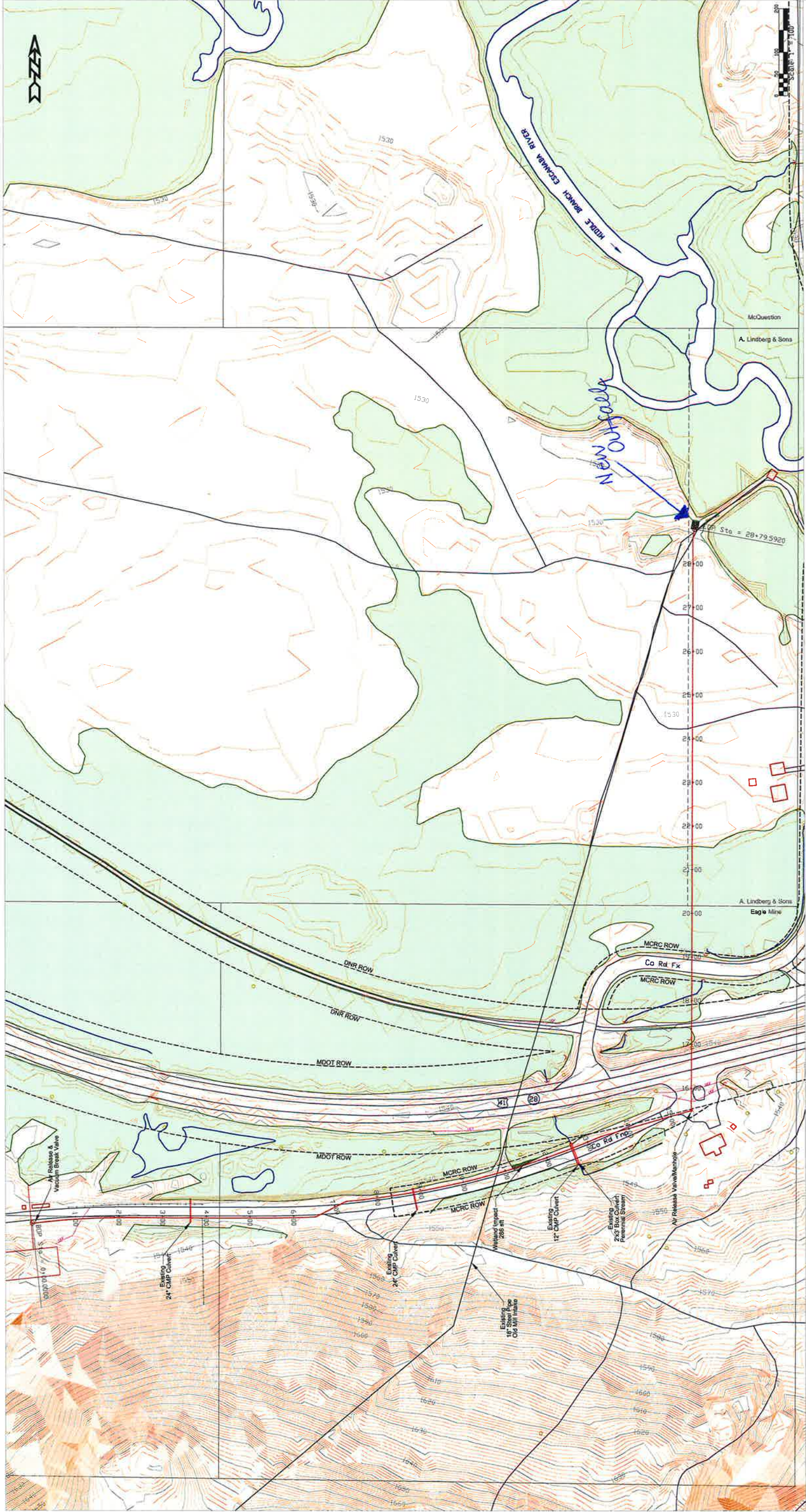
- 1) Does Eagle have any hardness data collected in the past 5 years from the wetland?
- 2) Does the Eagle have any hardness data collected in the past 5 years from the Outfall 001 collected as part of the Section 308 requirements?
- 3) Does the Eagle have any hardness data collected in the past 5 years from the Middle Branch Escanaba River upstream of Outfall 002 and where the wetland from Outfall 001 would drain into the river?

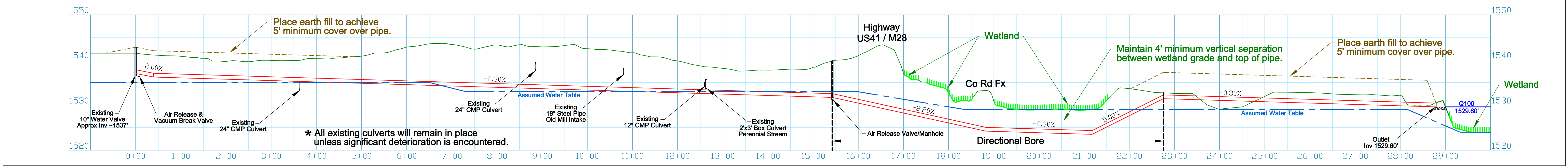
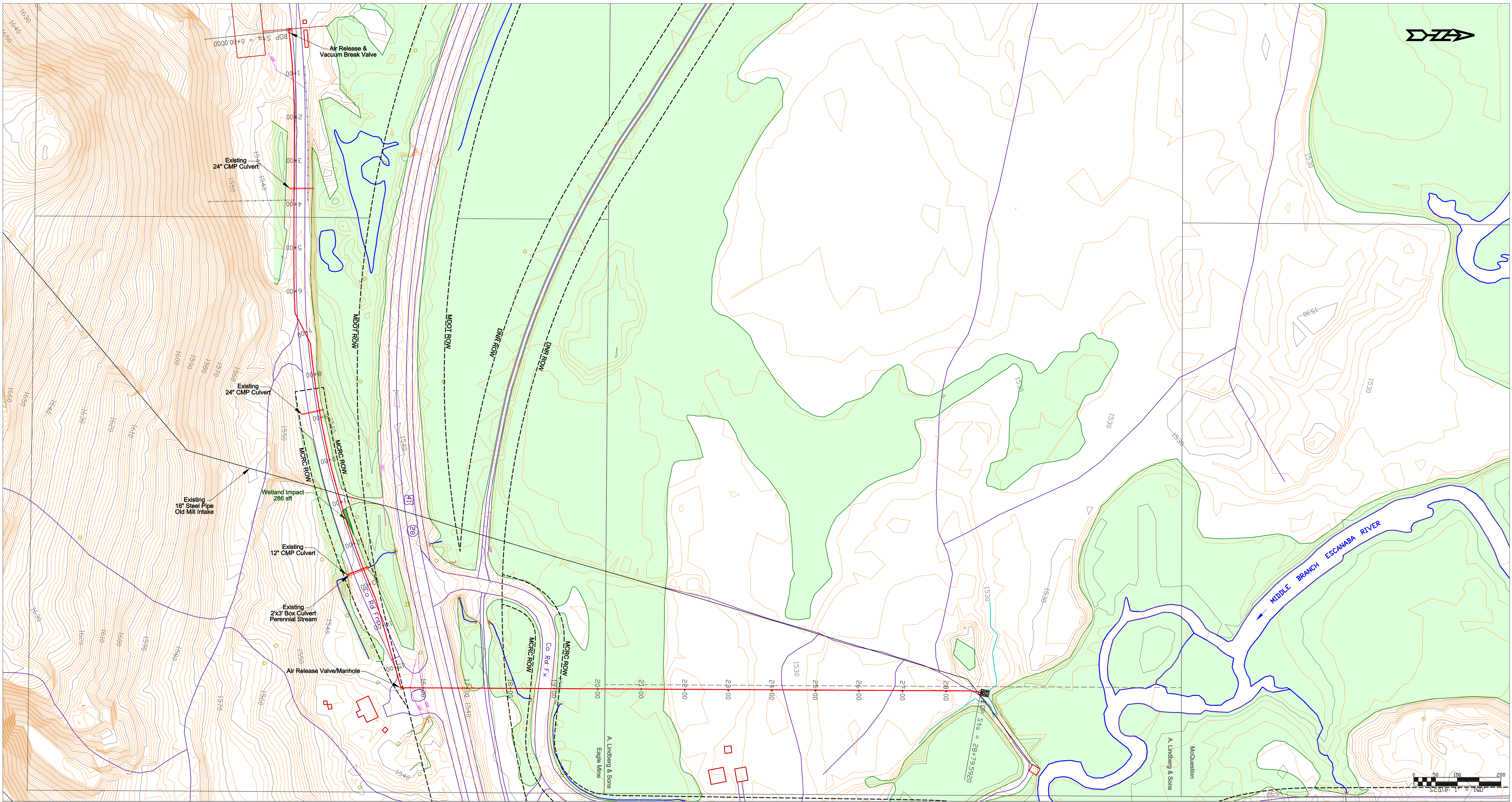
If you have any question about what data we've already seen, please contact Glen Schmitt at SCHMITTG1@michigan.gov or 517 284-5599.

Thanks

Steve Casey
UP District Supervisor
Water Resources Division

Department of Environmental Quality
~~906.346-8535~~
New Phone Number Starting November 3
906.235-5771





OWNER Eagle Mine 4547 County Road 601 Champion, MI 49814 (906) 339-7000	CONSULTANT A. Lindberg & Sons, Inc. 599 Washington St. Ishpeming, MI 49849 (906) 486-4459	DESCRIPTION Humboldt Mill WWTP Pipeline Discharge Pipe Plan/Profile	LOCATION Section 2, T47N-R29W Marquette County, Michigan	DRAWN BY W.E.N. DATE 08/29/2014	APPROVED BY PROJ. NO.	REVISION REV - 1 (9/12/14) SHEET NO. 1
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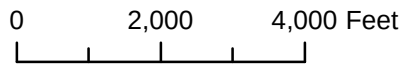




**HUMBOLDT MILL
PROPOSED SURFACE WATER AND
SEDIMENT MONITORING LOCATIONS**

- Legend**
- Reference Monitoring Station
 - ▲ Proposed Surface Water Monitoring Location
 - ▲ Proposed Surface Water and Sediment Monitoring Location
 - Road
 - River
 - Watershed Boundary
 - ▭ Humboldt Mill Property

Reference:
Data provided by: Eagle Mine, ESRI, and North Jackson Company
Projection & Datum: NAD 1927 UTM Zone 16N
Aerial Photo: 2010



1:32,000



North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure 1

October 09, 2013

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T13J020
Client Project 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,



Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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phone 231.773.5998
toll-free 800.733.5998
fax 231.773.6537

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673
info@trace-labs.com
www.trace-labs.com

SAMPLE SUMMARY

Trace Project ID: T13J020
Client Project ID: 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13J020-01	EM-HMP-WetEE	Aqueous	Client	09/27/13 11:15	10/02/13 08:10

CERTIFICATE OF ANALYSIS

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Trace Project ID: T13J020

Client Project ID: 60305471

Trace ID: T13J020-01

Date Collected: 09/27/13 11:15

Matrix: Aqueous

Sample ID: EM-HMP-WetEE

Date Received: 10/02/13 08:10

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: SM 2340B

Batch: [CALC]

Hardness as CaCO ₃	240 mg/L	6.6	1	10/04/13		10/07/13	mes	N	
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[illegible]



the science of compliance

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T13J020

SAMPLE LOG IN CHECKLIST

Trace ID #: <u>AECOM</u>	Date: <u>10/2/13</u>	Package Description: <u>COOLER</u>
Client Name: <u>AECOM</u>	Time: <u>8:10</u>	Logged in by: <u>JL</u>

Cooler Receipt

Cooler/samples delivered by:	Trace courier ☐	Hand delivered ☐	Commercial courier ☒	URS ☒	FED EX ☒	US Mail ☐
Name of delivery person: _____						
Tracking Number: ☐ Not Applicable	Tracking #: <u>1Z A31 2E6 15 93 43 3297</u>					
COC Seals present and intact on cooler?	No ☐	Yes ☐	☒ Not Applicable			
Custody seals signed by Client?	No ☐	Yes ☐	Client custody seal # (if applicable): _____			

Coolant and Temperature

Type of Coolant Used		Cooler Temperature	
Slurry w/ crushed, cubed, or chip ice? ☐		Correction Factor:	IR Thermometer <u>-0.2</u> °C
Multiple bags of ice around samples? ☒			Digital Stick Thermometer <u>0.0</u> °C
Ice Packs/ Blue Ice: ☐		Temperature Blank: <u>N/A</u>	°C (Use Digital Stick Thermometer)
No Coolant Present: ☐		Range of 3 samples: <u>2.2</u>	°C (Use IR Thermometer)
		Melt Water: <u>0.7</u>	°C (IR or Stick Therm. - circle one)
		Ice still present upon receipt: ☒ Yes ☐ No	

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	☒	☐	☐	
Each sample point is in a sealed plastic bag?	☐	☒	☐	
Labels filled out completely?	☒	☐	☐	
All bottle labels agree with Chain of Custody (COC)?	☒	☐	☐	
Sufficient sample to run tests requested?	☒	☐	☐	
pH checked and samples at correct pH?	☒	☐	☐	See Below*
Correct preservative added to samples?	☐	☐	☒	
Air bubbles absent from VOAs?	☐	☐	☒	
COC filled out properly and signed by client?	☒	☐	☐	
COC signed in by TRACE sample custodian?	☒	☐	☐	
Was project manager called and samples discussed?	☐	☐	☐	

Notes:

*EMD pH Test Strips Used:

☒ pH 0-2.5 Lot: HC390427 ☐ pH 11.0-13.0 Lot: HC949254
☐ Other: _____

Form 70-A.10
Effective 8/26/13

TRACE Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

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June 10, 2014

Golder Associates, Inc. - MI
Attn: Christina Stacey
15851 S. US 27, Suite 50
Lansing, MI 48906

Project: Eagle Mine - Humboldt Mill SW

Dear Christina Stacey,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1405382	05/22/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)**Total Metals by EPA 6000/7000 Series Methods**

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: USEPA-6020A

4E28037-CRL2

Selenium

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 1405382-01 WBR-001

Arsenic

1405382-01 WBR-001

Boron

1405382-01 WBR-001

Copper

1405382-01 WBR-001

Lead

1405382-01 WBR-001

Molybdenum

1405382-01 WBR-001

Vanadium

Narrative: This analyte was not present in this sample at a concentration greater than 50 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6010C

Sample/Analyte: 1405382-01 WBR-001

Aluminum

1405382-01 WBR-001

Magnesium

1405382-01 WBR-001

Potassium

PROJECT TECHNICAL NARRATIVE(s)**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: SM 4500-NH3 G-2011

4F02065-CRL1

Nitrogen, Ammonia

Analysis: SM 4500-NO3 F-2011

4F01007-CRL1

Nitrogen, Nitrate

Narrative: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control limit.

Analysis: SM 4500-NO3 F-2011

Sample/Analyte: 1405382-05 HMP-009

Nitrogen, Nitrite

Narrative: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: SM 2340 C-2011

Sample/Analyte: 1405382-01 WBR-001

Hardness as CaCO₃

1405382-06 HMWQ-004

Hardness as CaCO₃

STATEMENT OF DATA QUALIFICATIONS**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Qualification: The laboratory duplicate RPD for this sample exceeded the control limit.

Analysis: SM 2540 D-2011

Sample/Analyte: 1405382-04 Duplicate Residue, Suspended

Qualification: The laboratory duplicate RPD for this sample exceeded the control limit. Since the initial and/or the duplicate sample result was less than 5 times the reporting limit, the initial reported sample result is not qualified.

Analysis: SM 4500-S2 D-2011

Sample/Analyte: 1405382-01 WBR-001 Sulfide, Total

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1405382-01**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 10:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	10.1	2.50	ng/L	5	USEPA-1631E	05/29/14 14:23	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1405382-01**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 10:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	190	50	ug/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Arsenic	1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Barium	7.7	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:28	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Calcium	3.5	0.50	mg/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Iron	1000	10	ug/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Magnesium	1.3	0.50	mg/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Manganese	90	5.0	ug/L	5	USEPA-6020A	05/28/14 15:26	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Potassium	0.51	0.50	mg/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Sodium	8.0	0.50	mg/L	1	USEPA-6010C	05/27/14 14:06	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 12:52	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1405382-01**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 10:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	3.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	18	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 11:38	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO₃	18	4	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:31	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 16:06	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 17:53	HLB	1405201
Residue, Dissolved @ 180° C	100	100	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:30	LMA	1405003
*Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:37	WAH	1404920

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-002**
Lab Sample ID: **1405382-02**
Matrix: Water

Work Order: **1405382**
Description: Laboratory Services
Sampled: 5/21/14 11:30
Sampled By: Christina Stacey
Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	3.33	0.500	ng/L	1	USEPA-1631E	05/29/14 14:05	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-002**
 Lab Sample ID: **1405382-02**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	82	50	ug/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Arsenic	1.8	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Barium	7.9	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:32	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Calcium	6.2	0.50	mg/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Copper	1.3	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Iron	3900	10	ug/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Magnesium	2.8	0.50	mg/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Manganese	200	5.0	ug/L	5	USEPA-6020A	05/28/14 15:37	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Nickel	1.6	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Potassium	1.5	0.50	mg/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Sodium	18	0.50	mg/L	1	USEPA-6010C	05/27/14 14:29	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:04	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-002**
 Lab Sample ID: **1405382-02**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	3.9	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	37	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 11:38	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO₃	30	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:31	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 16:06	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 17:54	HLB	1405201
Residue, Dissolved @ 180° C	116	100	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	5.2	5.0	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	1.1	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:30	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:40	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-003**
Lab Sample ID: **1405382-03**
Matrix: Water

Work Order: **1405382**
Description: Laboratory Services
Sampled: 5/21/14 11:00
Sampled By: Christina Stacey
Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	2.56	0.500	ng/L	1	USEPA-1631E	05/29/14 14:19	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1405382-03**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:00
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Arsenic	1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Barium	5.9	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:33	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Calcium	6.1	0.50	mg/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Iron	2300	10	ug/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Magnesium	2.8	0.50	mg/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Manganese	30	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Nickel	1.1	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Potassium	1.3	0.50	mg/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Sodium	14	0.50	mg/L	1	USEPA-6010C	05/27/14 14:32	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860
Zinc	12	10	ug/L	1	USEPA-6020A	05/28/14 13:07	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1405382-03**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:00
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	14	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	29	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 11:38	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO₃	27	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:31	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 16:07	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 17:54	HLB	1405201
Residue, Dissolved @ 180° C	104	100	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:30	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:42	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **Duplicate**
 Lab Sample ID: **1405382-04**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	3.24	0.500	ng/L	1	USEPA-1631E	05/29/14 14:28	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **Duplicate**
 Lab Sample ID: **1405382-04**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	76	50	ug/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Arsenic	1.9	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Barium	8.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:36	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Calcium	5.8	0.50	mg/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Copper	1.2	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Iron	3800	10	ug/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Magnesium	2.5	0.50	mg/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Manganese	230	5.0	ug/L	5	USEPA-6020A	05/28/14 15:39	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Nickel	1.7	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Potassium	1.3	0.50	mg/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Sodium	16	0.50	mg/L	1	USEPA-6010C	05/27/14 14:36	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:14	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **Duplicate**
 Lab Sample ID: **1405382-04**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 11:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	12	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	36	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 11:43	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO₃	28	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 16:08	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 17:55	HLB	1405201
Residue, Dissolved @ 180° C	124	100	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
*Residue, Suspended	7.0	6.2	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	1.2	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:30	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:51	WAH	1404920

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **HMP-009**
Lab Sample ID: **1405382-05**
Matrix: Water

