

AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 27-JUL-15

Report Date: 30-JUL-15 14:31 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1648210
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

By Mak

Brent Mack, B.Sc. Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1648210 CONTD....

Version:

PAGE 2 of 5 30-JUL-15 14:31 (MT)

FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

L1648210-1 L1648210-2 L1648210-3 L1648210-4 L1648210-5 Sample ID Description Surface Water Surface Water Surface Water Surface Water Surface Water 17-JUL-15 17-JUL-15 17-JUL-15 17-JUL-15 18-JUL-15 Sampled Date **Sampled Time** WTN-1-S WTN-2-S WTS-1-S WTS-2-S NEM-1-S Client ID Grouping Analyte **WATER Physical Tests** Conductivity (uS/cm) 16.0 20.4 17.4 15.9 24.5 pH (pH) 6.78 6.83 6.81 6.78 7.03 Total Suspended Solids (mg/L) <1.0 <1.0 <1.0 <1.0 <1.0 Total Dissolved Solids (mg/L) 16.0 12.8 13.0 13.8 16.6 Turbidity (NTU) 0.42 0.39 0.43 0.35 0.24 Anions and Alkalinity, Bicarbonate (as CaCO3) (mg/L) 4.5 4.2 4.2 7.1 4.2 **Nutrients** Alkalinity, Carbonate (as CaCO3) (mg/L) <1.0 <1.0 <1.0 <1.0 <1.0 Alkalinity, Hydroxide (as CaCO3) (mg/L) <1.0 <1.0 <1.0 <1.0 <1.0 Alkalinity, Total (as CaCO3) (mg/L) 4.5 4.2 4.2 4.2 7.1 Bromide (Br) (mg/L) < 0.050 < 0.050 < 0.050 < 0.050 < 0.050 Chloride (CI) (mg/L) 1.94 1.22 1.06 1.06 0.53 Fluoride (F) (mg/L) 0.022 0.025 0.023 0.025 0.023 Nitrate (as N) (mg/L) < 0.0050 < 0.0050 < 0.0050 < 0.0050 < 0.0050 Nitrite (as N) (mg/L) < 0.0010 <0.0010 < 0.0010 <0.0010 < 0.0010 Orthophosphate-Dissolved (as P) (mg/L) < 0.0010 <0.0010 <0.0010 < 0.0010 < 0.0010 Phosphorus (P)-Total Dissolved (mg/L) < 0.0020 <0.0020 < 0.0020 0.0020 <0.0020 Silicate (as SiO2) (mg/L) 0.56 0.57 0.54 0.54 < 0.50 Sulfate (SO4) (mg/L) 1.39 1.24 1.20 1.22 3.19

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1648210 CONTD.... PAGE 3 of 5

30-JUL-15 14:31 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1648210-6 Surface Water 18-JUL-15 NEM-2-S	L1648210-7 Surface Water 18-JUL-15 MAM-1-S	L1648210-8 Surface Water 18-JUL-15 MAM-2-S	L1648210-9 Surface Water	L1648210-10 Surface Water 18-JUL-15 EB-JULY-AMARUQ
Grouping	Analyte				AMARUQ	
WATER	Allalyte					
Physical Tests	Conductivity (uS/cm)					
Filysical Tests	pH (pH)	24.5	22.5	22.6	15.4	<2.0
	Total Suspended Solids (mg/L)	7.04	6.86	6.86	6.76	5.45
	Total Dissolved Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Turbidity (NTU)	17.6	16.9	16.2	13.3	<3.0
Anions and	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	0.23	0.36	0.37	0.37	<0.10
Nutrients	Aikaiiiity, bicarbonate (as CaCCS) (iiig/L)	7.0	4.8	5.0	3.9	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.0	4.8	5.0	3.9	<1.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.53	1.98	1.98	1.05	<0.10
	Fluoride (F) (mg/L)	0.021	0.023	0.024	0.024	<0.020
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	<0.50	0.55	0.58	0.54	<0.50
	Sulfate (SO4) (mg/L)	3.19	2.10	2.11	1.21	<0.30

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1648210 CONTD.... PAGE 4 of 5

30-JUL-15 14:31 (MT) Version: FINΔI

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Fluoride (F)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bromide (Br)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Fluoride (F)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrite (as N)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nitrate (as N)	MS-B	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Description Qualifier

DLM Detection Limit Adjusted due to sample matrix effects.

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITP-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-L-IC-N-VA Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-TD-COL-VA Water Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

pH by Meter (Automated) APHA 4500-H "pH Value" PH-PCT-VA

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water APHA 4500-H pH Value pH by Meter (Automated)

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Silicate by Colourimetric analysis APHA 4500-SiO2 E. SILICATE-COL-VA Water

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

SO4-IC-N-VA Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

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Version: FINAL

TDS-LOW-VA

Water

Low Level TDS (3.0mg/L) by Gravimetric

APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA

Water

Total Suspended Solids by Grav. (1 mg/L)

APHA 2540[

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA

Water

Turbidity by Meter

APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA

Water

Turbidity by Meter

APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code

Laboratory Location

VA

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Short Holding Time

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

COC#	

ALS Envir

Rush Processing

www.alsglobal.com

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Contact:	Eric Franz			PDF	Excel	Digital	☐ Fax	Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TA								n TAT			
Address:	218-2902 West Broadway			Email 1:	efranz@azimut	hgroup.ca		O E	merge	ncy (1-	2 Bus.	Days)	- 100%	Surch	arge - (Contact	AI.S to	Confir	m TA
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and the second	NEM-1-S				18-Jul-15		Surface Water	Х	Х										
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	MAM-2-S				18-Jul-15		Surface Water	Х	Х										
	DUP-JULY-AMARUQ						Surface Water	Х	Х										
	EB-JULY-AMARUQ				18-Jul-15		Surface Water	X	Х										
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L1648210-COFC

Number of Containers ons: SIF



AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 27-JUL-15

Report Date: 29-JUL-15 16:19 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1648239
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

15 Mack

Brent Mack, B.Sc. Account Manager

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L1648239 CONTD....

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Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1648239-1 Surface Water 19-JUL-15	L1648239-2 Surface Water 19-JUL-15	L1648239-3 Surface Water 19-JUL-15	L1648239-4 Surface Water 19-JUL-15	L1648239-5 Surface Water 19-JUL-15 C41
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	22.1	24.5	22.8	23.1	17.0
	pH (pH)	6.92	7.13	7.07	7.12	6.91
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.3
	Total Dissolved Solids (mg/L)	15.0	17.7	18.4	15.4	13.3
	Turbidity (NTU)	0.33	0.32	0.38	0.21	0.83
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.7	8.7	7.7	7.8	5.1
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	5.7	8.7	7.7	7.8	5.1
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	0.47	0.55	0.57	0.67	0.50
	Fluoride (F) (mg/L)	0.063	0.034	0.046	0.039	0.043
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0055
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0020	0.0028	0.0022	<0.0020	0.0022
	Silicate (as SiO2) (mg/L)	0.64	0.59	0.76	<0.50	0.52
	Sulfate (SO4) (mg/L)	3.45	1.52	1.48	1.71	1.73

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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FINΔI

Version:

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Duplicate	Fluoride (F)	DLM	L1648239-1, -2, -3, -4, -5	
Duplicate	Bromide (Br)	DLM	L1648239-1, -2, -3, -4, -5	
Duplicate	Fluoride (F)	DLM	L1648239-1, -2, -3, -4, -5	
Duplicate	Nitrite (as N)	DLM	L1648239-1, -2, -3, -4, -5	
Matrix Spike	Nitrate (as N)	MS-B	L1648239-1, -2, -3, -4, -5	
Matrix Spike	Fluoride (F)	MS-B	L1648239-1, -2, -3, -4, -5	

Qualifiers for Individual Parameters Listed:

Qualifier Description

DLM Detection Limit Adjusted due to sample matrix effects.

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix Test Description		Method Reference**
ALK TITD VA	Motor	Alkalinity Chaning by Titration	ADLIA 2220 Alkalinitu

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-L-IC-N-VA Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-TD-COL-VA Water Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined

colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA Water Silicate by Colourimetric analysis APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

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Version: FINAL

TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#	

Page <u>2</u> of

Report To	· <u>········</u>			Report F	ormat / Distribut	ion		Serv	ice R	eque	sted (R	ush for	routine	analysis	subject t	o availability)	
	Azimuth Consulting Group)		Standar					Regular (Standard Turnaround Times - Business Days)								
Contact:	Eric Franz			☐ PDF	Excel	Digital	☐ Fax	O P	riority ((2-4 Bu	siness Da	ys) - 509	6 Surch	irge - Con	tact ALS to	o Confirm TAT	
Address:	218-2902 West Broadway			Email 1:	efranz@azimut	hgroup.ca		() E	Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to C					to Confirm TA			
	Vancouver, BC V6K2G8			Email 2:	gmann@azimu	thgroup.ca		○ 5	ame Da	ay or W	eekend l	mergeno	y - Cont	act ALS to	Confirm 1	TAT	
Phone:	604-730-1220	Fax:		Email 3:	ryan.vanengen	@agnicoeagle.c	<u>om</u>					Anal	ysis R	equest	vest		
Invoice To	Same as Report?	Yes	☐ No	Client / P	roject Informati	on		Ple	ase ir	ndicate	e below	Filtere	d, Pre	served o	or both (F, P, F/P)	
Hardcopy of Ir	nvoice with Report?	Yes	✓ No	Job #:	Amaruq Surfac	ewater				l l							
Company:				PO / AFE				}									
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	C14	•			19-Jul-15		Surface Water	Х	Х								
, AT	C17				19-Jul-15		Surface Water	Х	Х								
	C20				19-Jul-15		Surface Water	Х	Х								
	C41				19-Jul-15		Surface Water	X	Х								
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Number of Containers 2 2 2

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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8

Date Received: 29-JUL-15

Report Date: 07-AUG-15 12:24 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1649855
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

12 H. Work

Brent Mack, B.Sc. Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1649855 CONTD....

PAGE 2 of 5 07-AUG-15 12:24 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1649855-1 OTHER 17-JUL-15 WTN-1-S	L1649855-2 OTHER 17-JUL-15 WTN-2-S	L1649855-3 OTHER 17-JUL-15 WTS-1-S	L1649855-4 OTHER 17-JUL-15 WTS-2-S	L1649855-5 OTHER 18-JUL-15 NEM-1-S
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.320	0.251	0.282	0.284	0.148

L1649855 CONTD....

PAGE 3 of 5 07-AUG-15 12:24 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1649855-6 OTHER 18-JUL-15 NEM-2-S	L1649855-7 OTHER 18-JUL-15 MAM-1-S	L1649855-8 OTHER 18-JUL-15 MAM-2-S	L1649855-9 OTHER DUP-JULY- AMARUQ	L1649855-10 OTHER 19-JUL-15 C2
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.134	0.237	0.231	0.211	0.340

L1649855 CONTD....

PAGE 4 of 5 07-AUG-15 12:24 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1649855-11 OTHER 19-JUL-15 C14	L1649855-12 OTHER 19-JUL-15 C17	L1649855-13 OTHER 19-JUL-15 C20	L1649855-14 OTHER 19-JUL-15 C41	
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.370	0.359	0.209	0.360	

L1649855 CONTD.... PAGE 5 of 5 07-AUG-15 12:24 (MT) **FINAL**

Version:

Reference Information

Test Method References:

Tool mountain transfer and	**		
ALS Test Code	Matrix	Test Description	Method Reference**
CHLOROA-F-VA	Filter	Chlorophyll a by Fluorometer (Filter)	EPA 445.0

This analysis is done using procedures modified from EPA Method 445.0. Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS) Environmental

Chain of Custôdy / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#		

Page __1 of 2_

Report To				Report Fo	rmat / Distribut	ion		Service F	lequeste	d (Rush	for routine	analysi	s subject t	o availability
Company:	Azimuth Consulting	Group		Standard	Other			Regula:	(Standard	Turnarour	nd Times - E	Business (ays)	
Contact:	Eric Franz			PDF	Excel	Digital	☐ Fax	Priority	(2-4 Busine	ss Days) -	50% Surch	arge - Co	ntact ALS to	o Confirm TAT
Address:	218-2902 West Bro	adway		Email 1:	efranz@azimutl	ngroup.ca		○ Emerge	ncy (1-2 Bu	s. Days) -	100% Surc	harge - C	ontact ALS	to Confirm TA
	Vancouver, BC V6K	(2G8		Email 2:	gmann@azimut	hgroup.ca		Same Day or Weekend Emergency - Contact ALS to Confli					o Confirm T	i'AT
Phone:	604-730-1220	Fax:		Email 3:	ryan.vanengen(@agnicoeagle.c	<u>om</u>	Analysis Request				1		
Invoice To	Same as Report ?	✓ Yes	□ No	Client / Pr	oject Informatio	on		Please i	ndicate b	elow Fill	tered, Pre	served	or both (F, P, F/P)
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ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#

age 2 of

Report To				R	eport Fo	rmat / Distribut	ilon		Servi	Service Requested (Rush for routine analysis subject to av					availa	bility)	
Company:	Azimuth Consulting	Group			Standard	Other								usiness Da			
Contact:	Eric Franz				PDF Excel Digital Fax					ority (2-4	Business D	ays) - 50°	% Surch	arge - Con	tact ALS to	Confirm	n TAT
Address:	218-2902 West Bro	adway		E	Email 1: efranz@azimuthgroup.ca					Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm						m TA	
	Vancouver, BC V6K	(2G8		E	mail 2:	gmann@azimu	thgroup.ca		◯ Sai	ne Day or	Weekend	Emergen	y - Cont	act ALS to	Confirm T	'AT	
Phone:	604-730-1220	Fax:		Ε	mail 3:	ryan.vanengen	@agnicoeagle.co	<u>om</u>				Anal	ysis R	equest			
Invoice To	Same as Report ?	✓ Yes	☐ No	C	lient / Pr	oject Informati	on	· 	Plea	se indic	ate belo	v Filtere	d, Pre	served c	or both (F	F, P, F/	/P)
Hardcopy of I	nvoice with Report?	Yes	✓ No	J	ob #:	Amaruq Surface	ewater										
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8

Date Received: 29-JUL-15

Report Date: 07-AUG-15 13:40 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1649931
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

13 & Mack

Brent Mack, B.Sc. Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



PAGE 2 of 17 07-AUG-15 13:40 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-1 Surface Water 17-JUL-15 WTN-1-S	L1649931-2 Surface Water 17-JUL-15 WTN-2-S	L1649931-3 Surface Water 17-JUL-15 WTS-1-S	L1649931-4 Surface Water 17-JUL-15 WTS-2-S	L1649931-5 Surface Water 18-JUL-15 NEM-1-S
	Client ID					
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)	7.33	6.17	5.91	5.80	9.83
	pH (pH)					
	Turbidity (NTU)					
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)					
	Alkalinity, Carbonate (as CaCO3) (mg/L)					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)					
	Alkalinity, Total (as CaCO3) (mg/L)					
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)					
	Chloride (CI) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)	0.173	0.137	0.140	0.143	0.171
	Orthophosphate-Dissolved (as P) (mg/L)					
	Phosphorus (P)-Total Dissolved (mg/L)					
	Phosphorus (P)-Total (mg/L)	0.0020	0.0028	0.0025	0.0024	<0.0020
	Silicate (as SiO2) (mg/L)					
	Sulfate (SO4) (mg/L)					
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.15	2.07	2.04	1.98	1.45
	Total Organic Carbon (mg/L)	2.29	2.12	2.24	2.02	1.54
Total Metals	Aluminum (AI)-Total (mg/L)	0.0215	0.0176	0.0172	0.0170	0.0043
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00018	0.00014	0.00012	0.00013	0.00025
	Barium (Ba)-Total (mg/L)	0.00440	0.00343	0.00335	0.00325	0.00429
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.87	1.44	1.39	1.37	2.20
	Chromium (Cr)-Total (mg/L)	0.00013	0.00013	0.00012	<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1649931 CONTD.... PAGE 3 of 17

07-AUG-15 13:40 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-6 Surface Water 18-JUL-15 NEM-2-S	L1649931-7 Surface Water 18-JUL-15 MAM-1-S	L1649931-8 Surface Water 18-JUL-15 MAM-2-S	L1649931-9 Surface Water 18-JUL-15 DUP-JULY- AMARUQ	L1649931-10 Surface Water 18-JUL-15 EB-JULY-AMARUQ
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)	9.78	8.48	8.44	5.90	<0.50
	pH (pH)					
	Turbidity (NTU)					
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)					
	Alkalinity, Carbonate (as CaCO3) (mg/L)					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)					
	Alkalinity, Total (as CaCO3) (mg/L)					
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)					
	Chloride (CI) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)	0.171	0.139	0.137	0.163	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)					
	Phosphorus (P)-Total Dissolved (mg/L)					
	Phosphorus (P)-Total (mg/L)	0.0035	0.0031	0.0033	0.0048	<0.0020
	Silicate (as SiO2) (mg/L)					
	Sulfate (SO4) (mg/L)					
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.43	1.81	1.85	2.04	<0.50
	Total Organic Carbon (mg/L)	1.97	1.91	1.86	1.96	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0981	0.0152	0.0142	0.0175	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00024	0.00030	0.00031	0.00013	<0.00010
	Barium (Ba)-Total (mg/L)	0.00423	0.00485	0.00479	0.00336	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Calcium (Ca)-Total (mg/L)	2.24	2.16	2.14	1.36	<0.050
	Chromium (Cr)-Total (mg/L)	0.00013	0.00016	0.00015	0.00012	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

Version:

PAGE 4 of 17 07-AUG-15 13:40 (MT)

FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

L1649931-11 L1649931-12 L1649931-13 L1649931-14 L1649931-15 Sample ID Surface Water Surface Water Surface Water Description Surface Water Surface Water 18-JUL-15 19-JUL-15 19-JUL-15 19-JUL-15 19-JUL-15 Sampled Date Sampled Time TRAVEL BLANK-C2 C14 C17 C20 Client ID JULY-AMARUQ Grouping **Analyte WATER Physical Tests** Conductivity (uS/cm) <2.0 Hardness (as CaCO3) (mg/L) < 0.50 8.72 10.4 9.60 9.60 pH (pH) 5.80 Turbidity (NTU) < 0.10 Alkalinity, Bicarbonate (as CaCO3) (mg/L) Anions and <2.0 **Nutrients** Alkalinity, Carbonate (as CaCO3) (mg/L) < 2.0 Alkalinity, Hydroxide (as CaCO3) (mg/L) <2.0 Alkalinity, Total (as CaCO3) (mg/L) <2.0 Ammonia, Total (as N) (mg/L) < 0.0050 < 0.0050 < 0.0050 <0.0050 < 0.0050 Bromide (Br) (mg/L) < 0.050 Chloride (CI) (mg/L) < 0.10 Fluoride (F) (mg/L) < 0.020 Nitrate (as N) (mg/L) < 0.0050 Nitrite (as N) (mg/L) < 0.0010 Total Kjeldahl Nitrogen (mg/L) < 0.050 0.154 0.265 0.184 0.124 Orthophosphate-Dissolved (as P) (mg/L) < 0.0010 Phosphorus (P)-Total Dissolved (mg/L) < 0.0020 Phosphorus (P)-Total (mg/L) < 0.0020 < 0.0020 0.0022 0.0022 < 0.0020 Silicate (as SiO2) (mg/L) < 0.50 Sulfate (SO4) (mg/L) < 0.30 Cyanide, Total (mg/L) Cyanides < 0.0010 < 0.0010 < 0.0010 < 0.0010 < 0.0010 Cyanide, Free (mg/L) < 0.0010 < 0.0010 < 0.0010 < 0.0010 < 0.0010 Dissolved Organic Carbon (mg/L) Organic / 1.62 2.80 2.51 1.51 **Inorganic Carbon** Total Organic Carbon (mg/L) < 0.50 1.61 2.52 2.74 1.47 **Total Metals** Aluminum (Al)-Total (mg/L) < 0.0030 0.0126 0.0086 0.0148 0.0050 Antimony (Sb)-Total (mg/L) < 0.00010 < 0.00010 < 0.00010 < 0.00010 < 0.00010 Arsenic (As)-Total (mg/L) < 0.00010 0.00015 0.00024 0.00023 0.00014 Barium (Ba)-Total (mg/L) < 0.000050 0.00352 0.00361 0.00274 0.00205 Beryllium (Be)-Total (mg/L) < 0.000020 < 0.000020 < 0.000020 < 0.000020 < 0.000020 Bismuth (Bi)-Total (mg/L) < 0.000050 < 0.000050 < 0.000050 < 0.000050 < 0.000050 Boron (B)-Total (mg/L) < 0.010 < 0.010 < 0.010 < 0.010 < 0.010

< 0.0000050

< 0.050

< 0.00010

< 0.00010

< 0.00050

< 0.0000050

2.15

<0.00010

<0.00010

0.00099

< 0.0000050

2.82

< 0.00010

< 0.00010

0.00064

< 0.0000050

2.49

0.00012

< 0.00010

0.00069

< 0.0000050

2.27

< 0.00010

< 0.00010

< 0.00050

Cadmium (Cd)-Total (mg/L)

Calcium (Ca)-Total (mg/L)

Chromium (Cr)-Total (mg/L)

Cobalt (Co)-Total (mg/L)

Copper (Cu)-Total (mg/L)

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-16 Surface Water 19-JUL-15 C41		
Grouping	Analyte			
WATER				
Physical Tests	Conductivity (uS/cm)			
	Hardness (as CaCO3) (mg/L)	6.77		
	pH (pH)			
	Turbidity (NTU)			
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)			
	Alkalinity, Carbonate (as CaCO3) (mg/L)			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)			
	Alkalinity, Total (as CaCO3) (mg/L)			
	Ammonia, Total (as N) (mg/L)	<0.0050		
	Bromide (Br) (mg/L)			
	Chloride (CI) (mg/L)			
	Fluoride (F) (mg/L)			
	Nitrate (as N) (mg/L)			
	Nitrite (as N) (mg/L)			
	Total Kjeldahl Nitrogen (mg/L)	0.129		
	Orthophosphate-Dissolved (as P) (mg/L)			
	Phosphorus (P)-Total Dissolved (mg/L)			
	Phosphorus (P)-Total (mg/L)	0.0030		
	Silicate (as SiO2) (mg/L)			
	Sulfate (SO4) (mg/L)			
Cyanides	Cyanide, Total (mg/L)	<0.0010		
	Cyanide, Free (mg/L)	<0.0010		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.61		
	Total Organic Carbon (mg/L)	1.98		
Total Metals	Aluminum (Al)-Total (mg/L)	0.0210		
	Antimony (Sb)-Total (mg/L)	<0.00010		
	Arsenic (As)-Total (mg/L)	0.00013		
	Barium (Ba)-Total (mg/L)	0.00426		
	Beryllium (Be)-Total (mg/L)	<0.000020		
	Bismuth (Bi)-Total (mg/L)	<0.000050		
	Boron (B)-Total (mg/L)	<0.010		
	Cadmium (Cd)-Total (mg/L)	<0.0000050		
	Calcium (Ca)-Total (mg/L)	1.42		
	Chromium (Cr)-Total (mg/L)	0.00040		
	Cobalt (Co)-Total (mg/L)	<0.00010		
	Copper (Cu)-Total (mg/L)	0.00066		

