

**DATE** 23 November 2016**PROJECT No.** 1541520 Task 7007 Doc 067 Ver 0**TO** Ryan Vanengen  
Agnico Eagle Mines Ltd.**CC** Odrée Maude Vachon**FROM** Jennifer Cole, Valérie Bertrand**EMAIL** jcole@golder.com**GEOCHEMICAL TEST RESULTS FOR ROCK SAMPLES COLLECTED FROM POTENTIAL QUARRIES  
BETWEEN MEADOWBANK AND AMARUQ**

Agnico Eagle Mines Ltd. (Agnico) staff sampled rock from potential quarries located between Amaruq and Meadowbank to determine the suitability of material for road construction use with respect to acid rock drainage (ARD) potential and metal leaching (ML), as follows:

- June 2016: 46 surficial bedrock samples collected from 13 potential quarry locations.
- September 2016: 20 bedrock samples collected at depth (up to 17.5 m) from two drill holes at Quarry 61+150.

**1.0 ANALYTICAL METHODS**

All June 2016 samples were analyzed at the Meadowbank assay laboratory for carbon and sulphur content. From these results, Golder Associates (Golder) calculated carbonate neutralization potential (Carbonate NP), acid potential (AP), and the neutralization potential ratio (NPR) in order to define the acid generation potential of the samples.

At least one sample from each June 2016 location was also sent to SGS Laboratories in Lakefield, Ontario for Acid Base Accounting (ABA) and short-term leach testing (22% of June samples). All samples from 61+150 (September) were analyzed at SGS. SGS analyses included:

- Acid-Base Accounting (ABA) parameters for the determination of the acid generation potential: total sulphur, acid leachable sulphate, sulphide, carbon, carbonate, and NP. Carbonate NP, NPR and carbonate NPR were calculated by Golder.
- Shake Flask Extraction (SFE) leaching test to estimate the potential to release chemicals to the receiving environment: pH, alkalinity, conductivity; fluoride, chloride, sulphate, calcium, potassium, sodium, magnesium; and metals (Al, As, Ba, B, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, Th, U, V, Zn).

The results are presented for each potential quarry location in Table 1. ARD and ML were evaluated consistently with geochemical evaluations for the Amaruq project<sup>1</sup>; this approach for ARD evaluation is the same as the segregation guidelines utilized at Meadowbank<sup>2</sup>. Metal leaching potential was evaluated through comparison of short-term leach test results with the Portage Effluent Limits (NWB Water Licence #2AM MEA1525).

SGS laboratory certificates are appended to the report. Photographs were taken by Agnico staff (Odrée Maude Vachon) for each specific sampling location.



**Table 1: ARD/ML Results and Recommendations for Construction Use**

Quarry	Sample Count	Sample UTM Coordinates	CaNPR Range (Average)	Acid Generating Potential <sup>1</sup>	Metal Leaching Potential <sup>2</sup>	Recommended for Construction Use?	Recommendation
<b>10+500</b>	6	<ul style="list-style-type: none"> <li>■ 635420 E, 7227634 N</li> <li>■ 635434 E, 7227635 N</li> <li>■ 635454 E, 7227624 N</li> <li>■ 635502 E, 7227604 N</li> <li>■ 635485 E, 7227559 N</li> <li>■ 635485 E, 7227548 N</li> </ul>	2.0 – 27 (9.7)	<b>Non-PAG</b> 0 PAG 1 uncertain 5 non-PAG	None	Yes	Verification monitoring during exploitation if used
13+200	6	<ul style="list-style-type: none"> <li>■ 633826 E, 7229779 N</li> <li>■ 633815 E, 7229754 N</li> <li>■ 633796 E, 7229719 N</li> <li>■ 633789 E, 7229712 N</li> <li>■ 633782 E, 7229721 N</li> </ul>	0.9 – 2.7 (1.7)	<b>Variable PAG</b> 1 PAG 2 uncertain 3 non-PAG	None	<i>Pending further testing</i>	Additional samples to be taken at depth to confirm ARD potential. Rock types should be identified.
15+800	6	<ul style="list-style-type: none"> <li>■ 633034 E, 7232117 N</li> <li>■ 633029 E, 7232110 N</li> <li>■ 633013 E, 7232058 N</li> <li>■ 632987 E, 7232049 N</li> <li>■ 632959 E, 7231984 N</li> <li>■ 632971 E, 7231958 N</li> </ul>	2.7 – 12 (4.7)	<b>Non-PAG</b> 0 PAG 0 uncertain 6 non-PAG	Aluminum (marginal exceedance in 1 sample)	Yes	No further action required. Consider additional testing if material to be used adjacent to sensitive receptors.
<b>17+000</b>	5	<ul style="list-style-type: none"> <li>■ 632886 E, 7233161 N</li> <li>■ 632888 E, 7233183 N</li> <li>■ 632853 E, 7233205 N</li> <li>■ 632838 E, 7233214 N</li> <li>■ 632844 E, 7233229 N</li> </ul>	2.7 (all samples)	<b>Non-PAG</b> 0 PAG 0 uncertain 5 non-PAG	None	Yes	Verification monitoring during exploitation if used
<b>25+350</b>	3	<ul style="list-style-type: none"> <li>■ 626040 E, 7236005 N</li> <li>■ 626041 E, 7235967 N</li> <li>■ 626002 E, 7235970 N</li> </ul>	1.4 – 7.4 (3.8)	<b>Non-PAG</b> 0 PAG 1 uncertain 2 non-PAG	None	Yes	Verification monitoring during exploitation if used
<b>26+250</b>	6	<ul style="list-style-type: none"> <li>■ 625239 E, 7235912 N</li> <li>■ 625248 E, 7235893 N</li> <li>■ 625226 E, 7235884 N</li> <li>■ 625213 E, 7235862 N</li> <li>■ 625160 E, 7235842 N</li> <li>■ 625155 E, 7235882 N</li> </ul>	1.8 – 3.0 (2.5)	<b>Non-PAG</b> 0 PAG 1 uncertain 5 non-PAG	None	Yes	Verification monitoring during exploitation if used