Work Order: **1405382**
Description: Laboratory Services
Sampled: 5/21/14 12:45
Sampled By: Christina Stacey
Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	0.568	0.500	ng/L	1	USEPA-1631E	05/29/14 14:32	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMP-009**
 Lab Sample ID: **1405382-05**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 12:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Antimony	4.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Barium	7.9	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Boron	53	10	ug/L	1	USEPA-6020A	05/29/14 10:37	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Calcium	45	0.50	mg/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Cobalt	2.6	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Copper	2.3	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Iron	350	10	ug/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Magnesium	22	0.50	mg/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Manganese	200	5.0	ug/L	5	USEPA-6020A	05/28/14 15:46	MSM	1404860
Molybdenum	8.4	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Nickel	12	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Potassium	6.7	0.50	mg/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Sodium	11	0.50	mg/L	1	USEPA-6010C	05/27/14 14:39	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:17	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMP-009**
 Lab Sample ID: **1405382-05**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 12:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	91	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	12	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 13:12	LMA	1405011
Fluoride	0.12	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO3	192	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH3 G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	05/22/14 16:08	HLB	1405200
Nitrogen, Nitrate	1.2	0.050	mg/L	5	SM 4500-NO3 F-2011	05/22/14 18:38	HLB	1405201
Residue, Dissolved @ 180° C	288	50.0	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	120	5.0	mg/L	5	ASTM D516-90 (07)	05/27/14 11:14	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S2 D-2011	05/22/14 14:49	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1405382-06**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 12:10
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	30.5	2.50	ng/L	5	USEPA-1631E	05/29/14 14:46	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1405382-06**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 12:10
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	200	50	ug/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Arsenic	1.3	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Barium	10	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Boron	10	10	ug/L	1	USEPA-6020A	05/29/14 10:38	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Calcium	4.9	0.50	mg/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Chromium	1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Copper	9.6	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Iron	5200	10	ug/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Lead	1.5	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Magnesium	1.6	0.50	mg/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Manganese	250	5.0	ug/L	5	USEPA-6020A	05/28/14 15:48	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Nickel	2.2	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Potassium	1.8	0.50	mg/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Sodium	1.3	0.50	mg/L	1	USEPA-6010C	05/27/14 14:42	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Vanadium	1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860
Zinc	31	10	ug/L	1	USEPA-6020A	05/28/14 13:19	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1405382-06**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 12:10
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	11	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	4.9	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 13:12	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO₃	20	10	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 16:10	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 18:02	HLB	1405201
Residue, Dissolved @ 180° C	130	125	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	11.0	5.0	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:33	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:50	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **Field Blank**
Lab Sample ID: **1405382-07**
Matrix: Water

Work Order: **1405382**
Description: Laboratory Services
Sampled: 5/21/14 13:05
Sampled By: Christina Stacey
Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	<0.500	0.500	ng/L	1	USEPA-1631E	05/29/14 14:51	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **Field Blank**
 Lab Sample ID: **1405382-07**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 13:05
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Barium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:38	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Calcium	<0.50	0.50	mg/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Iron	<10	10	ug/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Magnesium	<0.50	0.50	mg/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Manganese	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Potassium	<0.50	0.50	mg/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Sodium	<0.50	0.50	mg/L	1	USEPA-6010C	05/27/14 14:45	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:22	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **Field Blank**
 Lab Sample ID: **1405382-07**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 13:05
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	<1.0	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 13:12	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO ₃	<2	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 16:11	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 18:02	HLB	1405201
Residue, Dissolved @ 180° C	<50.0	50.0	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:33	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:53	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1405382-08**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 9:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	6.28	0.500	ng/L	1	USEPA-1631E	05/29/14 14:55	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1405382-08**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 9:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	87	50	ug/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Barium	6.4	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:39	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Calcium	5.1	0.50	mg/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Iron	740	10	ug/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Magnesium	1.5	0.50	mg/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Manganese	37	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Potassium	0.59	0.50	mg/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Sodium	3.9	0.50	mg/L	1	USEPA-6010C	05/27/14 14:49	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:24	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1405382-08**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 9:30
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	11	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	7.2	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 13:12	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO3	22	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH3 G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	05/22/14 16:59	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	05/22/14 18:10	HLB	1405201
Residue, Dissolved @ 180° C	52.0	50.0	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:33	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S2 D-2011	05/22/14 14:43	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1405382-09**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 8:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	5.65	0.500	ng/L	1	USEPA-1631E	05/29/14 15:00	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1405382-09**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 8:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	110	50	ug/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Barium	6.7	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:40	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Calcium	5.2	0.50	mg/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Iron	820	10	ug/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Magnesium	1.5	0.50	mg/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Manganese	36	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Potassium	0.58	0.50	mg/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Sodium	3.2	0.50	mg/L	1	USEPA-6010C	05/27/14 14:59	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:27	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1405382-09**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 8:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	12	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	5.0	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 13:12	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO₃	22	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 17:00	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	05/22/14 18:11	HLB	1405201
Residue, Dissolved @ 180° C	58.0	50.0	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:33	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	05/22/14 14:45	WAH	1404920

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1405382-10**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 7:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	5.80	0.500	ng/L	1	USEPA-1631E	05/29/14 15:05	KLV	1405056

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1405382-10**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 7:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	83	50	ug/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Barium	6.9	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Boron	<10	10	ug/L	1	USEPA-6020A	05/29/14 10:41	MSM	1404860
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Calcium	5.2	0.50	mg/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Iron	670	10	ug/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Magnesium	1.6	0.50	mg/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Manganese	32	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Potassium	0.59	0.50	mg/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Sodium	3.5	0.50	mg/L	1	USEPA-6010C	05/27/14 15:02	CKD	1404857
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860
Zinc	<10	10	ug/L	1	USEPA-6020A	05/28/14 13:29	MSM	1404860

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1405382-10**
 Matrix: Water

Work Order: **1405382**
 Description: Laboratory Services
 Sampled: 5/21/14 7:45
 Sampled By: Christina Stacey
 Received: 5/22/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	13	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404932
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	05/27/14 12:23	SKA	1404934
Chloride	5.8	1.0	mg/L	1	SM 4500-Cl E-2011	05/28/14 13:12	LMA	1405011
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	06/03/14 13:30	SLL	1405313
Hardness as CaCO3	24	2	mg/L	1	SM 2340 C-2011	05/30/14 10:00	KAR	1405101
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH3 G-2011	05/29/14 13:40	CAC	1405178
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	05/22/14 17:01	HLB	1405200
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	05/22/14 18:11	HLB	1405201
Residue, Dissolved @ 180° C	<50.0	50.0	mg/L	1	SM 2540 C-2011	05/23/14 14:00	WAH	1404875
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	05/23/14 10:30	WAH	1404880
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	05/27/14 11:36	LMA	1405003
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S2 D-2011	05/22/14 14:48	WAH	1404920

QUALITY CONTROL REPORT

Total Metals by EPA 1600 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Mercury/USEPA-1631E

QC Batch: 1405056 (1631E Digestion)

Analyzed: 05/29/2014 By: KLV

Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Laboratory Control Sample		4.00	4.205	ng/L	105	77-123			0.500
1405382-05 [HMP-009]									
Matrix Spike	0.5683	4.00	5.551	ng/L	125	71-125			0.500
Matrix Spike Duplicate	0.5683	4.00	5.369	ng/L	120	71-125	3	24	0.500

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Aluminum/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<50	ug/L					50
Laboratory Control Sample		2000	1990	ug/L	99	80-120			50
1405382-01 [WBR-001]									
Matrix Spike	190	2000	2190	ug/L	100	75-125			50
Matrix Spike Duplicate	190	2000	2290	ug/L	105	75-125	4	20	50

Analyte: Antimony/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	53.1	ug/L	106	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.183	50.0	50.6	ug/L	101	75-125			1.0
Matrix Spike Duplicate	0.183	50.0	55.2	ug/L	110	75-125	9	20	1.0

Analyte: Arsenic/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	47.1	ug/L	94	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	1.01	50.0	48.7	ug/L	95	75-125			1.0
Matrix Spike Duplicate	1.01	50.0	47.4	ug/L	93	75-125	3	20	1.0

Analyte: Barium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	50.7	ug/L	101	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	7.73	50.0	58.3	ug/L	101	75-125			1.0
Matrix Spike Duplicate	7.73	50.0	57.2	ug/L	99	75-125	2	20	1.0

Analyte: Beryllium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Beryllium/USEPA-6020A (Continued)

QC Batch: 1404860 (Continued) (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Laboratory Control Sample		50.0	47.6	ug/L	95	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	<1.0	50.0	46.0	ug/L	92	75-125			1.0
Matrix Spike Duplicate	<1.0	50.0	46.0	ug/L	92	75-125	0.002	20	1.0

Analyte: Boron/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/29/2014 By: MSM

Method Blank			<10	ug/L					10
Laboratory Control Sample		50.0	43.8	ug/L	88	80-120			10
1405382-01 [WBR-001]									
Matrix Spike	4.79	50.0	46.7	ug/L	84	70-130			10
Matrix Spike Duplicate	4.79	50.0	44.8	ug/L	80	70-130	4	20	10

Analyte: Cadmium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<0.20	ug/L					0.20
Laboratory Control Sample		50.0	48.3	ug/L	97	80-120			0.20
1405382-01 [WBR-001]									
Matrix Spike	0.0446	50.0	47.9	ug/L	96	75-125			0.20
Matrix Spike Duplicate	0.0446	50.0	47.6	ug/L	95	75-125	0.7	20	0.20

Analyte: Calcium/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	20.0	mg/L	100	80-120			0.50
1405382-01 [WBR-001]									
Matrix Spike	3.45	20.0	23.3	mg/L	99	75-125			0.50
Matrix Spike Duplicate	3.45	20.0	24.3	mg/L	104	75-125	4	20	0.50

Analyte: Chromium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Chromium/USEPA-6020A (Continued)

QC Batch: 1404860 (Continued) (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Laboratory Control Sample		50.0	51.5	ug/L	103	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.474	50.0	51.7	ug/L	102	75-125			1.0
Matrix Spike Duplicate	0.474	50.0	50.3	ug/L	100	75-125	3	20	1.0

Analyte: Cobalt/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.5	ug/L	103	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.200	50.0	52.2	ug/L	104	75-125			1.0
Matrix Spike Duplicate	0.200	50.0	51.2	ug/L	102	75-125	2	20	1.0

Analyte: Copper/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	52.2	ug/L	104	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.863	50.0	53.2	ug/L	105	75-125			1.0
Matrix Spike Duplicate	0.863	50.0	51.1	ug/L	100	75-125	4	20	1.0

Analyte: Iron/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<10	ug/L					10
Laboratory Control Sample		400	418	ug/L	104	80-120			10
1405382-01 [WBR-001]									
Matrix Spike	1040	400	1410	ug/L	93	75-125			10
Matrix Spike Duplicate	1040	400	1500	ug/L	115	75-125	6	20	10

Analyte: Lead/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Lead/USEPA-6020A (Continued)

QC Batch: 1404860 (Continued) (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Laboratory Control Sample		50.0	52.6	ug/L	105	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.746	50.0	52.2	ug/L	103	75-125			1.0
Matrix Spike Duplicate	0.746	50.0	51.7	ug/L	102	75-125	1	20	1.0

Analyte: Lithium/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<8.0	ug/L					8.0
Laboratory Control Sample		400	411	ug/L	103	80-120			8.0
1405382-01 [WBR-001]									
Matrix Spike	<8.0	400	409	ug/L	102	75-125			8.0
Matrix Spike Duplicate	<8.0	400	425	ug/L	106	75-125	4	20	8.0

Analyte: Magnesium/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	20.6	mg/L	103	80-120			0.50
1405382-01 [WBR-001]									
Matrix Spike	1.32	20.0	21.7	mg/L	102	75-125			0.50
Matrix Spike Duplicate	1.32	20.0	22.7	mg/L	107	75-125	5	20	0.50

Analyte: Manganese/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.5	ug/L	103	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	90.0	50.0	143	ug/L	107	75-125			5.0
Matrix Spike Duplicate	90.0	50.0	140	ug/L	100	75-125	2	20	5.0

Analyte: Molybdenum/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Molybdenum/USEPA-6020A (Continued)

QC Batch: 1404860 (Continued) (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Laboratory Control Sample		50.0	52.0	ug/L	104	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.109	50.0	48.2	ug/L	96	75-125			1.0
Matrix Spike Duplicate	0.109	50.0	52.4	ug/L	105	75-125	8	20	1.0

Analyte: Nickel/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.2	ug/L	102	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.749	50.0	51.9	ug/L	102	75-125			1.0
Matrix Spike Duplicate	0.749	50.0	50.8	ug/L	100	75-125	2	20	1.0

Analyte: Potassium/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	20.3	mg/L	102	80-120			0.50
1405382-01 [WBR-001]									
Matrix Spike	0.514	20.0	20.8	mg/L	101	75-125			0.50
Matrix Spike Duplicate	0.514	20.0	21.7	mg/L	106	75-125	4	20	0.50

Analyte: Selenium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	44.6	ug/L	89	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	<1.0	50.0	44.0	ug/L	88	75-125			1.0
Matrix Spike Duplicate	<1.0	50.0	42.5	ug/L	85	75-125	3	20	1.0

Analyte: Silver/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<0.20	ug/L					0.20
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Silver/USEPA-6020A (Continued)

QC Batch: 1404860 (Continued) (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Laboratory Control Sample		50.0	48.5	ug/L	97	80-120			0.20
1405382-01 [WBR-001]									
Matrix Spike	<0.20	50.0	46.1	ug/L	92	75-125			0.20
Matrix Spike Duplicate	<0.20	50.0	44.9	ug/L	90	75-125	3	20	0.20

Analyte: Sodium/USEPA-6010C

QC Batch: 1404857 (3010A Digestion)

Analyzed: 05/27/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	20.6	mg/L	103	80-120			0.50
1405382-01 [WBR-001]									
Matrix Spike	8.02	20.0	28.4	mg/L	102	75-125			0.50
Matrix Spike Duplicate	8.02	20.0	29.7	mg/L	108	75-125	5	20	0.50

Analyte: Thallium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	52.3	ug/L	105	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.0344	50.0	51.5	ug/L	103	75-125			1.0
Matrix Spike Duplicate	0.0344	50.0	51.8	ug/L	103	75-125	0.5	20	1.0

Analyte: Vanadium/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.9	ug/L	104	80-120			1.0
1405382-01 [WBR-001]									
Matrix Spike	0.938	50.0	53.4	ug/L	105	75-125			1.0
Matrix Spike Duplicate	0.938	50.0	51.3	ug/L	101	75-125	4	20	1.0

Analyte: Zinc/USEPA-6020A

QC Batch: 1404860 (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Method Blank			<10	ug/L					10
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Zinc/USEPA-6020A (Continued)

QC Batch: 1404860 (Continued) (3020A Digestion)

Analyzed: 05/28/2014 By: MSM

Laboratory Control Sample		50.0	50.4	ug/L	101	80-120			10
1405382-01 [WBR-001]									
Matrix Spike	9.05	50.0	54.3	ug/L	91	75-125			10
Matrix Spike Duplicate	9.05	50.0	52.8	ug/L	87	75-125	3	20	10

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Alkalinity, Bicarbonate/SM 2320 B-2011

QC Batch: 1404932 (General Inorganic Prep)

Analyzed: 05/27/2014 By: SKA

Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		238	240	mg/L	101	74-123			2.0
1405382-06 [HMWQ-004]									
Matrix Spike	10.8	238	247	mg/L	99	78-117			2.0
Duplicate	10.8		11.3	mg/L			4	20	2.0

Analyte: Alkalinity, Carbonate/SM 2320 B-2011

QC Batch: 1404934 (General Inorganic Prep)

Analyzed: 05/27/2014 By: SKA

Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		378	375	mg/L	99	72-114			2.0
1405382-06 [HMWQ-004]									
Duplicate	<2.0		<2.0	mg/L				20	2.0

Analyte: Chloride/SM 4500-Cl E-2011

QC Batch: 1405011 (General Inorganic Prep)

Analyzed: 05/28/2014 By: LMA

Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		50.0	51.2	mg/L	102	90-106			1.0

Analyte: Fluoride/SM 4500-F C-2011

QC Batch: 1405313 (Method Specific Preparation)

Analyzed: 06/03/2014 By: SLL

Method Blank			<0.10	mg/L					0.10
Laboratory Control Sample		2.00	2.07	mg/L	104	90-110			0.10

Analyte: Hardness as CaCO₃/SM 2340 C-2011

QC Batch: 1405101 (Method Specific Preparation)

Analyzed: 05/30/2014 By: KAR

Method Blank			<2	mg/L					2
Laboratory Control Sample		86.3	87	mg/L	101	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2

Analyte: Nitrogen, Ammonia/SM 4500-NH₃ G-2011

QC Batch: 1405178 (General Inorganic Prep)

Analyzed: 05/29/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
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Continued on next page

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Nitrogen, Ammonia/SM 4500-NH3 G-2011 (Continued)

QC Batch: 1405178 (Continued) (General Inorganic Prep)

Analyzed: 05/29/2014 By: CAC

Laboratory Control Sample	0.500	0.539	mg/L	108	90-110			0.50
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Analyte: Nitrogen, Nitrate/SM 4500-NO3 F-2011

QC Batch: 1405201 (Method Specific Preparation)

Analyzed: 05/22/2014 By: HLB

Method Blank		<0.50	mg/L					0.50
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Laboratory Control Sample	0.500	0.541	mg/L	108	90-110			0.50
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1405382-05 [HMP-009]

Matrix Spike	1.24	2.50	3.73	mg/L	99	90-110		2.5
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Matrix Spike Duplicate	1.24	2.50	3.74	mg/L	100	90-110	0.3	20	2.5
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Analyte: Nitrogen, Nitrite/SM 4500-NO3 F-2011

QC Batch: 1405200 (Method Specific Preparation)

Analyzed: 05/22/2014 By: HLB

Method Blank		<0.50	mg/L					0.50
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Laboratory Control Sample	0.500	0.506	mg/L	101	90-110			0.50
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1405382-05 [HMP-009]

Matrix Spike	<0.50	0.500	0.568	mg/L	114	90-110		0.50
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Matrix Spike Duplicate	<0.50	0.500	0.513	mg/L	103	90-110	10	20	0.50
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Analyte: Residue, Dissolved @ 180° C/SM 2540 C-2011

QC Batch: 1404875 (General Inorganic Prep)

Analyzed: 05/23/2014 By: WAH

Method Blank		<50.0	mg/L					50.0
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Laboratory Control Sample	200	196	mg/L	98	85-115			50.0
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1405382-01 [WBR-001]

Duplicate	100	104	mg/L				4	5	100
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Analyte: Residue, Suspended/SM 2540 D-2011

QC Batch: 1404880 (General Inorganic Prep)

Analyzed: 05/23/2014 By: WAH

Method Blank		<3.3	mg/L					3.3
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Laboratory Control Sample	200	198	mg/L	99	88-104			24.8
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Continued on next page

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Residue, Suspended/SM 2540 D-2011 (Continued)

QC Batch: 1404880 (Continued) (General Inorganic Prep)

Analyzed: 05/23/2014 By: WAH

1405382-04 [Duplicate]

Duplicate	7.0		6.5	mg/L			7	5	6.2
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Analyte: Sulfate/ASTM D516-90 (07)

QC Batch: 1405003 (General Inorganic Prep)

Analyzed: 05/27/2014 By: LMA

Method Blank			<1.0	mg/L					1.0
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		10.0	9.23	mg/L	92	88-116			1.0
Laboratory Control Sample		20.0	19.6	mg/L	98	88-116			1.0

Analyte: Sulfide, Total/SM 4500-S2 D-2011

QC Batch: 1404920 (Method Specific Preparation)

Analyzed: 05/22/2014 By: WAH

Method Blank			<5.0	mg/L					5.0
Laboratory Control Sample		0.339	0.358	mg/L	106	80-120			5.0

1405382-01 [WBR-001]

Matrix Spike	0.0198	0.339	0.275	mg/L	75	55-119			5.0
Duplicate	0.0198		0.0130	mg/L			41	20	5.0

5560 Corporate Exchange Court SE, Grand Rapids, MI 49512
 Phone (616) 975-4500 Fax (616) 942-7463 www.trimatrixlabs.com

Analyses Requested

 Pg. 2 of

PRESERVATIVES

A NONE pH~7

 B HNO₃ pH<2

 C H₂SO₄ pH<2

D 1+1 HCl pH<2

E NaOH pH>12

F ZnAcNaOH pH>9

G MeOH

H Other (note below)

A	C	D	F	D	A	A
Alks, Cl, F, SO ₄ , NO ₃ , NO ₂	Ammonia	Total Metals (not filtered)	Sulfide	Dissolved metals (filtered)	LL Hg (filtered)	LL Hg (not filtered)
+ TDS						TSS
Container Type (corresponds to Container Packing List)						

For Lab Use Only	Client Name	Project Name
Cart	Golden Associates/Eagle Mine	Humboldt Mill SW
VOA Rack/Tray	Address	Client Project No. / P.O. No.
Receipt Log No.	220 W. Washington, Suite 240	1401484
Project Chemist	City, State Zip	Invoice To
Jennifer Rice	Marquette, MI 49855	☒ Client
Work Order No.	Phone: 906-273-2525 Fax 906-273-2528	☐ Other (comments)
1405382	Contact/Report To	
	Email christina_stacey@golder.com	Christina Stacey

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	C O M P	G R A B	Matrix	Number of Containers Submitted	Total	Sample Comments
			1 WBR-001-						SW	1		
			2 WBR-002						SW	1		
			3 WBR-003						SW	1		
			4 MER-001						SW	1		
			5 MER-002						SW	1		
			6 MER-003						SW	1		
			7 HMP-009						SW	1		
			8 HMMWQ-004						SW	1		
			9 DUPLICATE						SW	1		
			10 FIELD BLANK						SW	1		

Comments

 5/21/14 12:05
 5/21/14 12:10

 Sampled By (print)
 Christina Stacey

 How Shipped?
 Tracking No.