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	Sample ID	L1649931-1	L1649931-2	L1649931-3	L1649931-4	L1649931-5
	Description	Surface Water 17-JUL-15	Surface Water 17-JUL-15	Surface Water 17-JUL-15	Surface Water 17-JUL-15	Surface Water 18-JUL-15
	Sampled Date Sampled Time		17-30L-13	17-301-13	17-301-13	10-30L-13
	Client ID	WTN-1-S	WTN-2-S	WTS-1-S	WTS-2-S	NEM-1-S
Grouping	Analyte					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.036	0.037	0.037	0.037	0.018
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.63	0.59	0.57	0.56	1.00
	Manganese (Mn)-Total (mg/L)	0.00635	0.00490	0.00494	0.00516	0.0104
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.000050	<0.0000050	<0.0000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00086	0.00069	0.00069	0.00067	0.00075
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.38	0.32	0.33	0.33	0.59
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.312	0.307	0.301	0.307	0.209
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.00010	<0.000010
	Sodium (Na)-Total (mg/L)	0.513	0.473	0.492	0.473	0.479
	Strontium (Sr)-Total (mg/L)	0.0131	0.00866	0.00800	0.00780	0.00908
	Sulfur (S)-Total (mg/L)	0.50	<0.50	<0.50	<0.50	1.07
	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00038	0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000045	0.000045	0.000047	0.000043	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0081	0.0085	0.0110	0.0120	0.0023
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00013	0.00013	0.00011	0.00012	0.00023
	Barium (Ba)-Dissolved (mg/L)	0.00416	0.00340	0.00329	0.00330	0.00410
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	1.89	1.48	1.42	1.39	2.28
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00170	0.00035	0.00031	0.00034	<0.00020

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	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-6 Surface Water 18-JUL-15 NEM-2-S	L1649931-7 Surface Water 18-JUL-15 MAM-1-S	L1649931-8 Surface Water 18-JUL-15 MAM-2-S	L1649931-9 Surface Water 18-JUL-15 DUP-JULY- AMARUQ	L1649931-10 Surface Water 18-JUL-15 EB-JULY-AMARUQ
Grouping	Analyte					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.021	0.024	0.024	0.037	<0.010
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000062
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	1.02	0.74	0.73	0.55	<0.10
	Manganese (Mn)-Total (mg/L)	0.00974	0.00428	0.00399	0.00512	<0.00010
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00074	0.00091	0.00089	0.00067	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.59	0.49	0.49	0.33	<0.10
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.214	0.313	0.314	0.298	<0.050
	Silver (Ag)-Total (mg/L)	<0.00010	<0.000010	<0.000010	<0.000010	<0.00010
	Sodium (Na)-Total (mg/L)	0.481	0.510	0.498	0.475	<0.050
	Strontium (Sr)-Total (mg/L)	0.00917	0.0119	0.0119	0.00778	<0.00020
	Sulfur (S)-Total (mg/L)	1.07	0.73	0.73	<0.50	<0.50
	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	0.00032	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	<0.000010	0.000031	0.000034	0.000042	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0064	0.0066	0.0132	0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00022	0.00027	0.00026	0.00011	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00417	0.00471	0.00462	0.00320	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.26	2.20	2.19	1.42	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00021	0.00036	0.00037	0.00034	<0.00020

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	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-11 Surface Water 18-JUL-15 TRAVEL BLANK- JULY-AMARUQ	L1649931-12 Surface Water 19-JUL-15	L1649931-13 Surface Water 19-JUL-15	L1649931-14 Surface Water 19-JUL-15 C17	L1649931-15 Surface Water 19-JUL-15
Grouping	Analyte					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	<0.010	0.032	0.028	0.044	0.012
	Lead (Pb)-Total (mg/L)	<0.000050	0.000061	<0.000050	<0.00050	<0.00050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	<0.10	0.80	0.74	0.82	0.81
	Manganese (Mn)-Total (mg/L)	<0.00010	0.00161	0.00244	0.00390	0.00133
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.0000050	<0.000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00057	<0.00050	0.00051	0.00055
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	<0.10	0.32	0.37	0.40	0.36
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	<0.050	0.357	0.309	0.425	0.153
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	<0.050	0.494	0.512	0.559	0.506
	Strontium (Sr)-Total (mg/L)	<0.00020	0.0115	0.0143	0.0129	0.00913
	Sulfur (S)-Total (mg/L)	<0.50	1.17	0.55	0.54	0.60
	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00027	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	<0.000010	0.000060	0.000033	0.000043	0.000022
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0038	0.0053	0.0065	0.0021
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00014	0.00023	0.00023	0.00013
	Barium (Ba)-Dissolved (mg/L)		0.00332	0.00351	0.00260	0.00203
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		<0.000050	<0.000050	<0.0000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)		2.18	2.90	2.52	2.44
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00080	0.00061	0.00062	0.00037

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-16 Surface Water 19-JUL-15 C41		
Grouping	Analyte			
WATER				
Total Metals	Iron (Fe)-Total (mg/L)	0.070		
	Lead (Pb)-Total (mg/L)	<0.000050		
	Lithium (Li)-Total (mg/L)	<0.0010		
	Magnesium (Mg)-Total (mg/L)	0.76		
	Manganese (Mn)-Total (mg/L)	0.00164		
	Mercury (Hg)-Total (mg/L)	<0.0000050		
	Molybdenum (Mo)-Total (mg/L)	0.000062		
	Nickel (Ni)-Total (mg/L)	0.00318		
	Phosphorus (P)-Total (mg/L)	<0.050		
	Potassium (K)-Total (mg/L)	0.29		
	Selenium (Se)-Total (mg/L)	<0.000050		
	Silicon (Si)-Total (mg/L)	0.306		
	Silver (Ag)-Total (mg/L)	<0.000010		
	Sodium (Na)-Total (mg/L)	0.417		
	Strontium (Sr)-Total (mg/L)	0.00720		
	Sulfur (S)-Total (mg/L)	0.60		
	Thallium (TI)-Total (mg/L)	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010		
	Titanium (Ti)-Total (mg/L)	0.00034		
	Uranium (U)-Total (mg/L)	0.000038		
	Vanadium (V)-Total (mg/L)	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD		
	Dissolved Metals Filtration Location	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0062		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00011		
	Barium (Ba)-Dissolved (mg/L)	0.00400		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	1.47		
	Chromium (Cr)-Dissolved (mg/L)	0.00013		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	0.00053		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-1 Surface Water 17-JUL-15 WTN-1-S	L1649931-2 Surface Water 17-JUL-15 WTN-2-S	L1649931-3 Surface Water 17-JUL-15 WTS-1-S	L1649931-4 Surface Water 17-JUL-15 WTS-2-S	L1649931-5 Surface Water 18-JUL-15 NEM-1-S
Grouping	Analyte					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.010	0.096	0.018	0.023	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000104	<0.000050	<0.000050	0.000080	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.64	0.60	0.57	0.56	1.01
	Manganese (Mn)-Dissolved (mg/L)	0.00445	0.00431	0.00377	0.00424	0.00766
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00082	0.00071	0.00066	0.00068	0.00073
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.38	0.34	0.35	0.31	0.57
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.288	0.288	0.296	0.301	0.207
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.00010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.492	0.479	0.474	0.463	0.474
	Strontium (Sr)-Dissolved (mg/L)	0.0128	0.00857	0.00782	0.00774	0.00891
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	1.05
	Thallium (TI)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000037	0.000041	0.000040	0.000042	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0016	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.0010	<0.0030	<0.0010	<0.0010	<0.0010

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

L1649931-6 L1649931-7 L1649931-8 L1649931-9 L1649931-10 Sample ID Description Surface Water Surface Water Surface Water Surface Water Surface Water 18-JUL-15 Sampled Date 18-JUL-15 18-JUL-15 18-JUL-15 18-JUL-15 Sampled Time NEM-2-S MAM-1-S MAM-2-S DUP-JULY-EB-JULY-AMARUQ Client ID AMARUQ Grouping **Analyte WATER Dissolved Metals** Iron (Fe)-Dissolved (mg/L) < 0.010 < 0.010 < 0.010 0.021 < 0.010 Lead (Pb)-Dissolved (mg/L) < 0.000050 < 0.000050 < 0.000050 0.000055 < 0.000050 Lithium (Li)-Dissolved (mg/L) < 0.0010 <0.0010 < 0.0010 < 0.0010 < 0.0010 Magnesium (Mg)-Dissolved (mg/L) 0.72 1.00 0.72 0.57 < 0.10 Manganese (Mn)-Dissolved (mg/L) 0.00750 0.00323 0.00314 0.00411 < 0.00010 Mercury (Hg)-Dissolved (mg/L) < 0.0000050 < 0.0000050 < 0.0000050 < 0.0000050 < 0.0000050 Molybdenum (Mo)-Dissolved (mg/L) < 0.000050 < 0.000050 < 0.000050 < 0.000050 < 0.000050 Nickel (Ni)-Dissolved (mg/L) 0.00071 0.00085 0.00089 0.00063 < 0.00050 Phosphorus (P)-Dissolved (mg/L) < 0.050 < 0.050 < 0.050 < 0.050 < 0.050 Potassium (K)-Dissolved (mg/L) 0.55 0.46 0.46 0.32 < 0.10 Selenium (Se)-Dissolved (mg/L) < 0.000050 < 0.000050 < 0.000050 < 0.000050 < 0.000050 Silicon (Si)-Dissolved (mg/L) 0.208 0.296 0.298 0.300 < 0.050 Silver (Ag)-Dissolved (mg/L) < 0.000010 < 0.000010 <0.000010 < 0.000010 < 0.000010 Sodium (Na)-Dissolved (mg/L) 0.471 0.500 0.504 0.469 < 0.050 Strontium (Sr)-Dissolved (mg/L) 0.00903 0.0116 0.0116 0.00787 < 0.00020 Sulfur (S)-Dissolved (mg/L) 1.07 0.71 0.71 < 0.50 < 0.50 Thallium (TI)-Dissolved (mg/L) < 0.000010 < 0.000010 < 0.000010 < 0.000010 < 0.000010 Tin (Sn)-Dissolved (mg/L) < 0.00010 < 0.00010 < 0.00010 < 0.00010 < 0.00010 Titanium (Ti)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030 < 0.00030 Uranium (U)-Dissolved (mg/L) < 0.000010 0.000027 0.000030 0.000040 < 0.000010 Vanadium (V)-Dissolved (mg/L) < 0.00050 < 0.00050 < 0.00050 < 0.00050 < 0.00050 Zinc (Zn)-Dissolved (mg/L) < 0.0010 <0.0010 < 0.0010 <0.0010 <0.0010 Zirconium (Zr)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030 < 0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

L1649931-11 L1649931-12 L1649931-13 L1649931-14 L1649931-15 Sample ID Description Surface Water Surface Water Surface Water Surface Water Surface Water 18-JUL-15 19-JUL-15 19-JUL-15 19-JUL-15 Sampled Date 19-JUL-15 Sampled Time TRAVEL BLANK-C2 C14 C17 C20 Client ID JULY-AMARUQ Grouping **Analyte WATER Dissolved Metals** Iron (Fe)-Dissolved (mg/L) 0.012 0.011 0.020 0.014 Lead (Pb)-Dissolved (mg/L) 0.000053 < 0.000050 < 0.000050 < 0.000050 Lithium (Li)-Dissolved (mg/L) <0.0010 < 0.0010 <0.0010 <0.0010 Magnesium (Mg)-Dissolved (mg/L) 0.76 0.80 0.80 0.85 Manganese (Mn)-Dissolved (mg/L) 0.00123 0.00144 0.00300 0.00095 Mercury (Hg)-Dissolved (mg/L) < 0.0000050 < 0.0000050 < 0.0000050 < 0.0000050 Molybdenum (Mo)-Dissolved (mg/L) < 0.000050 < 0.000050 < 0.000050 < 0.000050 Nickel (Ni)-Dissolved (mg/L) 0.00055 < 0.00050 < 0.00050 < 0.00050 Phosphorus (P)-Dissolved (mg/L) < 0.050 < 0.050 < 0.050 < 0.050 Potassium (K)-Dissolved (mg/L) 0.32 0.37 0.38 0.36 Selenium (Se)-Dissolved (mg/L) < 0.000050 < 0.000050 < 0.000050 < 0.000050 Silicon (Si)-Dissolved (mg/L) 0.342 0.307 0.401 0.155 Silver (Ag)-Dissolved (mg/L) < 0.000010 <0.000010 < 0.000010 < 0.000010 Sodium (Na)-Dissolved (mg/L) 0.484 0.507 0.542 0.511 Strontium (Sr)-Dissolved (mg/L) 0.0112 0.0143 0.0124 0.00921 Sulfur (S)-Dissolved (mg/L) 1.13 0.54 0.52 0.61 Thallium (TI)-Dissolved (mg/L) < 0.000010 < 0.000010 < 0.000010 < 0.000010 Tin (Sn)-Dissolved (mg/L) < 0.00010 < 0.00010 < 0.00010 < 0.00010 Titanium (Ti)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030 Uranium (U)-Dissolved (mg/L) 0.000051 0.000028 0.000039 0.000020 Vanadium (V)-Dissolved (mg/L) < 0.00050 < 0.00050 < 0.00050 < 0.00050 Zinc (Zn)-Dissolved (mg/L) <0.0010 < 0.0010 <0.0010 <0.0010 Zirconium (Zr)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1649931-16 Surface Water 19-JUL-15 C41		
Grouping	Analyte			
WATER				
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	0.026		
	Lead (Pb)-Dissolved (mg/L)	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	0.75		
	Manganese (Mn)-Dissolved (mg/L)	0.00097		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	0.00286		
	Phosphorus (P)-Dissolved (mg/L)	<0.050		
	Potassium (K)-Dissolved (mg/L)	0.26		
	Selenium (Se)-Dissolved (mg/L)	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	0.286		
	Silver (Ag)-Dissolved (mg/L)	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	0.396		
	Strontium (Sr)-Dissolved (mg/L)	0.00704		
	Sulfur (S)-Dissolved (mg/L)	0.60		
	Thallium (TI)-Dissolved (mg/L)	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.000035		
	Vanadium (V)-Dissolved (mg/L)	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Nitrite (as N)	DLM	L1649931-11
Duplicate	Titanium (Ti)-Total	DLM	L1649931-15, -16
Duplicate	Bromide (Br)	DLM	L1649931-11
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1649931-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

rest metriou references.				
ALS Test Code	Matrix	Test Description	Method Reference**	
ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310 2 ΩR ΔΡΗΔ 2320	

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

OR

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BE-D-L-CCMS-VA Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

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CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are

determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARRONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CL-L-IC-N-VA Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA **ASTM 7237**

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

EC-PCT-VA Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Hardness **APHA 2340B** Water

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents,

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod) **MET-T-CCMS-VA**

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-COL-VA Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

pH by Meter (Automated) APHA 4500-H pH Value PH-PCT-VA Water

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

APHA 4500-P Phosphorus PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA Water Total Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

SILICATE-COL-VA Silicate by Colourimetric analysis APHA 4500-SiO2 F Water

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

Sulfate in Water by IC EPA 300.1 (mod) SO4-IC-N-VA Water

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TKN-F-VA APHA 4500-NORG D. Water TKN in Water by Fluorescence

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Chain of Custody / Analy Canada Toll Free: 1 www.alsglob



COC#	

L1649931-COFC

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Report To					Report Fo	ormat / Distribut	ion	ı	Serv	rice K	eque	stea	(Kush	for rou	tine ar	nalysis	subject to	o avail:	ability)
Company:	Azimuth Consulting Grou	up			Standard	Dother			•	Regular	(Stand	lard Tu	rnarou	nd Time	s - Busi	ness Da	ays)		
Contact:	Eric Franz				PDF	☐ Excel	Digital	Fax	Ö	riority (2-4 Bu	siness	Days) ·	- 50% S	urcharg	je - Con	itact ALS to	o Confir	m TAT
Address:	218-2902 West Broadwa	ay			Email 1:	efranz@azimuti	hgroup.ca		Ö	merger	су (1-	2 Bus. I	Days) -	100%	Surchar	ge - Co	ntact ALS	to Confi	rm TA
	Vancouver, BC V6K2G8	3			Email 2:	Same Day or Weekend Emergency - Contact ALS to Confirm TAT													
Phone:	604-730-1220	Fax:			Email 3; ryan.vanengen@agnicoeagle.com				Analysis Request Please indicate below Filtered, Preserved or both (F, P, F/P)										
		✓ Yes	□ No			roject Informatio			Ple		dicat				Prese	rved	or both (F, P, F	/P)
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ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#	

Page ____2 of

Report To		F	Report Fo	rmat / Distribut	ion		Serv	ice F	eque	sted	(Rush	for ro	utine a	analysi	s subjec	t to avail	ability)
Company:	Azimuth Consulting Group		Standard	Other			● F	Regular	(Stand	lard Tu	irnarou	nd Tim	es - Bu	siness (Days)		
Contact:	Eric Franz		PDF	Excel	Digital	Fax	O P	riority	(2-4 Bu	siness	Days)	- 50%	Surcha	rge - Co	ontact ALS	S to Confi	rm TAT
Address:	218-2902 West Broadway		Email 1:	efranz@azimutl	igroup.ca		O E	merge	псу (1-	2 Bus.	Days) ·	100%	Surch	arge - C	ontact Al	S to Conf	îm TA
	Vancouver, BC V6K2G8		Email 2:	gmann@azimut	hgroup.ca		O s	ame D	ay or V	Veeken	d Emer	gency	- Conta	ct ALS	to Confirr	n TAT	
Phone:	604-730-1220 Fax:	E	Email 3:	ryan.vanengen@	<u> Dagnicoeagle.co</u>	<u>m</u>					Α	nalys	is Re	ques	t		
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 31-AUG-15

Report Date: 21-SEP-15 09:59 (MT)

Version: FINAL REV. 2

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1665542
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

Comments:

21-SEP-2015 This report replaces the previous version and contains updated Sampling Dates for 2 samples.

Brent Mack, B.Sc. Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



PAGE 2 of 7 21-SEP-15 09:59 (MT)

Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1665542-1 SURFACE WATE 21-AUG-15 11:30 WTS-03-S	L1665542-2 SURFACE WATE 21-AUG-15 12:30 WTS-04-S	L1665542-3 SURFACE WATE 23-AUG-15 13:10 NEM-03-S	L1665542-4 SURFACE WATE 23-AUG-15 11:20 NEM-04-S	L1665542-5 SURFACE WATE 24-AUG-15 13:05 MAM-03-S
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	18.6	18.5	25.5	25.4	24.6
	pH (pH)	6.66	6.74	7.06	7.05	6.85
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	12.2	14.5	15.7	15.7	14.8
	Turbidity (NTU)	0.26	0.23	0.19	0.21	0.24
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	4.5	3.8	6.8	6.7	4.8
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	4.5	3.8	6.8	6.7	4.8
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	1.57	1.58	0.54	0.54	2.33
	Fluoride (F) (mg/L)	0.024	0.024	0.022	0.022	0.026
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0024	0.0022	0.0022	0.0023	0.0038
	Silicate (as SiO2) (mg/L)	0.59	0.60	<0.50	<0.50	0.63
	Sulfate (SO4) (mg/L)	1.30	1.31	3.24	3.24	2.23

PAGE 3 of 7 21-SEP-15 09:59 (MT)

Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1665542-6 SURFACE WATE 24-AUG-15 12:30 MAM-04-S	L1665542-7 SURFACE WATE AMARUQ AUG DUP-1	L1665542-8 SURFACE WATE 25-AUG-15 12:20 C2-AUG	L1665542-9 SURFACE WATE 25-AUG-15 11:55 C14-AUG	L1665542-10 SURFACE WATE 25-AUG-15 11:25 C17-AUG
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	24.4	19.5	22.7	23.5	23.0
	pH (pH)	6.83	6.70	6.83	7.08	7.01
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.1
	Total Dissolved Solids (mg/L)	15.3	14.2	15.9	17.0	17.8
	Turbidity (NTU)	0.27	0.24	0.24	0.35	0.82
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	4.5	4.3	5.2	7.7	7.9
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	4.5	4.3	5.2	7.7	7.9
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	2.32	1.84	0.51	0.56	0.59
	Fluoride (F) (mg/L)	0.025	0.026	0.072	0.034	0.049
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0243	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0023	0.0025	0.0021	0.0027	0.0031
	Silicate (as SiO2) (mg/L)	0.67	0.56	0.88	0.58	0.63
	Sulfate (SO4) (mg/L)	2.23	1.37	3.67	1.54	1.43

PAGE 4 of 7 21-SEP-15 09:59 (MT)

Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1665542-11 SURFACE WATE 25-AUG-15 10:50 C20-AUG	L1665542-12 SURFACE WATE 25-AUG-15 10:15 C41-AUG	L1665542-13 SURFACE WATE 25-AUG-15 AMARUQ AUG EB- 1	L1665542-14 SURFACE WATE 20-AUG-15 16:30 WTN-03-S	L1665542-15 SURFACE WATE 20-AUG-15 17:30 WTN-04-S
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	22.2	20.0	<2.0	18.8	19.8
	рН (рН)	7.08	6.96	5.40	6.83	6.82
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	15.9	15.4	<3.0	14.2	13.2
	Turbidity (NTU)	0.24	0.33	<0.10	0.23	0.28
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.1	5.8	<1.0	4.9	3.9
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.1	5.8	<1.0	4.9	3.9
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	0.64	0.58	<0.10	1.57	1.84
	Fluoride (F) (mg/L)	0.037	0.055	<0.020	0.025	0.025
	Nitrate (as N) (mg/L)	<0.0050	0.0097	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0021	0.0028	<0.0020	0.0025	0.0028
	Silicate (as SiO2) (mg/L)	<0.50	0.86	<0.50	0.56	0.57
	Sulfate (SO4) (mg/L)	1.63	2.05	<0.30	1.31	1.37

PAGE 5 of 7 21-SEP-15 09:59 (MT) Version: FINAL REV. 2

	Description Sampled Date Sampled Time Client ID	SURFACE WATE AMARUQ AUG TRAV-1		
Frouping	Analyte			
VATER				
Physical Tests	Conductivity (uS/cm)	<2.0		
	pH (pH)	5.34		
	Total Suspended Solids (mg/L)	<1.0		
	Total Dissolved Solids (mg/L)	<3.0		
	Turbidity (NTU)	<0.10		
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0		
	Bromide (Br) (mg/L)	<0.050		
	Chloride (CI) (mg/L)	<0.10		
	Fluoride (F) (mg/L)	<0.020		
	Nitrate (as N) (mg/L)	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020		
	Silicate (as SiO2) (mg/L)	<0.50		
	Sulfate (SO4) (mg/L)	<0.30		

Reference Information

L1665542 CONTD.... PAGE 6 of 7 21-SEP-15 09:59 (MT) Version: FINAL REV. 2

Test Method References:

ALS Test Code Method Reference** Matrix **Test Description ALK-TITR-VA** Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Water

CL-L-IC-N-VA Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Bromide in Water by IC (Low Level)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto, Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

BR-L-IC-N-VA

Water Fluoride in Water by IC EPA 300.1 (mod) F-IC-N-VA

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

APHA 4500-P Phosphorous P-TD-COL-VA Water Total Dissolved P in Water by Colour

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined

colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA Water Silicate by Colourimetric analysis APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by

the molybdosilicate-heteropoly blue colourimetric method.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric **APHA 2540C**

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

Turbidity by Meter APHA 2130 Turbidity **TURBIDITY-VA** Water

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Reference Information

L1665542 CONTD....
PAGE 7 of 7
21-SEP-15 09:59 (MT)

Version: FINAL REV. 2

 Laboratory Definition Code
 Laboratory Location

 VA
 ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Time

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

|--|

COC#	**

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ALSEL		Ru	eh D	r00000

SHIPMENT RELEASE (client use)

Date (dd-mmm-yy)

Time (hh-mm)

26-Aug-15 8:00

Released by:

Eric Franz

Report T	Го	₹ `	ısh Proces		Report Fo	rmat / Distribut	tion		Servi	ce Re	nueste	d (Ru	sh for	mutine :	analysis	subje	ect to ava	ilability)
Compan		Azimuth Consulting	Group	·	Standard			· · · · · · · · · · · · · · · · · · ·						imes - Bu				iii.
Contact:	<u> </u>	Eric Franz	· · · · · · · · · · · · · · · · · · ·		✓ PDF	✓ Excel	Digital	☐ Fax	_								LS to Con	firm TAT
Address:	:	218-2902 West Bro	adway		Email 1:	efranz@azimut			() Er	nergenc	/ (1-2 Bi	ıs. Day	s) - 100	% Surch	arge - C	ontact /	ALS to Co	nfirm TAT
		Vancouver, BC V6	(2G8		Email 2:	gmann@azimu	thgroup.ca		O Se	me Day	or Weel	end Er	nergeno	y - Conta	ct ALS t	to Confi	irm TAT	
Phone:		604-730-1220	Fax:		Email 3:	ryan.vanengen	@agnicoeagle.c	om_					Anal	ysis Re	quest	t		
Invoice ⁻	To	Same as Report ?	☑ Yes	□ No	Client / Pi	oject Informati			Ple	se inc	licate t	elow	Filtere	d, Pres	served	or bo	th (F, P,	F/P)
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Company					PO / AFE:					ŀ						ŀ		
Contact:					LSD:				notes									,
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Phone:			Fax:		Quote #:	Q39503			ey t	후							1	1 5
		ork Order # use only)	\$- -		ALS Contact:	Brent Mack	Sampler:	Eric Fra nz	Conventionals	TSS-Low, TDS-Low								ر ا
Samp	ole)	(Thi	Sample Ider is description will a	ntification ppear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conver	TSS-Lo								Number of Containers
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By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

Time:

11:50

Temperature: 17,4/6,5 °C

Verified by:

SHIPMENT RECEPTION (lab use only)

31 Aug

Received by:

Jeen

If Yes add SIF GENF 20.00 Front

Observations:

Yes / No?