Quarry	Sample Count	Sample UTM Coordinates	CaNPR Range (Average)	Acid Generating Potential <sup>1</sup>	Metal Leaching Potential <sup>2</sup>	Recommended for Construction Use?	Recommendation
30+050	5	<ul style="list-style-type: none"> <li>621456 E, 7236078 N</li> <li>621470 E, 7236036 N</li> <li>621440 E, 7236058 N</li> <li>621378 E, 7236069 N</li> <li>621421 E, 7236123 N</li> </ul>	3.4 – 44 (19)	<b>Non-PAG</b> 0 PAG 0 uncertain 5 non-PAG	None	Yes	Verification monitoring during exploitation if used 2 holes planned at KM 32 and 6 holes at KM 42.8
34+900	6	<ul style="list-style-type: none"> <li>618218 E, 7237046 N</li> <li>618222 E, 7237033 N</li> <li>618234 E, 7237002 N</li> <li>618232 E, 7236981 N</li> <li>618235 E, 7236950 N</li> <li>618226 E, 7236909 N</li> </ul>	2.4 – 23 (6.9)	<b>Non-PAG</b> 0 PAG 0 uncertain 6 non-PAG	None	Yes	Verification monitoring during exploitation if used
42+900	6 + 1 composite	<ul style="list-style-type: none"> <li>620926 E, 7242942 N</li> <li>620976 E, 7242932 N</li> <li>621014 E, 7242911 N</li> <li>621001 E, 7242876 N</li> <li>620978 E, 7242832 N</li> <li>620948 E, 7242862 N</li> </ul>	0.5 – 2.7 (2.0)	<b>Variable PAG</b> 2 PAG 1 uncertain <sup>3</sup> 4 non-PAG	None	<i>Pending further testing</i>	Additional samples to be taken at depth to confirm ARD potential. Rock types should be identified.
50+600	5	<ul style="list-style-type: none"> <li>616144 E, 7247144 N</li> <li>616137 E, 7247151 N</li> <li>616129 E, 724151 N</li> <li>616151 E, 7247106 N</li> <li>616143 E, 7247103 N</li> </ul>	2.7 – 9.8 (5.7)	<b>Non-PAG</b> 0 PAG 0 uncertain 5 non-PAG	Aluminum (marginal exceedance in 1 sample)	Yes	Verification monitoring during exploitation if used, especially if material to be used adjacent to sensitive receptors.
52+000	5	<ul style="list-style-type: none"> <li>615100 E, 7248021 N</li> <li>615114 E, 7247987 N</li> <li>615086 E, 7248008 N</li> <li>615064 E, 7248033 N</li> <li>615076 E, 7248052 N</li> </ul>	2.7 – 6.1 (4.0)	<b>Non-PAG</b> 0 PAG 0 uncertain 5 non-PAG	None	Yes	Verification monitoring during exploitation if used
53+650	6	<ul style="list-style-type: none"> <li>614874 E, 7250085 N</li> <li>614892 E, 7250089 N</li> <li>614913 E, 7250095 N</li> <li>614964 E, 7250124 N</li> <li>614999 E, 7250122 N</li> <li>615010 E, 7250148 N</li> </ul>	5.0 – 43 (16)	<b>Non-PAG</b> 0 PAG 0 uncertain 6 non-PAG	Aluminum (marginal exceedance in 1 sample)	Yes	Verification monitoring during exploitation if used, especially if material to be used adjacent to sensitive receptors.

Quarry	Sample Count	Sample UTM Coordinates	CaNPR Range (Average)	Acid Generating Potential <sup>1</sup>	Metal Leaching Potential <sup>2</sup>	Recommended for Construction Use?	Recommendation
61+150	6 (surface samples)	<div><div></div> 610657 E, 7255140 N</div> <div><div></div> 610671 E, 7255153 N</div> <div><div></div> 610642 E, 7255163 N</div> <div><div></div> 610607 E, 7255158 N</div> <div><div></div> 610576 E, 7255161 N</div> <div><div></div> 610636 E, 7255100 N</div>	0.7 – 2.7 (1.8)	<b>Variable PAG</b> 1 PAG 3 uncertain 2 non-PAG	None	Pending further testing	Requires further testing prior to use as a construction material: <div><div></div> Further spatial evaluation of ARD potential of material at depth and across quarry footprint</div>
	15 Diorite (core samples)	AMQ-1057 (10 samples): <div><div></div> 610605 E, 7255036 N</div> AMQ-1059 (10 samples):	0.4 – 2.9 (1.2)	<b>Variable PAG</b> 7 PAG 6 uncertain 2 non-PAG	Aluminum (marginal exceedance in 10 samples)		<div><div></div> Augmentation of database to evaluate range of potential sulphur content</div>
	5 Mafic Volcanic (core samples)	<div><div></div> 610628 E, 7255216 N</div>	0.4 – 3.2 (1.3)	<b>Variable PAG</b> 3 PAG 1 uncertain 1 non-PAG	Aluminum (marginal exceedance in 2 samples)		<div><div></div> Evaluate reactivity of sulphide minerals through additional test methods</div> <div><div></div> If used, must be mixed with NPAG material with high NP content</div>

**Notes:**

**Bolded** quarry IDs indicate those of particular interest / priority for use as construction material

1. Following Meadowbank segregation criteria:

- NPR < 1 Likely acid generating (PAG)
- 1 ≤ NPR < 2 Uncertain or low acid generating potential
- 2 ≥ NPR Non-potentially acid generating (NPAG)

2. Based on comparison with Portage effluent limits (NWB Water Licence #2AM MEA1525)

## 2.0 RECOMMENDATIONS FOR CONSTRUCTION USE

Of the thirteen (13) locations, 10 surface samples and three samples at depth (61+150) are considered non-potentially acid generating (NPAG).

Three (3) locations (13+200, 42+900, 61+150) report some samples with ARD potential, and additional drilling is recommended to collect samples from depth prior to using material from these quarries for construction.

At quarry 61+150, samples from both the diorite and mafic volcanic report low sulphur content (<0.005 to 0.3%), however due to low buffering capacity (lower than Whale Tail Pit database<sup>4</sup>) many of these samples are PAG. Additional testing is recommended to verify the sulphur content in other locations at this potential quarry site. Pending this, the use of material from this quarry should be limited to where it can be mixed with NPAG material with sufficiently high buffering capacity to bring the NPR value to greater or equal to 2.

Four (4) locations report one or more samples with aluminum above the Portage effluent criteria. Although the results suggest some propensity for this material to release aluminum, the reported concentrations are within the same order of magnitude as the effluent criteria. Further SFE tests should be considered at these locations if they are to be used for road construction in areas adjacent to sensitive receptors.

Should any of these quarries be used, verification monitoring is recommended during exploitation, in order to document the rock quality and verify the findings of this study.

## 3.0 CLOSURE

We trust this memorandum meets your current needs. Should you have any questions regarding this report, please contact the undersigned.



**GOLDER ASSOCIATES LTD.**



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Geochemist

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quarry\_geochem\_23nov2016.docx



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Attachment: SGS Certificates of Analysis

<sup>1</sup> Golder 2016. Report on Evaluation of the Geochemical Properties of Waste Rock, Ore, Tailings, Overburden and Sediment from the Whale Tail Pit and Road Aggregate Materials. Submitted to Agnico Eagle Mines Limited, Meadowbank Division. June 2016. (FEIS Amendment Volume 5, Appendix 5-E).