 Hand Carrier

 Sample's Signature


Company

Golder

1. Received By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished For Lab By	Date	Time


 5/22/14 08



Chain of Custody Record

COC No. **140528324**

For Lab Use Only

5560 Corporate Exchange Court SE, Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463 www.trimatrixlabs.com

Analyses Requested

Pg. ___ of ___

VOA Rack/Tray

Client Name

Project Name

Analyses Requested

← PRESERVATIVES

Receipt Log No.

Address

Client Project No. / P.O. No.

Ammonia

A NONE pH-7

Project Chemist

City, State Zip

Invoice To

Total Metals (not filtered)

B HNO₃ pH<2

Work Order No.

Marquette, MI 49855

☐ Client
☐ Other (comments)

Sulfide

C H₂SO₄ pH<2

405382

Phone: 906-273-2525 Fax 906-273-2528

Contact/Report To

Dissolved metals (filtered)

D 1+1 HCl pH<2

Schedule

Field Sample ID

Cooler ID

Sample Date

Sample Time

Container Type (corresponds to Container Packing List)

LL Hg (filtered)

E NaOH pH>12

Matrix Code

Sample Number

Sample Date

Sample Time

Matrix

LL Hg (not filtered)

F ZnAcNaOH pH>9

1

WBR-001

SW

1

G MeOH

2

WBR-002

SW

1

H Other (note below)

3

WBR-003

SW

1

4

MER-001

SW

1

5

MER-002

SW

1

6

MER-003

SW

1

7

HMP-009

SW

8

HMTVQ-004

SW

9

DUPLICATE

SW

10

FIELD-BLANK

SW

Comments

Sample Comments

Sampled By (print)

C. Stacey

How Shipped? Hand Carrier X

Tracking No.

1. Relinquished By

2. Received For Lab By

Company

Golden

1. Relinquished By

Date

Time

2. Received By

Date

Time

3. Relinquished By

Date

Time

Received By

Date

Time

Received By

Date

Time

Received For Lab By

Date

Time

Received For Lab By

Date

Time

ORIGINAL - LABORATORY

COPY - SAMPLER

Signature: [Signature]
Date: 5/22/14
Time: 08:00

SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: <u>Golder Assoc./Eagle Mine</u>	Work Order #: <u>1405382</u>
Receipt Record Page/Line #: <u>19-5</u>	Project Chemist: _____ Sample #: _____

Recorded by (initials/date): <u>SK 5/22/14</u>	☒ Cooler ☐ Box ☐ Other _____	Qty Received: <u>1</u>	☒ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (#) _____	☐ See Additional Cooler Information Form
--	--	------------------------	---	---

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time
TM2615	0956	TM0087	1018	TM2061	1025		
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact	
Coolant Location: <u>Dispersed</u> / Top / Middle / Bottom		Coolant Location: <u>Dispersed</u> / Top / Middle / Bottom		Coolant Location: <u>Dispersed</u> / Top / Middle / Bottom		Coolant Location: <u>Dispersed</u> / Top / Middle / Bottom	
Coolant/Temperature Taken Via:		Coolant/Temperature Taken Via:		Coolant/Temperature Taken Via:		Coolant/Temperature Taken Via:	
☒ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers		☒ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers		☒ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers		☐ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers	
Alternate Temperature Taken Via:		Alternate Temperature Taken Via:		Alternate Temperature Taken Via:		Alternate Temperature Taken Via:	
☒ Temperature Blank (TB) ☐ 1 Container		☒ Temperature Blank (TB) ☐ 1 Container		☒ Temperature Blank (TB) ☐ 1 Container		☐ Temperature Blank (TB) ☐ 1 Container	
Recorded °C	Correction Factor °C	Actual °C	Recorded °C	Correction Factor °C	Actual °C	Recorded °C	Correction Factor °C
Temp Blank: -	-	4.9	Temp Blank: -	-	1.9	Temp Blank: -	-
TB location: <u>Representative</u> / Not Representative			TB location: <u>Representative</u> / Not Representative			TB location: <u>Representative</u> / Not Representative	
1	3.7	-	3.7	1	3.7	-	3.7
2	3.6	-	3.6	2	3.6	-	3.6
3	4.2	-	4.2	3	3.2	-	3.2
Average °C		3.8	Average °C		2.1	Average °C	
☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?	

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received Yes No ☒ Chain of Custody record(s)? If No, Initiated By _____ ☒ Received for Lab Signed/Date/Time? ☐ Shipping document? ☐ Other _____	Check Sample Preservation N/A Yes No ☒ Average sample temperature ≤6° C? ☐ Was thermal preservation required? If "No", Project Chemist Approval Initials: _____ If "Yes" Completed Non Con Cooler - Cont inventory Form? ☐ Completed Sample Preservation Verification Form? ☒ Samples chemically preserved correctly? If "No", added orange tag? ☒ Received pre-preserved VOC soils? ☐ MeOH ☐ Na ₂ SO ₄
COC Information ☒ TriMatrix COC ☐ Other <u>140528324</u> COC ID Numbers: _____	Check for Short Hold-Time Prep/Analyses ☐ Bacteriological ☐ Air Bags ☐ EnCores / Methanol Pre-Preserved ☐ Formaldehyde/Aldehyde ☒ Green-tagged containers ☐ Yellow/White-tagged 1L ambers (SV Prep-Lab)
Check COC for Accuracy Yes No ☒ Analysis Requested? ☒ Sample ID matches COC? ☒ Sample Date and Time matches COC? ☒ Container type completed on COC? ☒ All container types indicated are received?	Notes ☐ Trip Blank received ☐ Trip Blank not listed on COC Cooler Received (Date/Time): <u>5/22/14 0830</u> Paperwork Delivered (Date/Time): <u>5/22/14 1008</u> ≤1 Hour Goal Met? <u>Yes</u> (No) 1040
Sample Condition Summary N/A Yes No ☒ Broken containers/lids? ☒ Missing or incomplete labels? ☒ Illegible information on labels? ☒ Low volume received? ☒ Inappropriate or non-TriMatrix containers received? ☐ VOC vials / TOX containers have headspace? ☐ Extra sample locations / containers not listed on COC?	

Client: <u>Golder Associates/Eagle Mine</u>	Work Order #: <u>1405382</u>
Receipt Log #: <u>19-5</u>	Completed By (initials/date): <u>AE 5/22/14</u>
Project Chemist: _____	

COC ID #: <u>140528324</u>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1		✓		✓✓	✓						
COC Line #2		✓		✓✓	✓						
COC Line #3		✓		✓✓	✓						
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9		✓		✓✓	✓						
COC Line #10											

Comments

Ph Strip Lot #

☒ **HC389101**
☐

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7		✓		✓✓	✓						
COC Line #8		✓		✓✓	✓						
COC Line #9											
COC Line #10		✓		✓✓✓	✓✓						

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H ₂ SO ₄
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H ₂ SO ₄
500	2.5

Client: <u>Golden Associates/Eagle Mine</u>		Work Order #: <u>1405382</u>
Receipt Log #: <u>19-5</u>	Completed By (Initials/Date): <u>AK 5/22/14</u>	Project Chemist: _____

COC ID # <u>140538324</u>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4		✓		✓	✓						
COC Line #5		✓		✓	✓						
COC Line #6		✓		✓	✓						
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Ph Strip Lot # <u>HC389101</u>
☒ ☐

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

Comments:

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H ₂ SO ₄
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H ₂ SO ₄
500	2.5

Comments:

July 31, 2014

Golder Associates, Inc. - MI
Attn: Christina Stacey
15851 S. US 27, Suite 50
Lansing, MI 48906

Project: Eagle Mine - Humboldt Mill SW

Dear Christina Stacey,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1407285	07/17/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

Total Metals by EPA 6000/7000 Series Methods

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: USEPA-6020A

4G24021-CRL1

Boron

4G24024-CRL2

Boron

Narrative: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration for the same analyte was greater than or equal to 4 times the spiked amount; matrix QC results are not available.

Analysis: USEPA-6010C

Sample/Analyte: 1407285-01 WBR-001

Iron

Narrative: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control limit.

Analysis: USEPA-6020A

Sample/Analyte: 1407285-01 WBR-001

Manganese

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 1407285-01 WBR-001

Arsenic

1407285-01 WBR-001

Cadmium

1407285-01 WBR-001

Copper

1407285-01 WBR-001

Lead

1407285-01 WBR-001

Molybdenum

1407285-01 WBR-001

Nickel

1407285-01 WBR-001

Silver

1407285-01 WBR-001

Thallium

1407285-01 WBR-001

Vanadium

Narrative: This analyte was not present in this sample at a concentration greater than 50 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6010C

Sample/Analyte: 1407285-01 WBR-001

Aluminum

1407285-01 WBR-001

Potassium

PROJECT TECHNICAL NARRATIVE(s)

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Narrative: Nitrite-N was analyzed within the EPA 48 hour hold time. The sample was also chemically preserved and later analyzed for Nitrate+Nitrite-N within the 28 day EPA hold time. Nitrate-N was calculated by subtraction of these two analyses.

Analysis: SM 4500-NO3 F-2011

Sample/Analyte:	1407285-04	MER-001	Nitrogen, Nitrate
	1407285-05	MER-002	Nitrogen, Nitrate
	1407285-06	MER-003	Nitrogen, Nitrate
	1407285-09	DUPLICATE	Nitrogen, Nitrate

Narrative: The concentration of analyte found in the MS and/or MSD exceeded the upper end of the calibration curve due to native analyte concentration found in the sample. Matrix quality control results are not available.

Analysis: SM 4500-NO3 F-2011

Sample/Analyte:	1407285-07	HMP-009	Nitrogen, Nitrate
-----------------	------------	---------	-------------------

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: SM 4500-NH3 G-2011

4G28048-CRL1	Nitrogen, Ammonia
--------------	-------------------

Analysis: SM 4500-NO3 F-2011

4G29080-CRL1	Nitrogen, Nitrite
--------------	-------------------

Narrative: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: SM 2340 C-2011

Sample/Analyte:	1407285-01	WBR-001	Hardness as CaCO3
	1407285-03	WBR-003	Hardness as CaCO3
	1407285-08	HMWQ-004	Hardness as CaCO3
	1407285-09	DUPLICATE	Hardness as CaCO3

STATEMENT OF DATA QUALIFICATIONS**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Qualification: The laboratory duplicate RPD for this sample exceeded the control limit. Since the initial and/or the duplicate sample result was less than 5 times the reporting limit, the initial reported sample result is not qualified.

Analysis: SM 4500-S2 D-2011

Sample/Analyte: 1407285-01 WBR-001

Sulfide, Total

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-001**
Lab Sample ID: **1407285-01**
Matrix: Water

Work Order: **1407285**
Description: Laboratory Services
Sampled: 7/16/14 10:05
Sampled By: Christina Stacey
Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	9.59	1.00	ng/L	2	USEPA-1631E	07/29/14 15:06	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1407285-01**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	360	50	ug/L	1	USEPA-6010C	07/24/14 10:53	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 14:12	DSC	1407067
Arsenic	2.3	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Barium	14	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 14:12	DSC	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/24/14 14:12	DSC	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Calcium	5.9	0.50	mg/L	1	USEPA-6010C	07/24/14 10:53	KLV	1407066
Chromium	1.2	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 14:12	DSC	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Iron	3100	50	ug/L	5	USEPA-6010C	07/24/14 14:39	KLV	1407066
Lead	1.6	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 10:53	KLV	1407066
Magnesium	2.2	0.50	mg/L	1	USEPA-6010C	07/24/14 10:53	KLV	1407066
Manganese	180	5.0	ug/L	5	USEPA-6020A	07/23/14 15:10	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Nickel	1.5	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Potassium	0.51	0.50	mg/L	1	USEPA-6010C	07/24/14 10:53	KLV	1407066
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Sodium	9.9	0.50	mg/L	1	USEPA-6010C	07/24/14 10:53	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Vanadium	1.1	1.0	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067
Zinc	11	10	ug/L	1	USEPA-6020A	07/22/14 17:12	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1407285-01**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	6.8	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	22	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:16	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	30	10	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:24	CAC	1407432
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:32	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 09:58	CAC	1407076
Residue, Dissolved @ 180° C	130	125	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:19	LMA	1407173
*Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:46	WAH	1407170

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-002**
Lab Sample ID: **1407285-02**
Matrix: Water

Work Order: **1407285**
Description: Laboratory Services
Sampled: 7/16/14 10:45
Sampled By: Christina Stacey
Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	2.77	0.500	ng/L	1	USEPA-1631E	07/29/14 14:20	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-002**
 Lab Sample ID: **1407285-02**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:45
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 12:52	MSM	1407067
Arsenic	4.1	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Barium	11	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 12:52	MSM	1407067
Boron	11	10	ug/L	1	USEPA-6020A	07/24/14 12:52	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Calcium	8.6	0.50	mg/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 12:52	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Iron	7200	10	ug/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Magnesium	3.7	0.50	mg/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Manganese	310	5.0	ug/L	5	USEPA-6020A	07/23/14 15:22	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Nickel	1.6	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Potassium	0.72	0.50	mg/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Sodium	23	0.50	mg/L	1	USEPA-6010C	07/24/14 11:12	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:20	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-002**
 Lab Sample ID: **1407285-02**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:45
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	17	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	46	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:16	LMA	1407125
Fluoride	0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	37	2	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:24	CAC	1407432
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:33	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 09:58	CAC	1407076
Residue, Dissolved @ 180° C	130	125	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:19	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:49	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1407285-03**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:30
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	3.87	0.500	ng/L	1	USEPA-1631E	07/29/14 14:25	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1407285-03**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:30
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 12:59	MSM	1407067
Arsenic	3.4	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Barium	12	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 12:59	MSM	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/24/14 12:59	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Calcium	12	0.50	mg/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 12:59	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Iron	7700	10	ug/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Magnesium	4.7	0.50	mg/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Manganese	510	10	ug/L	10	USEPA-6020A	07/23/14 17:28	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Nickel	1.5	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Potassium	<0.50	0.50	mg/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Sodium	18	0.50	mg/L	1	USEPA-6010C	07/24/14 11:16	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:22	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1407285-03**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:30
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	30	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	35	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:16	LMA	1407125
Fluoride	0.12	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	28	4	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407432
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:34	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 09:59	CAC	1407076
Residue, Dissolved @ 180° C	140	125	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<5.0	5.0	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:26	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:50	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **MER-001**
Lab Sample ID: **1407285-04**
Matrix: Water

Work Order: **1407285**
Description: Laboratory Services
Sampled: 7/16/14 9:35
Sampled By: Christina Stacey
Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	5.30	0.500	ng/L	1	USEPA-1631E	07/29/14 14:29	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1407285-04**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 9:35
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	65	50	ug/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:01	MSM	1407067
Arsenic	2.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Barium	9.3	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:01	MSM	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/24/14 13:01	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Calcium	9.2	0.50	mg/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:01	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Iron	2300	10	ug/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Magnesium	2.4	0.50	mg/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Manganese	160	10	ug/L	10	USEPA-6020A	07/23/14 15:25	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Potassium	<0.50	0.50	mg/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Sodium	3.7	0.50	mg/L	1	USEPA-6010C	07/24/14 11:27	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:23	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1407285-04**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 9:35
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	25	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	7.1	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:16	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	32	2	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:34	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:00	CAC	1407076
Residue, Dissolved @ 180° C	88.0	50.0	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:26	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:51	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1407285-05**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 9:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	5.19	0.500	ng/L	1	USEPA-1631E	07/29/14 14:33	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1407285-05**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 9:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	77	50	ug/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:02	MSM	1407067
Arsenic	2.2	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Barium	10	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:02	MSM	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/24/14 13:02	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Calcium	11	0.50	mg/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:02	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Iron	3200	10	ug/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Magnesium	3.0	0.50	mg/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Manganese	200	5.0	ug/L	5	USEPA-6020A	07/23/14 15:26	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Nickel	1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Potassium	0.52	0.50	mg/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Sodium	5.6	0.50	mg/L	1	USEPA-6010C	07/24/14 11:31	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:25	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1407285-05**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 9:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	28	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	9.8	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:16	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	38	2	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:35	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:04	CAC	1407076
Residue, Dissolved @ 180° C	70.0	50.0	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	4.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:26	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:52	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1407285-06**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 8:30
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	4.89	0.500	ng/L	1	USEPA-1631E	07/29/14 14:37	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1407285-06**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 8:30
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	68	50	ug/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:04	MSM	1407067
Arsenic	2.4	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Barium	11	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:04	MSM	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/24/14 13:04	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Calcium	11	0.50	mg/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/24/14 13:04	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Iron	3200	10	ug/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Magnesium	3.1	0.50	mg/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Manganese	200	5.0	ug/L	5	USEPA-6020A	07/23/14 15:28	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Potassium	0.58	0.50	mg/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Sodium	6.6	0.50	mg/L	1	USEPA-6010C	07/24/14 11:35	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067
Zinc	13	10	ug/L	1	USEPA-6020A	07/22/14 17:30	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1407285-06**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 8:30
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	30	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	11	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:23	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	39	2	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:40	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:05	CAC	1407076
Residue, Dissolved @ 180° C	98.0	50.0	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:26	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:56	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **HMP-009**
Lab Sample ID: **1407285-07**
Matrix: Water

Work Order: **1407285**
Description: Laboratory Services
Sampled: 7/16/14 11:45
Sampled By: Christina Stacey
Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	0.980	0.500	ng/L	1	USEPA-1631E	07/29/14 14:42	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMP-009**
 Lab Sample ID: **1407285-07**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:45
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	590	50	ug/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Antimony	6.1	1.0	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Arsenic	2.2	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Barium	23	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Boron	74	10	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Calcium	67	0.50	mg/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Chromium	1.2	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Cobalt	4.2	1.0	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Copper	9.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Iron	1600	10	ug/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Lead	2.4	1.0	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Magnesium	24	0.50	mg/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Manganese	300	5.0	ug/L	5	USEPA-6020A	07/23/14 15:30	MSM	1407067
Molybdenum	12	1.0	ug/L	1	USEPA-6020A	07/24/14 13:05	MSM	1407067
Nickel	21	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Potassium	7.9	0.50	mg/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Sodium	13	0.50	mg/L	1	USEPA-6010C	07/24/14 11:39	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:40	MSM	1407067
Vanadium	1.7	1.0	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:32	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMP-009**
 Lab Sample ID: **1407285-07**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:45
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	92	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	15	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:23	LMA	1407125
Fluoride	0.15	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	215	2	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:40	CAC	1407052
Nitrogen, Nitrate	0.79	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:06	CAC	1407076
Residue, Dissolved @ 180° C	318	50.0	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	9.5	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	130	25	mg/L	5	ASTM D516-90 (07)	07/21/14 10:02	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:57	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **HMWQ-004**
Lab Sample ID: **1407285-08**
Matrix: Water

Work Order: **1407285**
Description: Laboratory Services
Sampled: 7/16/14 11:00
Sampled By: Christina Stacey
Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	13.7	2.50	ng/L	5	USEPA-1631E	07/29/14 14:49	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1407285-08**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:00
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	450	50	ug/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:41	MSM	1407067
Arsenic	4.5	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Barium	20	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:41	MSM	1407067
Boron	17	10	ug/L	1	USEPA-6020A	07/23/14 16:41	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Calcium	8.3	0.50	mg/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Chromium	1.8	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Cobalt	3.2	1.0	ug/L	1	USEPA-6020A	07/23/14 16:41	MSM	1407067
Copper	14	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Iron	16000	10	ug/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Lead	4.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Magnesium	3.3	0.50	mg/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Manganese	320	5.0	ug/L	5	USEPA-6020A	07/23/14 15:31	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Nickel	4.4	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Potassium	2.2	0.50	mg/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Sodium	21	0.50	mg/L	1	USEPA-6010C	07/24/14 11:43	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Vanadium	2.7	1.0	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067
Zinc	22	10	ug/L	1	USEPA-6020A	07/22/14 17:33	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1407285-08**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:00
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	26	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	35	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:23	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	45	10	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	1.4	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:42	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:11	CAC	1407076
Residue, Dissolved @ 180° C	175	125	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	199	24.8	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:28	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:58	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **DUPLICATE**
Lab Sample ID: **1407285-09**
Matrix: Water