SHIPMENT VERIFICATION (lab use only)

Date:

Time:



Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#			
	Page	2 of	2

Report To				Re	port Fo	rmat / Distribut	tion		Serv	Ice Re	ques	ted (F	Rush f	or routi	ne analy	ysis sub	ject to	availa	bility)	_
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Address: 218	8-2902 West Bro	adway	,	Em	nail 1:	efranz@azimut	hgroup.ca		() E	mergeno	y (1-2	Bus. Da	ays) - :	100% St	ırcharge	- Contac	t ALS tr	o Confir	m TAT	
Va	ncouver, BC V6K	2G8		Em	nail 2:	gmann@azimu	thgroup.ca		O s	ame Day	or We	ekend	Emerg	ency - C	ontact Al	LS to Cor	nfirm T	AT		
Phone: 604	4-730 - 1220	Fax:		Em	nail 3:	ryan.vanengen	@agnicoeagle.	com					Ar	alysis	Requ	əst				
Invoice To Sa	me as Report ?	☑ Yes	☐ No	Cli	ent / Pr	roject Informati	on		Ple	ase in	dicate	belo:	w Filte	ered, F	reserv	ed or b	oth (F	, P, F	/P)	
Hardcopy of Invoi	ice with Report?	Yes	✓ No	Jol	b#:	Amaruq Surfac	ewater													
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Eric Franz		26-Aug-15						°C	L										s add	
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 02-SEP-15

Report Date: 17-SEP-15 09:39 (MT)

Version: FINAL REV. 2

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1667195

Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

Comments: 17-SEP-2015 This report replaces the previous version and contains a change to a Sampling

Date for one sample.

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



PAGE 2 of 16 17-SEP-15 09:39 (MT)

Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-1 Surface Water 21-AUG-15 11:30 WTS-03-S	L1667195-2 Surface Water 21-AUG-15 12:30 WTS-04-S	L1667195-3 Surface Water 23-AUG-15 13:10 NEM-03-S	L1667195-4 Surface Water 23-AUG-15 11:20 NEM-04-S	L1667195-5 Surface Water 24-AUG-15 13:05 MAM-03-S
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	6.66	6.65	9.80	10.0	9.11
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.128	0.111	0.084	0.107	0.095
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0028	<0.0020	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.92	1.85	1.38	1.55	1.57
	Total Organic Carbon (mg/L)	1.73	1.72	1.30	1.41	1.88
Total Metals	Aluminum (Al)-Total (mg/L)	0.0094	0.0077	0.0043	0.0050	0.0050
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00017	0.00018	0.00033	0.00031	0.00043
	Barium (Ba)-Total (mg/L)	0.00323	0.00325	0.00408	0.00409	0.00440
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	0.0000122	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.62	1.63	2.23	2.22	2.32
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00010	<0.00010	0.00011	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.020	0.017	0.013	0.011	0.014
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.62	0.62	1.01	1.01	0.77
	Manganese (Mn)-Total (mg/L)	0.00207	0.00202	0.00355	0.00340	0.00169
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00052	0.00054	0.00061	0.00060	0.00061
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.37	0.36	0.58	0.56	0.53
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.261	0.262	0.216	0.214	0.293
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.524	0.505	0.491	0.479	0.525
	Strontium (Sr)-Total (mg/L)	0.00988	0.0102	0.00953	0.00958	0.0126
	Sulfur (S)-Total (mg/L)	0.52	0.50	1.15	1.16	0.83

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-6 Surface Water 24-AUG-15 12:30 MAM-04-S	L1667195-7 Surface Water AMARUQ AUG DUP-1	L1667195-8 Surface Water 25-AUG-15 12:20 C2-AUG	L1667195-9 Surface Water 25-AUG-15 11:55 C14-AUG	L1667195-10 Surface Water 25-AUG-15 11:25 C17-AUG
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	9.13	7.14	8.78	10.0	9.39
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	0.0073	0.0052	<0.0050	0.0053
	Total Kjeldahl Nitrogen (mg/L)	0.129	0.153	0.085	0.162	0.144
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0036	<0.0020	<0.0020	0.0032
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.61	1.79	1.29	2.34	2.73
	Total Organic Carbon (mg/L)	1.58	1.80	1.41	2.39	2.68
Total Metals	Aluminum (AI)-Total (mg/L)	0.0058	0.0083	0.0044	0.0064	0.0211
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00043	0.00021	0.00015	0.00031	0.00039
	Barium (Ba)-Total (mg/L)	0.00441	0.00355	0.00324	0.00304	0.00267
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Calcium (Ca)-Total (mg/L)	2.29	1.74	2.10	2.71	2.44
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00028
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00013
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00082	0.00070	0.00080
	Iron (Fe)-Total (mg/L)	0.014	0.018	0.028	0.023	0.164
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.77	0.64	0.78	0.70	0.79
	Manganese (Mn)-Total (mg/L)	0.00173	0.00268	0.00031	0.00293	0.0169
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000055
	Nickel (Ni)-Total (mg/L)	0.00057	0.00061	<0.00050	<0.00050	0.00065
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.52	0.37	0.32	0.35	0.38
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.297	0.252	0.379	0.268	0.304
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.520	0.515	0.518	0.510	0.555
	Strontium (Sr)-Total (mg/L)	0.0126	0.0111	0.0113	0.0142	0.0127
	Sulfur (S)-Total (mg/L)	0.81	0.52	1.28	0.60	0.57

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-11 Surface Water 25-AUG-15 10:50 C20-AUG	L1667195-12 Surface Water 25-AUG-15 10:15 C41-AUG	L1667195-13 Surface Water 25-AUG-15 11:30 AMARUQ AUG EB- 1	L1667195-14 Surface Water 20-AUG-15 16:30 WTN-03-S	L1667195-15 Surface Water 20-AUG-15 17:30 WTN-04-S
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	8.74	7.87	<0.50	6.70	7.18
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.090	0.100	<0.050	0.109	0.107
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0023
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.39	1.91	<0.50	1.73	2.09
	Total Organic Carbon (mg/L)	1.35	1.44	<0.50	1.71	1.78
Total Metals	Aluminum (AI)-Total (mg/L)	0.0042	0.0081	0.0035	0.0083	0.0099
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00017	0.00015	<0.00010	0.00016	0.00018
	Barium (Ba)-Total (mg/L)	0.00183	0.00392	0.000088	0.00327	0.00345
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050	0.0000087	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.26	1.64	<0.050	1.64	1.77
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00019	<0.00010	<0.00010	0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00066	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.014	0.059	<0.010	0.016	0.019
	Lead (Pb)-Total (mg/L)	<0.000050	0.000081	0.000708	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.77	0.87	<0.10	0.64	0.65
	Manganese (Mn)-Total (mg/L)	0.00104	0.00173	<0.00010	0.00198	0.00256
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.0000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000073	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00230	<0.00050	0.00058	0.00059
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.34	0.29	<0.10	0.39	0.37
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.140	0.369	<0.050	0.249	0.265
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.487	0.476	<0.050	0.500	0.492
	Strontium (Sr)-Total (mg/L)	0.00879	0.00817	<0.00020	0.00987	0.0111
	Sulfur (S)-Total (mg/L)	0.61	0.75	<0.50	0.50	<0.50

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1667195 CONTD.... PAGE 5 of 16

17-SEP-15 09:39 (MT) Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-16 Surface Water 20-AUG-15 11:30 AMARUQ AUG TRAV-1		
Grouping	Analyte			
WATER				
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.50		
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050		
	Total Kjeldahl Nitrogen (mg/L)	<0.050		
	Phosphorus (P)-Total (mg/L)	<0.0020		
Cyanides	Cyanide, Total (mg/L)	<0.0010		
	Cyanide, Free (mg/L)	<0.0010		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)			
	Total Organic Carbon (mg/L)	<0.50		
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030		
	Antimony (Sb)-Total (mg/L)	<0.00010		
	Arsenic (As)-Total (mg/L)	<0.00010		
	Barium (Ba)-Total (mg/L)	<0.000050		
	Beryllium (Be)-Total (mg/L)	<0.000020		
	Bismuth (Bi)-Total (mg/L)	<0.000050		
	Boron (B)-Total (mg/L)	<0.010		
	Cadmium (Cd)-Total (mg/L)	<0.000050		
	Calcium (Ca)-Total (mg/L)	<0.050		
	Chromium (Cr)-Total (mg/L)	<0.00010		
	Cobalt (Co)-Total (mg/L)	<0.00010		
	Copper (Cu)-Total (mg/L)	<0.00050		
	Iron (Fe)-Total (mg/L)	<0.010		
	Lead (Pb)-Total (mg/L)	<0.000050		
	Lithium (Li)-Total (mg/L)	<0.0010		
	Magnesium (Mg)-Total (mg/L)	<0.10		
	Manganese (Mn)-Total (mg/L)	<0.00010		
	Mercury (Hg)-Total (mg/L)	<0.000050		
	Molybdenum (Mo)-Total (mg/L)	<0.000050		
	Nickel (Ni)-Total (mg/L)	<0.00050		
	Phosphorus (P)-Total (mg/L)	<0.050		
	Potassium (K)-Total (mg/L)	<0.10		
	Selenium (Se)-Total (mg/L)	<0.000050		
	Silicon (Si)-Total (mg/L)	<0.050		
	Silver (Ag)-Total (mg/L)	<0.000010		
	Sodium (Na)-Total (mg/L)	<0.050		
	Strontium (Sr)-Total (mg/L)	<0.00020		
	Sulfur (S)-Total (mg/L)	<0.50		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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L1667195 CONTD....

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	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-1 Surface Water 21-AUG-15 11:30 WTS-03-S	L1667195-2 Surface Water 21-AUG-15 12:30 WTS-04-S	L1667195-3 Surface Water 23-AUG-15 13:10 NEM-03-S	L1667195-4 Surface Water 23-AUG-15 11:20 NEM-04-S	L1667195-5 Surface Water 24-AUG-15 13:05 MAM-03-S
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000037	0.000036	0.000014	<0.000010	0.000025
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0061	0.0053	0.0016	0.0012	0.0022
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00016	0.00027	0.00029	0.00039
	Barium (Ba)-Dissolved (mg/L)	0.00315	0.00329	0.00387	0.00390	0.00433
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	1.62	1.63	2.25	2.29	2.34
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00036	0.00034	0.00023	0.00024	0.00036
	Iron (Fe)-Dissolved (mg/L)	0.011	0.011	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.63	0.63	1.02	1.04	0.79
	Manganese (Mn)-Dissolved (mg/L)	0.00123	0.00136	0.00061	0.00046	0.00034
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00050	0.00054	0.00052	0.00054
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.36	0.59	0.60	0.53
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.254	0.250	0.202	0.209	0.289
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.509	0.502	0.480	0.470	0.520
	Strontium (Sr)-Dissolved (mg/L)	0.00964	0.00984	0.00942	0.00937	0.0125
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	1.14	1.12	0.81

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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L1667195 CONTD....

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	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-6 Surface Water 24-AUG-15 12:30 MAM-04-S	L1667195-7 Surface Water AMARUQ AUG DUP-1	L1667195-8 Surface Water 25-AUG-15 12:20 C2-AUG	L1667195-9 Surface Water 25-AUG-15 11:55 C14-AUG	L1667195-10 Surface Water 25-AUG-15 11:25 C17-AUG
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.00010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	0.00036
	Uranium (U)-Total (mg/L)	0.000024	0.000034	0.000029	0.000028	0.000041
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0024	0.0048	0.0013	0.0027	0.0038
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00036	0.00020	0.00012	0.00026	0.00034
	Barium (Ba)-Dissolved (mg/L)	0.00429	0.00355	0.00318	0.00287	0.00241
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.35	1.78	2.18	2.79	2.47
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00042	0.00036	0.00069	0.00061	0.00067
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.072
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.79	0.65	0.81	0.74	0.78
	Manganese (Mn)-Dissolved (mg/L)	0.00032	0.00117	<0.00010	0.00120	0.0146
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00052	0.00054	<0.00050	<0.00050	0.00053
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.52	0.38	0.33	0.37	0.37
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.289	0.250	0.385	0.263	0.273
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.00010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.523	0.511	0.517	0.504	0.538
	Strontium (Sr)-Dissolved (mg/L)	0.0123	0.0111	0.0114	0.0139	0.0123
	Sulfur (S)-Dissolved (mg/L)	0.79	<0.50	1.27	0.57	0.52

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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L1667195 CONTD....

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	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-11 Surface Water 25-AUG-15 10:50 C20-AUG	L1667195-12 Surface Water 25-AUG-15 10:15 C41-AUG	L1667195-13 Surface Water 25-AUG-15 11:30 AMARUQ AUG EB- 1	L1667195-14 Surface Water 20-AUG-15 16:30 WTN-03-S	L1667195-15 Surface Water 20-AUG-15 17:30 WTN-04-S
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000020	0.000022	<0.000010	0.000037	0.000035
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0018	0.0026	<0.0010	0.0045	0.0048
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00013	0.00013	<0.00010	0.00014	0.00019
	Barium (Ba)-Dissolved (mg/L)	0.00174	0.00376	<0.000050	0.00316	0.00345
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.24	1.69	<0.050	1.65	1.80
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00041	0.00054	<0.00020	0.00037	0.00037
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.029	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.76	0.89	<0.10	0.63	0.66
	Manganese (Mn)-Dissolved (mg/L)	0.00045	0.00113	<0.00010	0.00057	0.00132
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000067	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00230	<0.00050	<0.00050	0.00053
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.33	0.30	<0.10	0.38	0.37
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.137	0.365	<0.050	0.249	0.256
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.476	0.483	<0.050	0.502	0.502
	Strontium (Sr)-Dissolved (mg/L)	0.00873	0.00795	<0.00020	0.00966	0.0110
	Sulfur (S)-Dissolved (mg/L)	0.57	0.72	<0.50	<0.50	<0.50

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-16 Surface Water 20-AUG-15 11:30 AMARUQ AUG TRAV-1		
Grouping	Analyte			
WATER				
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.00030		
	Uranium (U)-Total (mg/L)	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location			
	Dissolved Metals Filtration Location			
	Aluminum (AI)-Dissolved (mg/L)			
	Antimony (Sb)-Dissolved (mg/L)			
	Arsenic (As)-Dissolved (mg/L)			
	Barium (Ba)-Dissolved (mg/L)			
	Beryllium (Be)-Dissolved (mg/L)			
	Bismuth (Bi)-Dissolved (mg/L)			
	Boron (B)-Dissolved (mg/L)			
	Cadmium (Cd)-Dissolved (mg/L)			
	Calcium (Ca)-Dissolved (mg/L)			
	Chromium (Cr)-Dissolved (mg/L)			
	Cobalt (Co)-Dissolved (mg/L)			
	Copper (Cu)-Dissolved (mg/L)			
	Iron (Fe)-Dissolved (mg/L)			
	Lead (Pb)-Dissolved (mg/L)			
	Lithium (Li)-Dissolved (mg/L)			
	Magnesium (Mg)-Dissolved (mg/L)			
	Manganese (Mn)-Dissolved (mg/L)			
	Mercury (Hg)-Dissolved (mg/L)			
	Molybdenum (Mo)-Dissolved (mg/L)			
	Nickel (Ni)-Dissolved (mg/L)			
	Phosphorus (P)-Dissolved (mg/L)			
	Potassium (K)-Dissolved (mg/L)			
	Selenium (Se)-Dissolved (mg/L)			
	Silicon (Si)-Dissolved (mg/L)			
	Silver (Ag)-Dissolved (mg/L)			
	Sodium (Na)-Dissolved (mg/L)			
	Strontium (Sr)-Dissolved (mg/L)			
	Sulfur (S)-Dissolved (mg/L)			

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-1 Surface Water 21-AUG-15 11:30 WTS-03-S	L1667195-2 Surface Water 21-AUG-15 12:30 WTS-04-S	L1667195-3 Surface Water 23-AUG-15 13:10 NEM-03-S	L1667195-4 Surface Water 23-AUG-15 11:20 NEM-04-S	L1667195-5 Surface Water 24-AUG-15 13:05 MAM-03-S
Grouping	Analyte					
WATER						
Dissolved Metals	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.00010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000031	0.000031	<0.000010	<0.000010	0.000018
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1667195-6 Surface Water 24-AUG-15 12:30 MAM-04-S	L1667195-7 Surface Water AMARUQ AUG DUP-1	L1667195-8 Surface Water 25-AUG-15 12:20 C2-AUG	L1667195-9 Surface Water 25-AUG-15 11:55 C14-AUG	L1667195-10 Surface Water 25-AUG-15 11:25 C17-AUG
Grouping	Analyte					
WATER						
Dissolved Metals	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000018	0.000030	0.000022	0.000022	0.000033
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	25-AUG-15	L1667195-12 Surface Water 25-AUG-15 10:15 C41-AUG	L1667195-13 Surface Water 25-AUG-15 11:30 AMARUQ AUG EB- 1	L1667195-14 Surface Water 20-AUG-15 16:30 WTN-03-S	L1667195-15 Surface Water 20-AUG-15 17:30 WTN-04-S
Grouping	Analyte					
WATER						
Dissolved Metals	Thallium (TI)-Dissolved (mg/L)	<0.00010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000017	0.000017	<0.000010	0.000030	0.000031
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

PAGE 13 of 16 17-SEP-15 09:39 (MT) Version: FINAL REV. 2

ALS ENVIRONMENTAL ANALYTICAL REPORT

L1667195-16 Sample ID Description Surface Water 20-AUG-15 Sampled Date 11:30 Sampled Time AMARUQ AUG Client ID TRAV-1 Grouping Analyte **WATER Dissolved Metals** Thallium (TI)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L) Zirconium (Zr)-Dissolved (mg/L)

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1667195 CONTD.... PAGE 14 of 16 17-SEP-15 09:39 (MT)

Version: FINAL REV. 2

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Barium (Ba)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Manganese (Mn)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Strontium (Sr)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Titanium (Ti)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Duplicate	Aluminum (AI)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Duplicate	Barium (Ba)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Duplicate	Lead (Pb)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9
Duplicate	Manganese (Mn)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6 7, -8, -9

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA

Water

Total Be (Low) in Water by CRC ICPMS

EPA 200.2/6020A (mod)

Reference Information

L1667195 CONTD.... PAGE 15 of 16 17-SEP-15 09:39 (MT)

Version: FINAL REV. 2

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Dissolved organic carbon by combustion

Total organic carbon by combustion

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are

determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

Water

Water

CARBONS-DOC-VA

CARBONS-TOC-VA

APHA 5310B TOTAL ORGANIC CARBON (TOC)

APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

Reference Information

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Version: FINAL REV. 2

S-DIS-ICP-VA

Water

Dissolved Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA

Water

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

TKN-F-VA

Water

TKN in Water by Fluorescence

APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code

Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#	

Page <u>1 of ___2</u>

Report To		Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)											
Company:	Azimuth Consulting Group	✓ Standard Other © Regular (Standard Turnaround Times - Business Days)															
Contact:	Eric Franz	✓ PDF		☐ Digital	Fax	Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT											
Address:	218-2902 West Broadway	Email 1:	efranz@azimut	hgroup.ca		Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT					Г						
	Vancouver, BC V6K2G8	Email 2:	gmann@azimu	thgroup.ca		O s	ame Da	y or W	/eekend	d Eme	rgency	- Conta	ct ALS t	o Confirm	TAT		
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen	@agnicoeagle.c	om_								quest				
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(lab		ALS Contact:	Brent Mack	Sampler:	Eric/Franz	Ammonia,	ļ	T-CN (Low), Free CN (Low)	Total mercury	Dissolved mercury	Total Metats	ved Metals				- -	Number of Containers
Sample	Sample Identification (This description will appear on the rep		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	<u>ئ</u>	တ္ထ	L'CN	Total	Dissol	Total	Dissolved	i	ime.			Nem
	WTS-03-S		21-Aug-15	11:30	Surface Water	Х	Х	Х	Х	Х	Х	Х		ð	ં વ	Ы	7
AZ-WE	WTS-04-S	= =	21-Aug-15	12:30	Surface Water	Х	Х	X ·	Х	Х	Х	Х		AT.	Ä		7
3	NEM-03-S		23-Aug-15	13:10	Surface Water	X	Х	Х	X	X	X	Х			/1		7
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5.5	MAM-03-S	= ₽	24-Aug-15	13:05	Surface Water	х	Х	Х	Х	Х	Х	Х		は	X	1	7
46.	MAM-04-S	₽ 0.0	24-Aug-15	12:30	Surface Water	X	Х	X	Х	X	X	X		其	V C		7
374	AMARUQ AUG DUP-1	667195-COF		•	Surface Water	Х	Х	X	Х	Х	Х	х		K	5	1	7
78	C2-AUG	991	25-Aug-15	12:20	Surface Water	Х	X	X	X	Х	Х	Х		43		1	7
29	C14-AUG		25-Aug-15	11:55	Surface Water	Х	Х	Х	Х	х	Х	Х		B	•	, [7
10	C17-AUG		25-Aug-15	11:25	Surface Water	Х	Х	Х	Х	Х	Х	Х	7	•,		_	7
	C20-AUG		25-Aug-15	10:50	Surface Water	Х	Х	Х	Х	Х	Х	Х		1	1	_ ا	7
類は難	C41-AUG		25-Aug-15	10:15	Surface Water	Х	Х	Х	Х	X	Х	Х					7
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ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