<sup>2</sup> NPR<1 Likely acid generating (PAG); 1 ≤ NPR < 2 Uncertain or low acid generating potential; 2 ≥ NPR Non-potentially acid generating (NPAG)

<sup>3</sup> Composite sample collected has NPR of 1.4 and is uncertain ARD potential

<sup>4</sup> Golder 2016. Report on Evaluation of the Geochemical Properties of Waste Rock, Ore, Tailings, Overburden and Sediment from the Whale Tail Pit and Road Aggregate Materials. Submitted to Agnico Eagle Mines Limited, Meadowbank Division. June 2016. (FEIS Amendment Volume 5, Appendix 5-E).



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ABA - Modified Sobek

Project : PO#OL-528971

10-August-2016

Date Rec. : 29 July 2016  
 LR Report: CA14807-JUL16

Copy: #1

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: QR51+970-005- 000-16	6: QR17+000-002- 16	7: QR50+600-002- 000-16
Sample Date & Time					Date:N/A	Date:N/A	Date:N/A
Paste pH	05-Aug-16	09:03	06-Aug-16	15:15	8.28	8.43	8.07
Fizz Rate [---]	05-Aug-16	09:03	06-Aug-16	15:15	1	1	1
Sample weight [g]	05-Aug-16	09:03	06-Aug-16	15:15	2.03	2.04	2.10
HCl Added [mL]	05-Aug-16	09:03	06-Aug-16	15:15	20.00	20.00	20.00
HCl [Normality]	05-Aug-16	09:03	06-Aug-16	15:15	0.10	0.10	0.10
NaOH [Normality]	05-Aug-16	09:03	06-Aug-16	15:15	0.10	0.10	0.10
NaOH to pH=8.3 [mL]	05-Aug-16	09:03	06-Aug-16	15:15	18.42	17.82	18.39
Final pH	05-Aug-16	09:03	06-Aug-16	15:15	1.18	1.22	1.18
NP [t CaCO <sub>3</sub> /1000 t]	05-Aug-16	09:03	06-Aug-16	15:15	3.9	5.4	3.8
AP [t CaCO <sub>3</sub> /1000 t]	---	---	---	---	0.62	0.62	0.62
Net NP [t CaCO <sub>3</sub> /1000 t]	---	---	---	---	3.28	4.78	3.18
NP/AP [ratio]	---	---	---	---	6.29	8.71	6.13
Sulphur (total) [%]	05-Aug-16	11:43	09-Aug-16	11:29	0.011	0.009	0.010
Acid Leachable SO <sub>4</sub> -S [%]	---	---	09-Aug-16	---	< 0.02	< 0.02	< 0.02
Sulphide [%]	09-Aug-16	10:15	09-Aug-16	11:29	< 0.02	< 0.02	< 0.02
Carbon (total) [%]	05-Aug-16	11:43	09-Aug-16	09:36	0.075	0.041	0.097
Carbonate [%]	08-Aug-16	09:28	09-Aug-16	09:36	< 0.025	< 0.025	< 0.025
C(g) [%]	Aug09-16	---	---	Aug10-16	< 0.05	< 0.05	< 0.05
Weight [g]	---	---	---	---	1673	880	1458
Extra Split	---	---	---	---	1	1	1
PUL45	---	---	---	---	1	1	1

Analysis	8: QR13+500-001- 16	9: QR13+500-004- 16	10: QR42+900-002- 16	11: QR42+900-001- 16	12: QR34+900-002- 16	13: QR25+350-002- 16	14: QR30+100-004- 16
Sample Date & Time	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Paste pH	7.48	8.09	5.30	6.04	9.47	8.69	9.73

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**Project : PO#OL-528971**
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Analysis	8: QR13+500-001- 16	9: QR13+500-004- 16	10: QR42+900-002- 16	11: QR42+900-001- 16	12: QR34+900-002- 16	13: QR25+350-002- 16	14: QR30+100-004- 16
Fizz Rate [---]	1	1	1	1	1	1	2
Sample weight [g]	2.05	1.99	2.02	2.01	2.02	1.99	1.95
HCl Added [mL]	20.00	20.00	20.00	20.00	20.00	20.00	20.00
HCl [Normality]	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH [Normality]	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to pH=8.3 [mL]	17.79	17.39	19.07	18.94	13.86	17.96	11.44
Final pH	1.36	1.48	1.12	1.13	1.54	1.17	1.53
NP [t CaCO <sub>3</sub> /1000 t]	5.4	6.6	2.3	2.6	15	5.1	22
AP [t CaCO <sub>3</sub> /1000 t]	1.88	0.62	5.31	0.62	1.25	1.25	0.62
Net NP [t CaCO <sub>3</sub> /1000 t]	3.52	5.98	-3.01	1.98	14.0	3.85	21.4
NP/AP [ratio]	2.88	10.6	0.43	4.19	12.2	4.08	35.5
Sulphur (total) [%]	0.058	0.016	0.197	0.020	0.046	0.070	0.010
Acid Leachable SO <sub>4</sub> -S [%]	< 0.02	< 0.02	0.03	0.02	< 0.02	0.03	< 0.02
Sulphide [%]	0.06	< 0.02	0.17	< 0.02	0.04	0.04	< 0.02
Carbon (total) [%]	0.060	0.008	0.036	0.034	0.053	0.072	0.251
Carbonate [%]	< 0.025	< 0.025	< 0.025	< 0.025	0.195	< 0.025	0.809
C(g) [%]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Weight [g]	689	1005	1094	1025	1281	1078	572
Extra Split	1	1	1	1	1	1	1
PUL45	1	1	1	1	1	1	1

Analysis	15: QR61+700-002- 16	16: QR61+700-003- 16	17: QR15+800-003- 16	18: QR53+600-003- 000-16	19: QR26+300-004- 16	20: QR10+500-001- 16
Sample Date & Time	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Paste pH	7.87	8.40	9.76	9.71	9.32	9.02
Fizz Rate [---]	1	1	1	2	1	2
Sample weight [g]	2.05	2.01	1.97	2.00	2.02	2.06
HCl Added [mL]	20.00	20.00	20.00	20.00	20.00	47.30
HCl [Normality]	0.10	0.10	0.10	0.10	0.10	0.10
NaOH [Normality]	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to pH=8.3 [mL]	16.22	16.43	15.52	12.23	17.87	20.94
Final pH	1.35	1.25	1.35	1.55	1.18	1.55
NP [t CaCO <sub>3</sub> /1000 t]	9.2	8.9	11	19	5.3	64
AP [t CaCO <sub>3</sub> /1000 t]	1.25	1.25	0.62	0.62	0.94	10.0
Net NP [t CaCO <sub>3</sub> /1000 t]	7.95	7.65	10.8	18.8	4.36	54.0
NP/AP [ratio]	7.36	7.12	18.4	31.3	5.65	6.40
Sulphur (total) [%]	0.056	0.062	0.012	0.010	0.034	0.360
Acid Leachable SO <sub>4</sub> -S [%]	< 0.02	0.02	< 0.02	< 0.02	< 0.02	0.04
Sulphide [%]	0.04	0.04	< 0.02	< 0.02	0.03	0.32
Carbon (total) [%]	0.096	0.049	0.080	0.220	0.026	0.718
Carbonate [%]	< 0.025	< 0.025	0.255	0.889	< 0.025	3.22
C(g) [%]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12