Work Order: **1407285**
Description: Laboratory Services
Sampled: 7/16/14 10:05
Sampled By: Christina Stacey
Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	9.82	2.50	ng/L	5	USEPA-1631E	07/29/14 14:53	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **DUPLICATE**
 Lab Sample ID: **1407285-09**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	390	50	ug/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:43	MSM	1407067
Arsenic	2.3	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Barium	14	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:43	MSM	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/23/14 16:43	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Calcium	6.1	0.50	mg/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Chromium	1.1	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:43	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Iron	3300	10	ug/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Lead	1.4	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Magnesium	2.3	0.50	mg/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Manganese	190	5.0	ug/L	5	USEPA-6020A	07/23/14 15:33	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Nickel	1.5	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Potassium	0.54	0.50	mg/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Sodium	10	0.50	mg/L	1	USEPA-6010C	07/24/14 11:50	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Vanadium	1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:35	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **DUPLICATE**
 Lab Sample ID: **1407285-09**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 10:05
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	5.8	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	23	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:23	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO₃	28	4	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 10:33	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:43	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:12	CAC	1407076
Residue, Dissolved @ 180° C	140	125	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:28	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 10:59	WAH	1407170

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **FIELD BLANK**
 Lab Sample ID: **1407285-10**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:25
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	<0.500	0.500	ng/L	1	USEPA-1631E	07/29/14 14:58	KLV	1407566

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **FIELD BLANK**
 Lab Sample ID: **1407285-10**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:25
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:45	MSM	1407067
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Barium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:45	MSM	1407067
Boron	<10	10	ug/L	1	USEPA-6020A	07/23/14 16:45	MSM	1407067
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Calcium	<0.50	0.50	mg/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	07/23/14 16:45	MSM	1407067
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Iron	<10	10	ug/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Magnesium	<0.50	0.50	mg/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Manganese	1.5	1.0	ug/L	1	USEPA-6020A	07/23/14 16:45	MSM	1407067
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Potassium	<0.50	0.50	mg/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Sodium	<0.50	0.50	mg/L	1	USEPA-6010C	07/24/14 11:54	KLV	1407066
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067
Zinc	<10	10	ug/L	1	USEPA-6020A	07/22/14 17:36	MSM	1407067

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **FIELD BLANK**
 Lab Sample ID: **1407285-10**
 Matrix: Water

Work Order: **1407285**
 Description: Laboratory Services
 Sampled: 7/16/14 11:25
 Sampled By: Christina Stacey
 Received: 7/17/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407188
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	07/22/14 10:23	SKA	1407189
Chloride	<1.0	1.0	mg/L	1	SM 4500-Cl E-2011	07/21/14 11:23	LMA	1407125
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	07/23/14 14:00	KLA	1407257
Hardness as CaCO ₃	<2	2	mg/L	1	SM 2340 C-2011	07/18/14 13:30	KAR	1407053
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	07/24/14 12:30	CAC	1407434
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/17/14 13:44	CAC	1407052
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	07/18/14 10:12	CAC	1407076
Residue, Dissolved @ 180° C	<50.0	50.0	mg/L	1	SM 2540 C-2011	07/21/14 15:30	WAH	1407151
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	07/21/14 16:45	WAH	1407158
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	07/21/14 11:28	LMA	1407173
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	07/21/14 11:00	WAH	1407170

QUALITY CONTROL REPORT

Total Metals by EPA 1600 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Mercury/USEPA-1631E

QC Batch: 1407566 (1631E Digestion)

Analyzed: 07/29/2014 By: KLV

Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Laboratory Control Sample		4.00	3.388	ng/L	85	77-123			0.500

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Aluminum/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank			<50	ug/L					50
Laboratory Control Sample		2000	1840	ug/L	92	80-120			50
1407285-01 [WBR-001]									
Matrix Spike	362	2000	2390	ug/L	101	75-125			50
Matrix Spike Duplicate	362	2000	2360	ug/L	100	75-125	1	20	50

Analyte: Antimony/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/23/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	50.9	ug/L	102	80-120			1.0

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/24/2014 By: DSC

1407285-01 [WBR-001]

Matrix Spike	<1.0	50.0	51.4	ug/L	103	75-125			1.0
Matrix Spike Duplicate	<1.0	50.0	51.1	ug/L	102	75-125	0.7	20	1.0

Analyte: Arsenic/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	54.5	ug/L	109	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	2.30	50.0	60.2	ug/L	116	75-125			1.0
Matrix Spike Duplicate	2.30	50.0	58.7	ug/L	113	75-125	3	20	1.0

Analyte: Barium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	54.8	ug/L	110	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	14.0	50.0	71.7	ug/L	115	75-125			1.0
Matrix Spike Duplicate	14.0	50.0	69.6	ug/L	111	75-125	3	20	1.0

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Beryllium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/23/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.8	ug/L	104	80-120			1.0

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/24/2014 By: DSC

1407285-01 [WBR-001]

Matrix Spike	<1.0	50.0	58.3	ug/L	117	75-125			1.0
Matrix Spike Duplicate	<1.0	50.0	55.6	ug/L	111	75-125	5	20	1.0

Analyte: Boron/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/23/2014 By: MSM

Method Blank			<10	ug/L					10
Laboratory Control Sample		50.0	52.9	ug/L	106	80-120			10

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/24/2014 By: DSC

1407285-01 [WBR-001]

Matrix Spike	5.00	50.0	65.5	ug/L	121	70-130			10
Matrix Spike Duplicate	5.00	50.0	62.6	ug/L	115	70-130	5	20	10

Analyte: Cadmium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<0.20	ug/L					0.20
Laboratory Control Sample		50.0	53.9	ug/L	108	80-120			0.20

1407285-01 [WBR-001]

Matrix Spike	0.153	50.0	56.5	ug/L	113	75-125			0.20
Matrix Spike Duplicate	0.153	50.0	56.5	ug/L	113	75-125	0.09	20	0.20

Analyte: Calcium/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	18.8	mg/L	94	80-120			0.50

1407285-01 [WBR-001]

Matrix Spike	5.91	20.0	26.4	mg/L	102	75-125			0.50
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Calcium/USEPA-6010C (Continued)

QC Batch: 1407066 (Continued) (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

1407285-01 [WBR-001]

Matrix Spike Duplicate	5.91	20.0	25.9	mg/L	100	75-125	2	20	0.50
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Analyte: Chromium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	52.5	ug/L	105	80-120			1.0

1407285-01 [WBR-001]

Matrix Spike	1.24	50.0	56.5	ug/L	111	75-125			1.0
Matrix Spike Duplicate	1.24	50.0	54.5	ug/L	106	75-125	4	20	1.0

Analyte: Cobalt/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/23/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	56.4	ug/L	113	80-120			1.0

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/24/2014 By: DSC

1407285-01 [WBR-001]

Matrix Spike	0.636	50.0	54.2	ug/L	107	75-125			1.0
Matrix Spike Duplicate	0.636	50.0	53.4	ug/L	105	75-125	2	20	1.0

Analyte: Copper/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	50.9	ug/L	102	80-120			1.0

1407285-01 [WBR-001]

Matrix Spike	0.746	50.0	53.0	ug/L	105	75-125			1.0
Matrix Spike Duplicate	0.746	50.0	54.1	ug/L	107	75-125	2	20	1.0

Analyte: Iron/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank			<10	ug/L					10
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Iron/USEPA-6010C (Continued)

QC Batch: 1407066 (Continued) (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Laboratory Control Sample	400	387	ug/L	97	80-120		10
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Analyte: Lead/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank		<1.0	ug/L				1.0
Laboratory Control Sample	50.0	53.1	ug/L	106	80-120		1.0
1407285-01 [WBR-001]							
Matrix Spike	1.62	50.0	ug/L	111	75-125		1.0
Matrix Spike Duplicate	1.62	50.0	ug/L	106	75-125	4	20 1.0

Analyte: Lithium/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank		<8.0	ug/L				8.0
Laboratory Control Sample	400	374	ug/L	93	80-120		8.0
1407285-01 [WBR-001]							
Matrix Spike	<8.0	400	ug/L	99	75-125		8.0
Matrix Spike Duplicate	<8.0	400	ug/L	98	75-125	1	20 8.0

Analyte: Magnesium/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank		<0.50	mg/L				0.50
Laboratory Control Sample	20.0	18.4	mg/L	92	80-120		0.50
1407285-01 [WBR-001]							
Matrix Spike	2.17	20.0	mg/L	98	75-125		0.50
Matrix Spike Duplicate	2.17	20.0	mg/L	97	75-125	2	20 0.50

Analyte: Manganese/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/23/2014 By: MSM

Method Blank		<1.0	ug/L				1.0
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Continued on next page

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Manganese/USEPA-6020A (Continued)

QC Batch: 1407067 (Continued) (3020A Digestion)

Analyzed: 07/23/2014 By: MSM

Laboratory Control Sample		50.0	56.7	ug/L	113	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	183	50.0	254	ug/L	142	75-125			5.0
Matrix Spike Duplicate	183	50.0	232	ug/L	99	75-125	9	20	5.0

Analyte: Molybdenum/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	53.0	ug/L	106	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	0.234	50.0	55.2	ug/L	110	75-125			1.0
Matrix Spike Duplicate	0.234	50.0	54.7	ug/L	109	75-125	0.8	20	1.0

Analyte: Nickel/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	49.9	ug/L	100	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	1.54	50.0	53.6	ug/L	104	75-125			1.0
Matrix Spike Duplicate	1.54	50.0	53.1	ug/L	103	75-125	1	20	1.0

Analyte: Potassium/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	18.9	mg/L	94	80-120			0.50
1407285-01 [WBR-001]									
Matrix Spike	0.509	20.0	20.7	mg/L	101	75-125			0.50
Matrix Spike Duplicate	0.509	20.0	20.3	mg/L	99	75-125	2	20	0.50

Analyte: Selenium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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Continued on next page

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Selenium/USEPA-6020A (Continued)

QC Batch: 1407067 (Continued) (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Laboratory Control Sample		50.0	46.3	ug/L	93	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	0.693	50.0	49.9	ug/L	99	75-125			1.0
Matrix Spike Duplicate	0.693	50.0	53.4	ug/L	106	75-125	7	20	1.0

Analyte: Silver/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<0.20	ug/L					0.20
Laboratory Control Sample		50.0	48.6	ug/L	97	80-120			0.20
1407285-01 [WBR-001]									
Matrix Spike	0.0891	50.0	49.7	ug/L	99	75-125			0.20
Matrix Spike Duplicate	0.0891	50.0	48.8	ug/L	97	75-125	2	20	0.20

Analyte: Sodium/USEPA-6010C

QC Batch: 1407066 (3010A Digestion)

Analyzed: 07/24/2014 By: KLV

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	18.8	mg/L	94	80-120			0.50
1407285-01 [WBR-001]									
Matrix Spike	9.90	20.0	29.5	mg/L	98	75-125			0.50
Matrix Spike Duplicate	9.90	20.0	29.8	mg/L	99	75-125	0.7	20	0.50

Analyte: Thallium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	52.4	ug/L	105	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	0.109	50.0	54.1	ug/L	108	75-125			1.0
Matrix Spike Duplicate	0.109	50.0	52.6	ug/L	105	75-125	3	20	1.0

Analyte: Vanadium/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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Continued on next page

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Vanadium/USEPA-6020A (Continued)

QC Batch: 1407067 (Continued) (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Laboratory Control Sample		50.0	52.2	ug/L	104	80-120			1.0
1407285-01 [WBR-001]									
Matrix Spike	1.08	50.0	56.1	ug/L	110	75-125			1.0
Matrix Spike Duplicate	1.08	50.0	54.6	ug/L	107	75-125	3	20	1.0

Analyte: Zinc/USEPA-6020A

QC Batch: 1407067 (3020A Digestion)

Analyzed: 07/22/2014 By: MSM

Method Blank			<10	ug/L					10
Laboratory Control Sample		50.0	55.5	ug/L	111	80-120			10
1407285-01 [WBR-001]									
Matrix Spike	11.3	50.0	64.2	ug/L	106	75-125			10
Matrix Spike Duplicate	11.3	50.0	62.6	ug/L	103	75-125	2	20	10

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Alkalinity, Bicarbonate/SM 2320 B-2011

QC Batch: 1407188 (General Inorganic Prep)

Analyzed: 07/22/2014 By: SKA

Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		238	240	mg/L	101	74-123			2.0
1407285-01 [WBR-001]									
Matrix Spike	6.80	119	125	mg/L	99	78-117			2.0
Duplicate	6.80		6.31	mg/L			7	20	2.0

Analyte: Alkalinity, Carbonate/SM 2320 B-2011

QC Batch: 1407189 (General Inorganic Prep)

Analyzed: 07/22/2014 By: SKA

Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		378	373	mg/L	99	72-114			2.0
1407285-01 [WBR-001]									
Duplicate	<2.0		<2.0	mg/L				20	2.0

Analyte: Chloride/SM 4500-Cl E-2011

QC Batch: 1407125 (General Inorganic Prep)

Analyzed: 07/21/2014 By: LMA

Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		50.0	50.4	mg/L	101	90-106			1.0

Analyte: Fluoride/SM 4500-F C-2011

QC Batch: 1407257 (Method Specific Preparation)

Analyzed: 07/23/2014 By: KLA

Method Blank			<0.10	mg/L					0.10
Laboratory Control Sample		2.00	2.06	mg/L	103	90-110			0.10
1407285-01 [WBR-001]									
Matrix Spike	0.0535	2.00	2.08	mg/L	101	75-125			0.10
Duplicate	0.0535		0.0445	mg/L			18	20	0.10

Analyte: Hardness as CaCO3/SM 2340 C-2011

QC Batch: 1407053 (Method Specific Preparation)

Analyzed: 07/18/2014 By: KAR

Method Blank			<2	mg/L					2
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Continued on next page

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Hardness as CaCO₃/SM 2340 C-2011 (Continued)

QC Batch: 1407053 (Continued) (Method Specific Preparation)

Analyzed: 07/18/2014 By: KAR

Laboratory Control Sample		86.3	88	mg/L	102	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2
1407285-01 [WBR-001]									
Matrix Spike	30	1000	1020	mg/L	99	86-113			10
Duplicate	30		25	mg/L			18	20	10

Analyte: Nitrogen, Ammonia/SM 4500-NH₃ G-2011

QC Batch: 1407432 (General Inorganic Prep)

Analyzed: 07/24/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.487	mg/L	97	90-110			0.50

QC Batch: 1407434 (General Inorganic Prep)

Analyzed: 07/24/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.476	mg/L	95	90-110			0.50

Analyte: Nitrogen, Nitrate/SM 4500-NO₃ F-2011

QC Batch: 1407076 (General Inorganic Prep)

Analyzed: 07/18/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.531	mg/L	106	90-110			0.50

Analyte: Nitrogen, Nitrite/SM 4500-NO₃ F-2011

QC Batch: 1407052 (General Inorganic Prep)

Analyzed: 07/17/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.527	mg/L	105	90-110			0.50
1407285-07 [HMP-009]									
Matrix Spike	<0.50	0.500	0.533	mg/L	107	90-110			0.50
Matrix Spike Duplicate	<0.50	0.500	0.519	mg/L	104	90-110	3	20	0.50

Analyte: Residue, Dissolved @ 180° C/SM 2540 C-2011

QC Batch: 1407151 (General Inorganic Prep)

Analyzed: 07/21/2014 By: WAH

Method Blank			<50.0	mg/L					50.0
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Continued on next page

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Residue, Dissolved @ 180° C/SM 2540 C-2011 (Continued)

QC Batch: 1407151 (Continued) (General Inorganic Prep)

Analyzed: 07/21/2014 By: WAH

Laboratory Control Sample		200	196	mg/L	98	85-115			50.0
1407285-01 [WBR-001]									
Duplicate	130		125	mg/L			4	5	125

Analyte: Residue, Suspended/SM 2540 D-2011

QC Batch: 1407158 (General Inorganic Prep)

Analyzed: 07/21/2014 By: WAH

Method Blank			<3.3	mg/L					3.3
Laboratory Control Sample		200	191	mg/L	96	88-104			24.8

Analyte: Sulfate/ASTM D516-90 (07)

QC Batch: 1407173 (General Inorganic Prep)

Analyzed: 07/21/2014 By: LMA

Method Blank			<1.0	mg/L					1.0
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		20.0	20.3	mg/L	102	88-116			1.0
Laboratory Control Sample		10.0	10.0	mg/L	100	88-116			1.0
1407285-07 [HMP-009]									
Matrix Spike	125	20.0	144	mg/L	94	55-151			5.0
Matrix Spike Duplicate	125	20.0	145	mg/L	97	55-151	0.4	20	5.0

Analyte: Sulfide, Total/SM 4500-S2 D-2011

QC Batch: 1407170 (Method Specific Preparation)

Analyzed: 07/21/2014 By: WAH

Method Blank			<5.0	mg/L					5.0
Laboratory Control Sample		0.349	0.334	mg/L	96	80-120			5.0
1407285-01 [WBR-001]									
Matrix Spike	0.0235	0.349	0.249	mg/L	65	55-119			5.0
Duplicate	0.0235		0.0190	mg/L			21	20	5.0

For Lab Use Only

 5560 Corporate Exchange Court SE, Grand Rapids, MI 49512
 Phone (616) 975-4500 Fax (616) 942-7463 www.trimatrixlabs.com

Analyses Requested

 Pg. 1 of 1

 Cart 3

VOA Rack/Tray

 Receipt Log No. 3-3

 Project Chemist Jennifer Rice

 Work Order No. 140720813

Client Name

Golder Associates/Eagle Mine

Address

220 W. Washington, Suite 240

City, State Zip

Marquette, MI 49855

Phone:

906-273-2525

Fax:

906-273-2528

Email

christina.stacey@golder.com

Project Name

Humboldt Mill SW

Client Project No. / P.O. No.

1401484

Invoice To

☒ Client

☐ Other (comments)

Contact/Report To

Christina Stacey

Field Sample ID

Cooler ID

Sample Date

Sample Time

Matrix

Comments

How Shipped?

Hand

Carrier

Tracking No.