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Page	2 of	2

0004

Report Format / Distribution Report To Service Requested (Rush for routine analysis subject to availability) **Azimuth Consulting Group** Standard ☐ Other Regular (Standard Turnaround Times - Business Days) Company: O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT Eric Franz √ Excel ☐ Digital Fax Contact: ✓ PDF 218-2902 West Broadway Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT Address: efranz@azimuthgroup.ca Email 1: Same Day or Weekend Emergency - Contact ALS to Confirm TAT Vancouver, BC V6K2G8 gmann@azimuthgroup.ca Email 2: Phone: 604-730-1220 Fax: Email 3: ryan vanengen@agnicoeagle.com **Analysis Request** ✓ Yes ☐ No Please indicate below Filtered, Preserved or both (F, P, F/P) Client / Project Information Invoice To Same as Report? ☑ No Amaruq Surfacewater F/P P F/P Hardcopy of Invoice with Report? Yes Job #: PO / AFE: Company: Ammonia, TKN, Total P Contact: SD: T-CN (Low), Free CN (Low) Number of Containers Address: Phone: Q39503 Fax: Quote #: Dissolved mercury Lab Work Order # ALS **Brent Mack** Sampler: Eric Franz Total mercury Total Metals Contact: (lab use only) Sample Identification Sample? Date Time ပ္ခဲ 8 Sample Type (This description will appear on the report) (dd-mmm-yy) (hh:mm) # --AMARUQ AUG EB-1 Surface Water Х Х X X Х X X 7 25-Aug-15 14 WTN-03-S X X X Х 20-Aug-15 16:30 Surface Water Х X Х 7 Х Х WTN-04-S 17:30 X X Х Х 20-Aug-15 Surface Water 7 AMARUQ AUG TRAV-1 Х X X 1216 X X Surface Water 4 190 44.5 Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses. SHIPMENT RECEPTION (lab use only) SHIPMENT VERIFICATION (lab use only) Since the second Released by: Observations: Date (dd-mmm-yy) Time (hh-mm) Date: Temperature: Verified by: Date: Time: Received by: Time: Yes / No? Fric Franz 26-Aug-15 03-00 11 Am If Yes add SIF

GENF 20.00 Front



AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 03-SEP-15

Report Date: 16-SEP-15 16:25 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1667870
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

B Mack

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1667870 CONTD....

PAGE 2 of 5 16-SEP-15 16:25 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	Other 21-AUG-15 11:30	L1667870-2 Other 21-AUG-15 12:30 WTS-04-S	L1667870-3 Other 23-AUG-15 13:10 NEM-03-S	L1667870-4 Other 23-AUG-15 11:20 NEM-04-S	L1667870-5 Other 24-AUG-15 13:05 MAM-03-S
Grouping	Analyte					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.665	0.640	0.324	0.390	0.392

L1667870 CONTD....

PAGE 3 of 5 16-SEP-15 16:25 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1667870-6 Other 24-AUG-15 12:30 MAM-04-S	L1667870-7 Other AMARUQ AUG DUP-1	L1667870-8 Other 25-AUG-15 12:20 C2-AUG	L1667870-9 Other 25-AUG-15 11:55 C14-AUG	L1667870-10 Other 25-AUG-15 11:25 C17-AUG
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.471	0.798	0.580	0.627	0.844

L1667870 CONTD....

PAGE 4 of 5 16-SEP-15 16:25 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1667870-11 Other 25-AUG-15 10:50 C20-AUG	L1667870-12 Other 25-AUG-15 10:15 C41-AUG	L1667870-13 Other 20-AUG-15 16:30 WTN-03-S	L1667870-14 Other 20-AUG-15 17:30 WTN-04-S	
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.394	0.463	0.652	0.696	

L1667870 CONTD....

PAGE 5 of 5

16-SEP-15 16:25 (MT)

Version: FINAL

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CHLOROA-F-VA	Filter	Chlorophyll a by Fluorometer (Filter)	EPA 445.0
This analysis is done usin	a nranaduran	modified from EDA Mothod 445 0. Chlorophyll	a is determined by a routing postone sytraction followed with

This analysis is done using procedures modified from EPA Method 445.0. Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#	<u></u> .		
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Report To					Report Format / Distribution					Service Requested (Rush for routine analysis subject to availability)											
Company:	Azimuth Consulting	Group			✓ Standar	d Other			● Re	gular (S	tandard To	urnaround	Time	25 - Bus	iness Days)					
Contact:	Eric Franz				☑ PDF ☑ Excel ☐ Digital ☐ Fax				Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT												
Address: 218-2902 West Broadway Vancouver, BC V6K2G8				Email 1: efranz@azimuthgroup.ca				Emergency (1-2 Bus, Days) - 100% Surcharge - Contact ALS to Confirm TAT													
				Email 2: gmann@azimuthgroup.ca				Same Day or Weekend Emergency - Contact ALS to Confirm TAT													
Phone:	604-730-1220 Fax:					Email 3: ryan.vanengen@agnicoeagle.com				Analysis Request Please indicate below Filtered, Preserved or both (F, P, F/P)											
nvoice To Same as Report?				Client / Project Information				Plea	se ind	icate be	low Filte	red,	Prese	erved or	both ((F, P, I	F/P)	l l			
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ALS Environmental

Report To

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

COC#			
	Page	2 of	2

Service Requested (Rush for routine analysis subject to availability)

www.alsglobal.com

Report Format / Distribution

Company: /	Azimuth Consulting Group	<u> </u>	☑ Standa	ard Other			Regular (Standard Turnaround Times - Business Days)								
Contact: I	Eric Franz		✓ PDF	✓ PDF ✓ Excel Digital Fax			O Priority	Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT							
Address: 2	218-2902 West Broadway		Email 1:	efranz@azimut	hgroup.ca		Emerge	Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT							
	Vancouver, BC V6K2G8		Email 2:	gmann@azimu	thgroup.ca		Same D	ay or Weel	end Eme	ergency -	gency - Contact ALS to Confirm TAT				
Phone: 6	604-730-1220 Fax		Email 3:	ryan vanengen	@agnicoeagle.	<u>com</u>	Analysis Request								
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	Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.														
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Eric Franz	31-Aug-	5 9:00	<u> </u>			110	,			• •			ENE 20	es add :	٦I٢



AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 10-AUG-15

Report Date: 17-AUG-15 13:47 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1655097
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: E-

Legal Site Desc:

BJ Mack

Brent Mack, B.Sc. Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1655097 CONTD....

PAGE 2 of 4 17-AUG-15 13:47 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1655097-1 SURFACE WATE 04-AUG-15 11:05 A12-A11	L1655097-2 SURFACE WATE 04-AUG-15 13:40 A17-A16	L1655097-3 SURFACE WATE 04-AUG-15 08:30 A1-DS1	L1655097-4 SURFACE WATE 04-AUG-15 16:40 C58 OUTLET	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	23.9	15.0	16.1	24.4	
	pH (pH)	6.81	6.80	6.77	6.98	
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	17.7	13.7	13.2	18.9	
	Turbidity (NTU)	0.24	0.26	0.29	0.23	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.8	5.0	5.0	7.2	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	5.8	5.0	5.0	7.2	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Chloride (CI) (mg/L)	1.73	0.68	0.74	0.51	
	Fluoride (F) (mg/L)	0.025	0.031	0.028	0.023	
	Nitrate (as N) (mg/L)	0.0065	<0.0050	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	
	Silicate (as SiO2) (mg/L)	0.58	0.81	<0.50	<0.50	
	Sulfate (SO4) (mg/L)	2.57	0.85	1.32	3.03	

L1655097 CONTD.... PAGE 3 of 4 17-AUG-15 13:47 (MT) FINΔI Version:

Reference Information

Test Method References: ALS Test Code Method Reference** Matrix **Test Description ALK-TITR-VA** Water Alkalinity Species by Titration APHA 2320 Alkalinity This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. **BR-L-IC-N-VA** Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CL-L-IC-N-VA Chloride in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. **EC-PCT-VA** Water Conductivity (Automated) APHA 2510 Auto, Conduc. This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. Water Fluoride in Water by IC EPA 300.1 (mod) F-IC-N-VA Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. APHA 4500-P Phosphorous P-TD-COL-VA Water Total Dissolved P in Water by Colour This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter. pH by Meter (Automated) APHA 4500-H "pH Value" This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field. PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field. PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. SILICATE-COL-VA Water Silicate by Colourimetric analysis APHA 4500-SiO2 E. This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method. SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric **APHA 2540C** This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540D This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. **TURBIDITY-VA** Water Turbidity by Meter APHA 2130 "Turbidity" This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

Turbidity by Meter APHA 2130 Turbidity **TURBIDITY-VA**

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Water

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

L1655097 CONTD....

PAGE 4 of 4

17-AUG-15 13:47 (MT)

Version: FINAL

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
Chain of Custody Numbers	

Chain of Custody Numbers:

E-1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Express Shipping

Chain of Custod Analytical Request Form
Canada T ee: 1 800 668 9878

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	Franz			[≱_POF				Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT											
Address: 218	3-2902 West Bro	adway		Email 1:	efranz@azimuth	igroup.ca			Confirm TAT Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT						TAT				
Van	ncouver, BC V6K	2G8		Email 2:	gmann@azimut	hgroup,ca		0	Same Day or Weekend Emergency - Contact ALS to Confirm TAT										
Phone: 604	-730-1220	Fax:		Email 3:	ryan.vanengen@	Dagnicoeagle.co	<u>om</u>							is Re	•				
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Hardcopy of Invoice	ce with Report?	Yes	☑ No	Job #:	Amaruq Surface	ewater												<u> </u>	」
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 14-AUG-15

Report Date: 20-AUG-15 16:25 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1658117
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: 2

Legal Site Desc:

15 Mack

Brent Mack, B.Sc. Account Manager

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L1658117 CONTD....

PAGE 2 of 5 20-AUG-15 16:25 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1658117-1 Surface Water 05-AUG-15 08:30 A8-A7	L1658117-2 Surface Water 05-AUG-15 12:30 D1	L1658117-3 Surface Water 06-AUG-15 08:40 B5-B4	L1658117-4 Surface Water 06-AUG-15 16:15 A20-A19	L1658117-5 Surface Water 07-AUG-15 10:45 A34-A16
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	23.2	22.0	21.6	13.8	14.7
	рН (рН)	6.95	7.02	6.92	6.84	6.79
	Total Suspended Solids (mg/L)	<1.0	<1.0	1.8	<1.0	1.7
	Total Dissolved Solids (mg/L)	19.1	20.0	17.9	15.8	16.4
	Turbidity (NTU)	0.24	0.37	0.30	0.35	0.57
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	6.4	7.1	5.8	4.8	5.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	6.4	7.1	5.8	4.8	5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	0.94	0.95	1.11	0.59	0.56
	Fluoride (F) (mg/L)	0.025	0.038	0.028	0.029	0.039
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0123	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	0.0043	<0.0020
	Silicate (as SiO2) (mg/L)	0.87	<0.50	0.76	1.25	0.72
	Sulfate (SO4) (mg/L)	2.64	1.23	2.39	0.73	1.12

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1658117 CONTD.... PAGE 3 of 5

20-AUG-15 16:25 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1658117-6 Surface Water 08-AUG-15 09:00 C8-C7	L1658117-7 Surface Water 08-AUG-15 11:50 A101-A100	L1658117-8 Surface Water 05-AUG-15 08:40 E3-E2	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)	26.4	12.6	23.0	
	pH (pH)	7.15	6.74	6.97	
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	21.5	13.8	19.5	
	Turbidity (NTU)	0.22	0.31	0.27	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	9.4	3.9	6.3	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	9.4	3.9	6.3	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Chloride (CI) (mg/L)	0.49	0.65	0.94	
	Fluoride (F) (mg/L)	0.033	0.027	0.025	
	Nitrate (as N) (mg/L)	<0.0050	0.0055	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	
	Silicate (as SiO2) (mg/L)	1.43	0.92	0.88	
	Sulfate (SO4) (mg/L)	2.26	0.71	2.64	

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1658117 CONTD.... PAGE 4 of 5

20-AUG-15 16:25 (MT)

Version:

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	В	L1658117-1, -2, -3, -4, -5, -6, -8
Method Blank	Alkalinity, Total (as CaCO3)	В	L1658117-7
Method Blank	Alkalinity, Total (as CaCO3)	В	L1658117-7
Matrix Spike	Phosphorus (P)-Total Dissolved	MS-B	L1658117-1, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
В	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-L-IC-N-VA Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-TD-COL-VA Water Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA Water Silicate by Colourimetric analysis APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric APHA 2540C

L1658117 CONTD....

PAGE 5 of 5

20-AUG-15 16:25 (MT)

Version: FINAL

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Express Shipping

Chain of Custod Analytical Request Form Canada Transee: 1 800 668 9878

COC#	 2	
	of	{

Report To	Report Fo	eport Format / Distribution				Service Requested (Rush for routine analysis subject to availability)							
Company: Azimuth Consulting Group	Standar	d Other			•	Regular	(Standard T	urnaround	Times • B	usiness Day	5)		
Contact: Eric Franz	☑ PDF	🗷 Excel	☐ Digital	☐ Fax	0	Priority (2-4 Busines	s Days) - 5	50% Surch	arge - Conta	ect ALS to	Confirm T	ra'i'
Address: 218-2902 West Broadway	Email 1:	efranz@azimuth	group.ca		Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT								
Vancouver, BC V6K2G8	Email 2:	gmann@azimuti	hgroup.ca		Ö	Same Day or Weekend Emergency - Contact ALS to Confirm TAT							
Phone: 604-730-1220 Fax:	Email 3:	rvan.vanengen@	gagnicoeagle.co	m	Analysis Request								
Invoice To Same as Report ?	Client / Pr	roject Informatio	on		Ple	ase ir	dicate be	low Filte	red, Pre	served or	both (F	, P, F/P))
Hardcopy of Invoice with Report? Yes No	Job #:	Amaruq Surface	water										
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 18-AUG-15

Report Date: 27-AUG-15 17:42 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1659270
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: 3

Legal Site Desc:

Comments: ADDITIONAL 27-AUG-15 17:31

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



PAGE 2 of 10 27-AUG-15 17:42 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1659270-1 Surface Water 04-AUG-15 08:00 A1-D51	L1659270-2 Surface Water 04-AUG-15 10:30 A12-A11	L1659270-3 Surface Water 04-AUG-15 13:10 A17-A16	L1659270-4 Surface Water 04-AUG-15 16:28 C58 OUTLET	L1659270-5 Surface Water 06-AUG-15 08:40 B5-B4
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	5.77	8.98	5.31	9.68	7.84
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0050	0.0073	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.144	0.144	0.152	0.124	0.143
	Phosphorus (P)-Total (mg/L)	0.0026	<0.0020	0.0023	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.92	1.84	1.88	1.60	1.57
	Total Organic Carbon (mg/L)	1.90	1.70	1.63	1.47	1.56
Total Metals	Aluminum (AI)-Total (mg/L)	0.0090	0.0084	0.0085	0.0049	0.0088
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00010	0.00035	0.00011	0.00030	0.00020
	Barium (Ba)-Total (mg/L)	0.00301	0.00473	0.00371	0.00389	0.00457
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	0.000051	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Calcium (Ca)-Total (mg/L)	1.51	2.30	1.33	2.26	1.94
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.051	0.017	0.057	0.015	0.035
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.46	0.79	0.50	1.02	0.71
	Manganese (Mn)-Total (mg/L)	0.00162	0.00075	0.00080	0.00386	0.00097
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00066	<0.00050	0.00052	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.37	0.57	0.41	0.63	0.59
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.265	0.354	0.464	0.219	0.344
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.620	0.577	0.656	0.506	0.542
	Strontium (Sr)-Total (mg/L)	0.00727	0.0115	0.00714	0.00961	0.00825
	Sulfur (S)-Total (mg/L)	0.56	0.94	<0.50	1.10	0.82

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1659270 CONTD.... PAGE 3 of 10

27-AUG-15 17:42 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1659270-6 QA 04-AUG-15 08:00 TRAVEL BLANK		
Grouping	Analyte			
WATER				
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.50		
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050		
	Total Kjeldahl Nitrogen (mg/L)	<0.050		
	Phosphorus (P)-Total (mg/L)	<0.0020		
Cyanides	Cyanide, Total (mg/L)	<0.0010		
	Cyanide, Free (mg/L)	<0.0010		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)			
	Total Organic Carbon (mg/L)	<0.50		
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030		
	Antimony (Sb)-Total (mg/L)	<0.00010		
	Arsenic (As)-Total (mg/L)	<0.00010		
	Barium (Ba)-Total (mg/L)	<0.000050		
	Beryllium (Be)-Total (mg/L)	<0.000020		
	Bismuth (Bi)-Total (mg/L)	<0.000050		
	Boron (B)-Total (mg/L)	<0.010		
	Cadmium (Cd)-Total (mg/L)	<0.000050		
	Calcium (Ca)-Total (mg/L)	<0.050		
	Chromium (Cr)-Total (mg/L)	<0.00010		
	Cobalt (Co)-Total (mg/L)	<0.00010		
	Copper (Cu)-Total (mg/L)	<0.00050		
	Iron (Fe)-Total (mg/L)	<0.010		
	Lead (Pb)-Total (mg/L)	<0.000050		
	Lithium (Li)-Total (mg/L)	<0.0010		
	Magnesium (Mg)-Total (mg/L)	<0.10		
	Manganese (Mn)-Total (mg/L)	<0.00010		
	Mercury (Hg)-Total (mg/L)	<0.000050		
	Molybdenum (Mo)-Total (mg/L)	<0.000050		
	Nickel (Ni)-Total (mg/L)	<0.00050		
	Phosphorus (P)-Total (mg/L)	<0.050		
	Potassium (K)-Total (mg/L)	<0.10		
	Selenium (Se)-Total (mg/L)	<0.000050		
	Silicon (Si)-Total (mg/L)	<0.050		
	Silver (Ag)-Total (mg/L)	<0.000010		
	Sodium (Na)-Total (mg/L)	<0.050		
	Strontium (Sr)-Total (mg/L)	<0.00020		
	Sulfur (S)-Total (mg/L)	<0.50		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

PAGE 4 of 10 27-AUG-15 17:42 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1659270-1 Surface Water 04-AUG-15 08:00 A1-D51	L1659270-2 Surface Water 04-AUG-15 10:30 A12-A11	L1659270-3 Surface Water 04-AUG-15 13:10 A17-A16	L1659270-4 Surface Water 04-AUG-15 16:28 C58 OUTLET	L1659270-5 Surface Water 06-AUG-15 08:40 B5-B4
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.00010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000035	0.000028	0.000027	<0.000010	0.000025
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0040	0.0022	0.0040	0.0018	0.0033
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00032	<0.00010	0.00029	0.00016
	Barium (Ba)-Dissolved (mg/L)	0.00353	0.00614	0.00483	0.00410	0.00742
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	<0.0000050	<0.0000050	0.0000063
	Calcium (Ca)-Dissolved (mg/L)	1.54	2.29	1.33	2.23	1.97
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00032	0.00080	0.00032	0.00026	0.00082
	Iron (Fe)-Dissolved (mg/L)	0.014	<0.010	0.025	<0.010	0.012
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00050	0.000137
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.00107
	Magnesium (Mg)-Dissolved (mg/L)	0.47	0.79	0.49	1.00	0.71
	Manganese (Mn)-Dissolved (mg/L)	0.00065	0.00059	0.00041	0.00042	0.00055
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00061	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.57	0.40	0.59	0.60
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00050	<0.000050	<0.00050
	Silicon (Si)-Dissolved (mg/L)	0.253	0.358	0.447	0.209	0.340
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.00010	<0.00010	<0.00010
	Sodium (Na)-Dissolved (mg/L)	0.555	0.676	0.672	0.511	0.649
	Strontium (Sr)-Dissolved (mg/L)					0.00824
	Sulfur (S)-Dissolved (mg/L)	0.00663 <0.50	0.0110	0.00701 <0.50	0.00930 1.07	0.00824

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1659270 CONTD.... PAGE 5 of 10

27-AUG-15 17:42 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1659270-6 QA 04-AUG-15 08:00 TRAVEL BLANK		
Grouping	Analyte			
WATER				
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.00030		
	Uranium (U)-Total (mg/L)	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location			
	Dissolved Metals Filtration Location			
	Aluminum (Al)-Dissolved (mg/L)			
	Antimony (Sb)-Dissolved (mg/L)			
	Arsenic (As)-Dissolved (mg/L)			
	Barium (Ba)-Dissolved (mg/L)			
	Beryllium (Be)-Dissolved (mg/L)			
	Bismuth (Bi)-Dissolved (mg/L)			
	Boron (B)-Dissolved (mg/L)			
	Cadmium (Cd)-Dissolved (mg/L)			
	Calcium (Ca)-Dissolved (mg/L)			
	Chromium (Cr)-Dissolved (mg/L)			
	Cobalt (Co)-Dissolved (mg/L)			
	Copper (Cu)-Dissolved (mg/L)			
	Iron (Fe)-Dissolved (mg/L)			
	Lead (Pb)-Dissolved (mg/L)			
	Lithium (Li)-Dissolved (mg/L)			
	Magnesium (Mg)-Dissolved (mg/L)			
	Manganese (Mn)-Dissolved (mg/L)			
	Mercury (Hg)-Dissolved (mg/L)			
	Molybdenum (Mo)-Dissolved (mg/L)			
	Nickel (Ni)-Dissolved (mg/L)			
	Phosphorus (P)-Dissolved (mg/L)			
	Potassium (K)-Dissolved (mg/L)			
	Selenium (Se)-Dissolved (mg/L)			
	Silicon (Si)-Dissolved (mg/L)			
	Silver (Ag)-Dissolved (mg/L)			
	Sodium (Na)-Dissolved (mg/L)			
	Strontium (Sr)-Dissolved (mg/L)			
	Sulfur (S)-Dissolved (mg/L)			

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	04-AUG-15 08:00	L1659270-2 Surface Water 04-AUG-15 10:30 A12-A11	L1659270-3 Surface Water 04-AUG-15 13:10 A17-A16	L1659270-4 Surface Water 04-AUG-15 16:28 C58 OUTLET	L1659270-5 Surface Water 06-AUG-15 08:40 B5-B4
Grouping	Analyte					
WATER						
Dissolved Metals	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010	0.00027
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000028	0.000023	0.000021	<0.000010	0.000025
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version:

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FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

L1659270-6 Sample ID QA Description 04-AUG-15 Sampled Date 08:00 **Sampled Time** TRAVEL BLANK Client ID Grouping Analyte **WATER Dissolved Metals** Thallium (TI)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L) Zirconium (Zr)-Dissolved (mg/L)

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1659270 CONTD....