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**LR Report :** CA14807-JUL16

Analysis	15: QR61+700-002- 16	16: QR61+700-003- 16	17: QR15+800-003- 16	18: QR53+600-003- 000-16	19: QR26+300-004- 16	20: QR10+500-001- 16
Weight [g]	989	1373	1224	1181	1359	1178
Extra Split	1	1	1	1	1	1
PUL45	1	1	1	1	1	1

\*NP (Neutralization Potential)

=  $50 \times (N \text{ of HCL} \times \text{Total HCL added} - N \text{ NaOH} \times \text{NaOH added})$

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Weight of Sample


\*AP (Acid Potential) = % Sulphide Sulphur  $\times 31.25$

\*Net NP (Net Neutralization Potential) = NP-AP

NP/AP Ratio = NP/AP

\*Results expressed as tonnes CaCO<sub>3</sub> equivalent/1000 tonnes of material

Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

  
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**SFE-24hr 4:1 L/S Ratio**

16-August-2016

**Date Rec. :** 29 July 2016

**LR Report:** CA14808-JUL16

**Reference:** PO# OL-460193-L

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: QR51+970-005- 000-16	6: QR17+000-002- 16	7: QR50+600-002- 000-16	8: QR13+500-001- 16	9: QR13+500-004- 16	10: QR42+900-002- 16	11: QR42+900-001- 16
Sample Date & Time			Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Sample weight [g]	11-Aug-16	11:08	200	200	200	200	200	200	200
Volume D.I. Water [mL]	11-Aug-16	11:08	800	800	800	800	800	800	800
Initial pH	11-Aug-16	11:08	6.72	7.12	6.77	6.20	7.29	4.93	5.48
Final pH	11-Aug-16	11:08	6.59	7.54	6.89	7.25	8.24	5.44	5.99
pH [no unit]	15-Aug-16	14:30	8.98	9.09	9.14	9.53	9.33	8.58	9.36
Alkalinity [mg/L as CaCO3]	15-Aug-16	14:30	17	22	32	60	16	11	15
Conductivity [uS/cm]	15-Aug-16	14:30	55	51	78	150	78	38	41

Analysis	12: QR34+900-002- 16	13: QR25+350-002- 16	14: QR30+100-004- 16	15: QR61+700-002- 16	16: QR61+700-003- 16	17: QR15+800-003- 16	18: QR53+600-003- 000-16	19: QR26+300-004- 16	20: QR10+500-001- 16
Sample Date & Time	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Sample weight [g]	200	200	200	200	200	200	200	200	200
Volume D.I. Water [mL]	800	800	800	800	800	800	800	800	800
Initial pH	9.56	7.90	9.59	7.22	7.77	9.69	9.70	8.66	9.75
Final pH	9.47	8.33	9.15	6.84	7.74	9.35	9.27	8.59	9.17
pH [no unit]	9.32	9.19	9.49	9.08	9.27	9.53	9.61	9.28	7.93
Alkalinity [mg/L as CaCO3]	37	43	49	17	17	45	84	23	29
Conductivity [uS/cm]	82	100	100	64	56	105	183	61	97



SGS Canada Inc.

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SFE-24hr 4:1 L/S Ratio

LR Report :

CA14808-JUL16

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: QR51+970-005- 000-16	6: QR17+000-002- 16	7: QR50+600-002- 000-16	8: QR13+500-001- 16	9: QR13+500-004- 16	10: QR42+900-002- 16	11: QR42+900-001- 16
Fluoride [mg/L]	15-Aug-16	13:51	0.20	0.35	0.25	0.68	0.50	0.07	0.10
Chloride [mg/L]	16-Aug-16	11:07	2	2	3	2	3	< 1	1
Sulphate [mg/L]	16-Aug-16	11:14	3	1	< 1	4	9	5	2
Mercury [mg/L]	16-Aug-16	12:14	< 0.00001	0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Silver [mg/L]	16-Aug-16	13:35	0.000003	0.000008	0.000020	0.000008	< 0.000002	0.000002	0.000003
Aluminum [mg/L]	16-Aug-16	13:35	0.582	0.716	3.01	0.545	0.135	0.021	0.223
Arsenic [mg/L]	16-Aug-16	13:35	0.0006	0.0012	0.0007	0.0022	0.0003	0.0006	0.0028
Barium [mg/L]	16-Aug-16	13:35	0.0118	0.00532	0.0193	0.00178	0.00165	0.00202	0.00218
Boron [mg/L]	16-Aug-16	13:35	0.085	0.077	0.209	0.218	0.061	0.065	0.086
Beryllium [mg/L]	16-Aug-16	13:35	0.000076	0.000061	0.000176	0.000009	< 0.000007	< 0.000007	< 0.000007
Bismuth [mg/L]	16-Aug-16	13:35	0.000011	0.000011	0.000653	0.000022	< 0.000007	< 0.000007	0.000044
Calcium [mg/L]	16-Aug-16	13:35	0.27	0.45	0.31	0.32	1.94	0.85	0.40
Cadmium [mg/L]	16-Aug-16	13:35	< 0.000003	< 0.000003	< 0.000003	< 0.000003	< 0.000003	< 0.000003	< 0.000003
Cobalt [mg/L]	16-Aug-16	13:35	0.000203	0.000279	0.000325	0.000476	0.000004	0.000952	0.000005
Chromium [mg/L]	16-Aug-16	13:35	0.00025	0.00050	0.00110	0.0120	0.00057	0.00026	0.00084
Copper [mg/L]	16-Aug-16	13:35	0.00171	0.00263	0.0117	0.0307	0.00052	0.00290	0.00077