Relinquished By

Date

Time

Received By

Date

Time

Relinquished By

Date

Time

Received By

Date

Time

Relinquished By

Date

Time

Received By

Date

Time

Relinquished By

Date

Time

Received By

Date

PRESERVATIVES

A NONE pH~7

 B HNO₃ pH<2

 C H₂SO₄ pH<2

D 1+1 HCl pH<2

E NaOH pH>12

F ZnAc2/NaOH pH>9

G MeOH

H Other (note below)

Total Sample Comments

Number of Containers Submitted

Container Type (corresponds to Container Packing List)

 A As, Cl, F, SO₄, NO₃, NO₂, TDS

C Ammonia

D Total Metals (not filtered)

F Sulfide

D Dissolved metals (filtered)

A LL Hg (filtered)

A LL Hg (not filtered)

A TSS

3

4

6

9

15

24

SAMPLE RECEIVING / LOG-IN CHECKLIST



TRIMATRIX
LABORATORIES

Client: <u>Golder Assoc.</u>	Work Order #: <u>1407285</u>
Receipt Record Page/Line #: <u>3-3</u>	Project Chemist: _____ Sample #: _____

Recorded by (Initials/date): <u>Ln 7/17/14</u>	Cooler ☒ Cooler ☐ Box ☐ Other	Qty Received: <u>3</u>	Thermometer Used: ☒ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (# _____) ☐ See Additional Cooler Information Form
--	---	------------------------	---

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time
<u>tm2851</u>	<u>0926</u>	<u>tm2961</u>	<u>0930</u>	<u>tm2861</u>	<u>0937</u>		
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact	
Coolant Type: ☒ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☒ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☒ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None	
Coolant Location: <u>Dispersed</u> / Top / Middle / Bottom		Coolant Location: <u>Melted</u> / Top / Middle / Bottom		Coolant Location: <u>Dispersed</u> / Top / Middle / Bottom		Coolant Location: _____ / Top / Middle / Bottom	
Temp Blank Present: ☒ Yes ☐ No		Temp Blank Present: ☒ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No	
If Present, Temperature Blank Location is: ☒ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☒ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative	
	Observed °C	Correction Factor °C	Actual °C		Observed °C	Correction Factor °C	Actual °C
Temp Blank:	<u>2.1</u>	<u>-</u>	<u>2.1</u>	Temp Blank:	<u>5.7</u>	<u>-</u>	<u>5.7</u>
Sample 1:	<u>1.7</u>	<u>-</u>	<u>1.7</u>	Sample 1:	<u>4.2</u>	<u>-</u>	<u>4.2</u>
Sample 2:	<u>2.1</u>	<u>-</u>	<u>2.1</u>	Sample 2:	<u>2.6</u>	<u>-</u>	<u>2.6</u>
Sample 3:	<u>1.9</u>	<u>-</u>	<u>1.9</u>	Sample 3:	<u>2.4</u>	<u>-</u>	<u>2.4</u>
3 Sample Average °C: <u>1.9</u>				3 Sample Average °C: <u>3.1</u>			
☐ Cooler ID on COC?				☐ Cooler ID on COC?			
☐ VOC Trip Blank received?				☐ VOC Trip Blank received?			
	Observed °C	Correction Factor °C	Actual °C		Observed °C	Correction Factor °C	Actual °C
Temp Blank:	<u>2.2</u>	<u>-</u>	<u>2.2</u>	Temp Blank:	<u>2.2</u>	<u>-</u>	<u>2.2</u>
Sample 1:	<u>1.3</u>	<u>-</u>	<u>1.3</u>	Sample 1:	<u>1.3</u>	<u>-</u>	<u>1.3</u>
Sample 2:	<u>1.1</u>	<u>-</u>	<u>1.1</u>	Sample 2:	<u>1.1</u>	<u>-</u>	<u>1.1</u>
Sample 3:	<u>1.1</u>	<u>-</u>	<u>1.1</u>	Sample 3:	<u>1.1</u>	<u>-</u>	<u>1.1</u>
3 Sample Average °C: <u>1.2</u>				3 Sample Average °C: _____			
☐ Cooler ID on COC?				☐ Cooler ID on COC?			
☐ VOC Trip Blank received?				☐ VOC Trip Blank received?			

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received Yes ☒ No ☐ Chain of Custody record(s)? If No, Initiated By _____ Received for Lab Signed/Date/Time? _____ ☐ Shipping document? ☐ Other _____ COC Information ☒ TriMatrix COC ☐ Other <u>140720813</u> COC ID Numbers: _____ Check COC for Accuracy Yes ☒ No ☐ Analysis Requested? ☒ Sample ID matches COC? ☒ Sample Date and Time matches COC? ☒ Container type completed on COC? ☒ All container types indicated are received? Sample Condition Summary N/A ☐ Yes ☒ No ☐ ☒ Broken containers/lids? ☒ Missing or incomplete labels? ☒ Illegible information on labels? ☒ Low volume received? ☒ Inappropriate or non-TriMatrix containers received? ☒ VOC vials / TOX containers have headspace? ☒ Extra sample locations / containers not listed on COC?	Check Sample Preservation N/A ☐ Yes ☒ No ☐ ☒ Temperature Blank OR average sample temperature, ≥6° C? ☐ If either is ≥6° C, was thermal preservation required? If "Yes", Project Chemist Approval Initials: _____ If "Yes" Completed Non Con Cooler - Cont Inventory Form? Completed Sample Preservation Verification Form? ☒ Samples chemically preserved correctly? If "No", added orange tag? ☒ Received pre-preserved VOC soils? ☐ MeOH ☐ Na₂SO₄ Check for Short Hold-Time Prep/Analyses ☐ Bacteriological ☐ Air Bags ☐ EnCores / Methanol Pre-Preserved ☐ Formaldehyde/Aldehyde ☒ Green-tagged containers ☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab) Notes ☐ Trip Blank received ☐ Trip Blank not listed on COC Cooler Received (Date/Time): <u>7/17/14 0830</u> Paperwork Delivered (Date/Time): <u>7/17/14 0959</u> ≥1 Hour Goal Met? <u>Yes</u> ☒ No ☐
--	--



Client <i>Golden Assoc / Eagle Mine</i>	Work Order # <i>1407283</i>
Receipt Log # <i>3-3</i>	Completed By (initials/date) <i>SA 7/17/14</i>
Project Chemist:	

COC ID # <i>140720813</i>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1		✓		✓✓	✓						
COC Line #2		✓		✓✓	✓						
COC Line #3		✓		✓✓	✓						
COC Line #4		✓		✓✓	✓						
COC Line #5		✓		✓✓	✓						
COC Line #6		✓		✓✓	✓						
COC Line #7		✓		✓✓	✓						
COC Line #8		✓		✓✓	✓						
COC Line #9		✓		✓✓	✓						
COC Line #10											

Comments

pH Strip Reagent #
☒ 4051306
☐

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H ₂ SO ₄
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H ₂ SO ₄
500	2.5

September 15, 2014

Eagle Mine LLC
Attn: Ms. Amanda Zeidler
4547 County Rd 601
Champion, MI 49814

Project: Humboldt Mill WTP

Dear Ms. Amanda Zeidler,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1409123	09/08/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist



PROJECT TECHNICAL NARRATIVE(s)

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Narrative: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: SM 2340 C-2011

Sample/Analyte: 1409123-01 WWestDisch1-090514

Hardness as CaCO₃



STATEMENT OF DATA QUALIFICATIONS

All analyses have been validated and comply with our Quality Control Program.
No Qualification is required.

ANALYTICAL REPORT

Client: **Eagle Mine LLC**
Project: Humboldt Mill WTP
Client Sample ID: **WWestDisch1-090514**
Lab Sample ID: **1409123-01**
Matrix: Waste Water

Work Order: **1409123**
Description: Laboratory Services
Sampled: 9/5/14 11:50
Sampled By: D. Bertucci
Received: 9/8/14 12:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Action Limit	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO ₃	60	10		mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409575

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
---------	--------------	------------	--------	------	--------------	----------------	-----	------------	----

Analyte: Hardness as CaCO₃/SM 2340 C-2011

QC Batch: 1409575 (Method Specific Preparation)

Analyzed: 09/12/2014 By: KAR

Method Blank			<2	mg/L					2
Laboratory Control Sample		86.3	88	mg/L	101	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2
1409123-01 [WWestDisch1-090514]									
Matrix Spike	60	1000	1050	mg/L	99	86-113			10
Duplicate	60		60	mg/L			0	20	10



5560 Corporate Exchange Court SE
Grand Rapids, MI 49512

Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No.

14090922

For Lab Use Only

Cart

VOA Rack/Tray

Receipt Log No

Project Chemist

Work Order No

Schedule

Matrix Code

Sample Number

Field Sample ID

Cooler ID

Sample Date

Sample Time

Container Type

Number of Containers Submitted

Total

Sample Comments

Client Name

Address

City, State Zip

Phone/Fax

Email

Project Name

Client Project No. / P.O. No.

Invoice To

Contact/Report To

Ambera Zeidler, Roger Olson

Client

Other (comments)

Container Type (corresponds to Container Packing List)

Number of Containers Submitted

Total

Sample Comments

Client Name

Address

City, State Zip

Phone/Fax

Email

Project Name

Client Project No. / P.O. No.

Invoice To

Contact/Report To

Ambera Zeidler, Roger Olson

Client

Analyses Requested

Pg. 1 of 1

PRESERVATIVES

A NONE pH<7

B HNO₃ pH<2

C H₂SO₄ pH<2

D 1+1 HCl pH<2

E NaOH pH>12

F ZnAcNaOH pH>9

G MeOH

H Other (note below)

VOA Rack/Tray		Client Name		Project Name		PRESERVATIVES	
Receipt Log No. 39.3		Eagle Mine, LLC		Humboldt Mill		A NONE pH~7	
Project Chemist		Address 4547 County Road 601		Client Project No. / P.O. No. 3101103439		B HNO ₃ pH<2	
Work Order No. 1409123		City, State Zip Champion, MI 49814		Invoice To ☒ Client ☐ Other (comments)		C H ₂ SO ₄ pH<2	
Phone/Fax 906.339.7076		Contact/Report To Amanda Zeidler, Roger Olson		Total Hardness		D 1+1 HCl pH<2	
Email amanda.zeidler@lundmining.com, roger.olson@lundmining.com		Field Sample ID W West D Sch 1 - 090514		Cooler ID		E NaOH pH>12	
Matrix Code		Sample Number 01		Sample Date 9/5/14		F ZnAcNaOH pH>9	
Sample Number		Sample Time 11:50		Matrix W		G MeOH	
Sample Number		Sample Time		Matrix		H Other (note below)	
Sample Number		Sample Time		Matrix			
Sample Number		Sample Time		Matrix			
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Sample Number		Sample Time		Matrix			

SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: <u>Eagle Mine</u>	New / Add To: <u>1409123</u>	Work Order #: <u>1409123</u>
Receipt Record Page/Line #: <u>39.3</u>	Project Chemist: _____	Sample #: _____

Recorded by (initials/date): <u>Wd 9.8.14</u>	☐ Cooler ☒ Box ☐ Other	Qty Received: <u>1</u>	☒ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (# _____)	Thermometer Used: ☐ See Additional Cooler Information Form
---	--	------------------------	---	---

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time	
<u>BOX</u>	<u>13:44</u>							
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☒ None Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative								
Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	
Temp Blank:			Temp Blank:			Temp Blank:		
Sample 1:			Sample 1:			Sample 1:		
Sample 2:			Sample 2:			Sample 2:		
Sample 3:			Sample 3:			Sample 3:		
3 Sample Average °C: <u>19.1</u>			3 Sample Average °C:			3 Sample Average °C:		
☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?		

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☒	☐	Chain of Custody record(s)? If No, Initiated By _____
☒	☐	Received for Lab Signed/Date/Time?
☒	☐	Shipping document?
☒	☐	Other _____

COC Information

☒ TriMatrix COC	☐ Other _____
COC ID Numbers: <u>14090922</u>	

Check COC for Accuracy

Yes	No	
☒	☐	Analysis Requested?
☒	☐	Sample ID matches COC?
☒	☐	Sample Date and Time matches COC?
☒	☐	Container type completed on COC?
☒	☐	All container types indicated are received?

Sample Condition Summary

N/A	Yes	No	
☒	☒	☐	Broken containers/lids?
☒	☒	☐	Missing or incomplete labels?
☒	☒	☐	Illegible information on labels?
☒	☒	☐	Low volume received?
☒	☒	☐	Inappropriate or non-TriMatrix containers received?
☒	☒	☐	VOC vials / TOX containers have headspace?
☒	☒	☐	Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A	Yes	No	
☒	☒	☐	Temperature Blank OR average sample temperature, ≥6° C?
☒	☒	☐	If either is ≥6° C, was thermal preservation required?
☒	☒	☐	If "Yes", Project Chemist Approval Initials: _____
☒	☒	☐	If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☒	☒	☐	Completed Sample Preservation Verification Form?
☒	☒	☐	Samples chemically preserved correctly?
☒	☒	☐	If "No", added orange tag?
☒	☒	☐	Received pre-preserved VOC soils?
☒	☒	☐	☐ MeOH ☐ Na ₂ SO ₄

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological ☐ Air Bags ☐ EnCores / Methanol Pre-Preserved ☐ Formaldehyde/Aldehyde ☐ Green-tagged containers ☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab)	AFTER HOURS ONLY: COPIES OF COC TO LAB AREA(S) ☐ NONE RECEIVED ☒ RECEIVED, COCs TO LAB(S)
---	--

Notes

☐ Trip Blank received ☒ Cooler Received (Date/Time) <u>9.8.14 1200</u>	☐ Trip Blank not listed on COC ☒ Paperwork Delivered (Date/Time) <u>9.8.14 1350</u>	☒ ≤1 Hour Goal Met? <u>Yes</u> ☐ No
--	---	--

Client Eagle Mine Receipt Log # 39.3	Work Order # 1409123 Completed By (initials/date) WC 9.8.14 Project Chemist
---	---

COC ID # 14090922				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13		3	6	15				
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe				
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄		None	HNO ₃	HNO ₃				
Expected pH	>12	<2	<2		6-8	<2	<2				
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

pH Strip Reagent #
☒ 4051306
☐

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

Comments

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13		3	6	15				
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe				
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄		None	HNO ₃	HNO ₃				
Expected pH	>12	<2	<2		6-8	<2	<2				
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H ₂ SO ₄
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H ₂ SO ₄
500	2.5

Comments

September 24, 2014

Golder Associates, Inc. - MI
Attn: Christina Stacey
220 W. Washington, Suite 240
Marquette, MI 49855

Project: Eagle Mine - Humboldt Mill SW

Dear Christina Stacey,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1409174	09/10/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

Total Metals by EPA 6000/7000 Series Methods

Narrative: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte:	1409174-01 WBR-001	Selenium
	1409174-02 WBR-002	Selenium
	1409174-03 WBR-003	Selenium
	1409174-04 MER-001	Selenium
	1409174-05 MER-002	Selenium
	1409174-07 HMWQ-004	Selenium

Narrative: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration for the same analyte was greater than or equal to 4 times the spiked amount; matrix QC results are not available.

Analysis: USEPA-6010C

Sample/Analyte:	1409174-05 MER-002	Iron
Analysis:	USEPA-6020A	
Sample/Analyte:	1409174-05 MER-002	Manganese

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte:	1409174-05 MER-002	Antimony
	1409174-05 MER-002	Arsenic
	1409174-05 MER-002	Cadmium
	1409174-05 MER-002	Chromium
	1409174-05 MER-002	Cobalt
	1409174-05 MER-002	Copper
	1409174-05 MER-002	Lead
	1409174-05 MER-002	Molybdenum
	1409174-05 MER-002	Selenium
	1409174-05 MER-002	Thallium

Narrative: This analyte was not present in this sample at a concentration greater than 50 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6010C

Sample/Analyte:	1409174-05 MER-002	Aluminum
	1409174-05 MER-002	Lithium
	1409174-05 MER-002	Potassium

PROJECT TECHNICAL NARRATIVE(s)**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: SM 4500-NH3 G-2011

4I15038-CRL1

Nitrogen, Ammonia

Analysis: SM 4500-S2 D-2011

4I15056-CRL1

Sulfide, Total

4I15061-CRL1

Sulfide, Total

Narrative: The MS and/or MSD recovery exceeded the upper control limit. The non-spiked sample result for the same analyte was non-detect.

Analysis: SM 4500-NO3 F-2011

Sample/Analyte: 1409174-05 MER-002

Nitrogen, Nitrite

Narrative: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: SM 2340 C-2011

Sample/Analyte: 1409174-01 WBR-001

Hardness as CaCO3

1409174-07 HMWQ-004

Hardness as CaCO3

STATEMENT OF DATA QUALIFICATIONS**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Qualification: The laboratory duplicate RPD for this sample exceeded the control limit.

Analysis: SM 2540 C-2011

Sample/Analyte: 1409174-05 MER-002 Residue, Dissolved @ 180° C

Analysis: SM 2540 D-2011

Sample/Analyte: 1409174-05 MER-002 Residue, Suspended
1409174-07 HMWQ-004 Residue, Suspended

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-001**
Lab Sample ID: **1409174-01**
Matrix: Water

Work Order: **1409174**
Description: Laboratory Services
Sampled: 9/9/14 10:30
Sampled By: K. Coolman
Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	14.4	2.50	ng/L	5	USEPA-1631E	09/11/14 14:14	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1409174-01**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	390	50	ug/L	1	USEPA-6010C	09/15/14 12:22	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Arsenic	2.8	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Barium	16	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:43	DSC	1409475
Boron	<10	10	ug/L	1	USEPA-6020A	09/16/14 11:33	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Calcium	7.1	0.50	mg/L	1	USEPA-6010C	09/15/14 12:22	CKD	1409473
Chromium	1.4	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Cobalt	2.2	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Iron	4100	10	ug/L	1	USEPA-6010C	09/15/14 12:22	CKD	1409473
Lead	1.9	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Lithium	8.4	8.0	ug/L	1	USEPA-6010C	09/15/14 13:52	CKD	1409473
Magnesium	2.8	0.50	mg/L	1	USEPA-6010C	09/15/14 12:22	CKD	1409473
Manganese	640	10	ug/L	10	USEPA-6020A	09/16/14 11:46	MSM	1409475
Molybdenum	9.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Nickel	2.6	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Potassium	1.4	0.50	mg/L	1	USEPA-6010C	09/15/14 13:52	CKD	1409473
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:43	DSC	1409475
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Sodium	9.7	0.50	mg/L	1	USEPA-6010C	09/15/14 13:52	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Vanadium	1.6	1.0	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475
Zinc	11	10	ug/L	1	USEPA-6020A	09/12/14 14:13	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-001**
 Lab Sample ID: **1409174-01**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	14	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	22	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO₃	35	10	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:28	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 13:55	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:24	CAC	1409542
Residue, Dissolved @ 180° C	192	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	09/15/14 11:01	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	09/11/14 12:05	WAH	1409691

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-002**
Lab Sample ID: **1409174-02**
Matrix: Water

Work Order: **1409174**
Description: Laboratory Services
Sampled: 9/9/14 11:15
Sampled By: K. Coolman
Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	2.48	0.500	ng/L	1	USEPA-1631E	09/11/14 14:18	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-002**
 Lab Sample ID: **1409174-02**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 11:15
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	09/15/14 12:25	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Arsenic	4.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Barium	8.3	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:45	DSC	1409475
Boron	11	10	ug/L	1	USEPA-6020A	09/16/14 11:34	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Calcium	8.8	0.50	mg/L	1	USEPA-6010C	09/15/14 12:25	CKD	1409473
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Iron	7700	10	ug/L	1	USEPA-6010C	09/15/14 12:25	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 13:55	CKD	1409473
Magnesium	4.0	0.50	mg/L	1	USEPA-6010C	09/15/14 12:25	CKD	1409473
Manganese	290	5.0	ug/L	5	USEPA-6020A	09/16/14 11:47	MSM	1409475
Molybdenum	3.1	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Nickel	1.4	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Potassium	1.1	0.50	mg/L	1	USEPA-6010C	09/15/14 13:55	CKD	1409473
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:45	DSC	1409475
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Sodium	24	0.50	mg/L	1	USEPA-6010C	09/15/14 13:55	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475
Zinc	<10	10	ug/L	1	USEPA-6020A	09/12/14 14:15	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-002**
 Lab Sample ID: **1409174-02**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 11:15
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	30	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	46	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO3	42	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH3 G-2011	09/11/14 15:28	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	09/10/14 13:55	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	09/10/14 16:24	CAC	1409542
Residue, Dissolved @ 180° C	174	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	4.9	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	09/15/14 11:01	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S2 D-2011	09/11/14 12:06	WAH	1409691

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **WBR-003**
Lab Sample ID: **1409174-03**
Matrix: Water

Work Order: **1409174**
Description: Laboratory Services
Sampled: 9/9/14 10:55
Sampled By: K. Coolman
Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	3.38	0.500	ng/L	1	USEPA-1631E	09/11/14 14:22	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1409174-03**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:55
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	09/15/14 12:28	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Arsenic	2.6	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Barium	11	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:48	DSC	1409475
Boron	<10	10	ug/L	1	USEPA-6020A	09/16/14 11:35	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Calcium	11	0.50	mg/L	1	USEPA-6010C	09/15/14 12:28	CKD	1409473
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Iron	5700	10	ug/L	1	USEPA-6010C	09/15/14 12:28	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 13:59	CKD	1409473
Magnesium	4.8	0.50	mg/L	1	USEPA-6010C	09/15/14 12:28	CKD	1409473
Manganese	690	10	ug/L	10	USEPA-6020A	09/16/14 11:48	MSM	1409475
Molybdenum	1.9	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Nickel	2.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Potassium	1.1	0.50	mg/L	1	USEPA-6010C	09/15/14 13:59	CKD	1409473
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:48	DSC	1409475
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Sodium	19	0.50	mg/L	1	USEPA-6010C	09/15/14 13:59	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475
Zinc	<10	10	ug/L	1	USEPA-6020A	09/12/14 14:17	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **WBR-003**
 Lab Sample ID: **1409174-03**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:55
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	42	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	37	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	0.12	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO₃	54	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:36	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 13:56	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:25	CAC	1409542
Residue, Dissolved @ 180° C	162	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	5.6	5.0	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	09/15/14 11:01	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	09/11/14 12:07	WAH	1409691