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27-AUG-15 17:42 (MT)

Version: FINAL

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Ouplicate	Bismuth (Bi)-Total	DLA	L1659270-6
uplicate	Cadmium (Cd)-Total	DLA	L1659270-6
Duplicate	Lead (Pb)-Total	DLA	L1659270-6
Duplicate	Silver (Ag)-Total	DLA	L1659270-6
Ouplicate	Thallium (TI)-Total	DLA	L1659270-6
Duplicate	Tin (Sn)-Total	DLA	L1659270-6
Duplicate	Titanium (Ti)-Total	DLA	L1659270-6
Duplicate	Vanadium (V)-Total	DLA	L1659270-6
Duplicate	Zinc (Zn)-Total	DLA	L1659270-6
Duplicate	Zirconium (Zr)-Total	DLA	L1659270-6
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Cadmium (Cd)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Chromium (Cr)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Cobalt (Co)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Lead (Pb)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Silver (Ag)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Thallium (TI)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Titanium (Ti)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Vanadium (V)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Ouplicate	Zirconium (Zr)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
latrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Natrix Spike	Sodium (Na)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Natrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Natrix Spike	Calcium (Ca)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Silicon (Si)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Aluminum (AI)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Copper (Cu)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Sodium (Na)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
latrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Total Organic Carbon	MS-B	L1659270-3
Matrix Spike	Total Organic Carbon	MS-B	L1659270-3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
//atrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	S Test Code Matrix Test Description		Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

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Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are

determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VAWater Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society

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Version: FINAL

of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-PRES-COL-VA

Water

Total P in Water by Colour

APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

S-DIS-ICP-VA

Water

Dissolved Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA

Water

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

TKN-F-VA

Water

TKN in Water by Fluorescence

APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code

Chain of Custody Numbers:

3

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

Laboratory Location

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Ground Shipping

Chain of Custody Analytical Request Form Canada Towns: 1 800 668 9878 www.splobal.com

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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 18-AUG-15

Report Date: 26-AUG-15 17:33 (MT)

Version: FINAL REV. 2

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1659279
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: 4

Legal Site Desc:

Comments: Please note Dissolved S data has been removed from this report, as requested, for sample D1 only, due to the possibility of improper preservation and, therefore, field contamination.

125 Mark

Brent Mack, B.Sc. Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

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26-AUG-15 17:33 (MT) Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1659279-1 Surface Water 06-AUG-15 16:15 A20-A19	L1659279-2 Surface Water 05-AUG-15 08:40 A8-A7	L1659279-3 Surface Water 05-AUG-15 13:00 D1	L1659279-4 Surface Water 05-AUG-15 08:40 E3-E2	L1659279-5 Surface Water 08-AUG-15 11:50 A101-A100
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	4.45	8.22	8.43	8.40	4.17
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	0.0057	0.0061	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.142	0.150	0.157	0.132	0.123
	Phosphorus (P)-Total (mg/L)	0.0026	<0.0020	0.0028	0.0048	0.0026
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.96	1.74	2.24	1.86	1.75
	Total Organic Carbon (mg/L)	2.08	1.63	2.30	1.46	1.86
Total Metals	Aluminum (AI)-Total (mg/L)	0.0170	0.0064	0.0144	0.0060	0.0102
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00023	0.00014	0.00023	<0.00010
	Barium (Ba)-Total (mg/L)	0.00355	0.00473	0.00275	0.00475	0.00173
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Calcium (Ca)-Total (mg/L)	1.21	2.09	1.95	2.21	1.24
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.038	0.017	0.028	0.016	0.031
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.41	0.72	0.85	0.80	0.29
	Manganese (Mn)-Total (mg/L)	0.00077	0.00225	0.00238	0.00179	0.00240
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000060
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00054	<0.00050	0.00052	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.38	0.53	0.34	0.61	0.27
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.571	0.372	0.195	0.401	0.412
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.632	0.541	0.727	0.537	0.580
	Strontium (Sr)-Total (mg/L)	0.00699	0.00899	0.00610	0.00903	0.00556
	Sulfur (S)-Total (mg/L)	<0.50	0.91	<0.50	1.00	<0.50

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1659279-6 Surface Water 08-AUG-15 09:00 C8-C7	L1659279-7 Surface Water 07-AUG-15 10:45 A34-A16		
Grouping	Analyte				
WATER					
Physical Tests	Hardness (as CaCO3) (mg/L)	10.6	5.19		
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050		
	Total Kjeldahl Nitrogen (mg/L)	0.095 _{DLM}	0.193		
	Phosphorus (P)-Total (mg/L)	<0.020	0.0038		
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010		
	Cyanide, Free (mg/L)	<0.0010	<0.0010		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35	2.33		
	Total Organic Carbon (mg/L)	1.41	2.43		
Total Metals	Aluminum (Al)-Total (mg/L)	0.0051	0.0211		
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Total (mg/L)	0.00036	0.00018		
	Barium (Ba)-Total (mg/L)	0.00991	0.00218		
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050		
	Calcium (Ca)-Total (mg/L)	2.47	0.906		
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00015		
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Total (mg/L)	<0.00050	0.00072		
	Iron (Fe)-Total (mg/L)	<0.010	0.161		
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010		
	Magnesium (Mg)-Total (mg/L)	1.09	0.69		
	Manganese (Mn)-Total (mg/L)	0.00269	0.00257		
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Total (mg/L)	0.000966	0.000083		
	Nickel (Ni)-Total (mg/L)	0.00056	0.00076		
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050		
	Potassium (K)-Total (mg/L)	0.50	0.37		
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Total (mg/L)	0.634	0.335		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	0.625	0.614		
	Strontium (Sr)-Total (mg/L)	0.0119	0.00523		
	Sulfur (S)-Total (mg/L)	0.83	<0.50		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1659279-1 Surface Water 06-AUG-15 16:15 A20-A19	L1659279-2 Surface Water 05-AUG-15 08:40 A8-A7	L1659279-3 Surface Water 05-AUG-15 13:00 D1	L1659279-4 Surface Water 05-AUG-15 08:40 E3-E2	L1659279-5 Surface Water 08-AUG-15 11:50 A101-A100
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00033	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000048	0.000021	0.000045	0.000021	0.000052
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0060	0.0027	0.0054	0.0033	0.0034
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00020	0.00015	0.00020	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00655	0.00748	0.00313	0.00802	0.00256
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	1.16	2.11	1.98	2.15	1.20
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00069	0.00063	0.00064	0.00059	0.00053
	Iron (Fe)-Dissolved (mg/L)	0.014	<0.010	0.011	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.38	0.72	0.85	0.74	0.28
	Manganese (Mn)-Dissolved (mg/L)	0.00046	0.00096	0.00068	0.00094	0.00062
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000054
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00052	<0.00050	0.00052	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.34	0.54	0.32	0.55	0.27
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.536	0.369	0.191	0.390	0.386
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.767	0.629	0.820	0.658	0.649
	Strontium (Sr)-Dissolved (mg/L)	0.00669	0.00870	0.00618	0.00868	0.00533
	Sulfur (S)-Dissolved (mg/L)	<0.50	0.89		0.89	<0.50

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1659279-6 Surface Water 08-AUG-15 09:00 C8-C7	L1659279-7 Surface Water 07-AUG-15 10:45 A34-A16		
Grouping	Analyte				
WATER					
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00048		
	Uranium (U)-Total (mg/L)	0.000020	0.000069		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0026	0.0073		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00034	0.00015		
	Barium (Ba)-Dissolved (mg/L)	0.0115	0.00376		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.000050		
	Calcium (Ca)-Dissolved (mg/L)	2.47	0.922		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	0.00047	0.00074		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.080		
	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.00050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	1.08	0.70		
	Manganese (Mn)-Dissolved (mg/L)	0.00108	0.00179		
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000126	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00069		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	0.53	0.44		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	0.636	0.324		
	Silver (Ag)-Dissolved (mg/L)	<0.00010	<0.00010		
	Sodium (Na)-Dissolved (mg/L)	0.698	0.701		
	Strontium (Sr)-Dissolved (mg/L)	0.098	0.00483		
	Sulfur (S)-Dissolved (mg/L)	0.80	<0.50		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1659279-1 Surface Water 06-AUG-15 16:15 A20-A19	L1659279-2 Surface Water 05-AUG-15 08:40 A8-A7	L1659279-3 Surface Water 05-AUG-15 13:00 D1	L1659279-4 Surface Water 05-AUG-15 08:40 E3-E2	L1659279-5 Surface Water 08-AUG-15 11:50 A101-A100
Grouping	Analyte					
WATER						
Dissolved Metals	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00016	0.00012	0.00013	0.00013	0.00013
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000044	0.000017	0.000043	0.000018	0.000045
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

L1659279-6 L1659279-7 Sample ID Surface Water Description Surface Water 08-AUG-15 07-AUG-15 Sampled Date 09:00 10:45 Sampled Time C8-C7 A34-A16 Client ID Grouping **Analyte WATER Dissolved Metals** Thallium (TI)-Dissolved (mg/L) < 0.000010 < 0.000010 Tin (Sn)-Dissolved (mg/L) <0.00010 0.00011 Titanium (Ti)-Dissolved (mg/L) < 0.00030 < 0.00030 Uranium (U)-Dissolved (mg/L) 0.000018 0.000054 Vanadium (V)-Dissolved (mg/L) < 0.00050 < 0.00050 Zinc (Zn)-Dissolved (mg/L) < 0.0010 < 0.0010 Zirconium (Zr)-Dissolved (mg/L) < 0.00030 < 0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Cadmium (Cd)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Chromium (Cr)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Cobalt (Co)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Lead (Pb)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Silver (Ag)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Thallium (TI)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Titanium (Ti)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Vanadium (V)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Phosphorus (P)-Total	MS-B	L1659279-1, -2, -3, -4, -5, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Natrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Aluminum (AI)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Total Organic Carbon	MS-B	L1659279-4
Matrix Spike	Total Organic Carbon	MS-B	L1659279-4
Natrix Spike	Phosphorus (P)-Total	MS-B	L1659279-6
Natrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code Matrix Test Description		Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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CARBONS-DOC-VA Water

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

S-DIS-ICP-VA Water Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or

L1659279 CONTD.... PAGE 10 of 10 26-AUG-15 17:33 (MT)

Version: FINAL REV. 2

microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA

Water

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

TKN-F-VA

Water

TKN in Water by Fluorescence

APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code

Laboratory Location

Chain of Custody Numbers:

4

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Ground Shipping

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AZIMUTH CONSULTING GROUP INC.

ATTN: Maggie McConnell

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 09-SEP-15

Report Date: 22-SEP-15 14:32 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1669874

Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SEDIMENT

C of C Numbers: 2, 3, OL-1767

Legal Site Desc:

Comments:

Please note that Silver (Ag) results for Filter samples are denoted with 'RRR' qualifiers due to a failing Laboratory Control Standard associated with those results. Due to the destructive nature of Filter analysis the testing could not be repeated and the results for Silver (Ag) should be considered approximate values.

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1669874 CONTD.... PAGE 2 of 18

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Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1669874-34 Filter 22-AUG-15 AMARUQ SWIPE-1	L1669874-35 Filter 21-AUG-15 AMARUQ SWIPE-2	L1669874-36 Filter 24-AUG-15 AMARUQ SWIPE-3	L1669874-37 Filter 24-AUG-15 AMARUQ SWIPE-4	
Grouping	Analyte						
FILTER							
Metals	Aluminum (Al)-Total (mg)		0.011	0.018	0.015	<0.010	
	Antimony (Sb)-Total (mg)		<0.010	<0.010	<0.010	<0.010	
	Arsenic (As)-Total (mg)		<0.010	<0.010	<0.010	<0.010	
	Barium (Ba)-Total (mg)		0.00135	0.00147	0.00084	<0.00050	
	Beryllium (Be)-Total (mg)		<0.00030	<0.00030	<0.00030	<0.00030	
	Bismuth (Bi)-Total (mg)		<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050	
	Calcium (Ca)-Total (mg)		<0.050	<0.050	<0.050	<0.050	
	Chromium (Cr)-Total (mg)		0.0021	0.0083	0.0042	0.0054	
	Cobalt (Co)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050	
	Copper (Cu)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Total (mg)		0.0312	0.0696	0.0452	0.0395	
	Lead (Pb)-Total (mg)		<0.0030	0.0038	<0.0030	<0.0030	
	Lithium (Li)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050	
	Magnesium (Mg)-Total (mg)		0.0084	0.0170	0.0154	0.0094	
	Manganese (Mn)-Total (mg)		0.00147	0.00107	0.00077	0.00060	
	Molybdenum (Mo)-Total (mg)		<0.0020	<0.0020	<0.0020	<0.0020	
	Nickel (Ni)-Total (mg)		<0.0030	0.0038	<0.0030	<0.0030	
	Phosphorus (P)-Total (mg)		<0.020	<0.020	<0.020	<0.020	
	Potassium (K)-Total (mg)		<0.10	<0.10	<0.10	<0.10	
	Selenium (Se)-Total (mg)		<0.010	<0.010	<0.010	<0.010	
	Silver (Ag)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050	
	Sodium (Na)-Total (mg)		0.10	<0.10	<0.10	<0.10	
	Strontium (Sr)-Total (mg)		<0.00030	<0.00030	<0.00030	<0.00030	
	Thallium (TI)-Total (mg)		<0.010	<0.010	<0.010	<0.010	
	Tin (Sn)-Total (mg)		<0.0020	0.0023	<0.0020	<0.0020	
	Titanium (Ti)-Total (mg)		0.00059	0.00089	0.00055	<0.00050	
	Vanadium (V)-Total (mg)		<0.0020	<0.0020	<0.0020	<0.0020	
	Zinc (Zn)-Total (mg)		0.00031	0.00113	0.00095	0.00047	

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-1 Soil/Sed/Waste 22-AUG-15 WTN-EX-1	L1669874-2 Soil/Sed/Waste 22-AUG-15 WTN-EX-2	L1669874-3 Soil/Sed/Waste 22-AUG-15 WTN-EX-3	L1669874-4 Soil/Sed/Waste 22-AUG-15 WTN-EX-4	L1669874-5 Soil/Sed/Waste 22-AUG-15 WTN-EX-5
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	86.3	86.9	87.9	86.6	89.0
	pH (1:2 soil:water) (pH)	6.03	5.80	6.40	6.02	6.16
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10	0.15	<0.10
	% Sand (2.0mm - 0.063mm) (%)	24.0	9.19	21.7	21.9	9.37
	% Silt (0.063mm - 4um) (%)	66.1	79.3	71.1	69.9	82.5
	% Clay (<4um) (%)	9.92	11.5	7.16	8.00	8.11
	Texture	Silt loam	Silt	Silt loam	Silt loam	Silt
Organic /	Total Organic Carbon (%)	6.65	7.08	7.80	7.36	8.66
Inorganic Carbon Metals	Aluminum (Al) (mg/kg)				.====	
Wetais	Antimony (Sb) (mg/kg)	14700	18400	13500	15200	16000
	Arsenic (As) (mg/kg)	0.27	0.29	0.29	0.29	0.35
	Barium (Ba) (mg/kg)	69.4	147	79.5	81.7	139
	Beryllium (Be) (mg/kg)	98.0	129	102	107	106
	Bismuth (Bi) (mg/kg)	1.12	1.53	1.06	1.14	1.32
	Boron (B) (mg/kg)	0.33	0.47	0.33	0.34	0.40
	Cadmium (Cd) (mg/kg)	10.0	10.3	10.0	10.1	12.5
		0.297	0.481	0.304	0.334	0.375
	Calcium (Ca) (mg/kg)	3310	2950	3220	3340	3710
	Chromium (Cr) (mg/kg)	162	197	169	176	176
	Cobalt (Co) (mg/kg)	13.6	17.0	15.0	15.8	14.9
	Copper (Cu) (mg/kg)	32.6	50.8	33.5	34.7	40.9
	Iron (Fe) (mg/kg)	35200	51700	38600	39000	50900
	Lead (Pb) (mg/kg)	10.0	13.3	9.90	10.1	11.4
	Lithium (Li) (mg/kg)	16.2	17.6	14.7	16.7	15.4
	Magnesium (Mg) (mg/kg)	8770	9750	8870	9440	9030
	Manganese (Mn) (mg/kg)	916	816	1170	1230	744
	Mercury (Hg) (mg/kg)	0.0597	0.0764	0.0675	0.0667	0.0788
	Molybdenum (Mo) (mg/kg)	2.29	4.57	2.39	2.32	3.79
	Nickel (Ni) (mg/kg)	90.7	117	91.8	98.9	95.6
	Phosphorus (P) (mg/kg)	662	794	716	795	864
	Potassium (K) (mg/kg)	1940	2340	1760	2030	2150
	Selenium (Se) (mg/kg)	0.40	0.70	0.47	0.48	0.59
	Silver (Ag) (mg/kg)	0.21	0.31	0.21	0.23	0.27
	Sodium (Na) (mg/kg)	293	339	327	390	506
	Strontium (Sr) (mg/kg)	24.4	22.7	21.6	25.6	24.8
	Thallium (TI) (mg/kg)	0.129	0.189	0.130	0.142	0.158
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	485	537	393	507	500

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-6 Soil/Sed/Waste 22-AUG-15 WTN-1	L1669874-7 Soil/Sed/Waste 22-AUG-15 WTN-2	L1669874-8 Soil/Sed/Waste 22-AUG-15 WTN-3	L1669874-9 Soil/Sed/Waste 22-AUG-15 WTN-4	L1669874-10 Soil/Sed/Waste 22-AUG-15 WTN-5
Grouping	Analyte					
SOIL	•					
Physical Tests	Moisture (%)	85.0	86.8	80.9	87.2	87.2
	pH (1:2 soil:water) (pH)	6.29	6.17	5.71	5.67	5.76
Particle Size	% Gravel (>2mm) (%)	<0.10	0.41	<0.10	<0.10	0.12
	% Sand (2.0mm - 0.063mm) (%)	4.08	4.09	4.68	3.18	4.75
	% Silt (0.063mm - 4um) (%)	87.0	86.0	82.6	84.6	83.6
	% Clay (<4um) (%)	8.95	9.53	12.6	12.2	11.6
	Texture	Silt	Silt	Silt	Silt	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.91	5.20	4.65	5.72	5.20
Metals	Aluminum (AI) (mg/kg)	13900	12700	14800	14200	13400
	Antimony (Sb) (mg/kg)	0.25	0.27	0.25	0.34	0.27
	Arsenic (As) (mg/kg)	897	1000	568	1760	809
	Barium (Ba) (mg/kg)	212	586	97.4	180	179
	Beryllium (Be) (mg/kg)	1.22	1.18	1.27	1.28	1.18
	Bismuth (Bi) (mg/kg)	0.45	0.42	0.47	0.49	0.46
	Boron (B) (mg/kg)	7.3	7.2	6.9	7.7	6.4
	Cadmium (Cd) (mg/kg)	0.315	0.483	0.151	0.363	0.407
	Calcium (Ca) (mg/kg)	1950	2150	2050	2260	1660
	Chromium (Cr) (mg/kg)	84.4	80.5	94.5	95.4	87.5
	Cobalt (Co) (mg/kg)	24.0	20.0	20.5	25.3	24.0
	Copper (Cu) (mg/kg)	37.3	38.4	35.5	41.7	38.6
	Iron (Fe) (mg/kg)	151000	146000	127000	179000	139000
	Lead (Pb) (mg/kg)	10.9	11.0	11.7	12.8	11.5
	Lithium (Li) (mg/kg)	13.4	11.8	14.0	13.1	12.5
	Magnesium (Mg) (mg/kg)	5800	5410	6300	6110	5880
	Manganese (Mn) (mg/kg)	6660	23500	2200	5430	3900
	Mercury (Hg) (mg/kg)	0.0742	0.0827	0.0612	0.0939	0.0795
	Molybdenum (Mo) (mg/kg)	6.27	6.91	5.33	8.63	5.81
	Nickel (Ni) (mg/kg)	92.0	126	59.9	92.7	108
	Phosphorus (P) (mg/kg)	1830	2250	1770	2750	2020
	Potassium (K) (mg/kg)	2040	2060	2150	2110	1840
	Selenium (Se) (mg/kg)	0.78	0.78	0.75	0.96	0.76
	Silver (Ag) (mg/kg)	0.76	0.78	0.73	0.32	0.76
	Sodium (Na) (mg/kg)	292	302	257	355	328
	Strontium (Sr) (mg/kg)	292	29.5	21.6	25.0	19.0
	Thallium (Tl) (mg/kg)	0.219	0.240	0.154	0.210	0.236
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	379	370	413	393	308

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-11 Soil/Sed/Waste 22-AUG-15 WTN-COMP	L1669874-12 Soil/Sed/Waste 21-AUG-15 WTS-1	L1669874-13 Soil/Sed/Waste 21-AUG-15 WTS-2	L1669874-14 Soil/Sed/Waste 21-AUG-15 WTS-3	L1669874-15 Soil/Sed/Waste 21-AUG-15 WTS-4
Grouping	Analyte					
SOIL	,					
Physical Tests	Moisture (%)	88.1	85.5	85.2	87.0	87.0
•	pH (1:2 soil:water) (pH)	00.1	5.48	5.46	5.53	5.76
Particle Size	% Gravel (>2mm) (%)		<0.10	<0.10	<0.10	<0.10
	% Sand (2.0mm - 0.063mm) (%)		5.41	3.07	2.77	2.75
	% Silt (0.063mm - 4um) (%)		82.0	82.4	82.2	84.7
	% Clay (<4um) (%)		12.6	14.5	15.0	12.6
	Texture		Silt	Silt	Silt	Silt
Organic /	Total Organic Carbon (%)		5.29	5.50	6.24	6.41
Inorganic Carbon						
Metals	Aluminum (Al) (mg/kg)		14700	16800	17100	16200
	Antimony (Sb) (mg/kg)		0.23	0.26	0.22	0.23
	Arsenic (As) (mg/kg)		102	152	80.3	112
	Barium (Ba) (mg/kg)		113	120	122	133
	Beryllium (Be) (mg/kg)		1.35	1.67	1.47	1.42
	Bismuth (Bi) (mg/kg)		0.52	0.58	0.55	0.56
	Boron (B) (mg/kg)		6.9	7.9	9.4	8.9
	Cadmium (Cd) (mg/kg)		0.410	0.181	0.177	0.299
	Calcium (Ca) (mg/kg)		2300	2340	2630	2530
	Chromium (Cr) (mg/kg)		63.3	70.0	70.6	68.6
	Cobalt (Co) (mg/kg)		16.1	15.9	10.4	13.4
	Copper (Cu) (mg/kg)		37.9	45.0	41.4	42.0
	Iron (Fe) (mg/kg)		69000	94100	54800	77400
	Lead (Pb) (mg/kg)		13.7	13.7	13.0	13.8
	Lithium (Li) (mg/kg)		13.1	14.1	15.0	13.7
	Magnesium (Mg) (mg/kg)		5690	5720	6250	5900
	Manganese (Mn) (mg/kg)		2010	1890	1040	2180
	Mercury (Hg) (mg/kg)		0.0764	0.0789	0.0752	0.0952
	Molybdenum (Mo) (mg/kg)		3.26	5.57	3.87	3.97
	Nickel (Ni) (mg/kg)		73.9	63.6	54.4	67.0
	Phosphorus (P) (mg/kg)		1680	1380	1050	1330
	Potassium (K) (mg/kg)		2170	2420	2580	2450
	Selenium (Se) (mg/kg)		0.67	0.78	0.68	0.82
	Silver (Ag) (mg/kg)		0.26	0.29	0.33	0.34
	Sodium (Na) (mg/kg)		282	276	344	409
	Strontium (Sr) (mg/kg)		22.1	23.2	25.4	24.5
	Thallium (TI) (mg/kg)		0.195	0.181	0.171	0.188
	Tin (Sn) (mg/kg)		<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)		407	437	456	425