Analysis	12: QR34+900-002- 16	13: QR25+350-002- 16	14: QR30+100-004- 16	15: QR61+700-002- 16	16: QR61+700-003- 16	17: QR15+800-003- 16	18: QR53+600-003- 000-16	19: QR26+300-004- 16	20: QR10+500-001- 16
Fluoride [mg/L]	0.23	0.94	0.12	0.30	0.74	0.72	0.97	0.64	0.09
Chloride [mg/L]	1	3	2	2	2	2	1	2	2
Sulphate [mg/L]	1	6	< 1	5	3	< 1	2	2	15
Mercury [mg/L]	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001
Silver [mg/L]	0.000002	0.000007	0.000005	0.000003	0.000008	0.000013	0.000005	0.000008	0.000002
Aluminum [mg/L]	0.408	0.464	0.797	0.808	0.717	1.32	1.09	0.666	0.842
Arsenic [mg/L]	0.0012	0.0017	0.0007	0.0008	0.0014	0.0451	0.0021	0.0011	0.0202
Barium [mg/L]	0.00499	0.0259	0.00886	0.0291	0.0182	0.0152	0.00497	0.0162	0.0111
Boron [mg/L]	0.034	0.032	0.027	0.070	0.068	0.056	0.097	0.081	0.018
Beryllium [mg/L]	< 0.000007	0.000019	0.000007	0.000034	0.000029	0.000042	0.000016	0.000029	< 0.000007
Bismuth [mg/L]	< 0.000007	< 0.000007	0.000007	< 0.000007	< 0.000007	0.000011	< 0.000007	< 0.000007	< 0.000007
Calcium [mg/L]	5.02	7.10	9.14	0.54	0.21	3.48	3.90	0.45	10.8
Cadmium [mg/L]	< 0.000003	0.000003	< 0.000003	< 0.000003	< 0.000003	0.000020	0.000006	< 0.000003	< 0.000003
Cobalt [mg/L]	0.000090	0.000108	0.000123	0.000337	0.000228	0.000320	0.000019	0.000192	0.000006
Chromium [mg/L]	0.00054	0.00032	0.00027	0.00070	0.00044	0.00048	0.00204	0.00047	0.00005
Copper [mg/L]	0.00096	0.0332	0.00351	0.00393	0.00587	0.00596	0.00286	0.00069	0.00059



SGS Canada Inc.

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SFE-24hr 4:1 L/S Ratio

LR Report :

CA14808-JUL16

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: QR51+970-005- 000-16	6: QR17+000-002- 16	7: QR50+600-002- 000-16	8: QR13+500-001- 16	9: QR13+500-004- 16	10: QR42+900-002- 16	11: QR42+900-001- 16
Iron [mg/L]	16-Aug-16	13:35	0.394	1.29	1.61	0.441	< 0.007	0.170	0.067
Potassium [mg/L]	16-Aug-16	13:35	0.712	1.43	5.76	2.68	2.15	0.715	0.677
Lithium [mg/L]	16-Aug-16	13:35	0.000724	0.000540	0.000940	0.000353	0.001193	0.0206	0.0270
Magnesium [mg/L]	16-Aug-16	13:35	0.170	0.278	0.607	0.682	2.31	0.196	0.052
Manganese [mg/L]	16-Aug-16	13:35	0.0150	0.0183	0.0194	0.00659	0.00008	0.0209	0.00044
Molybdenum [mg/L]	16-Aug-16	13:35	0.00087	0.00111	0.00038	0.00077	0.00093	0.00007	0.00046
Sodium [mg/L]	16-Aug-16	13:35	12.4	9.88	15.3	32.4	7.79	5.91	7.49
Nickel [mg/L]	16-Aug-16	13:35	0.0003	< 0.0001	0.0012	0.0043	< 0.0001	0.0043	< 0.0001
Phosphorus [mg/L]	16-Aug-16	13:35	0.071	0.038	0.042	0.018	0.005	0.009	0.015
Lead [mg/L]	16-Aug-16	13:35	0.00106	0.00022	0.00043	< 0.00001	< 0.00001	< 0.00001	0.00015
Antimony [mg/L]	16-Aug-16	13:35	0.0005	0.0004	0.0006	0.0006	0.0006	0.0007	0.0009
Selenium [mg/L]	16-Aug-16	13:35	0.00012	< 0.00004	0.00009	0.00307	0.00068	0.00021	0.00015
Silicon [mg/L]	16-Aug-16	13:35	6.63	5.63	15.0	3.96	1.19	4.22	5.12
Tin [mg/L]	16-Aug-16	13:35	0.0191	0.00134	0.00057	0.00027	0.00020	0.00016	0.00015
Strontium [mg/L]	16-Aug-16	13:35	0.00068	0.00117	0.00105	0.00137	0.00656	0.0202	0.00137
Titanium [mg/L]	16-Aug-16	15:10	0.00286	0.0338	0.0436	0.00299	0.00010	0.00014	0.00068

Analysis	12: QR34+900-002- 16	13: QR25+350-002- 16	14: QR30+100-004- 16	15: QR61+700-002- 16	16: QR61+700-003- 16	17: QR15+800-003- 16	18: QR53+600-003- 000-16	19: QR26+300-004- 16	20: QR10+500-001- 16
Iron [mg/L]	0.168	0.455	0.512	0.820	0.621	1.46	0.520	0.615	0.010
Potassium [mg/L]	1.20	4.59	1.43	3.99	2.08	10.6	8.91	1.24	1.67
Lithium [mg/L]	0.000342	0.00109	0.000471	0.00130	0.000700	0.00452	0.00236	0.000737	0.000343
Magnesium [mg/L]	1.05	0.976	1.19	0.490	0.343	0.407	0.138	0.458	1.78
Manganese [mg/L]	0.00234	0.0105	0.00572	0.00985	0.00835	0.0219	0.0141	0.0126	0.00076
Molybdenum [mg/L]	0.00093	0.00648	0.00051	0.00027	0.00053	0.0275	0.0107	0.00864	0.00085
Sodium [mg/L]	9.51	10.7	10.6	11.3	11.1	11.8	33.0	11.4	3.35
Nickel [mg/L]	0.0003	0.0002	0.0006	0.0004	0.0003	0.0002	0.0002	0.0002	< 0.0001
Phosphorus [mg/L]	0.042	0.038	0.046	0.096	0.069	0.053	0.024	0.029	0.008
Lead [mg/L]	0.00015	0.00186	0.00024	0.00010	0.00006	0.00333	0.00072	0.00094	< 0.00001
Antimony [mg/L]	0.0014	0.0005	0.0007	0.0005	0.0005	0.0024	0.0006	0.0004	0.0005
Selenium [mg/L]	0.00008	0.00005	< 0.00004	0.00008	0.00006	0.00006	0.00010	< 0.00004	0.00018
Silicon [mg/L]	3.05	4.31	2.25	9.28	6.20	4.12	3.68	4.14	1.27
Tin [mg/L]	0.00984	0.00057	0.00042	0.00019	0.00014	0.00016	0.00012	0.00008	0.00009
Strontium [mg/L]	0.0131	0.0261	0.0299	0.00141	0.00126	0.00648	0.00753	0.0038	0.0376
Titanium [mg/L]	0.00478	0.0216	0.00750	0.0349	0.0275	0.0632	0.0189	0.0127	< 0.00005