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1409174-04**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:05
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	6.28	0.500	ng/L	1	USEPA-1631E	09/11/14 14:26	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1409174-04**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:05
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	09/15/14 12:32	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Arsenic	2.6	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Barium	9.3	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:51	DSC	1409475
Boron	<10	10	ug/L	1	USEPA-6020A	09/16/14 11:36	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Calcium	9.2	0.50	mg/L	1	USEPA-6010C	09/15/14 12:32	CKD	1409473
Chromium	1.1	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Iron	2500	10	ug/L	1	USEPA-6010C	09/15/14 12:32	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 14:02	CKD	1409473
Magnesium	2.6	0.50	mg/L	1	USEPA-6010C	09/15/14 12:32	CKD	1409473
Manganese	190	5.0	ug/L	5	USEPA-6020A	09/16/14 11:49	MSM	1409475
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Nickel	1.3	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:51	DSC	1409475
Potassium	0.83	0.50	mg/L	1	USEPA-6010C	09/15/14 14:02	CKD	1409473
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Sodium	4.7	0.50	mg/L	1	USEPA-6010C	09/15/14 14:02	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475
Zinc	16	10	ug/L	1	USEPA-6020A	09/12/14 14:27	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-001**
 Lab Sample ID: **1409174-04**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 10:05
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	37	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	8.8	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO3	40	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH3 G-2011	09/11/14 15:36	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	09/10/14 13:57	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO3 F-2011	09/10/14 16:26	CAC	1409542
Residue, Dissolved @ 180° C	80.0	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	09/15/14 11:04	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S2 D-2011	09/11/14 12:10	WAH	1409691

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **MER-002**
Lab Sample ID: **1409174-05**
Matrix: Water

Work Order: **1409174**
Description: Laboratory Services
Sampled: 9/9/14 9:30
Sampled By: K. Coolman
Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	4.60	0.500	ng/L	1	USEPA-1631E	09/11/14 14:30	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1409174-05**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 9:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	330	50	ug/L	1	USEPA-6010C	09/15/14 12:35	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Arsenic	5.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Barium	20	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:53	DSC	1409475
Boron	<10	10	ug/L	1	USEPA-6020A	09/16/14 13:53	DSC	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Calcium	11	0.50	mg/L	1	USEPA-6010C	09/15/14 12:35	CKD	1409473
Chromium	1.2	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Cobalt	1.5	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Copper	1.2	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Iron	6400	10	ug/L	1	USEPA-6010C	09/15/14 12:35	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 14:05	CKD	1409473
Magnesium	3.2	0.50	mg/L	1	USEPA-6010C	09/15/14 12:35	CKD	1409473
Manganese	580	10	ug/L	10	USEPA-6020A	09/16/14 11:53	MSM	1409475
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Nickel	1.7	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 13:53	DSC	1409475
Potassium	1.0	0.50	mg/L	1	USEPA-6010C	09/15/14 14:05	CKD	1409473
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Sodium	6.6	0.50	mg/L	1	USEPA-6010C	09/15/14 14:05	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Vanadium	3.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475
Zinc	<10	10	ug/L	1	USEPA-6020A	09/12/14 14:34	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-002**
 Lab Sample ID: **1409174-05**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 9:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	39	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	11	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO₃	48	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:36	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 13:57	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:30	CAC	1409542
*Residue, Dissolved @ 180° C	100	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
*Residue, Suspended	13.2	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	6.3	5.0	mg/L	1	ASTM D516-90 (07)	09/15/14 09:09	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	09/11/14 11:46	WAH	1409691

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **MER-003**
Lab Sample ID: **1409174-06**
Matrix: Water

Work Order: **1409174**
Description: Laboratory Services
Sampled: 9/9/14 8:45
Sampled By: K. Coolman
Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	4.92	0.500	ng/L	1	USEPA-1631E	09/11/14 14:42	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1409174-06**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 8:45
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	09/15/14 12:52	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Arsenic	2.4	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Barium	12	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:12	DSC	1409475
Boron	11	10	ug/L	1	USEPA-6020A	09/16/14 11:40	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Calcium	12	0.50	mg/L	1	USEPA-6010C	09/15/14 12:52	CKD	1409473
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Iron	3200	10	ug/L	1	USEPA-6010C	09/15/14 12:52	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 14:29	CKD	1409473
Magnesium	3.6	0.50	mg/L	1	USEPA-6010C	09/15/14 12:52	CKD	1409473
Manganese	210	5.0	ug/L	5	USEPA-6020A	09/16/14 11:58	MSM	1409475
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Potassium	1.2	0.50	mg/L	1	USEPA-6010C	09/15/14 14:29	CKD	1409473
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:12	DSC	1409475
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Sodium	9.5	0.50	mg/L	1	USEPA-6010C	09/15/14 14:29	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475
Zinc	<10	10	ug/L	1	USEPA-6020A	09/12/14 14:43	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **MER-003**
 Lab Sample ID: **1409174-06**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 8:45
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	40	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	16	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO₃	54	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:37	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 14:03	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:32	CAC	1409542
Residue, Dissolved @ 180° C	76.0	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	9.4	5.0	mg/L	1	ASTM D516-90 (07)	09/15/14 09:09	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	09/11/14 12:11	WAH	1409691

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
Project: Eagle Mine - Humboldt Mill SW
Client Sample ID: **HMWQ-004**
Lab Sample ID: **1409174-07**
Matrix: Water

Work Order: **1409174**
Description: Laboratory Services
Sampled: 9/9/14 11:35
Sampled By: K. Coolman
Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	3.65	0.500	ng/L	1	USEPA-1631E	09/11/14 14:46	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1409174-07**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 11:35
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	3900	50	ug/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Antimony	1.7	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Arsenic	24	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Barium	84	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:15	DSC	1409475
Boron	28	10	ug/L	1	USEPA-6020A	09/16/14 11:41	MSM	1409475
Cadmium	0.74	0.20	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Calcium	16	0.50	mg/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Chromium	10	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Cobalt	20	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Copper	120	5.0	ug/L	5	USEPA-6020A	09/15/14 17:42	MSM	1409475
Iron	52000	10	ug/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Lead	40	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Lithium	12	8.0	ug/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Magnesium	6.0	0.50	mg/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Manganese	1800	50	ug/L	50	USEPA-6020A	09/16/14 11:59	MSM	1409475
Molybdenum	3.3	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Nickel	22	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Potassium	2.8	0.50	mg/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Selenium	2.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:15	DSC	1409475
Silver	0.27	0.20	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Sodium	32	0.50	mg/L	1	USEPA-6010C	09/15/14 13:02	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Vanadium	27	1.0	ug/L	1	USEPA-6020A	09/12/14 14:44	MSM	1409475
Zinc	190	50	ug/L	5	USEPA-6020A	09/15/14 17:42	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **HMWQ-004**
 Lab Sample ID: **1409174-07**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 11:35
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	50	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	43	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	0.17	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO₃	65	10	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	0.58	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:37	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 14:04	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:33	CAC	1409542
Residue, Dissolved @ 180° C	172	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
*Residue, Suspended	199	24.8	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	09/15/14 11:04	LMA	1409673
Sulfide, Total	<50	50	mg/L	10	SM 4500-S ₂ D-2011	09/11/14 12:12	WAH	1409691

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **DUPLICATE**
 Lab Sample ID: **1409174-08**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 9:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	4.70	0.500	ng/L	1	USEPA-1631E	09/11/14 14:51	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **DUPLICATE**
 Lab Sample ID: **1409174-08**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 9:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Arsenic	2.6	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Barium	11	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:18	DSC	1409475
Boron	<10	10	ug/L	1	USEPA-6020A	09/16/14 11:42	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Calcium	12	0.50	mg/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Iron	3100	10	ug/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Magnesium	3.3	0.50	mg/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Manganese	230	5.0	ug/L	5	USEPA-6020A	09/16/14 12:00	MSM	1409475
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Potassium	0.95	0.50	mg/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:18	DSC	1409475
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Sodium	7.0	0.50	mg/L	1	USEPA-6010C	09/15/14 13:08	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Vanadium	1.2	1.0	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475
Zinc	<10	10	ug/L	1	USEPA-6020A	09/12/14 14:46	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **DUPLICATE**
 Lab Sample ID: **1409174-08**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 9:30
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	39	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	11	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:23	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO₃	48	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:37	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 14:05	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:34	CAC	1409542
Residue, Dissolved @ 180° C	104	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	3.5	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	6.2	5.0	mg/L	1	ASTM D516-90 (07)	09/15/14 09:12	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	09/11/14 12:12	WAH	1409691

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **FIELD BLANK**
 Lab Sample ID: **1409174-09**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 12:20
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	<0.500	0.500	ng/L	1	USEPA-1631E	09/11/14 14:55	KLV	1409545

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **FIELD BLANK**
 Lab Sample ID: **1409174-09**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 12:20
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	<50	50	ug/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Antimony	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Arsenic	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Barium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Beryllium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:20	DSC	1409475
Boron	<10	10	ug/L	1	USEPA-6020A	09/16/14 11:43	MSM	1409475
Cadmium	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Calcium	<0.50	0.50	mg/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Chromium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Cobalt	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Copper	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Iron	<10	10	ug/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Lead	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Lithium	<8.0	8.0	ug/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Magnesium	<0.50	0.50	mg/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Manganese	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Molybdenum	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Nickel	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Potassium	<0.50	0.50	mg/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Selenium	<1.0	1.0	ug/L	1	USEPA-6020A	09/16/14 14:20	DSC	1409475
Silver	<0.20	0.20	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Sodium	<0.50	0.50	mg/L	1	USEPA-6010C	09/15/14 13:12	CKD	1409473
Thallium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Vanadium	<1.0	1.0	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475
Zinc	<10	10	ug/L	1	USEPA-6020A	09/12/14 14:53	MSM	1409475

ANALYTICAL REPORT

Client: **Golder Associates, Inc. - MI**
 Project: Eagle Mine - Humboldt Mill SW
 Client Sample ID: **FIELD BLANK**
 Lab Sample ID: **1409174-09**
 Matrix: Water

Work Order: **1409174**
 Description: Laboratory Services
 Sampled: 9/9/14 12:20
 Sampled By: K. Coolman
 Received: 9/10/14 8:10

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409644
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B-2011	09/15/14 12:45	SKA	1409646
Chloride	<1.0	1.0	mg/L	1	SM 4500-Cl E-2011	09/18/14 08:30	LMA	1409826
Fluoride	<0.10	0.10	mg/L	1	SM 4500-F C-2011	09/18/14 14:00	KLA	1409856
Hardness as CaCO ₃	<2	2	mg/L	1	SM 2340 C-2011	09/12/14 14:20	KAR	1409576
Nitrogen, Ammonia	<0.50	0.50	mg/L	1	SM 4500-NH ₃ G-2011	09/11/14 15:37	CAC	1409563
Nitrogen, Nitrite	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 14:05	CAC	1409541
Nitrogen, Nitrate	<0.50	0.50	mg/L	1	SM 4500-NO ₃ F-2011	09/10/14 16:34	CAC	1409542
Residue, Dissolved @ 180° C	<50.0	50.0	mg/L	1	SM 2540 C-2011	09/11/14 16:45	WAY	1409532
Residue, Suspended	<3.3	3.3	mg/L	1	SM 2540 D-2011	09/12/14 18:00	WAY	1409584
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (07)	09/15/14 11:04	LMA	1409673
Sulfide, Total	<5.0	5.0	mg/L	1	SM 4500-S ₂ D-2011	09/11/14 12:13	WAH	1409691

QUALITY CONTROL REPORT

Total Metals by EPA 1600 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Mercury/USEPA-1631E

QC Batch: 1409545 (1631E Digestion)

Analyzed: 09/11/2014 By: KLV

Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Laboratory Control Sample		4.00	3.998	ng/L	100	77-123			0.500
1409174-05 [MER-002]									
Matrix Spike	4.601	4.00	9.186	ng/L	115	71-125			0.500
Matrix Spike Duplicate	4.601	4.00	9.300	ng/L	117	71-125	1	24	0.500

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Aluminum/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)

Analyzed: 09/15/2014 By: CKD

Method Blank			<50	ug/L					50
Laboratory Control Sample		2000	1990	ug/L	99	80-120			50
1409174-05 [MER-002]									
Matrix Spike	327	2000	2530	ug/L	110	75-125			50
Matrix Spike Duplicate	327	2000	2640	ug/L	116	75-125	4	20	50

Analyte: Antimony/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	52.7	ug/L	105	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	0.255	50.0	52.5	ug/L	104	75-125			1.0
Matrix Spike Duplicate	0.255	50.0	52.2	ug/L	104	75-125	0.5	20	1.0

Analyte: Arsenic/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	41.0	ug/L	82	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	5.03	50.0	51.1	ug/L	92	75-125			1.0
Matrix Spike Duplicate	5.03	50.0	51.5	ug/L	93	75-125	0.8	20	1.0

Analyte: Barium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	48.0	ug/L	96	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	19.8	50.0	71.9	ug/L	104	75-125			1.0
Matrix Spike Duplicate	19.8	50.0	68.8	ug/L	98	75-125	4	20	1.0

Analyte: Beryllium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/16/2014 By: DSC

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Beryllium/USEPA-6020A (Continued)

QC Batch: 1409475 (Continued) (3020A Digestion)						Analyzed: 09/16/2014		By: DSC	
Laboratory Control Sample		50.0	55.0	ug/L	110	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	<1.0	50.0	55.8	ug/L	112	75-125			1.0
Matrix Spike Duplicate	<1.0	50.0	55.0	ug/L	110	75-125	1	20	1.0

Analyte: Boron/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)						Analyzed: 09/16/2014		By: DSC	
1409174-05 [MER-002]									
Matrix Spike	5.31	50.0	61.7	ug/L	113	70-130			10
Matrix Spike Duplicate	5.31	50.0	62.0	ug/L	113	70-130	0.4	20	10

QC Batch: 1409475 (3020A Digestion)						Analyzed: 09/16/2014		By: MSM	
Method Blank			<10	ug/L					10
Laboratory Control Sample		50.0	40.0	ug/L	80	80-120			10

Analyte: Cadmium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)						Analyzed: 09/12/2014		By: MSM	
Method Blank			<0.20	ug/L					0.20
Laboratory Control Sample		50.0	43.3	ug/L	87	80-120			0.20
1409174-05 [MER-002]									
Matrix Spike	0.0672	50.0	48.1	ug/L	96	75-125			0.20
Matrix Spike Duplicate	0.0672	50.0	48.4	ug/L	97	75-125	0.5	20	0.20

Analyte: Calcium/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)						Analyzed: 09/15/2014		By: CKD	
Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	19.2	mg/L	96	80-120			0.50
1409174-05 [MER-002]									
Matrix Spike	11.1	20.0	29.8	mg/L	93	75-125			0.50
Matrix Spike Duplicate	11.1	20.0	33.3	mg/L	111	75-125	11	20	0.50

Analyte: Chromium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)						Analyzed: 09/12/2014		By: MSM	
Method Blank			<1.0	ug/L					1.0

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Chromium/USEPA-6020A (Continued)

QC Batch: 1409475 (Continued) (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Laboratory Control Sample		50.0	53.0	ug/L	106	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	1.22	50.0	60.1	ug/L	118	75-125			1.0
Matrix Spike Duplicate	1.22	50.0	56.7	ug/L	111	75-125	6	20	1.0

Analyte: Cobalt/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.1	ug/L	102	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	1.46	50.0	59.7	ug/L	116	75-125			1.0
Matrix Spike Duplicate	1.46	50.0	56.3	ug/L	110	75-125	6	20	1.0

Analyte: Copper/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	50.4	ug/L	101	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	1.19	50.0	56.9	ug/L	111	75-125			1.0
Matrix Spike Duplicate	1.19	50.0	54.2	ug/L	106	75-125	5	20	1.0

Analyte: Iron/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)

Analyzed: 09/15/2014 By: CKD

Method Blank			<10	ug/L					10
Laboratory Control Sample		400	406	ug/L	101	80-120			10

Analyte: Lead/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Lead/USEPA-6020A (Continued)

QC Batch: 1409475 (Continued) (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Laboratory Control Sample		50.0	50.3	ug/L	101	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	0.873	50.0	57.8	ug/L	114	75-125			1.0
Matrix Spike Duplicate	0.873	50.0	54.0	ug/L	106	75-125	7	20	1.0

Analyte: Lithium/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)

Analyzed: 09/15/2014 By: CKD

Method Blank			<8.0	ug/L					8.0
Laboratory Control Sample		400	434	ug/L	109	80-120			8.0
1409174-05 [MER-002]									
Matrix Spike	7.29	400	415	ug/L	102	75-125			8.0
Matrix Spike Duplicate	7.29	400	446	ug/L	110	75-125	7	20	8.0

Analyte: Magnesium/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)

Analyzed: 09/15/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	19.8	mg/L	99	80-120			0.50
1409174-05 [MER-002]									
Matrix Spike	3.23	20.0	22.4	mg/L	96	75-125			0.50
Matrix Spike Duplicate	3.23	20.0	24.8	mg/L	108	75-125	10	20	0.50

Analyte: Manganese/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	51.8	ug/L	104	80-120			1.0

Analyte: Molybdenum/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Molybdenum/USEPA-6020A (Continued)

QC Batch: 1409475 (Continued) (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Laboratory Control Sample		50.0	53.2	ug/L	106	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	0.664	50.0	56.0	ug/L	111	75-125			1.0
Matrix Spike Duplicate	0.664	50.0	52.0	ug/L	103	75-125	7	20	1.0

Analyte: Nickel/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	50.1	ug/L	100	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	1.65	50.0	58.0	ug/L	113	75-125			1.0
Matrix Spike Duplicate	1.65	50.0	54.4	ug/L	106	75-125	6	20	1.0

Analyte: Potassium/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)

Analyzed: 09/15/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	22.5	mg/L	113	80-120			0.50
1409174-05 [MER-002]									
Matrix Spike	1.01	20.0	22.3	mg/L	107	75-125			0.50
Matrix Spike Duplicate	1.01	20.0	24.2	mg/L	116	75-125	8	20	0.50

Analyte: Selenium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/16/2014 By: DSC

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	49.2	ug/L	98	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	0.323	50.0	50.1	ug/L	100	75-125			1.0
Matrix Spike Duplicate	0.323	50.0	50.7	ug/L	101	75-125	1	20	1.0

Analyte: Silver/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<0.20	ug/L					0.20
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Silver/USEPA-6020A (Continued)

QC Batch: 1409475 (Continued) (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Laboratory Control Sample		50.0	47.7	ug/L	95	80-120			0.20
1409174-05 [MER-002]									
Matrix Spike	<0.20	50.0	50.7	ug/L	101	75-125			0.20
Matrix Spike Duplicate	<0.20	50.0	49.9	ug/L	100	75-125	1	20	0.20

Analyte: Sodium/USEPA-6010C

QC Batch: 1409473 (3010A Digestion)

Analyzed: 09/15/2014 By: CKD

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		20.0	21.7	mg/L	108	80-120			0.50
1409174-05 [MER-002]									
Matrix Spike	6.65	20.0	26.9	mg/L	101	75-125			0.50
Matrix Spike Duplicate	6.65	20.0	29.5	mg/L	114	75-125	9	20	0.50

Analyte: Thallium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	49.6	ug/L	99	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	0.0557	50.0	56.8	ug/L	114	75-125			1.0
Matrix Spike Duplicate	0.0557	50.0	53.2	ug/L	106	75-125	6	20	1.0

Analyte: Vanadium/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	52.4	ug/L	105	80-120			1.0
1409174-05 [MER-002]									
Matrix Spike	2.95	50.0	62.9	ug/L	120	75-125			1.0
Matrix Spike Duplicate	2.95	50.0	58.0	ug/L	110	75-125	8	20	1.0

Analyte: Zinc/USEPA-6020A

QC Batch: 1409475 (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Method Blank			<10	ug/L					10
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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Zinc/USEPA-6020A (Continued)

QC Batch: 1409475 (Continued) (3020A Digestion)

Analyzed: 09/12/2014 By: MSM

Laboratory Control Sample		50.0	43.1	ug/L	86	80-120			10
1409174-05 [MER-002]									
Matrix Spike	7.01	50.0	51.9	ug/L	90	75-125			10
Matrix Spike Duplicate	7.01	50.0	53.2	ug/L	92	75-125	3	20	10

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Alkalinity, Bicarbonate/SM 2320 B-2011

QC Batch: 1409644 (General Inorganic Prep)