 $^{^{\}star}$ Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	21-AUG-15	L1669874-17 Soil/Sed/Waste 21-AUG-15 WTS-COMP	L1669874-18 Soil/Sed/Waste 24-AUG-15 MAM-1	L1669874-19 Soil/Sed/Waste 24-AUG-15 MAM-2	L1669874-20 Soil/Sed/Waste 24-AUG-15 MAM-3
Grouping	Analyte					
SOIL	.,					
Physical Tests	Moisture (%)	84.4	85.9	89.7	90.7	91.0
•	pH (1:2 soil:water) (pH)	5.94	00.0	5.85	5.98	5.72
Particle Size	% Gravel (>2mm) (%)	0.82		<0.10	<0.10	<0.10
	% Sand (2.0mm - 0.063mm) (%)	4.49		0.92	2.45	0.72
	% Silt (0.063mm - 4um) (%)	82.2		93.9	92.4	94.0
	% Clay (<4um) (%)	12.5		5.20	5.13	5.33
	Texture	Silt		Silt	Silt	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.58		11.4	11.7	10.7
Metals	Aluminum (Al) (mg/kg)	16400		19100	18600	19500
	Antimony (Sb) (mg/kg)	0.22		0.29	0.32	0.37
	Arsenic (As) (mg/kg)	118		75.7	143	277
	Barium (Ba) (mg/kg)	104		142	142	153
	Beryllium (Be) (mg/kg)	1.28		1.34	1.29	1.55
	Bismuth (Bi) (mg/kg)	0.53		0.47	0.45	0.53
	Boron (B) (mg/kg)	6.7		19.5	20.8	20.6
	Cadmium (Cd) (mg/kg)	0.224		0.267	0.255	0.300
	Calcium (Ca) (mg/kg)	2030		3620	3370	3310
	Chromium (Cr) (mg/kg)	66.1		161	162	168
	Cobalt (Co) (mg/kg)	23.7		11.4	11.5	13.6
	Copper (Cu) (mg/kg)	39.1		62.5	63.9	75.7
	Iron (Fe) (mg/kg)	89500		34100	43400	61200
	Lead (Pb) (mg/kg)	12.5		17.4	16.5	19.1
	Lithium (Li) (mg/kg)	13.2		18.4	17.1	15.7
	Magnesium (Mg) (mg/kg)	5750		9260	9010	8660
	Manganese (Mn) (mg/kg)	2760		349	414	468
	Mercury (Hg) (mg/kg)	0.0657		0.0987	0.0991	0.0972
	Molybdenum (Mo) (mg/kg)	4.09		3.24	3.73	5.96
	Nickel (Ni) (mg/kg)	60.0		105	102	109
	Phosphorus (P) (mg/kg)	1070		868	911	951
	Potassium (K) (mg/kg)	2340		3090	2950	2990
	Selenium (Se) (mg/kg)	0.75		0.63	0.63	0.84
	Silver (Ag) (mg/kg)	0.24		0.42	0.42	0.48
	Sodium (Na) (mg/kg)	330		424	442	520
	Strontium (Sr) (mg/kg)	21.3		24.8	24.3	24.4
	Thallium (TI) (mg/kg)	0.199		0.246	0.223	0.245
	Tin (Sn) (mg/kg)	<2.0		<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	447		528	510	565

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: **FINAL** L1669874-21 L1669874-22 L1669874-23 L1669874-24 L1669874-25 Sample ID Soil/Sed/Waste Description Soil/Sed/Waste Soil/Sed/Waste Soil/Sed/Waste Soil/Sed/Waste 24-AUG-15 24-AUG-15 24-AUG-15 23-AUG-15 23-AUG-15 Sampled Date Sampled Time MAM-4 MAM-5 MAM-COMP NEM-1 NEM-2 Client ID Grouping **Analyte** SOIL **Physical Tests** Moisture (%) 90.9 89.9 89.8 91.7 85.6 pH (1:2 soil:water) (pH) 5.54 5.40 6.20 6.53 **Particle Size** % Gravel (>2mm) (%) < 0.10 < 0.10 < 0.10 0.26 % Sand (2.0mm - 0.063mm) (%) 0.85 1.08 12.5 50.3 % Silt (0.063mm - 4um) (%) 47.1 93.1 92.3 77.9 % Clay (<4um) (%) 6.09 6.60 9.56 2.35 Texture Silt Silt Silt Sandy loam Total Organic Carbon (%) Organic / 11.5 10.6 8.19 6.02 **Inorganic Carbon** Metals Aluminum (Al) (mg/kg) 17000 18400 10800 9250 Antimony (Sb) (mg/kg) 0.25 0.26 0.40 0.22 Arsenic (As) (mg/kg) 68.6 70.0 52.0 13.4 Barium (Ba) (mg/kg) 125 136 98.5 63.1 Beryllium (Be) (mg/kg) 1.14 1.20 0.64 0.46 Bismuth (Bi) (mg/kg) 0.39 0.43 0.23 < 0.20 Boron (B) (mg/kg) 17.0 15.3 14.1 9.1 Cadmium (Cd) (mg/kg) 0.269 0.296 0.248 0.180 Calcium (Ca) (mg/kg) 2770 2780 3490 3030 Chromium (Cr) (mg/kg) 141 158 113 96.5 Cobalt (Co) (mg/kg) 11.7 13.3 8.59 6.86 Copper (Cu) (mg/kg) 57.4 60.5 40.0 21.9 Iron (Fe) (mg/kg) 30200 33000 25800 14600 Lead (Pb) (mg/kg) 15.9 16.8 9.33 6.40 Lithium (Li) (mg/kg) 14.7 15.1 9.8 9.9 Magnesium (Mg) (mg/kg) 8380 8900 6450 6640 Manganese (Mn) (mg/kg) 357 408 407 236 Mercury (Hg) (mg/kg) 0.0960 0.0955 0.0299 0.0180 Molybdenum (Mo) (mg/kg) 2.83 2.89 3.84 1.42 Nickel (Ni) (mg/kg) 98.7 107 88.0 64.1 Phosphorus (P) (mg/kg) 764 796 697 518 Potassium (K) (mg/kg) 2710 2990 1470 1210 Selenium (Se) (mg/kg) 0.61 0.67 0.56 0.34 Silver (Ag) (mg/kg) 0.43 0.44 0.18 < 0.10 Sodium (Na) (mg/kg) 304 338 430 390 Strontium (Sr) (mg/kg) 20.2 20.6 25.9 25.9 Thallium (TI) (mg/kg) 0.224 0.249 0.093 0.060 Tin (Sn) (mg/kg) <2.0 <2.0 <2.0 < 2.0

Titanium (Ti) (mg/kg)

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-26 Soil/Sed/Waste 23-AUG-15 NEM-3	L1669874-27 Soil/Sed/Waste 23-AUG-15 NEM-4	L1669874-28 Soil/Sed/Waste 23-AUG-15 NEM-5	L1669874-29 Soil/Sed/Waste 23-AUG-15 NEM-COMP	L1669874-30 Soil/Sed/Waste
One union	Amelida					
Grouping SOIL	Analyte					
	Maisture (O/)					
Physical Tests	Moisture (%)	90.9	91.3	86.8	90.0	84.3
	pH (1:2 soil:water) (pH)	6.32	6.45	6.49		5.47
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10		0.34
	% Sand (2.0mm - 0.063mm) (%)	19.2	19.0	44.0		4.54
	% Silt (0.063mm - 4um) (%)	76.4	77.4	53.3		82.8
	% Clay (<4um) (%)	4.42	3.60	2.63		12.3
	Texture	Silt loam	Silt loam	Silt loam		Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	11.1	10.9	5.49		4.61
Metals	Aluminum (Al) (mg/kg)	10800	9990	9610		14300
	Antimony (Sb) (mg/kg)	0.35	0.36	0.20		0.22
	Arsenic (As) (mg/kg)	46.4	79.9	26.1		557
	Barium (Ba) (mg/kg)	91.3	99.3	64.3		92.2
	Beryllium (Be) (mg/kg)	0.59	0.55	0.47		1.09
	Bismuth (Bi) (mg/kg)	0.21	0.22	<0.20		0.40
	Boron (B) (mg/kg)	12.5	13.5	7.7		5.3
	Cadmium (Cd) (mg/kg)	0.221	0.201	0.144		0.137
	Calcium (Ca) (mg/kg)	3690	3160	2280		1720
	Chromium (Cr) (mg/kg)	110	104	106		92.4
	Cobalt (Co) (mg/kg)	7.96	10.2	6.77		19.7
	Copper (Cu) (mg/kg)	36.4	33.1	27.5		33.6
	Iron (Fe) (mg/kg)	23800	32500	18000		122000
	Lead (Pb) (mg/kg)	8.35	8.60	7.16		10.4
	Lithium (Li) (mg/kg)	10.0	8.5	8.5		10.5
	Magnesium (Mg) (mg/kg)	6590	6130	6480		6000
	Manganese (Mn) (mg/kg)	302	861	301		1960
	Mercury (Hg) (mg/kg)	0.0289	0.0320	0.0213		0.0542
	Molybdenum (Mo) (mg/kg)	2.50	3.17	2.99		4.88
	Nickel (Ni) (mg/kg)	78.4	85.5	66.1		57.8
	Phosphorus (P) (mg/kg)	664	736	498		1680
	Potassium (K) (mg/kg)	1460	1380	1230		1950
	Selenium (Se) (mg/kg)	0.51	0.56	0.36		0.71
	Silver (Ag) (mg/kg)	0.16	0.13	0.11		0.20
	Sodium (Na) (mg/kg)	555	522	297		222
	Strontium (Sr) (mg/kg)	26.7	24.1	20.4		18.1
	Thallium (TI) (mg/kg)	0.079	0.081	0.064		0.130
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0		<2.0
	Titanium (Ti) (mg/kg)	258	241	261		363

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-31 Soil/Sed/Waste	L1669874-32 Soil/Sed/Waste	L1669874-33 Soil/Sed/Waste	L1669874-38 Soil/Sed/Waste	
Grouping	Analyte					
SOIL	·					
Physical Tests	Moisture (%)	85.6	91.3	90.4	91.2	
	pH (1:2 soil:water) (pH)	5.83	6.37	6.27	01.2	
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10		
	% Sand (2.0mm - 0.063mm) (%)	5.12	17.2	0.50		
	% Silt (0.063mm - 4um) (%)	82.8	78.7	86.1		
	% Clay (<4um) (%)	12.0	4.18	13.4		
	Texture	Silt	Silt loam	Silt		
Organic /	Total Organic Carbon (%)	5.33	9.18	11.7		
Inorganic Carbon Metals						
IVICTAIS	Aluminum (Al) (mg/kg) Antimony (Sb) (mg/kg)	14500	10300	17200		
	Artimony (Sb) (mg/kg) Arsenic (As) (mg/kg)	0.21	0.38	0.33		
	, , , , ,	96.7	47.2	138		
	Barium (Ba) (mg/kg)	112	92.2	138		
	Beryllium (Be) (mg/kg)	1.26	0.68	1.34		
	Bismuth (Bi) (mg/kg)	0.49	0.25	0.45		
	Boron (B) (mg/kg)	7.0	13.0	19.8		
	Cadmium (Cd) (mg/kg)	0.383	0.273	0.258		
	Calcium (Ca) (mg/kg)	2270	3620	3370		
	Chromium (Cr) (mg/kg)	62.5	113	158		
	Cobalt (Co) (mg/kg)	15.8	8.06	11.4		
	Copper (Cu) (mg/kg)	36.5	39.7	63.1		
	Iron (Fe) (mg/kg)	64300	24500	43800		
	Lead (Pb) (mg/kg)	13.3	9.41	16.2		
	Lithium (Li) (mg/kg)	11.2	12.4	18.0		
	Magnesium (Mg) (mg/kg)	5620	6610	8570		
	Manganese (Mn) (mg/kg)	1850	304	389		
	Mercury (Hg) (mg/kg)	0.0746	0.0304	0.0874		
	Molybdenum (Mo) (mg/kg)	3.21	2.70	3.64		
	Nickel (Ni) (mg/kg)	71.5	83.7	99.8		
	Phosphorus (P) (mg/kg)	1560	656	876		
	Potassium (K) (mg/kg)	2100	1440	2780		
	Selenium (Se) (mg/kg)	0.67	0.57	0.66		
	Silver (Ag) (mg/kg)	0.24	0.20	0.42		
	Sodium (Na) (mg/kg)	284	503	342		
	Strontium (Sr) (mg/kg)	22.1	27.1	23.7		
	Thallium (TI) (mg/kg)	0.190	0.090	0.215		
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0		
	Titanium (Ti) (mg/kg)	403	247	457		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-1 Soil/Sed/Waste 22-AUG-15 WTN-EX-1	L1669874-2 Soil/Sed/Waste 22-AUG-15 WTN-EX-2	L1669874-3 Soil/Sed/Waste 22-AUG-15 WTN-EX-3	L1669874-4 Soil/Sed/Waste 22-AUG-15 WTN-EX-4	L1669874-5 Soil/Sed/Waste 22-AUG-15 WTN-EX-5
Grouping	Analyte					
SOIL						
Metals	Uranium (U) (mg/kg)	8.05	12.3	7.72	8.27	10.2
	Vanadium (V) (mg/kg)	30.5	38.4	29.3	32.3	34.3
	Zinc (Zn) (mg/kg)	85.4	112	86.1	90.1	107
	Zirconium (Zr) (mg/kg)	1.3	1.7	1.6	1.4	1.6
Aggregate Organics	Mineral Oil and Grease (mg/kg)	1.0		1.0		1.0
Hydrocarbons	EPH10-19 (mg/kg)					
	EPH19-32 (mg/kg)					
	LEPH (mg/kg)					
	HEPH (mg/kg)					
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)					
	Acenaphthylene (mg/kg)					
	Anthracene (mg/kg)					
	Benz(a)anthracene (mg/kg)					
	Benzo(a)pyrene (mg/kg)					
	Benzo(b)fluoranthene (mg/kg)					
	Benzo(b+j+k)fluoranthene (mg/kg)					
	Benzo(g,h,i)perylene (mg/kg)					
	Benzo(k)fluoranthene (mg/kg)					
	Chrysene (mg/kg)					
	Dibenz(a,h)anthracene (mg/kg)					
	Fluoranthene (mg/kg)					
	Fluorene (mg/kg)					
	Indeno(1,2,3-c,d)pyrene (mg/kg)					
	2-Methylnaphthalene (mg/kg)					
	Naphthalene (mg/kg)					
	Phenanthrene (mg/kg)					
	Pyrene (mg/kg)					
	Surrogate: Acenaphthene d10 (%)					
	Surrogate: Chrysene d12 (%)					
	Surrogate: Naphthalene d8 (%)					
	Surrogate: Phenanthrene d10 (%)					
	B(a)P Total Potency Equivalent (mg/kg)					
	IACR (CCME) (mg/kg)					

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-6 Soil/Sed/Waste 22-AUG-15 WTN-1	L1669874-7 Soil/Sed/Waste 22-AUG-15 WTN-2	L1669874-8 Soil/Sed/Waste 22-AUG-15 WTN-3	L1669874-9 Soil/Sed/Waste 22-AUG-15 WTN-4	L1669874-10 Soil/Sed/Waste 22-AUG-15 WTN-5
Grouping	Analyte					
SOIL	,					
Metals	Uranium (U) (mg/kg)	8.78	8.47	9.22	9.64	9.21
	Vanadium (V) (mg/kg)	23.7	22.4	25.9	25.3	23.5
	Zinc (Zn) (mg/kg)	88.1	99.3	79.1	96.2	92.8
	Zirconium (Zr) (mg/kg)	<1.0	1.3	1.2	1.3	1.2
Aggregate Organics	Mineral Oil and Grease (mg/kg)	1110				
Hydrocarbons	EPH10-19 (mg/kg)					
	EPH19-32 (mg/kg)					
	LEPH (mg/kg)					
	HEPH (mg/kg)					
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)					
	Acenaphthylene (mg/kg)					
	Anthracene (mg/kg)					
	Benz(a)anthracene (mg/kg)					
	Benzo(a)pyrene (mg/kg)					
	Benzo(b)fluoranthene (mg/kg)					
	Benzo(b+j+k)fluoranthene (mg/kg)					
	Benzo(g,h,i)perylene (mg/kg)					
	Benzo(k)fluoranthene (mg/kg)					
	Chrysene (mg/kg)					
	Dibenz(a,h)anthracene (mg/kg)					
	Fluoranthene (mg/kg)					
	Fluorene (mg/kg)					
	Indeno(1,2,3-c,d)pyrene (mg/kg)					
	2-Methylnaphthalene (mg/kg)					
	Naphthalene (mg/kg)					
	Phenanthrene (mg/kg)					
	Pyrene (mg/kg)					
	Surrogate: Acenaphthene d10 (%)					
	Surrogate: Chrysene d12 (%)					
	Surrogate: Naphthalene d8 (%)					
	Surrogate: Phenanthrene d10 (%)					
	B(a)P Total Potency Equivalent (mg/kg)					
	IACR (CCME) (mg/kg)					

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-11 Soil/Sed/Waste 22-AUG-15 WTN-COMP	L1669874-12 Soil/Sed/Waste 21-AUG-15 WTS-1	L1669874-13 Soil/Sed/Waste 21-AUG-15 WTS-2	L1669874-14 Soil/Sed/Waste 21-AUG-15 WTS-3	L1669874-15 Soil/Sed/Waste 21-AUG-15 WTS-4
Grouping	Analyte					
SOIL	•					
Metals	Uranium (U) (mg/kg)		9.53	12.3	11.2	11.1
	Vanadium (V) (mg/kg)		24.3	26.9	26.5	25.6
	Zinc (Zn) (mg/kg)		86.7	99.2	87.9	89.8
	Zirconium (Zr) (mg/kg)		1.2	1.4	1.9	1.3
Aggregate Organics	Mineral Oil and Grease (mg/kg)	<525				
Hydrocarbons	EPH10-19 (mg/kg)	<820				
	EPH19-32 (mg/kg)	<820				
	LEPH (mg/kg)	<820				
	HEPH (mg/kg)	<820				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.010				
	Acenaphthylene (mg/kg)	<0.010				
	Anthracene (mg/kg)	<0.0080				
	Benz(a)anthracene (mg/kg)	<0.020				
	Benzo(a)pyrene (mg/kg)	<0.020				
	Benzo(b)fluoranthene (mg/kg)	<0.020				
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.028				
	Benzo(g,h,i)perylene (mg/kg)	<0.020				
	Benzo(k)fluoranthene (mg/kg)	<0.020				
	Chrysene (mg/kg)	<0.020				
	Dibenz(a,h)anthracene (mg/kg)	<0.010				
	Fluoranthene (mg/kg)	<0.020				
	Fluorene (mg/kg)	<0.020				
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.020				
	2-Methylnaphthalene (mg/kg)	<0.020				
	Naphthalene (mg/kg)	<0.020				
	Phenanthrene (mg/kg)	<0.020				
	Pyrene (mg/kg)	<0.020				
	Surrogate: Acenaphthene d10 (%)	95.2				
	Surrogate: Chrysene d12 (%)	113.5				
	Surrogate: Naphthalene d8 (%)	90.2				
	Surrogate: Phenanthrene d10 (%)	108.6				
	B(a)P Total Potency Equivalent (mg/kg)	<0.020				
	IACR (CCME) (mg/kg)	<0.21				

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-16 Soil/Sed/Waste 21-AUG-15 WTS-5	L1669874-17 Soil/Sed/Waste 21-AUG-15 WTS-COMP	L1669874-18 Soil/Sed/Waste 24-AUG-15 MAM-1	L1669874-19 Soil/Sed/Waste 24-AUG-15 MAM-2	L1669874-20 Soil/Sed/Waste 24-AUG-15 MAM-3
Grouping	Analyte					
SOIL						
Metals	Uranium (U) (mg/kg)	10.3		11.5	11.8	13.8
	Vanadium (V) (mg/kg)	25.6		39.5	39.6	43.3
	Zinc (Zn) (mg/kg)	84.4		110	109	129
	Zirconium (Zr) (mg/kg)	1.1		4.2	3.7	3.5
Aggregate Organics	Mineral Oil and Grease (mg/kg)		1690		G.I.	0.0
Hydrocarbons	EPH10-19 (mg/kg)		<680			
	EPH19-32 (mg/kg)		<680			
	LEPH (mg/kg)		<680			
	HEPH (mg/kg)		<680			
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)		<0.0050			
	Acenaphthylene (mg/kg)		<0.0050			
	Anthracene (mg/kg)		<0.0040			
	Benz(a)anthracene (mg/kg)		<0.010			
	Benzo(a)pyrene (mg/kg)		<0.010			
	Benzo(b)fluoranthene (mg/kg)		<0.010			
	Benzo(b+j+k)fluoranthene (mg/kg)		<0.015			
	Benzo(g,h,i)perylene (mg/kg)		<0.010			
	Benzo(k)fluoranthene (mg/kg)		<0.010			
	Chrysene (mg/kg)		<0.010			
	Dibenz(a,h)anthracene (mg/kg)		<0.0050			
	Fluoranthene (mg/kg)		<0.010			
	Fluorene (mg/kg)		<0.010			
	Indeno(1,2,3-c,d)pyrene (mg/kg)		<0.010			
	2-Methylnaphthalene (mg/kg)		<0.010			
	Naphthalene (mg/kg)		<0.010			
	Phenanthrene (mg/kg)		<0.010			
	Pyrene (mg/kg)		<0.010			
	Surrogate: Acenaphthene d10 (%)		97.0			
	Surrogate: Chrysene d12 (%)		121.5			
	Surrogate: Naphthalene d8 (%)		92.2			
	Surrogate: Phenanthrene d10 (%)		114.2			
	B(a)P Total Potency Equivalent (mg/kg)		<0.020			
	IACR (CCME) (mg/kg)		<0.15			