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**SFE-24hr 4:1 L/S Ratio**

**LR Report :**

**CA14808-JUL16**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: QR51+970-005- 000-16	6: QR17+000-002- 16	7: QR50+600-002- 000-16	8: QR13+500-001- 16	9: QR13+500-004- 16	10: QR42+900-002- 16	11: QR42+900-001- 16
Thallium [mg/L]	16-Aug-16	13:35	< 0.000005	< 0.000005	0.000021	< 0.000005	< 0.000005	< 0.000005	< 0.000005
Uranium [mg/L]	16-Aug-16	13:35	0.00520	0.000452	0.00182	0.000070	0.000018	0.000105	0.000755
Vanadium [mg/L]	16-Aug-16	13:35	0.00084	0.00077	0.00188	0.00269	0.00040	0.00009	0.00023
Zinc [mg/L]	16-Aug-16	13:35	0.003	0.004	0.003	< 0.002	< 0.002	< 0.002	< 0.002

Analysis	12: QR34+900-002- 16	13: QR25+350-002- 16	14: QR30+100-004- 16	15: QR61+700-002- 16	16: QR61+700-003- 16	17: QR15+800-003- 16	18: QR53+600-003- 000-16	19: QR26+300-004- 16	20: QR10+500-001- 16
Thallium [mg/L]	< 0.000005	< 0.000005	< 0.000005	0.000007	< 0.000005	0.000027	0.000007	< 0.000005	< 0.000005
Uranium [mg/L]	0.000042	0.00169	0.000778	0.000108	0.000081	0.00268	0.00325	0.000194	0.000029
Vanadium [mg/L]	0.00997	0.00103	0.00267	0.00308	0.00378	0.00293	0.00031	0.00182	0.00393
Zinc [mg/L]	< 0.002	< 0.002	< 0.002	0.004	0.003	0.006	0.004	0.002	< 0.002

**Brian Graham B.Sc.**  
Project Specialist  
Environmental Services, Analytical



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## Agnico Eagle Mines Limited

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10200, route de Pressac  
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J0Y 1C0,

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ABA - Modified Sobek

14-November-2016

**Date Rec. :** 24 October 2016

**LR Report:** CA15494-OCT16

**Reference:** PO#OL-535593

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Partial Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: AMQ-1057-1	6: AMQ-1057-2	7: AMQ-1057-3	8: AMQ-1057-4	9: AMQ-1057-5	10: AMQ-1057-6	11: AMQ-1057-7	12: AMQ-1057-8	13: AMQ-1057-9	14: AMQ-1057-10
Sample Date & Time			Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Paste pH	08-Nov-16	13:51	9.76	9.82	10.06	9.79	9.79	10.15	10.05	9.72	9.73	9.96
Fizz Rate [---]	08-Nov-16	13:51	1	1	1	1	1	1	1	1	1	1
Sample weight [g]	08-Nov-16	13:51	2.00	2.00	1.99	2.01	2.02	1.98	2.02	2.01	2.02	2.01
HCl Added [mL]	08-Nov-16	13:51	20.00	20.00	20.00	25.00	26.00	20.00	20.00	20.00	20.00	20.00
HCl [Normality]	08-Nov-16	13:51	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH [Normality]	08-Nov-16	13:51	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to [pH=8.3 mL]	08-Nov-16	13:51	14.80	15.52	14.88	18.42	19.39	14.86	14.56	14.88	16.41	14.99
Final pH	08-Nov-16	13:51	1.41	1.59	1.73	1.59	1.59	1.66	1.88	1.54	1.39	1.40
NP [t CaCO3/1000 t]	08-Nov-16	13:51	13	11	13	16	16	13	14	13	8.9	12
AP [t CaCO3/1000 t]	---	---	2.19	1.88	1.56	0.62	3.44	0.94	0.94	2.81	0.62	0.62
Net NP [t CaCO3/1000 t]	---	---	10.8	9.32	11.3	15.8	13.0	12.1	12.6	9.89	8.28	11.9
NP/AP [ratio]	---	---	5.94	5.97	8.26	26.5	4.77	13.9	14.4	4.52	14.2	20.2
Sulphur (total) [%]	11-Nov-16	16:24	0.115	0.102	0.088	0.027	0.157	0.048	0.059	0.148	0.042	< 0.005
Acid Leachable SO4-S [%]	---	---	0.04	0.04	0.04	0.03	0.05	< 0.02	0.03	0.06	0.02	< 0.02
Sulphide [%]	11-Nov-16	16:24	0.07	0.06	0.05	< 0.02	0.11	0.03	0.03	0.09	0.02	< 0.02
Carbon (total) [%]	11-Nov-16	12:57	0.021	0.042	0.030	0.019	0.029	0.026	0.037	0.049	0.045	0.024
Carbonate [%]	11-Nov-16	12:57	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025



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**ABA - Modified Sobek**

**LR Report :**

**CA15494-OCT16**

Analysis	15: AMQ-1059-1	16: AMQ-1059-2	17: AMQ-1059-3	18: AMQ-1059-4	19: AMQ-1059-5	20: AMQ-1059-6	21: AMQ-1059-7	22: AMQ-1059-8	23: AMQ-1059-9	24: AMQ-1059-10
Sample Date & Time	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Paste pH	9.76	9.85	9.81	9.86	9.62	9.88	9.67	9.53	9.78	9.93
Fizz Rate [---]	1	1	1	1	1	1	1	1	1	1
Sample weight [g]	2.00	2.00	1.99	2.01	2.03	1.98	2.00	2.01	2.01	1.99
HCl Added [mL]	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
HCl [Normality]	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH [Normality]	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to [pH=8.3 mL]	15.72	15.68	15.61	14.93	14.46	13.64	13.50	14.16	13.70	14.60
Final pH	1.34	1.34	1.42	1.49	1.59	1.69	1.72	1.57	1.73	1.49
NP [t CaCO3/1000 t]	11	11	11	13	14	16	16	14	16	14
AP [t CaCO3/1000 t]	1.88	1.56	2.19	2.19	1.25	5.62	2.81	3.12	4.06	2.81
Net NP [t CaCO3/1000 t]	8.82	9.24	8.81	10.4	12.4	10.5	13.4	11.4	11.6	10.8
NP/AP [ratio]	5.71	6.91	5.03	5.76	10.9	2.86	5.76	4.64	3.86	4.84
Sulphur (total) [%]	0.094	0.074	0.105	0.114	0.068	0.255	0.139	0.161	0.166	0.145
Acid Leachable SO4-S [%]	0.03	0.02	0.04	0.04	0.03	0.08	0.05	0.06	0.04	0.06
Sulphide [%]	0.06	0.05	0.07	0.07	0.04	0.18	0.09	0.10	0.13	0.09
Carbon (total) [%]	0.023	0.015	0.016	0.047	0.011	0.069	0.063	0.135	0.117	0.040
Carbonate [%]	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025