Analyzed: 09/15/2014 By: SKA

Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		238	240	mg/L	101	74-123			2.0
1409174-05 [MER-002]									
Matrix Spike	38.5	238	280	mg/L	102	78-117			2.0
Duplicate	38.5		39.5	mg/L			2	20	2.0

Analyte: Alkalinity, Carbonate/SM 2320 B-2011

QC Batch: 1409646 (General Inorganic Prep)

Analyzed: 09/15/2014 By: SKA

Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		378	360	mg/L	95	72-114			2.0
1409174-05 [MER-002]									
Duplicate	<2.0		<2.0	mg/L				20	2.0

Analyte: Chloride/SM 4500-Cl E-2011

QC Batch: 1409826 (General Inorganic Prep)

Analyzed: 09/18/2014 By: LMA

Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		50.0	49.6	mg/L	99	90-106			1.0
1409174-05 [MER-002]									
Matrix Spike	11.4	50.0	60.1	mg/L	97	72-123			1.0
Matrix Spike Duplicate	11.4	50.0	60.7	mg/L	99	72-123	1	20	1.0

Analyte: Fluoride/SM 4500-F C-2011

QC Batch: 1409856 (Method Specific Preparation)

Analyzed: 09/18/2014 By: KLA

Method Blank			<0.10	mg/L					0.10
Laboratory Control Sample		2.00	2.05	mg/L	102	90-110			0.10
1409174-05 [MER-002]									
Matrix Spike	0.0409	2.00	2.06	mg/L	101	75-125			0.10
Duplicate	0.0409		0.0372	mg/L			9	20	0.10

Analyte: Hardness as CaCO3/SM 2340 C-2011

QC Batch: 1409576 (Method Specific Preparation)

Analyzed: 09/12/2014 By: KAR

Method Blank			<2	mg/L					2
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QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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Analyte: Hardness as CaCO₃/SM 2340 C-2011 (Continued)

QC Batch: 1409576 (Continued) (Method Specific Preparation)

Analyzed: 09/12/2014 By: KAR

Laboratory Control Sample		86.3	88	mg/L	101	92-110			2
Laboratory Control Sample		200	209	mg/L	104	92-110			2
1409174-05 [MER-002]									
Matrix Spike	48	200	245	mg/L	99	86-113			2
Matrix Spike Duplicate	48	200	245	mg/L	99	86-113	0	20	2

Analyte: Nitrogen, Ammonia/SM 4500-NH₃ G-2011

QC Batch: 1409563 (General Inorganic Prep)

Analyzed: 09/11/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.459	mg/L	92	90-110			0.50
1409174-05 [MER-002]									
Matrix Spike	0.00920	0.500	0.479	mg/L	94	90-110			0.50
Matrix Spike Duplicate	0.00920	0.500	0.476	mg/L	93	90-110	0.6	20	0.50

Analyte: Nitrogen, Nitrate/SM 4500-NO₃ F-2011

QC Batch: 1409542 (General Inorganic Prep)

Analyzed: 09/10/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.497	mg/L	99	90-110			0.50
1409174-05 [MER-002]									
Matrix Spike	0.0204	0.500	0.519	mg/L	100	90-110			0.50
Matrix Spike Duplicate	0.0204	0.500	0.509	mg/L	98	90-110	2	20	0.50

Analyte: Nitrogen, Nitrite/SM 4500-NO₂ F-2011

QC Batch: 1409541 (General Inorganic Prep)

Analyzed: 09/10/2014 By: CAC

Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		0.500	0.514	mg/L	103	90-110			0.50
1409174-05 [MER-002]									
Matrix Spike	<0.50	0.500	0.664	mg/L	133	90-110			0.50
Matrix Spike Duplicate	<0.50	0.500	0.613	mg/L	123	90-110	8	20	0.50

Analyte: Residue, Dissolved @ 180° C/SM 2540 C-2011

QC Batch: 1409532 (General Inorganic Prep)

Analyzed: 09/11/2014 By: WAY

Method Blank			<50.0	mg/L					50.0
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Continued on next page

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
---------	--------------	------------	--------	------	--------------	----------------	-----	------------	----

Analyte: Residue, Dissolved @ 180° C/SM 2540 C-2011 (Continued)

QC Batch: 1409532 (Continued) (General Inorganic Prep)

Analyzed: 09/11/2014 By: WAY

Laboratory Control Sample		200	184	mg/L	92	85-115			50.0
1409174-05 [MER-002]									
Duplicate	100		120	mg/L			18	5	50.0

Analyte: Residue, Suspended/SM 2540 D-2011

QC Batch: 1409584 (General Inorganic Prep)

Analyzed: 09/12/2014 By: WAY

Method Blank			<3.3	mg/L					3.3
Laboratory Control Sample		200	202	mg/L	101	88-104			24.8
1409174-05 [MER-002]									
Duplicate	13.2		8.3	mg/L			46	5	3.3
1409174-07 [HMWQ-004]									
Duplicate	199		229	mg/L			14	5	24.8

Analyte: Sulfate/ASTM D516-90 (07)

QC Batch: 1409673 (General Inorganic Prep)

Analyzed: 09/15/2014 By: LMA

Method Blank			<1.0	mg/L					1.0
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		10.0	9.52	mg/L	95	88-116			1.0
Laboratory Control Sample		20.0	19.2	mg/L	96	88-116			1.0
1409174-05 [MER-002]									
Matrix Spike	6.30	20.0	28.7	mg/L	112	55-151			1.0
Matrix Spike Duplicate	6.30	20.0	28.6	mg/L	112	55-151	0.2	20	1.0

Analyte: Sulfide, Total/SM 4500-S2 D-2011

QC Batch: 1409691 (Method Specific Preparation)

Analyzed: 09/11/2014 By: WAH

Method Blank			<5.0	mg/L					5.0
Laboratory Control Sample		0.336	0.321	mg/L	96	80-120			5.0
1409174-05 [MER-002]									
Matrix Spike	0.0217	0.336	0.308	mg/L	85	55-119			5.0
Matrix Spike Duplicate	0.0217	0.336	0.313	mg/L	87	55-119	1	20	5.0

For Lab Use Only

 5560 Corporate Exchange Court SE, Grand Rapids, MI 49512
 Phone (616) 975-4500 Fax (616) 942-7463 www.trimatrixlabs.com

Analyses Requested

 Pg. 1 of 1

 Cart 449, 12

Client Name

Golder Associates/Eagle Mine

Project Name

Humboldt Mill SW

 Receipt Log No. 43-3

Address

220 W. Washington, Suite 240

Client Project No. / P.O. No.

1401484

Project Chemist

Jennifer Rice

Invoice To

☒ Client

☐ Other (comments)

Work Order No.

1409174

City, State Zip

Marquette, MI 49855

Phone: 906-273-2525 Fax 906-273-2528

Contact/Report To

Christina Stacey

A	C	D	F	D	A	A	A
Ars, Cl, F, SO4, NO3, NO2, TDS							
Ammonia							
Total Metals (not filtered)							
Sulfide							
Dissolved metals (filtered)							
LL Hg (filtered)							
LL Hg (not filtered)							
TSS							

- ☐ PRESERVATIVES
 A NONE pH<7
 B HNO₃ pH<2
 C H₂SO₄ pH<2
 D 1+1 HCl pH<2
 E NaOH pH>12
 F ZnAc/NaOH pH>9
 G MeOH
 H Other (note below)

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	C	O	M	P	G	R	A	B	Matrix	Number of Containers Submitted	Total	Sample Comments
01		01	WBR-001		9-9-14	1030	X								SW	1	1	7
		02	WBR-002			1115	X								SW	1	1	7
		03	WBR-003			1055	X								SW	1	1	7
		04	MER-001			1005	X								SW	1	1	7
		05	MER-002			0930	X								SW	2	2	11
		06	MER-003			0845	X								SW	1	1	7
		07	HMP-009				X								SW	1	1	7
		08	HMP-004			1135	X								SW	1	1	7
		09	DUPLICATE			0930	X								SW	1	1	7
		10	FIELD BLANK			1230	X								SW	1	1	7

Sampled By (print)

Kyle Logmon

Sample Signature

Company

GOLDER

How Shipped?

Tracking No.

Hand

Carrier

Date

Time

Comments

1135

0930

1230

1135

0930

1230

1135

0930

1230

1135

0930

ORIGINAL - LABORATORY

COPY - SAMPLER

SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: Golder	Work Order #: 1409174
Receipt Record Page/Line #: 43.3	Project Chemist: _____ Sample #: _____

Recorded by (initials/date): WC 9.10.14	☒ Cooler ☐ Box ☐ Other	Qty Received: 3	Thermometer Used: ☐ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (#) _____	☐ See Additional Cooler Information Form
--	--	------------------------	--	---

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time	
Im 2648	0824	Im 1982	0835	Im 0104	0845			
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact		
Coolant Type: ☒ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☒ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☒ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		
Coolant Location: ☒ Dispersed / ☐ Top / ☐ Middle / ☐ Bottom		Coolant Location: ☒ Dispersed / ☐ Top / ☐ Middle / ☐ Bottom		Coolant Location: ☒ Dispersed / ☐ Top / ☐ Middle / ☐ Bottom		Coolant Location: ☐ Dispersed / ☐ Top / ☐ Middle / ☐ Bottom		
Temp Blank Present: ☐ Yes ☒ No		Temp Blank Present: ☐ Yes ☒ No		Temp Blank Present: ☐ Yes ☒ No		Temp Blank Present: ☐ Yes ☒ No		
If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		
Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	
Temp Blank: 2.4	-	2.4	Temp Blank: 3.0	-	3.0	Temp Blank: 2.8	-	
Sample 1: 2.9	-	2.9	Sample 1: 3.1	-	3.1	Sample 1:		
Sample 2: 2.1	-	2.1	Sample 2: 3.1	-	3.1	Sample 2:		
Sample 3: 3.2	-	3.2	Sample 3: 3.5	-	3.5	Sample 3:		
3 Sample Average °C: 2.7			3 Sample Average °C: 3.2			3 Sample Average °C: 3.0		
☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?		

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes ☒ No ☐ Chain of Custody record(s)? If No, Initiated By _____

☒ Received for Lab Signed/Date/Time? _____

☒ Shipping document? _____

☒ Other: _____

COC Information

☒ TriMatrix COC ☐ Other: _____

COC ID Numbers: _____

Check COC for Accuracy

Yes ☒ No ☐ Analysis Requested? **SV 9/11**

☒ Sample ID matches COC?

☒ Sample Date and Time matches COC?

☒ Container type completed on COC?

☒ All container types indicated are received?

Sample Condition Summary

N/A	Yes	No
☒	☐	☐ Broken containers/lids?
☒	☐	☐ Missing or incomplete labels?
☒	☐	☐ Illegible information on labels?
☒	☐	☐ Low volume received?
☒	☐	☐ Inappropriate or non-TriMatrix containers received?
☒	☐	☐ VOC vials / TOX containers have headspace?
☒	☐	☐ Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A ☒ Yes ☐ No ☐ Temperature Blank OR average sample temperature, ≥6° C?

☒ If either is ≥6° C, was thermal preservation required?

If "Yes", Project Chemist Approval Initials: _____

If "Yes" Completed Non Con Cooler - Cont Inventory Form?

Completed Sample Preservation Verification Form?

☒ Samples chemically preserved correctly?

If "No", added orange tag?

☐ Received pre-preserved VOC soils?

☐ MeOH ☐ Na₂SO₄

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological

☐ Air Bags

☐ EnCores / Methanol Pre-Preserved

☐ Formaldehyde/Aldehyde

☐ Green-tagged containers

☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)

☐ NONE RECEIVED

☒ RECEIVED, COCs TO LAB(S)

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time): 9.10.14 0810	Paperwork Delivered (Date/Time): 9.10.14 0900	≤1 Hour Goal Met? Yes / No
--	--	-----------------------------------

Client: Golder	Work Order #: 1409174
Receipt Log #: 43-3	Project Chemist: _____
Completed By: (initials/date) WC 9.10.14	

COC ID #: 140720813				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1		✓		✓	✓						
COC Line #2		✓		✓	✓						
COC Line #3		✓		✓	✓						
COC Line #4		✓		✓	✓						
COC Line #5		✓		✓	✓						
COC Line #6		✓		✓	✓						
COC Line #7											
COC Line #8		✓		✓	✓						
COC Line #9		✓		✓	✓						
COC Line #10		✓		✓	✓						

pH Strip Reagent #
☒ 4051306
☐ _____

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #: _____				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	
500	2.5
1000	5.0
Container Type 4	
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	
500	2.5

Comments

September 25, 2014

Eagle Mine LLC
Attn: Ms. Amanda Zeidler
4547 County Rd 601
Champion, MI 49814

Project: Humboldt Mill WTP

Dear Ms. Amanda Zeidler,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1409306	09/18/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

No Project Narrative is associated with this report.



STATEMENT OF DATA QUALIFICATIONS

All analyses have been validated and comply with our Quality Control Program.
No Qualification is required.

ANALYTICAL REPORT

Client: **Eagle Mine LLC**
Project: Humboldt Mill WTP
Client Sample ID: **WWest Disch2-091714**
Lab Sample ID: **1409306-01**
Matrix: Waste Water

Work Order: **1409306**
Description: Laboratory Services
Sampled: 9/17/14 10:05
Sampled By: D. Bertucci
Received: 9/18/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Action Limit	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO ₃	86	2		mg/L	1	SM 2340 C-2011	09/19/14 16:30	KAR	1409892

ANALYTICAL REPORT

Client: **Eagle Mine LLC**
Project: Humboldt Mill WTP
Client Sample ID: **WWest Disch3-091714**
Lab Sample ID: **1409306-02**
Matrix: Waste Water

Work Order: **1409306**
Description: Laboratory Services
Sampled: 9/17/14 10:17
Sampled By: D. Bertucci
Received: 9/18/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Action Limit	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO ₃	29	2		mg/L	1	SM 2340 C-2011	09/19/14 16:30	KAR	1409892

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
---------	--------------	------------	--------	------	--------------	----------------	-----	------------	----

Analyte: Hardness as CaCO₃/SM 2340 C-2011

QC Batch: 1409892 (Method Specific Preparation)

Analyzed: 09/19/2014 By: KAR

Method Blank			<2	mg/L					2
Laboratory Control Sample		86.3	90	mg/L	104	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2
1409306-01 [WWest Disch2-091714]									
Matrix Spike	86	200	286	mg/L	100	86-113			2
Duplicate	86		86	mg/L			0	20	2



Analyses Requested

Pg. 1 of 1

Chain of Custody Record

COC No.

14090923

Time	Date	Time
3. Returned By		
3. Received for by	DAN	Time
		
September 9/8/17 08:30		

SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: <u>Eagle Mine</u>	Work Order #: <u>1409306</u>
Receipt Record Page/Log #: <u>5-5</u>	Project Chemist: _____ Sample #: _____

Recorded by (Initials/date): <u>SK 9/18/14</u>	☐ Cooler ☒ Box ☐ Other	Qty Received: <u>1</u>	Thermometer Used: ☒ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (# _____) ☐ See Additional Cooler Information Form
--	--	------------------------	--

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time	
<u>Box</u>	<u>0955</u>							
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact		
Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☒ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		
Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		Coolant Location: Dispersed / Top / Middle / Bottom Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		
Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	
Temp Blank:			Temp Blank:			Temp Blank:		
Sample 1:			Sample 1:			Sample 1:		
Sample 2:			Sample 2:			Sample 2:		
Sample 3:			Sample 3:			Sample 3:		
3 Sample Average °C: <u>17.8</u>			3 Sample Average °C:			3 Sample Average °C:		
☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?		

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes ☒ No ☐ Chain of Custody record(s)? If No, Initiated By _____

Received for Lab Signed/Date/Time? _____

☐ Shipping document?

☐ Other _____

COC Information

☒ TriMatrix COC ☐ Other 14090923

COC ID Numbers: _____

Check COC for Accuracy

Yes ☒ No ☐ Analysis Requested?

☒ Sample ID matches COC?

☒ Sample Date and Time matches COC?

Container type completed on COC?

☒ All container types indicated are received?

Sample Condition Summary

N/A ☒ Yes ☐ No ☐

☒ Broken containers/lids?

☒ Missing or incomplete labels?

☒ Illegible information on labels?

☒ Low volume received?

☒ Inappropriate or non-TriMatrix containers received?

☐ VOC vials / TOX containers have headspace?

☒ Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A ☒ Yes ☐ No ☐

☒ Temperature Blank OR average sample temperature, ≥6° C?

☐ If either is ≥6° C, was thermal preservation required?

If "Yes", Project Chemist Approval Initials: _____

If "Yes" Completed Non Con Cooler - Cont Inventory Form?

Completed Sample Preservation Verification Form?

☒ Samples chemically preserved correctly?

If "No", added orange tag?

☒ Received pre-preserved VOC soils?

☐ MeOH ☐ Na₂SO₄

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological

☐ Air Bags

☐ EnCores / Methanol Pre-Preserved

☐ Formaldehyde/Aldehyde

☐ Green-tagged containers

☐ Yellow/White-tagged 1 L Ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)

☒ NONE RECEIVED

☐ RECEIVED, COCs TO LAB(S)

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time): <u>9/18/14 0830</u>	Paperwork Delivered (Date/Time): <u>9/18/14 0958</u>	≤1 Hour Goal Met? Yes ☐ No ☒
--	--	---

Client: <u>Eagle Mine</u>	Work Order # <u>1409306</u>
Receipt Log # <u>55</u>	Completed By (Initials/Date) <u>AE 9/18/14</u>
Project Chemist _____	

COC ID # <u>14090923</u>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

pH Strip Reagent #	
☒	4051306
☐	_____

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

Comments

COC ID # _____				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5 NaOH	
500	2.5
1000	5.0
Container Type 4 H ₂ SO ₄	
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13 H ₂ SO ₄	
500	2.5

Comments

October 02, 2014

Eagle Mine LLC
Attn: Ms. Amanda Zeidler
4547 County Rd 601
Champion, MI 49814

Project: Humboldt Mill WTP

Dear Ms. Amanda Zeidler,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1410011	10/01/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

No Project Narrative is associated with this report.



STATEMENT OF DATA QUALIFICATIONS

All analyses have been validated and comply with our Quality Control Program.
No Qualification is required.

ANALYTICAL REPORT

Client: **Eagle Mine LLC**
Project: Humboldt Mill WTP
Client Sample ID: **HMWTP-EFF-093014**
Lab Sample ID: **1410011-01**
Matrix: Waste Water

Work Order: **1410011**
Description: Laboratory Services
Sampled: 9/30/14 13:00
Sampled By: Dave Tornberry
Received: 10/1/14 9:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Action Limit	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO ₃	203	2		mg/L	1	SM 2340 C-2011	10/01/14 16:05	KAR	1410535

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
---------	--------------	------------	--------	------	--------------	----------------	-----	------------	----

Analyte: Hardness as CaCO₃/SM 2340 C-2011

QC Batch: 1410535 (Method Specific Preparation)

Analyzed: 10/01/2014 By: KAR

Method Blank			<2	mg/L					2
Laboratory Control Sample		79.7	79	mg/L	99	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2
1410011-01 [HMWTP-EFF-093014]									
Matrix Spike	203	1000	1210	mg/L	101	86-113			10
Duplicate	203		202	mg/L			0.5	20	2



5560 Corporate Exchange Court SE
Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 14090826

Analyses Requested

Pg. 1 of 1

For Lab Use Only

Client Name
Eagle Mine LLC

Project Name
Humboldt WTP

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

VOA Rack/Tray

Client Name
Eagle Mine LLC

Project Name
Humboldt WTP

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Receipt Log No.

Address
4547 Co Rd 601

Client Project No. / P.O. No.

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Project Chemist

City, State Zip
Champion, MI 49814

Invoice To

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Work Order No.