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-21 Soil/Sed/Waste 24-AUG-15 MAM-4	L1669874-22 Soil/Sed/Waste 24-AUG-15 MAM-5	L1669874-23 Soil/Sed/Waste 24-AUG-15 MAM-COMP	L1669874-24 Soil/Sed/Waste 23-AUG-15 NEM-1	L1669874-25 Soil/Sed/Waste 23-AUG-15 NEM-2
Grouping	Analyte					
SOIL						
Metals	Uranium (U) (mg/kg)	10.6	11.1		4.08	2.46
	Vanadium (V) (mg/kg)	35.5	38.4		24.1	19.4
	Zinc (Zn) (mg/kg)	99.0	110		59.7	44.3
	Zirconium (Zr) (mg/kg)	4.2	4.4		<1.0	<1.0
Aggregate Organics	Mineral Oil and Grease (mg/kg)			1960	1110	1.10
Hydrocarbons	EPH10-19 (mg/kg)			<1100		
	EPH19-32 (mg/kg)			OLHM <1100		
	LEPH (mg/kg)			<1100		
	HEPH (mg/kg)			<1100		
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)			<0.015		
	Acenaphthylene (mg/kg)			<0.015		
	Anthracene (mg/kg)			<0.012		
	Benz(a)anthracene (mg/kg)			<0.030		
	Benzo(a)pyrene (mg/kg)			<0.030		
	Benzo(b)fluoranthene (mg/kg)			<0.030		
	Benzo(b+j+k)fluoranthene (mg/kg)			<0.042		
	Benzo(g,h,i)perylene (mg/kg)			<0.030		
	Benzo(k)fluoranthene (mg/kg)			<0.030		
	Chrysene (mg/kg)			<0.030		
	Dibenz(a,h)anthracene (mg/kg)			<0.015		
	Fluoranthene (mg/kg)			<0.030		
	Fluorene (mg/kg)			<0.030		
	Indeno(1,2,3-c,d)pyrene (mg/kg)			<0.030		
	2-Methylnaphthalene (mg/kg)			<0.030		
	Naphthalene (mg/kg)			<0.030		
	Phenanthrene (mg/kg)			<0.030		
	Pyrene (mg/kg)			<0.030		
	Surrogate: Acenaphthene d10 (%)			87.7		
	Surrogate: Chrysene d12 (%)			115.7		
	Surrogate: Naphthalene d8 (%)			78.1		
	Surrogate: Phenanthrene d10 (%)			108.1		
	B(a)P Total Potency Equivalent (mg/kg)			<0.029		
	IACR (CCME) (mg/kg)			<0.32		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

Version: FINAL

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	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-26 Soil/Sed/Waste 23-AUG-15 NEM-3	L1669874-27 Soil/Sed/Waste 23-AUG-15 NEM-4	L1669874-28 Soil/Sed/Waste 23-AUG-15 NEM-5	L1669874-29 Soil/Sed/Waste 23-AUG-15 NEM-COMP	L1669874-30 Soil/Sed/Waste
Grouping	Analyte					
SOIL						
Metals	Uranium (U) (mg/kg)	3.61	3.52	3.00		8.06
	Vanadium (V) (mg/kg)	23.1	21.9	21.2		24.7
	Zinc (Zn) (mg/kg)	54.2	54.7	44.6		75.2
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0		<1.0
Aggregate Organics	Mineral Oil and Grease (mg/kg)				2990	11.0
Hydrocarbons	EPH10-19 (mg/kg)				DLHM <880	
	EPH19-32 (mg/kg)				DLHM <880	
	LEPH (mg/kg)				<880	
	HEPH (mg/kg)				<880	
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)				<0.010	
	Acenaphthylene (mg/kg)				<0.010	
	Anthracene (mg/kg)				O.0080	
	Benz(a)anthracene (mg/kg)				<0.020	
	Benzo(a)pyrene (mg/kg)				<0.020	
	Benzo(b)fluoranthene (mg/kg)				<0.020	
	Benzo(b+j+k)fluoranthene (mg/kg)				<0.028	
	Benzo(g,h,i)perylene (mg/kg)				<0.020	
	Benzo(k)fluoranthene (mg/kg)				<0.020	
	Chrysene (mg/kg)				<0.020	
	Dibenz(a,h)anthracene (mg/kg)				<0.010	
	Fluoranthene (mg/kg)				<0.020	
	Fluorene (mg/kg)				<0.020	
	Indeno(1,2,3-c,d)pyrene (mg/kg)				<0.020	
	2-Methylnaphthalene (mg/kg)				<0.020	
	Naphthalene (mg/kg)				<0.020	
	Phenanthrene (mg/kg)				<0.020	
	Pyrene (mg/kg)				<0.020	
	Surrogate: Acenaphthene d10 (%)				94.4	
	Surrogate: Chrysene d12 (%)				122.1	
	Surrogate: Naphthalene d8 (%)				85.3	
	Surrogate: Phenanthrene d10 (%)				115.2	
	B(a)P Total Potency Equivalent (mg/kg)				<0.020	
	IACR (CCME) (mg/kg)				<0.21	

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Vanadiu Zinc (Zn Zirconiu	n (U) (mg/kg) Im (V) (mg/kg)				DUP	
SOIL Metals Uranium Vanadiu Zinc (Zn Zirconiu	n (U) (mg/kg)			I.		
Metals Uranium Vanadiu Zinc (Zn Zirconiu						
Zinc (Zn Zirconiu	ım (V) (mg/kg)	9.31	4.18	11.9		
Zirconiu		23.6	23.4	38.6		
	n) (mg/kg)	82.7	57.7	106		
Aggregate Mineral	m (Zr) (mg/kg)	<1.0	1.6	4.0		
Organics	Oil and Grease (mg/kg)			0	1010	
Hydrocarbons EPH10-	19 (mg/kg)				<1000	
EPH19-	32 (mg/kg)				<1000	
LEPH (r	mg/kg)				<1000	
HEPH (ı	mg/kg)				<1000	
Polycyclic Acenapl Aromatic Hydrocarbons	hthene (mg/kg)				<0.015	
Acenapl	hthylene (mg/kg)				<0.015	
Anthrac	ene (mg/kg)				<0.012	
Benz(a)	anthracene (mg/kg)				<0.030	
Benzo(a	a)pyrene (mg/kg)				<0.030	
Benzo(b)fluoranthene (mg/kg)				<0.030	
Benzo(b	p+j+k)fluoranthene (mg/kg)				<0.042	
Benzo(g	g,h,i)perylene (mg/kg)				< 0.030	
Benzo(k	x)fluoranthene (mg/kg)				O.030 DLHM	
Chrysen	ne (mg/kg)				<0.030 DLHM	
•	a,h)anthracene (mg/kg)				<0.015 DLHM	
Fluorant	thene (mg/kg)				<0.030 DLHM	
	e (mg/kg)				<0.030 DLHM	
	1,2,3-c,d)pyrene (mg/kg)				<0.030 DLHM	
	rlnaphthalene (mg/kg)				<0.030 DLHM	
	alene (mg/kg)				<0.030 DLHM	
	threne (mg/kg)				<0.030 DLHM	
Pyrene					<0.030	
_	te: Acenaphthene d10 (%)				90.8	
_	te: Chrysene d12 (%)				115.6	
_	te: Naphthalene d8 (%)				85.0	
_	te: Phenanthrene d10 (%)				108.4	
	otal Potency Equivalent (mg/kg)				<0.029	
IACR (C	CCME) (mg/kg)				<0.32	

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version:

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	EPH10-19	DLHM	L1669874-11, -17, -23, -29, -38
Duplicate	EPH19-32	DLHM	L1669874-11, -17, -23, -29, -38
Laboratory Control Sample	Silver (Ag)-Total	LCS-L	L1669874-34, -35, -36, -37

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHM	Detection Limit Adjusted: Sample has High Moisture Content
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AIR VOLUME-VA	Misc.	Air volume (L)	HYGIENE METHOD
C-TOT-ORG-LECO-SK	Soil	Organic Carbon by combustion method	SSSA (1996) p. 973

Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)

Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight lass after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.

Reference for Total C:

Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

Reference for Inorganic C:

Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA. Madison, WI. Book series no. 5

BC MOE EPH GCFID

EPH-TUMB-FID-VA Soil EPH in Solids by Tumbler and GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Solids by GC/FID", v2.1, July 1999. Soil samples are extracted with a 1:1 mixture of hexane and acetone using a rotary extraction technique modified from EPA 3570 prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

HG-200.2-CVAF-VA Soil Mercury in Soil by CVAFS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

LEPH/HEPH-CALC-VA Soil LEPHs and HEPHs BC MOE LABORATORY MANUAL (2005)

Light and Heavy Extractable Petroleum Hydrocarbons in Solids. These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Light and Heavy Extractable Petroleum Hydrocarbons in Solids or Water". According to this method, LEPH and HEPH are calculated

by subtracting selected Polycyclic Aromatic Hydrocarbon results from Extractable Petroleum Hydrocarbon results. To calculate LEPH, the individual results for Naphthalene and Phenanthrene are subtracted from EPH(C10-19). To calculate HEPH, the individual results for Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, and Pyrene are subtracted from EPH(C19-32). Analysis of Extractable Petroleum Hydrocarbons adheres to all prescribed elements of the BCMELP method "Extractable Petroleum Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

MET-200.2-CCMS-VA Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

MET-AR-MG-ICP-VA Filter Metals in Filter by ICPOES NIOSH 7303/EPA 6010B

This analysis is carried out using procedures adapted from Method 7303 in the NIOSH Manual of Analytcial Methods (NMAM). The procedure involves a hot block digestion of the filter media, using a combination of nitric acid and hydrochloric acid. Instrumental analysis of the filter extract is by inductively coupled plasma - optical emission spectrophotometry (EPA 6010B).

MOISTURE-VA Soil Moisture content ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

OGG-TUMB-SG-VA Soil CWS MOG with Silica Gel CCME PETROLEUM HYDROCARBONS-

Reference Information

L1669874 CONTD....

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This analysis is carried out in accordance with the "Reference Method for the Canada-Wide Standard Voll Etrocum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment, December 2000." A subsample of the sediment/soil is extracted with 1:1 hexane:acetone using a rotary extraction apparatus. The extract undergoes a silica-gel clean-up to remove polar compounds, and is analyzed gravimetrically. Mineral Oil and Grease is equivalent to fraction F4G of the Canada-wide Standard for Petroleum Hydrocarbons.

Accuracy target values for Reference Materials used in this method are derived from averages of long-term method performance, as certified values do not exist for the reported parameters.

PAH-TMB-H/A-MS-VA

Soil

PAH - Rotary Extraction (Hexane/Acetone)

EPA 3570/8270

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3570 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-1:2-VA

Soil

pH in Soil (1:2 Soil:Water Extraction)

BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe

PSA-PIPET+GRAVEL-SK Soil

Particle size - Sieve and Pipette

SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

Reference:

Burt, R. (2009). Soil Survey Field and Laboratory Methods Manual. Soil Survey Investigations Report No. 5. Method 3.2.1.2.2. United States Department of Agriculture Natural Resources Conservation Service.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

VA ALS F

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

.

3

OI -1767

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

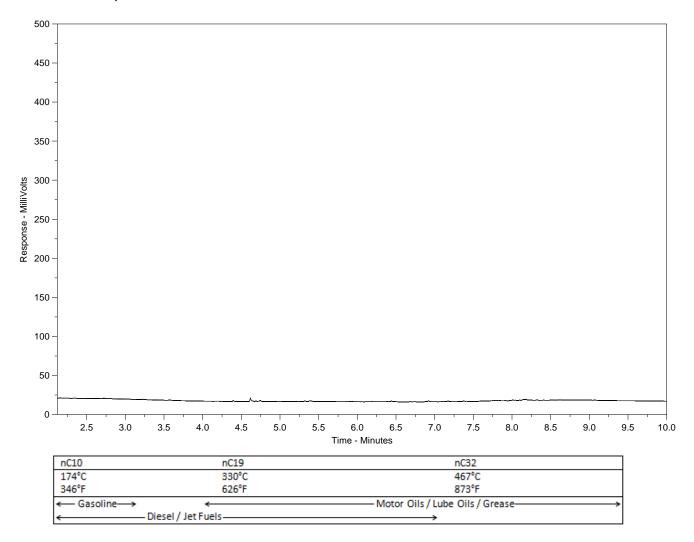
Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



ALS Sample ID: L1669874-11 Client Sample ID: WTN-COMP



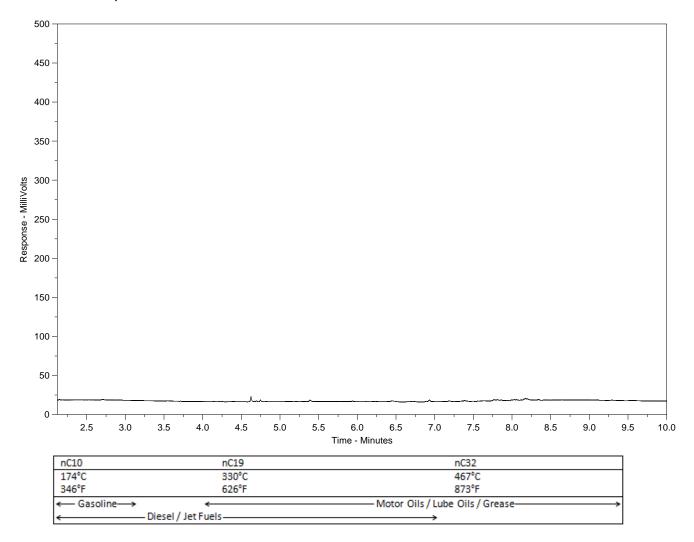
The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.



ALS Sample ID: L1669874-17 Client Sample ID: WTS-COMP



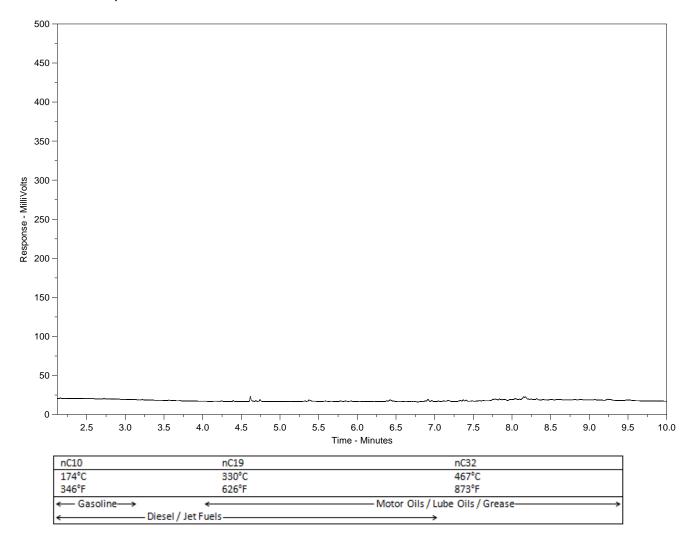
The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.



ALS Sample ID: L1669874-23 Client Sample ID: MAM-COMP



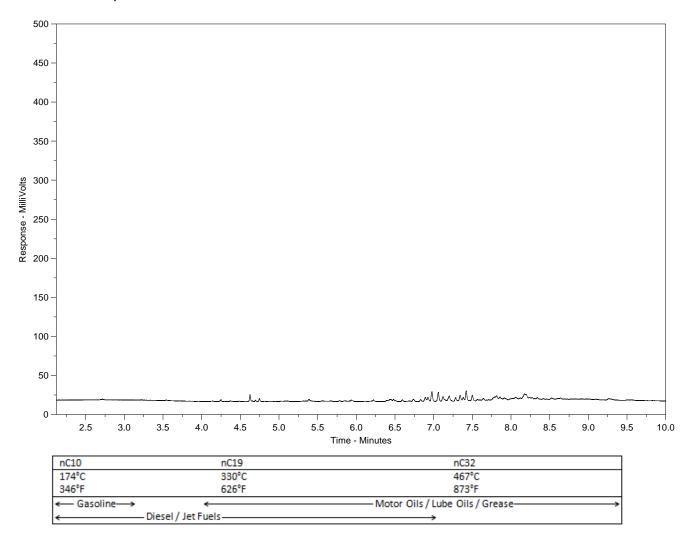
The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.



ALS Sample ID: L1669874-29 Client Sample ID: NEM-COMP



The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

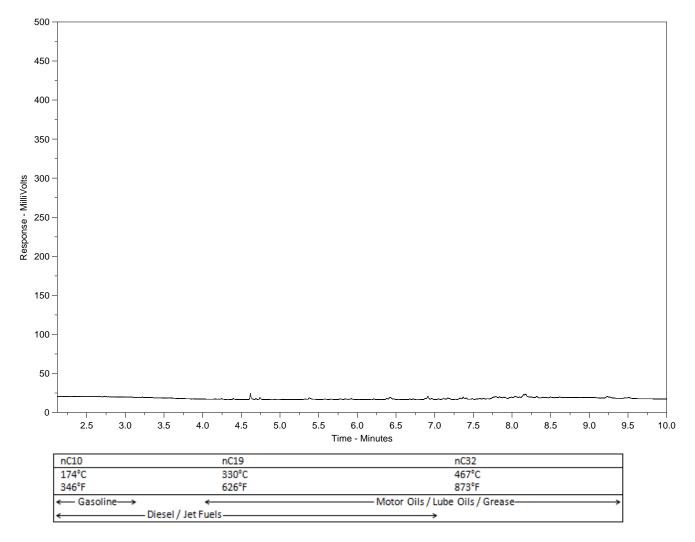
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.



ALS Sample ID: L1669874-38

Client Sample ID: AMARUQ-COMP-DUP



The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

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ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free : 1 800 668 9878 www.alsglobal.com

Report To					Reporting				Servic	e Re	quest	ed								
Company:	Azimuth Consulting Grau	1b			Distribution:	□Fax	□Mail	⊠ Email	⊕ Reg	jular ((Stand	ard Tu	marou	ន៨ Time	es - Busi	iness Da	ys) - R			
Contact:	Maggie McConnell				□ Ciriteria on	Report (select from	Guidelines below)		O Pric	rity (3	3 Days) - surc	harge	will app	oly - P					
Address:	#218 - 2902 West Broad	way			Report Type:	⊠Excel	□Digit	al	O Pric	rity (2	2 Days) - surc	harge	will app	oly - ₽2					
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Phone:	604-730-1220	Fax:	604-739-8511											Analy	rsis Req	quests				
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	b Work Order# lab use only)		1669874	L	ALS Contact:	Brent Mack	Sampler:		of Containers	Total metals, pH.	TOC, (PAHS, LEPHS,	Total Metals				≣် E	' '		
Sample	Sam	ple identification	n	Coort	linates	D-4-	7	0	Number		Р	ease i	ndicate	e below	Filtered)	· F/P)	
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	WTN-Ex-1					22 Aug 15		Soil/Sed/Waste	2	R	R				1.			ò		
	WTN-Ex-2					,,,,		Soil/Sed/Waste	2	R	R							ĝ		
3 [WTN-Ex-3			<u> </u>		15		Soil/Sed/Waste	2	R	R									
Carry.	WTN-Ex-4					N.		Soil/Sed/Waste	2	æ	R				1					
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	Special Instruct	tions/Comments	i	The quest	lons below m	ust be answered fo	or water samples (check Yes or No)	Guide	lines										
•				Are any samp	le taken from	a regulated DW syst	tem? ☐Yes	□No	l											
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				s the water sampled intended to be potable for human					15 - 17 20	. 1	Sales and Sales	10.00	AMPL	LE CON	IDITION	(lab us	e only)	per se	Ta.	Section 1
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Page 2 of 3

ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free : 1 800 668 9878 www.alsglobal.com

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Page 3 of 3

Chain of Custody / Analytical Request Form Canada Toll Free : 1 800 668 9878 www.alsglobal.com

ALS Environmental

(ALS)	Environmental				W	ww.alsglobal.c	om													_	-	
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 28-SEP-15

Report Date: 05-OCT-15 12:21 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1679754

Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACE WATER

C of C Numbers: 14-490824

Legal Site Desc:

BJ Mak

Brent Mack, B.Sc. Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1679754 CONTD....

PAGE 2 of 5 05-OCT-15 12:21 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1679754-1 Surface Water 17-SEP-15 14:47 A34-A16	L1679754-2 Surface Water 17-SEP-15 15:45 A16-A14	L1679754-3 Surface Water 19-SEP-15 12:20 C58 OUTLET	L1679754-4 Surface Water 19-SEP-15 14:55 A1-DS1	L1679754-5 Surface Water 19-SEP-15 16:10 A17-A16
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	18.6	34.1	28.3	21.2	17.1
	pH (pH)	6.74	6.70	7.04	6.85	6.84
	Total Suspended Solids (mg/L)	10.5	3.2	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	14.8	23.5	15.9	14.0	10.2
	Turbidity (NTU)	14.9	0.31	0.25	0.81	0.22
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.4	4.3	6.6	6.3	5.7
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	5.4	4.3	6.6	6.3	5.7
	Bromide (Br) (mg/L)	<0.050	0.063	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	0.64	5.66	0.53	0.95	0.73
	Fluoride (F) (mg/L)	0.032	0.026	0.024	0.028	0.032
	Nitrate (as N) (mg/L)	0.0138	<0.0050	<0.0050	0.0107	0.0068
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0014	0.0012	0.0011	0.0014
	Phosphorus (P)-Total Dissolved (mg/L)	0.0026	<0.0020	<0.0020	0.0026	<0.0020
	Silicate (as SiO2) (mg/L)	1.38	0.65	<0.50	1.01	1.15
	Sulfate (SO4) (mg/L)	1.36	1.73	3.20	2.02	1.06

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1679754 CONTD.... PAGE 3 of 5

05-OCT-15 12:21 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1679754-6 Surface Water 21-SEP-15 12:38 A13-A12	L1679754-8 Surface Water 19-SEP-15 14:56 E5-E4		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)	27.6	20.8		
	рН (рН)	6.78	6.87		
	Total Suspended Solids (mg/L)	<1.0	1.1		
	Total Dissolved Solids (mg/L)	14.7	15.5		
	Turbidity (NTU)	0.36	0.77		
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.9	5.8		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	5.9	5.8		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Chloride (CI) (mg/L)	2.08	0.96		
	Fluoride (F) (mg/L)	0.025	0.027		
	Nitrate (as N) (mg/L)	0.0139	0.0112		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0012	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020		
	Silicate (as SiO2) (mg/L)	0.99	0.89		
	Sulfate (SO4) (mg/L)	3.33	2.06		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1679754 CONTD.... PAGE 4 of 5 D5-OCT-15 12:21 (MT)

05-OCT-15 12:21 (MT)

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Duplicate	Nitrite (as N)	DLM	L1679754-1, -2, -3, -4, -5, -6	
Duplicate	Nitrite (as N)	DLM	L1679754-1, -2, -3, -4, -5, -6	
Duplicate	Fluoride (F)	DLM	L1679754-8	
Duplicate	Nitrite (as N)	DLM	L1679754-8	
Duplicate	Nitrite (as N)	DLM	L1679754-8	
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L1679754-8	

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code Matrix		Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-L-IC-N-VA Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-TD-COL-VA Water Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA Water Silicate by Colourimetric analysis APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

L1679754 CONTD....