*Brian Graham B.Sc.  
Project Specialist  
Environmental Services, Analytical*





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**ABA - Modified Sobek**

**LR Report :**

**CA15494-OCT16**

\*NP (Neutralization Potential)

=  $50 \times (N \text{ of HCL} \times \text{Total HCL added} - N \text{ NaOH} \times \text{NaOH added})$

-----  
Weight of Sample

\*AP (Acid Potential) = % Sulphide Sulphur  $\times 31.25$

\*Net NP (Net Neutralization Potential) = NP-AP

NP/AP Ratio = NP/AP

\*Results expressed as tonnes CaCO<sub>3</sub> equivalent/1000 tonnes of material

Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.



**SGS Canada Inc.**

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## Agnico Eagle Mines Limited

Attn : Odrée Maude Vachon

10200, route de Pressac  
Rouyn-Noranda, Quebec  
J0Y 1C0,

Phone: 819-759-3700 x5699

Fax:(819) 759-3663

SFE-3:1 L/S 24hrs

09-November-2016

**Date Rec. :** 24 October 2016  
**LR Report:** CA15495-OCT16  
**Reference:** PO#OL-535593

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Tim	5: AMQ-1057-1	6: AMQ-1057-2	7: AMQ-1057-3	8: AMQ-1057-4	9: AMQ-1057-5	10: AMQ-1057-6	11: AMQ-1057-7	12: AMQ-1057-8	13: AMQ-1057-9	14: AMQ-1057-10
Sample Date & Time			Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Sample weight [g]	04-Nov-16	11:25	250	250	250	250	250	250	250	250	250	250
Volume D.I. Water [mL]	04-Nov-16	11:25	750	750	750	750	750	750	750	750	750	750
Initial pH	04-Nov-16	11:25	9.18	9.25	9.39	9.42	9.39	9.22	9.31	9.32	8.89	9.52
Final pH	04-Nov-16	11:25	9.25	9.36	9.56	9.56	9.54	9.63	9.53	9.29	9.24	9.56
pH [no unit]	08-Nov-16	16:00	7.53	7.46	7.49	7.67	7.58	7.57	7.59	7.44	7.32	7.58
Alkalinity [mg/L as CaCO3]	08-Nov-16	16:00	17	17	22	20	17	21	20	15	11	16
Conductivity [uS/cm]	08-Nov-16	16:00	54	56	54	50	48	47	46	50	40	39
Sulphate [mg/L]	07-Nov-16	12:41	2	2	1	1	2	1	1	1	1	1
Mercury [mg/L]	08-Nov-16	10:50	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Aluminum [mg/L]	09-Nov-16	10:21	1.04	1.38	1.91	0.933	0.789	2.16	1.93	1.30	0.993	1.31
Arsenic [mg/L]	09-Nov-16	10:21	0.0016	0.0026	0.0029	0.0012	0.0013	0.0034	0.0034	0.0020	0.0035	0.0024
Barium [mg/L]	09-Nov-16	10:21	0.0113	0.0128	0.0176	0.00412	0.00345	0.0148	0.0134	0.0113	0.00904	0.00197
Beryllium [mg/L]	09-Nov-16	10:21	0.000015	0.000023	0.000021	0.000012	0.000009	0.000016	0.000017	0.000021	0.000017	0.000014
Bismuth [mg/L]	09-Nov-16	10:21	0.000007	0.000018	0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007
Calcium [mg/L]	09-Nov-16	10:21	1.36	1.84	1.02	0.82	0.77	0.52	0.41	0.46	0.27	0.29
Cadmium [mg/L]	09-Nov-16	10:21	< 0.000003	0.000008	0.000006	0.000003	< 0.000003	0.000004	0.000007	< 0.000003	0.000004	< 0.000003
Cobalt [mg/L]	09-Nov-16	10:21	0.000093	0.000165	0.000129	0.000175	0.000139	0.000122	0.000071	0.000134	0.000069	0.000066
Chromium [mg/L]	09-Nov-16	10:21	0.00017	0.00039	0.00027	0.00061	0.00063	0.00021	0.00014	0.00024	0.00020	0.00003
Copper [mg/L]	09-Nov-16	10:21	0.00049	0.00072	0.00025	0.00040	0.00038	0.00033	0.00076	0.00045	0.00049	0.00069
Iron [mg/L]	09-Nov-16	10:21	0.262	0.340	0.315	0.293	0.265	0.284	0.194	0.419	0.156	0.134

OnLine LIMS

0000829638



**SGS Canada Inc.**

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**SFE-3:1 L/S 24hrs**

**LR Report :**

**CA15495-OCT16**

Analysis	3: Analysis Approval Date	4: Analysis Approval Tim	5: AMQ-1057-1	6: AMQ-1057-2	7: AMQ-1057-3	8: AMQ-1057-4	9: AMQ-1057-5	10: AMQ-1057-6	11: AMQ-1057-7	12: AMQ-1057-8	13: AMQ-1057-9	14: AMQ-1057-10
Potassium [mg/L]	09-Nov-16	10:21	8.51	9.23	9.37	6.78	3.99	7.85	6.80	6.39	2.48	2.37
Lithium [mg/L]	09-Nov-16	10:21	0.0032	0.0069	0.0035	0.0022	0.0016	0.0020	0.0018	0.0012	0.0016	0.0010
Magnesium [mg/L]	09-Nov-16	10:21	0.484	0.716	0.392	0.391	0.428	0.223	0.172	0.297	0.135	0.135
Manganese [mg/L]	09-Nov-16	10:21	0.00466	0.00854	0.00574	0.00636	0.00513	0.00521	0.00472	0.00746	0.00291	0.00318
Molybdenum [mg/L]	09-Nov-16	10:21	0.00159	0.00251	0.00318	0.00083	0.00165	0.00658	0.00623	0.00196	0.00077	0.00066
Sodium [mg/L]	09-Nov-16	10:21	10.2	12.7	9.14	8.87	8.80	7.05	7.27	7.53	7.73	8.12
Nickel [mg/L]	09-Nov-16	10:21	0.0002	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
Lead [mg/L]	09-Nov-16	10:21	0.00006	0.00022	0.00011	0.00007	0.00004	0.00008	0.00006	0.00009	0.00020	0.00004
Antimony [mg/L]	09-Nov-16	10:21	0.0014	0.0011	0.0010	0.0012	0.0010	0.0009	0.0009	0.0009	0.0011	0.0011
Selenium [mg/L]	09-Nov-16	10:21	0.00009	0.00009	0.00007	0.00008	0.00036	< 0.00004	0.00004	0.00008	0.00005	< 0.00004
Tin [mg/L]	09-Nov-16	10:21	0.00013	0.00046	0.00022	0.00023	0.00009	0.00012	0.00018	0.00024	0.00014	0.00005
Strontium [mg/L]	09-Nov-16	10:21	0.0213	0.0496	0.0222	0.0153	0.0124	0.00939	0.00747	0.00695	0.00527	0.00489
Titanium [mg/L]	09-Nov-16	10:21	0.0261	0.0468	0.0298	0.0121	0.0105	0.0254	0.0126	0.0272	0.00821	0.00986
Thallium [mg/L]	09-Nov-16	10:21	< 0.000005	0.000007	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005
Uranium [mg/L]	09-Nov-16	10:21	0.000059	0.000170	0.000166	0.000056	0.000115	0.000093	0.000084	0.000066	0.00259	0.000146
Vanadium [mg/L]	09-Nov-16	10:21	0.0196	0.0330	0.0231	0.0277	0.0193	0.0198	0.0194	0.0124	0.0160	0.0168
Zinc [mg/L]	09-Nov-16	10:21	< 0.002	0.005	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