Phone/Fax 906-339-7000

Contact/Report To
Amanda Zeidler

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Schedule

Field Sample ID
HMWTP-EFF-093014

Cooler ID

Sample Date
9-30-14

Sample Time
1300

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Matrix Code

Sample Number
01

Sample Date
9-30-14

Sample Time
1300

Matrix

B

Container Type (corresponds to Container Packing List)

← PRESERVATIVES
A NONE pH<7
B HNO₃ pH<2
C H₂SO₄ pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Sample Number

Field Sample ID
HMWTP-EFF-093014

Cooler ID

Sample Date
9-30-14

Sample Time
1300

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Container Type (corresponds to Container Packing List)

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HMWTP-EFF-093014

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Sample Time
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HMWTP-EFF-093014

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HMWTP-EFF-093014

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HMWTP-EFF-093014

Cooler ID

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9-30-14

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E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

SAMPLE RECEIVING / LOG-IN CHECKLIST



TRIMATRIX
LABORATORIES

Client: <u>Eagle Mine</u>	Work Order #: <u>410011</u>
Receipt Record Page/Line #: <u>27/11</u>	Project Chemist: _____ Sample #: _____

Recorded by (initials/date): <u>WDC 10-1-14</u>	☒ Cooler ☐ Box ☐ Other: _____	Qty Received: <u>1</u>	☒ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (# _____)	Thermometer Used: _____ See Additional Cooler Information Form ☐
---	---	------------------------	---	--

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time	
<u>Box</u>	<u>1124</u>							
Custody Seals:		Custody Seals:		Custody Seals:		Custody Seals:		
☒ None ☐ Present / Intact ☐ Present / Not Intact		☐ None ☐ Present / Intact ☐ Present / Not Intact		☐ None ☐ Present / Intact ☐ Present / Not Intact		☐ None ☐ Present / Intact ☐ Present / Not Intact		
Coolant Type:		Coolant Type:		Coolant Type:		Coolant Type:		
☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☒ None		☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		
Coolant Location:		Coolant Location:		Coolant Location:		Coolant Location:		
Dispersed / Top / Middle / Bottom		Dispersed / Top / Middle / Bottom		Dispersed / Top / Middle / Bottom		Dispersed / Top / Middle / Bottom		
Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No		
If Present, Temperature Blank Location is:		If Present, Temperature Blank Location is:		If Present, Temperature Blank Location is:		If Present, Temperature Blank Location is:		
☐ Representative ☐ Not Representative		☐ Representative ☐ Not Representative		☐ Representative ☐ Not Representative		☐ Representative ☐ Not Representative		
Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	
Temp Blank:			Temp Blank:			Temp Blank:		
Sample 1:	<u>20.6</u>	<u>- 20.6</u>	Sample 1:			Sample 1:		
Sample 2:			Sample 2:			Sample 2:		
Sample 3:			Sample 3:			Sample 3:		
3 Sample Average °C: <u>20.6</u>			3 Sample Average °C:			3 Sample Average °C:		
☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?		

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or inventory Form

Paperwork Received Yes ☒ No ☐ Chain of Custody record(s)? If No, Initiated By _____ Received for Lab Signed/Date/Time? _____ ☐ Shipping document? ☐ Other: _____ COC Information ☒ TriMatrix COC ☐ Other: _____ COC ID Numbers: _____ Check COC for Accuracy Yes ☒ No ☐ Analysis Requested? ☒ Sample ID matches COC? ☒ Sample Date and Time matches COC? Container type completed on COC? ☒ All container types indicated are received? Sample Condition Summary <table style="width: 100%;"> <tr> <th>N/A</th> <th>Yes</th> <th>No</th> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ Broken containers/lids?</td> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ Missing or incomplete labels?</td> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ Illegible information on labels?</td> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ Low volume received?</td> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ Inappropriate or non-TriMatrix containers received?</td> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ VOC vials / TOX containers have headspace?</td> </tr> <tr> <td>☒</td> <td>☒</td> <td>☐ Extra sample locations / containers not listed on COC?</td> </tr> </table>	N/A	Yes	No	☒	☒	☐ Broken containers/lids?	☒	☒	☐ Missing or incomplete labels?	☒	☒	☐ Illegible information on labels?	☒	☒	☐ Low volume received?	☒	☒	☐ Inappropriate or non-TriMatrix containers received?	☒	☒	☐ VOC vials / TOX containers have headspace?	☒	☒	☐ Extra sample locations / containers not listed on COC?	Check Sample Preservation N/A ☒ Yes ☐ No ☐ ☐ Temperature Blank OR average sample temperature, ≥6° C? If either is ≥6° C, was thermal preservation required? If "Yes", Project Chemist Approval Initials: _____ If "Yes" Completed Non Con Cooler - Cont Inventory Form? Completed Sample Preservation Verification Form? ☒ Samples chemically preserved correctly? If "No", added orange tag? ☐ Received pre-preserved VOC soils? ☐ MeOH ☐ Na₂SO₄ Check for Short Hold-Time Prep/Analyses ☐ Bacteriological ☐ Air Bags ☐ EnCores / Methanol Pre-Preserved ☐ Formaldehyde/Aldehyde ☐ Green-tagged containers ☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab) Notes ☐ Trip Blank received ☐ Trip Blank not listed on COC <table style="width: 100%;"> <tr> <td>Cooler Received (Date/Time): <u>10-1-14 0900</u></td> <td>Paperwork Delivered (Date/Time): <u>10-1-14 1130</u></td> <td>≤1 Hour Goal Met? <u>Yes</u> / <u>No</u></td> </tr> </table>	Cooler Received (Date/Time): <u>10-1-14 0900</u>	Paperwork Delivered (Date/Time): <u>10-1-14 1130</u>	≤1 Hour Goal Met? <u>Yes</u> / <u>No</u>
N/A	Yes	No																										
☒	☒	☐ Broken containers/lids?																										
☒	☒	☐ Missing or incomplete labels?																										
☒	☒	☐ Illegible information on labels?																										
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Cooler Received (Date/Time): <u>10-1-14 0900</u>	Paperwork Delivered (Date/Time): <u>10-1-14 1130</u>	≤1 Hour Goal Met? <u>Yes</u> / <u>No</u>																										

Client: Eagle Mine	Work Order #: 1410011
Receipt Log #: 27-11	Completed By (initials/date): WC 10.1.14
Project Chemist: _____	

COC ID #: 14090826				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

pH Strip Reagent #

4051306

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
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COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H ₂ SO ₄
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H ₂ SO ₄
500	2.5

October 06, 2014

Eagle Mine LLC
Attn: Ms. Amanda Zeidler
4547 County Rd 601
Champion, MI 49814

Project: Humboldt Mill WTP

Dear Ms. Amanda Zeidler,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1410047	10/03/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

No Project Narrative is associated with this report.



STATEMENT OF DATA QUALIFICATIONS

All analyses have been validated and comply with our Quality Control Program.
No Qualification is required.

ANALYTICAL REPORT

Client: **Eagle Mine LLC**
Project: Humboldt Mill WTP
Client Sample ID: **HMWTP-EFF-100214**
Lab Sample ID: **1410047-01**
Matrix: Waste Water

Work Order: **1410047**
Description: Laboratory Services
Sampled: 10/2/14 11:15
Sampled By: Dave Tornberg
Received: 10/3/14 9:45

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Action Limit	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO ₃	210	2		mg/L	1	SM 2340 C-2011	10/03/14 11:30	KAR	1410678

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
---------	--------------	------------	--------	------	--------------	----------------	-----	------------	----

Analyte: Hardness as CaCO₃/SM 2340 C-2011

QC Batch: 1410678 (Method Specific Preparation)

Analyzed: 10/03/2014 By: KAR

Method Blank			<2	mg/L					2
Laboratory Control Sample		79.7	80	mg/L	100	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2
1410047-01 [HMWTP-EFF-100214]									
Matrix Spike	210	1000	1210	mg/L	100	86-113			10
Duplicate	210		210	mg/L			0	20	2



Pg. 1 of 1

$\frac{1}{\text{of } 1}$

+	B
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859

lander

total

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Conduct a type (with spaces to control tracking list)

6

nothing is for nothing

[illegible][illegible]

100

[illegible]

[illegible]

[illegible]

[illegible][illegible]

[illegible]

[illegible]

Results requested

1

Date _____ Time _____ Requisitioned By _____

10

Date: _____
Time: _____
3. Received For Lab By: _____

Page 6 of 8

SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: <u>Eagle Mine</u>	Work Order #: <u>1410047</u>
Receipt Record Page/Line #: <u>31.2</u>	Project Chemist: _____ Sample #: _____

Recorded by (initials/date): <u>WC 10.3.14</u>	☒ Cooler ☐ Box ☐ Other: _____	Qty Received: <u>1</u>	☒ IR Gun (#202) ☐ Thermometer Used ☐ Digital Thermometer (#54) ☐ Other (# _____)	☐ See Additional Cooler Information Form
--	---	------------------------	--	---

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time	
<u>Box</u>	<u>1032</u>							
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact								
Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☒ None								
Coolant Location: Dispersed / Top / Middle / Bottom								
Temp Blank Present: ☐ Yes ☐ No If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative								
Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	Actual °C	Observed °C	Correction Factor °C	
Temp Blank			Temp Blank			Temp Blank		
Sample 1: <u>20.9</u>		<u>20.9</u>	Sample 1:			Sample 1:		
Sample 2:			Sample 2:			Sample 2:		
Sample 3:			Sample 3:			Sample 3:		
3 Sample Average °C: <u>20.9</u>			3 Sample Average °C:			3 Sample Average °C:		
☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?			☐ Cooler ID on COC? ☐ VOC Trip Blank received?		

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☒	☐	Chain of Custody record(s)? If No, Initiated By _____
☒	☐	Received for Lab Signed/Date/Time? _____
☒	☐	Shipping document? _____
☒	☐	Other: _____

COC Information

☒ TriMatrix COC	☐ Other: _____
---	---------------------------------------

COC ID Numbers: _____

Check COC for Accuracy

Yes	No	
☒	☐	Analysis Requested?
☒	☐	Sample ID matches COC?
☒	☐	Sample Date and Time matches COC?
☒	☐	Container type completed on COC?
☒	☐	All container types indicated are received?

Sample Condition Summary

N/A	Yes	No	
☒	☒	☐	Broken containers/lids?
☒	☒	☐	Missing or incomplete labels?
☒	☒	☐	Illegible information on labels?
☒	☒	☐	Low volume received?
☒	☒	☐	Inappropriate or non-TriMatrix containers received?
☒	☒	☐	VOC vials / TOX containers have headspace?
☒	☒	☐	Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A	Yes	No	
☒	☒	☐	Temperature Blank OR average sample temperature, ≥6° C?
☒	☒	☐	If either is ≥6° C, was thermal preservation required?
☒	☒	☐	If "Yes", Project Chemist Approval Initials: _____
☒	☒	☐	If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☒	☒	☐	Completed Sample Preservation Verification Form?
☒	☒	☐	Samples chemically preserved correctly?
☒	☒	☐	If "No", added orange tag?
☒	☒	☐	Received pre-preserved VOC soils?
		☐	MeOH ☐ Na ₂ SO ₄

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological	AFTER HOURS ONLY: COPIES OF COC TO LAB AREA(S) ☐ NONE RECEIVED ☒ RECEIVED, COCs TO LAB(S)
☐ Air Bags	
☐ EnCores / Methanol Pre-Preserved	
☐ Formaldehyde/Aldehyde	
☐ Green-tagged containers	
☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab)	

Notes

☐ Trip Blank received Cooler Received (Date/Time): <u>10.3.14 0945</u>	☐ Trip Blank not listed on COC Paperwork Delivered (Date/Time): <u>10.3.14 1035</u>	≤1 Hour Goal Met? <u>(Yes) / No</u>
--	---	-------------------------------------

Client <u>Eagle Mine</u>	Work Order # <u>1410047</u>
Receipt Log # <u>31.2</u>	Completed By (initials/date) <u>WC 10.3.14</u>
Project Chemist _____	

COC ID # <u>14100568</u>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

pH-Strip Reagent # 4051306

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID # _____				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe					
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃					
Expected pH	>12	<2	<2	6-8	<2	<2					
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H ₂ SO ₄
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H ₂ SO ₄
500	2.5

October 08, 2014

Eagle Mine LLC
Attn: Ms. Amanda Zeidler
4547 County Rd 601
Champion, MI 49814

Project: Humboldt Mill WTP

Dear Ms. Amanda Zeidler,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1410048	10/02/2014	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACCLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-14-4); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

No Project Narrative is associated with this report.



STATEMENT OF DATA QUALIFICATIONS

All analyses have been validated and comply with our Quality Control Program.
No Qualification is required.

ANALYTICAL REPORT

Client: **Eagle Mine LLC**
Project: Humboldt Mill WTP
Client Sample ID: **HMWWTP-EF-100114**
Lab Sample ID: **1410048-02**
Matrix: Waste Water

Work Order: **1410048**
Description: Laboratory Services
Sampled: 10/1/14 11:30
Sampled By: DT/DC
Received: 10/2/14 8:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Action Limit	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO ₃	211	2		mg/L	1	SM 2340 C-2011	10/03/14 11:30	KAR	1410678

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
---------	--------------	------------	--------	------	--------------	----------------	-----	------------	----

Analyte: Hardness as CaCO₃/SM 2340 C-2011

QC Batch: 1410678 (Method Specific Preparation)

Analyzed: 10/03/2014 By: KAR

Method Blank			<2	mg/L					2
Laboratory Control Sample		79.7	80	mg/L	100	92-110			2
Laboratory Control Sample		200	200	mg/L	100	92-110			2



For Lab Use Only

5560 Corporate Exchange Court SE
Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 14100742

Analyses Requested

Pg. 1 of 1

Cart 3

VQA Rack/Trey

Receipt Log No. 29-2

Project Chemist JHK

Work Order No. 14100742

Client Name

Eagle Mine, LLC

Address

4547 County Road 601

City, State Zip

Champion, MI 49814

Phone/Fax 906-339-7076

Email amanda.zeidler@lundminning.com, roger.olson@lundminning.com

Project Name

Humboldt Mill WTP

Client Project No. / P.O. No.

3101103439

Invoice To

☒ Client ☐ Other (comments)

Contact/Report To

Amanda Zeidler, Roger Olson

A B A A A A C B

BOD

Total Metals (see below)

Low Level Hg

TSS

TDS, SO4

Fluoride

NH3, Total Phosphorus

Total Hardness

← PRESERVATIVES

A NONE pH~7

B HNO3 pH<2

C H2SO4 pH<2

D 1+1 HCl pH<2

E NaOH pH>12

F ZnAc2/NaOH pH>9

G MeOH

H Other (note below)

Schedule Matrix Code Sample Number

Field Sample ID

Cooler ID

Sample Date

Sample Time

C O R G
M A S

Matrix

Number of Containers Submitted

Container Type (corresponds to Container Packing List)

Total

Sample Comments

02 HMWTP-INF-100114

10/01/14

1120

✓ W

1

2

1

1

1

1

1

5

01 HMWTP-EFF-100114

10/01/14

1130

✓ W

1

1

2

1

1

1

1

9

04 HMWTP-FD-100114

10/01/14

1135

✓ W

2

2

2

2

2

2

2

2

05 HMWTP-EB-100114

10/01/14

1140

✓ W

2

2

2

2

2

2

2

2

Sampled By (print)

Dave Tomberg, Don Clary

Sample's Signature

Company

Eagle Mine

How Shipped?

Tracking No.

Carrier

Fed Ex

Hand

Carrier

Date

Time

10/1/14 12:55 pm

1. Relinquished By

1. Received By

Date

Time

10/1/14 12:55 pm

2. Relinquished By

2. Received By

Date

Time

10/1/14 12:55 pm

3. Relinquished By

3. Received By

Date

Time

10/1/14 12:55 pm

4. Relinquished By

4. Received By

Date

Time

10/1/14 12:55 pm

Comments

INF Metals: Cu, Ni, Se

EFF Metals: As, Cd, Co, Cu, Pb, Mn, Ni, Se, Zn, Sb, Ba, B, Cr, Li, Mo, Sr

24 Hour Return on Inquiries

✱

SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: <u>Eagle Mine</u>	New / Add To: <u>1410048</u>	Work Order #
Receipt Record Page/Line #: <u>29-2</u>	Project Chemist:	Sample #:

Recorded by (Initials/date): <u>Ln 10/2/14</u>	Cooler ☒ Box ☐ Other	Qty Received: <u>1</u>	Thermometer Used ☒ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (#)	See Additional Cooler Information Form
--	---	------------------------	--	--

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time
<u>Accutest</u>	<u>1018</u>						
Custody Seals: ☒ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact		Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact	
Coolant Type: ☐ Loose Ice ☒ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None		Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None	
Coolant Location: Dispersed / <u>Top</u> / Middle / Bottom		Coolant Location: Dispersed / Top / Middle / Bottom		Coolant Location: Dispersed / Top / Middle / Bottom		Coolant Location: Dispersed / Top / Middle / Bottom	
Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No		Temp Blank Present: ☐ Yes ☐ No	
If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative		If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative	
Observed °C	Correction Factor °C	Actual °C		Observed °C	Correction Factor °C	Actual °C	
Temp Blank:				Temp Blank:			
Sample 1:	<u>2.9</u>	<u>-</u>	<u>2.9</u>	Sample 1:			
Sample 2:	<u>2.7</u>	<u>-</u>	<u>2.7</u>	Sample 2:			
Sample 3:	<u>2.1</u>	<u>-</u>	<u>2.1</u>	Sample 3:			
3 Sample Average °C: <u>2.6</u>				3 Sample Average °C:			
☐ Cooler ID on COC?				☐ Cooler ID on COC?			
☐ VOC Trip Blank received?				☐ VOC Trip Blank received?			

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☒	☐	Chain of Custody record(s)? If No, Initiated By _____
☒	☐	Received for Lab Signed/Date/Time?
☒	☐	Shipping document?
☐	☒	Other _____

COC Information

TriMatrix COC	Other	<u>14100742</u>
---------------	-------	-----------------

COC ID Numbers:

Check Sample Preservation

N/A	Yes	No	
☒	☐	☒	Temperature Blank OR average sample temperature, ≥6° C?
☒	☐	☐	If either is ≥6° C, was thermal preservation required?
☒	☐	☐	If "Yes", Project Chemist Approval Initials: _____
☒	☐	☐	If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☒	☐	☐	Completed Sample Preservation Verification Form?
☒	☐	☒	Samples chemically preserved correctly?
☒	☐	☐	If "No", added orange tag?
☒	☐	☒	Received pre-preserved VOC soils?
		☐	MeOH
		☐	Na ₂ SO ₄

Check COC for Accuracy

Yes	No	
☒	☐	Analysis Requested?
☒	☐	Sample ID matches COC?
☒	☐	Sample Date and Time matches COC?
☒	☐	Container type completed on COC?
☒	☐	All container types indicated are received?

Check for Short Hold-Time Prep/Analyses

Bacteriological	Air Bags	EnCores / Methanol Pre-Preserved	Formaldehyde/Aldehyde	Green-tagged containers	Yellow/White-tagged 1 L ambers (SV Prep-Lab)
☐	☐	☐	☐	☒	☐

AFTER HOURS ONLY:

COPIES OF COC TO LAB AREA(S)	
☐ NONE RECEIVED	☒ RECEIVED, COCs TO LAB(S)

Sample Condition Summary

N/A	Yes	No	
☒	☐	☐	Broken containers/lids?
☒	☐	☐	Missing or incomplete labels?
☒	☐	☐	Illegible information on labels?
☒	☐	☐	Low volume received?
☒	☐	☐	Inappropriate or non-TriMatrix containers received?
☒	☐	☐	VOC vials / TOX containers have headspace?
☒	☐	☐	Extra sample locations / containers not listed on COC?

Notes

Trip Blank received	Trip Blank not listed on COC	
Cooler Received (Date/Time): <u>10/2/14 0830</u>	Paperwork Delivered (Date/Time): <u>10/2/14 1026</u>	≤1 Hour Goal Met? <u>Yes / No</u>

Client: <u>Eagle mine</u>	Work Order #: <u>1410048</u>	Project Chemist: <u>[Signature]</u>
Receipt Log #: <u>29-2</u>	Completed by (initials/date): <u>AK 10/21/14</u>	

COC ID # <u>14100742</u>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15		3	6	15	
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe		Green	Red	Red Stripe	
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃		None	HNO ₃	HNO ₃	
Expected pH	>12	<2	<2	6-8	<2	<2		6-8	<2	<2	
COC Line #1				✓✓	✓			✓✓	✓		
COC Line #2		✓		✓✓	✓✓			✓✓	✓✓		
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

pH Strip Reagent #
☒ 4051306
☐ _____

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13	3	6	15		3	6	15	
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe		Green	Red	Red Stripe	
Preservative	NaOH	H ₂ SO ₄	H ₂ SO ₄	None	HNO ₃	HNO ₃		None	HNO ₃	HNO ₃	
Expected pH	>12	<2	<2	6-8	<2	<2		6-8	<2	<2	
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5 NaOH	
500	2.5
1000	5.0
Container Type 4 H₂SO₄	
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13 H₂SO₄	
500	2.5