Analysis	15: AMQ-1059-1	16: AMQ-1059-2	17: AMQ-1059-3	18: AMQ-1059-4	19: AMQ-1059-5	20: AMQ-1059-6	21: AMQ-1059-7	22: AMQ-1059-8	23: AMQ-1059-9	24: AMQ-1059-10
Sample Date & Time	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A	Date:N/A
Sample weight [g]	250	250	250	250	250	250	250	250	250	250
Volume D.I. Water [mL]	750	750	750	750	750	750	750	750	750	750
Initial pH	9.23	9.11	9.32	9.14	9.16	9.22	9.17	8.98	9.12	9.37
Final pH	9.37	9.50	9.57	9.50	9.54	9.63	9.41	9.25	9.36	9.65
pH [no unit]	7.22	7.38	7.48	7.43	7.48	7.56	7.49	7.54	7.57	7.46
Alkalinity [mg/L as CaCO3]	12	13	15	14	15	22	21	20	25	22
Conductivity [uS/cm]	40	44	40	41	42	54	53	51	67	60
Sulphate [mg/L]	2	3	2	3	1	2	1	1	2	2
Mercury [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Aluminum [mg/L]	1.14	0.979	1.30	1.23	0.529	1.16	0.732	0.755	0.789	1.04
Arsenic [mg/L]	0.0021	0.0021	0.0039	0.0030	0.0030	0.0023	0.0016	0.0025	0.0022	0.0025
Barium [mg/L]	0.00921	0.00898	0.0151	0.00756	0.00319	0.00509	0.00273	0.00461	0.00568	0.00704
Beryllium [mg/L]	0.000013	0.000012	0.000016	0.000014	0.000011	0.000012	0.000011	0.000012	0.000010	0.000010
Bismuth [mg/L]	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007



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SFE-3:1 L/S 24hrs

LR Report :

CA15495-OCT16

Analysis	15: AMQ-1059-1	16: AMQ-1059-2	17: AMQ-1059-3	18: AMQ-1059-4	19: AMQ-1059-5	20: AMQ-1059-6	21: AMQ-1059-7	22: AMQ-1059-8	23: AMQ-1059-9	24: AMQ-1059-10
Calcium [mg/L]	0.27	0.19	0.15	0.14	0.33	0.19	0.43	0.30	0.53	0.44
Cadmium [mg/L]	0.000004	< 0.000003	< 0.000003	< 0.000003	0.000004	< 0.000003	< 0.000003	0.000003	< 0.000003	< 0.000003
Cobalt [mg/L]	0.000119	0.000094	0.000108	0.000086	0.000187	0.000109	0.000103	0.000088	0.000098	0.000098
Chromium [mg/L]	0.00010	0.00008	0.00022	0.00016	0.00084	0.00010	0.00027	0.00024	0.00021	0.00032
Copper [mg/L]	0.00121	0.00058	0.00048	0.00025	0.00051	0.00074	0.00079	0.00113	0.00026	0.00016
Iron [mg/L]	0.195	0.177	0.216	0.195	0.222	0.238	0.250	0.276	0.278	0.253
Potassium [mg/L]	4.41	4.63	4.49	4.96	3.91	4.45	5.84	7.89	11.2	7.74
Lithium [mg/L]	0.0014	0.0009	0.0009	0.0009	0.0014	0.0008	0.0010	0.0022	0.0015	0.0008
Magnesium [mg/L]	0.157	0.160	0.131	0.134	0.295	0.184	0.420	0.307	0.441	0.299
Manganese [mg/L]	0.00446	0.00353	0.00396	0.00394	0.00602	0.00448	0.00664	0.00773	0.00625	0.00584
Molybdenum [mg/L]	0.00070	0.00066	0.00090	0.00060	0.00090	0.00046	0.00059	0.00073	0.00079	0.00042
Sodium [mg/L]	6.54	7.08	6.42	6.27	6.91	9.60	7.46	6.35	7.12	7.80
Nickel [mg/L]	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0003	0.0002	0.0003	0.0003
Lead [mg/L]	0.00006	0.00007	0.00005	0.00008	0.00007	0.00004	0.00005	0.00008	0.00007	0.00007
Antimony [mg/L]	0.0008	0.0007	0.0006	0.0005	0.0006	0.0015	0.0013	0.0010	0.0016	0.0018
Selenium [mg/L]	0.00007	0.00005	< 0.00004	0.00006	0.00009	0.00006	0.00004	0.00008	0.00008	0.00005
Tin [mg/L]	0.00013	0.00019	0.00008	0.00035	0.00017	0.00003	0.00014	0.00013	0.00013	0.00039
Strontium [mg/L]	0.00485	0.00290	0.00202	0.00173	0.00226	0.00201	0.00303	0.00221	0.00355	0.00306
Titanium [mg/L]	0.0131	0.0138	0.0155	0.0127	0.00898	0.0124	0.0140	0.0120	0.0173	0.0163
Thallium [mg/L]	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005
Uranium [mg/L]	0.000079	0.000037	0.000080	0.000068	0.000099	0.000042	0.000039	0.000086	0.000093	0.000028
Vanadium [mg/L]	0.0145	0.0150	0.0198	0.0144	0.0313	0.0200	0.00816	0.00877	0.00996	0.0173
Zinc [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.002

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Environmental Services, Analytical