PAGE 5 of 5

05-OCT-15 12:21 (MT)

Version: FINAL

TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

14-490824

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

	COC Number:	14 -	49	082	4
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Report To	Report Format	1.	Select Service Level Bolow (Rush Turnaround Time (TAT) is not available for all tests)	
COMPANY: AZIMUTH CONSULTING COROUP	Select Report Format: PD	# EDD (DIGITAL)	R Regular (Standard TAT If received by 3pm)	
Contact: ERIC FRANT	Quality Control (QC) Report with Rep	ort Yes 🗍 No	P Priority (2-4 business days if received by 3pm)	
Addrass:	Criteria on Report - provide details bek	aw if box checked	E Emergency (1-2 business days if received by 3pm)	
218 - 2102 WEGT DROADWAY, VANCOUVER, BC 268		MAIL FAX	E2 Same day or weekend emergency if received by 10am ~ contact ALS for surcharge.	
	Email 1 or Fax & Franz Waz	Emuthgroup, Za	Specify Date Required for E2,E or P:	
Phone: (404) 730-1220	Email 2 ryan. Vanengen	(Dagnico Eagle, com	Analysis Request	
Invoice To Same as Report To FYes □ No	Invoice Dis	stribution	Indicate Fittered (F), Preserved (P) or Fittered and Preserved (F/P) below	
Copy of Invoice with Report Yes VNo	Select Invoice Distribution:	EMAIL MAIL FAX		
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Contact:	Email 2		S- tow	jo.
Project Information	Oil and Gas Require	d Fields (client use)		ij.
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PO / AFE:	Activity Code:]	<u>ğ</u>
LSD:	Location:			Number of Containers
ALS Lab Work Order # (lab use only)	ALS Contact:	Sampler:		Ż
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E5-E4 I S	21-540-15	12:00	KX	
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		<u> </u>	/ SAMPLE CONDITION AS RECEIVED (lab use only)	\neg
Drinking Water (DW) Samples ¹ (client use) Special	Instructions / Specify Criteria to add on	report (client Use)	Frozen SIF Observations Yes No	
Are samples taken from a Regulated DW System?	IONALS INCLUDE:		Ice packs Yes No Custody seal intact Yes No	
TYes TNo	All ra Tapping	e a superiority.	Cooling Initiated	
Are samples for human drinking water use?	THE EL TOROISMA	LONGUETTO CHLORIAN	INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C	
TYes TNo ANIONS (F, N	PH, EC, TURBIDITY Dz, NO3, Br, 504), L TE : AND DETHO-PA	J. Tener charles	14/14/15	
SHIPMENT RELEASE (client use)	INITIAL SHIPMENT RECEPT	TION (lab use only)	. FINAL SHIPMENT RECEPTION (lab use only)	_
Released by: Date: Time: Receive		Date: Time:	Received by: Shake 50 71me: 1110	
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	WHI	TE - LABORATORY COPY YELLO	W - CLIENT COPY UN-HANDSZBE VOB FrombO4 January 2014	



AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway

Vancouver BC V6K 2G8

Date Received: 30-SEP-15

Report Date: 09-OCT-15 13:10 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1681194
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUA SURFACE WATER

C of C Numbers: 14-490825

Legal Site Desc:

BJ Mack

Brent Mack, B.Sc. Account Manager

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L1681194 CONTD....

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Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1681194-1 Surface Water 17-SEP-15 14:47 A34-A16	L1681194-2 Surface Water 17-SEP-15 15:45 A16-A14	L1681194-3 Surface Water 19-SEP-15 12:20 C58 OUTLET	L1681194-4 Surface Water 19-SEP-15 14:55 A1-DS1	L1681194-5 Surface Water 19-SEP-15 16:10 A17-A16
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	6.18	12.6	9.61	7.34	5.85
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0064	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.173	0.150	0.129	0.179	0.293
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon		2.76	13.2 RRV	1.83	1.94	1.84
	Total Organic Carbon (mg/L)	2.76	2.45	1.65	1.79	3.03
Total Metals	Aluminum (Al)-Total (mg/L)	0.491	0.0087	0.0039	0.0304	0.0053
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00035	0.00027	0.00026	0.00011	<0.00010
	Barium (Ba)-Total (mg/L)	0.00613	0.00508	0.00362	0.00377	0.00342
	Beryllium (Be)-Total (mg/L)	0.000038	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.000050	<0.0000050	<0.000050
	Calcium (Ca)-Total (mg/L)	1.04	3.07	2.18	1.85	1.37
	Chromium (Cr)-Total (mg/L)	0.00199	0.00014	<0.00010	0.00014	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00028	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00164	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.793	0.020	<0.010	0.070	0.030
	Lead (Pb)-Total (mg/L)	0.000536	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.97	0.92	0.99	0.59	0.52
	Manganese (Mn)-Total (mg/L)	0.00943	0.00313	0.00258	0.00154	0.00039
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000065	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00201	0.00103	0.00480	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.49	0.40	0.56	0.45	0.34
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	1.41	0.266	0.211	0.486	0.522
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.605	0.574	0.489	0.607	0.644
	Strontium (Sr)-Total (mg/L)	0.00626	0.0223	0.00932	0.00811	0.00695
	Sulfur (S)-Total (mg/L)	<0.50	0.61	1.12	0.67	<0.50
	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1681194-6 Surface Water 21-SEP-15 12:38 A13-A12	L1681194-7 Surface Water 21-SEP-15 13:00 E5-E4
Grouping	Analyte		
WATER			
Physical Tests	Hardness (as CaCO3) (mg/L)	10.0	7.37
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.126	0.115
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.45	2.23
	Total Organic Carbon (mg/L)	1.57	1.87
Total Metals	Aluminum (Al)-Total (mg/L)	0.0086	0.0238
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00030	0.00011
	Barium (Ba)-Total (mg/L)	0.00487	0.00364
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000107	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.53	1.86
	Chromium (Cr)-Total (mg/L)	0.00015	0.00011
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00063	<0.00050
	Iron (Fe)-Total (mg/L)	0.022	0.062
	Lead (Pb)-Total (mg/L)	0.000263	0.000059
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.86	0.61
	Manganese (Mn)-Total (mg/L)	0.00081	0.00125
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00072	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.57	0.47
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.434	0.473
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.583	0.662
	Strontium (Sr)-Total (mg/L)	0.0112	0.00807
	Sulfur (S)-Total (mg/L)	1.15	0.68
	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1681194-1 Surface Water 17-SEP-15 14:47 A34-A16	L1681194-2 Surface Water 17-SEP-15 15:45 A16-A14	L1681194-3 Surface Water 19-SEP-15 12:20 C58 OUTLET	L1681194-4 Surface Water 19-SEP-15 14:55 A1-DS1	L1681194-5 Surface Water 19-SEP-15 16:10 A17-A16
Grouping	Analyte					
WATER						
Total Metals	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.0156	<0.00030	<0.00030	0.00081	<0.00030
	Uranium (U)-Total (mg/L)	0.000318	0.000027	<0.000010	0.000033	0.000017
	Vanadium (V)-Total (mg/L)	0.00081	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0033	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	0.00039	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0452	0.0039	0.0021	0.0072	0.0023
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00019	0.00023	0.00026	0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00339	0.00728	0.00387	0.00577	0.00418
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	1.08	3.40	2.22	1.93	1.46
	Chromium (Cr)-Dissolved (mg/L)	0.00040	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00090	0.00043	0.00025	0.00056	0.00034
	Iron (Fe)-Dissolved (mg/L)	0.085	<0.010	<0.010	0.021	0.012
	Lead (Pb)-Dissolved (mg/L)	0.000142	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.84	1.00	0.99	0.62	0.54
	Manganese (Mn)-Dissolved (mg/L)	0.00279	0.00180	0.00059	0.00083	0.00040
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000051	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00114	0.00104	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.38	0.45	0.59	0.45	0.38
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.675	0.285	0.208	0.458	0.543
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.687	0.625	0.491	0.735	0.801
	Strontium (Sr)-Dissolved (mg/L)	0.00591	0.0225	0.00909	0.00804	0.00690
	Sulfur (S)-Dissolved (mg/L)	<0.50	0.60	1.25	0.71	<0.50
	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1681194-6 Surface Water 21-SEP-15 12:38 A13-A12	L1681194-7 Surface Water 21-SEP-15 13:00 E5-E4		
Grouping	Analyte				
WATER					
Total Metals	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	0.00030	0.00068		
	Uranium (U)-Total (mg/L)	0.000017	0.000029		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0032	0.0076		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00024	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.00548	0.00436		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050		
	Calcium (Ca)-Dissolved (mg/L)	2.54	1.93		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	0.00055	0.00048		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.021		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	0.89	0.62		
	Manganese (Mn)-Dissolved (mg/L)	0.00043	0.00088		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.000050		
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	0.00065	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	0.58	0.48		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	0.439	0.457		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	0.623	0.747		
	Strontium (Sr)-Dissolved (mg/L)	0.0112	0.00805		
	Sulfur (S)-Dissolved (mg/L)	1.11	0.69		
	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010		

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	Sample ID Description Sampled Date Sampled Time Client ID	L1681194-1 Surface Water 17-SEP-15 14:47 A34-A16	L1681194-2 Surface Water 17-SEP-15 15:45 A16-A14	L1681194-3 Surface Water 19-SEP-15 12:20 C58 OUTLET	L1681194-4 Surface Water 19-SEP-15 14:55 A1-DS1	L1681194-5 Surface Water 19-SEP-15 16:10 A17-A16
Grouping	Analyte					
WATER						
Dissolved Metals	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00109	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000143	0.000024	<0.000010	0.000024	0.000014
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010	<0.0010	0.0012	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1681194-6 Surface Water 21-SEP-15 12:38 A13-A12	L1681194-7 Surface Water 21-SEP-15 13:00 E5-E4		
Grouping	Analyte				
WATER					
Dissolved Metals	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.000014	0.000023		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Total	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Total	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Total	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Total Organic Carbon	MS-B	L1681194-1, -3, -4, -5, -7
Matrix Spike	Total Organic Carbon	MS-B	L1681194-2, -6
Matrix Spike	Dissolved Organic Carbon	MS-B	L1681194-2, -6
Qualifiers for Individual Paran	neters Listed:		
Qualifier Description		·	

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**		
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)		

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.

Reference Information

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Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA

Water

Diss. Mercury in Water by CVAAS or CVAFS

APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA

Water

Total Mercury in Water by CVAAS or CVAFS

EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA

Water

Dissolved Metals in Water by CRC ICPMS

APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA

Water

Dissolved Metals in Water by ICPOES

EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA

Water

Total Metals in Water by CRC ICPMS

EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA

Water

Total Metals in Water by ICPOES

EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA

Water

Ammonia in Water by Fluorescence

APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA

Water

Ammonia in Water by Fluorescence

J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

S-DIS-ICP-VA

Water

Dissolved Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA

Wate

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

TKN-F-VA

Water

TKN in Water by Fluorescence

APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

^{**} ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

L1681194 CONTD....

PAGE 10 of 10

09-OCT-15 13:10 (MT)

Version: FINAL

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

Chain of Custody Numbers:

14-490825

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Canadian Locations (Tol) Free 1-800-668-9878)

EMERGENCY SPILL RESPONSE: +1 855 638 LADS (5227)

ouver, BC		Fort St. John, BC	
Loughaed Hwy	D: 00.000.000	10345A Dogwood Street	Ph: 260-261-5517
haby, BC,	Ph: 604-263-4188	Fort St. John , BC	Ph: 260-201-5517 Fax: 250-261-5587
(1W8	Fax: 604-253-6700	V1J 8W7	Ph: 250-261-4947
		After Hours / Emergency	Fil. 250-141-1447
nloops, BC		Fort Nelson, BC Airport Terminal Building	
5 McGill Rd, Unit 2B			Ph 250-775-0929
nloops. BC	Ph: 250-372-3538	No.1 Cassaa Way, Rm 108 Fort Nelson, BC	FTI. 25U-7 (5-002)
C 6K7	Ph: 250-372-3670	VOC 1R0	
er Hours / Emergency	Ph: 250-572-1458	Calgary, AB	
monton, AB			
98-67 Avenue NW		2559-29th Street NE	
monton, AB	Phr 780-413-5227	Calgary, AB T1Y 785	Fax: 403-291-0298
E 075	Fax: 780-437-2311		-
er Hours / Emergency	Ph: 780-913-2289	After Hours / Emergency	Ph: 403-651-1471
rt McMurray, AB		Granda Prairie, AD	
y 1, 245 MacDoneld Crescent		9505-111th Street	
rt McMurrey, AB	Ph: 780-791-1524	TBV 5W1	Fax: 780-513-2191
H 485	Fax: 780-791-1586	After Hours / Emergency	Ph: 780-512-4343
er Hours / Emergoncy	Ph: 780-714-8482		
nnipeg, MB		Regina, SK	
29 Niakwa Road East, Unit 12		1119 Osler Street	
Innipeg, MÐ	Ph. 204-255-9720	Regina, SK	
81374	Fax: 204-255-9721	S4R 8R4	
fer Hours / Emergency	Ph: 204-764-6677	After Hours / Emergency	Ph: 308-221-7147
mkatoon, SK		Thunder Bay, ON	
9 - 66 Street East		1081 Barlon Street	
asketoon, SK	Ph. 306-668-8370	Thunder Bay, ON	Ph: 807-623-8483
7K 6X5	Fex. 306-868-8353	P7B 5N3	Fex: 807-623-7598
fer Hours / Emergency	Ph: 306-221-7147	After Hours / Emergency	Ph. 807-824-4482
aterioo, ON		Burlington, ON	
Northland Orive, Unit 1		5420 Mainway Brive, Unit 5	
laterico, ON	Ph: 519-886-6910	Burlington, ON	Ph: 905-331-3111
2V 2B8	Fex: 519-886-9047	L7L8A4	Fex: 905-331-4667
fter Hours / Emergency	Ph: 519-589-0044		
lississauga, DN		London, ON	
730 Coopers Avenue, Unit 30		309 Exeter Road, Unit #29	
hssissauge, ON	Ph: 905-507-8910	London, ON	Ph: 519-652-6044
47. 21:9	Fax: 806-607-6927	NOL 101	Fex: 519-852-0871
ichmond Hill, ON		Ottawa, ON 190 Colonnade Road, Unit 7	
5 West Beaver Creek Road, Unit 1			Ph: 613-225-6279
tichmond Hill, ON	Ph: 905-881-9887	Nepsan, ON K29 7J5	Pn: 613-225-6279 Pax: 613-225-2801
48 1H2	Fax: 905-851-6062	K25 735 Whitehorse, YT	Febt; 013-222-2001
ellowkolfe, NT		12 - 151 Indusidal Road	
16 - 314 Old Airport Road		12 - 151 Inquellati Road Whitehorse, YF	Ph: 857-666-6689
eltowknife, NT	Ph 867-873-5593	yvnnenomaa, Y F	4.u. 901-000-0098

Yellowkotfe, NT

After Hours / Emergency

Sample Container, Preservation and Holding Time Table. Keep samples cool (4°C) and ship to an ALS location as soon as possible.

Note: Specific container, preservation and holding times may vary based on regulatory requirements - consult your local ALS laboratory for assistance prior to sampling

ocations (Toll Free 1	1-800-668-9878)	(ALS)			valion and flolding times may vary based of regula				Water / Sell Hold Tim
LL RESPONSE: +1 855 63	5 LADS (5227)		Inorganics	Analysis ⁴	Water Container	Water Preservation	Additional Notes	Sell Container	14 Days / NA
	Fort St. John, BC			Acidity and Alkalinity	0.5-1 L Plastic			125-250 mL Jar or Rag	28 Days ⁷ /6 Months
	10345A Dogwood Street			Anions (Br. Cl. SO4, F) and Electrical Conductivity	0.5-1 L Plastic			125-250 mL Jar or Bag	28 Days (Chlorite 14 Days
Ph: 604-263-4188	Fort St. John , BC	Ph: 250-251-5517		firemate, Chlorate and Chlorite	125 ml. Plestic	EDA (Ethylenedismina)		NA	
Fax; 604-253-6700	V1J 8W7	Fax: 250-251-5587		ROD, Colour and Turbidity	0.5-1 L Plastic			NA	2-4 Days i NA
	After Hours / Emergency	Ph: 250-261-4947		COD and Phonois (4AAP)	125-250 mL Glass	1:1 Sutfune Acid (H ₂ 80 ₄)		NA .	28 Days / NA
	Fort Nelson, BC			Cyanide, Total , Weak Acid Dissociable, Free	145 mt Plastic	8N NaOH		125-250 ml, Jan or Rep	14 Days / 14 Days
	Airport Terminal Building		ROUTINE INORGANICS	Dissolved Oxygen	300 mL BOD bottle	1 oách: MnSO, & alkaline ice		NA NA	8 Hours / NA
Ph: 250-372-3538	No.1 Cossna Way, Rm 108	Ph. 250-775-0929	AND MISC	Dissolved or Total Inorganic Carbon (DIC or TIC)	125-250 mL Glass		Field Filter for Dissolved	125-250 mL Jar or Bag	14 Driys / 28 Days
Ph: 250-372-3670	Fort Nelson, BC		1	Despived or Total Organic Carbon (DOC or TOC)	125-250 ml. Ginas	1;1 Sulfuric Acid (H ₂ SO ₄)	Field Filler for Dissolved	125-250 mL Jar or Bag	28 Days / 28 Days
Ph: 250-572-1458	V0C 1R0		l	Flashpoint	2 x 100mL Amber Glass		Zero Headspace	125-250 (nL Jer	7 Days / 7 Days
1111 200 012 1-00	Calgary, AB		ļ	ρΗ	9 5-1 I. Piestic			126-250 mL Jar or Bag	0.25 Hours / 30 Days
	2559-29th Street NE			Solids (TS, TSS, TDS)	0.5-1 L Plastic			NA	7 Days / NA
Ph: 780-413-5227	Calgory, AB			Sulfide	125 mL Plestic	Zinc Acetate & 6N NBOH		125-250 mL Jer or Bag	7 Days / 7 Days
Fax: 780-437-2311	T1Y 785	Fax: 403-291-0298		Sulfite	125 ml. Plastic			NA .	0.25 Hours / NA
		Ph: 403-651-1471		Ammonia Nitrogen	250 ml. Glass or Plastic	1,1 Sulfuric Acid (H ₂ SO ₄)		125-250 mL Jar of Bag	28 Days / 72 Hours
Ph: 780-913-2299	After Hours / Emergency Granda Prairie, AD	11. 400-001-1411		Nitrate or Nitrite Nitrogen (and Ammonia suppreserved)	0.5-1 l. Plastic			NA NA	2-7 Days 10 / NA
	· ·			Nitrogen, Kjaldehl, Organic, Total or Disselved	250 int, Glass or Plastic	1:1 Sulfuric Acid (H ₂ SO ₄)	Field Filter for Dissolved	NA NA	2ft Days / NA
	9505-111th Street		NUTRIENTS	Nutriants Available (N,P,K,S)	NA .			125-250 mL Jan or Bag	NA/3 Days
Ph: 780-791-1524	T8V 5W1	Fax: 780-513-2191		Fhosphorus, Resclive (orthophosphale)	0.5-1 L Plestic	·		NA .	2-7 Days 12 / NA
Fax: 780-791-1588	After Hours / Emergency	Ph: 780-512-4343		Phosphorus, Total Dissolved	250 mL Glass or Prostic	1:1 Sulfurio Acid (H ₂ SO ₄)	Field Filter for Dissolved	NĄ	28 Days / NA
Ph: 780-714-8482			1	Phosphorus, Total	250 mL Glass or Plantic	1:1 Sulfurio Acid (H _c SO _c)		NA NA	28 Days / NA
	Regina. 8K			Chronium VI (Hexavalent)	125 mt. Plastic	50 % NaOH (BC MoE) or 6N NaOH + a	Ammonium Butter (OMoE)	125-250 mi, Jer or Bag	28 Days / 30 Days
	1119 Osler Street		l	Mercury, Methyl	250 ml, pre-cleaned Glass or IFE	Contact Leb	Contest tate	125-250 ml, Jár or Bag	8 Months / 28 Days
Ph. 204-255-9720	Regina, SK		METALS		40 mL Glass Vial or 120 mL Glass	1:1 Hydrochloric Acid (HCl)	Field Filter for Dissolved	125-250 ml, Jar or Bag	28 Days / 28 Days
Fax: 204-255-9721	S4R 8R4			Mercury, Total or Dissolved Matals, Total or Dissolved	125-250 mL Pleshe	1:3 Nitric Acid (HNO ₃) to pH<2	Field Filter for Dissolved	126-250 ml. Jar or Bag	6 Months / 6 Months
Ph: 204-764-6677	After Hours / Emergoncy	Ph: 308-221-7147	- Organics -		· 小说 中人人自己的自治 山石 原本血液 赤眼中 医毛 野寶 5	Angle as a sure of street transfer \$250.	アクランシング 大田 大田 日上.	B全型发展中文3 × 4 × 2 ° °	் உள்ள காழுகுள்ளை இர
	Thunder Bay, ON		Organics	BTEX/F1 or VPH	2 or 3 x 40 mL Glass Vials ²	Sodium Bisulfata	Zero Headspace	125 mt. Jar, Encore or Terra	14 Days / 7 Days 12
	1081 Barton Street		ı	Votatile Organics (THM, Perchloroethylene)	2 or 3 x 40 mL Glass Viuls 2	Sodium Pieulfete *	Zero Hoadapaca	Core sampling kit ⁶	14 Days / 7 Days 12
Fh. 306-668-8370	Thunder Bay, ON	Ph: 807-623-8483			2 x 60 ml, Amber Glass Virts or 500 ml, Amber Glass 5	Sodium Blauffata		125 - 500 ml. Jar	14 Days 14/ 14 Day
Fex. 306-668-8353	P7B 5N3	Fex: 607-623-7598	HYDRO- CARBONS	CWS F2-F4	2 x 500 mL Amber Glass	Sodium Bisulfate		125 - 500 mL Jar	14 Days / 14 Days
Ph: 306-221-7147	After Hours / Emergency	Ph. 807-824-4482	02111301113	EPH or LEPH/HEPH	. 2 x 0.5 - 1 L Amber Glass	Sadium Bisullate ⁵	_	125 - 500 mL Jar	14 Days / 14 Days
	Burlington, ON			Polycyclic Aromatic Hydrocarbona (HAHs) Oil & Grease or Mineral Oll & Grease	2 x 0 5 - 1 L Gloss	1:1 HCl or H ₂ SO ₄		125 - 500 mL Jar	28 Days / 26 Days
	5420 Mainway Brive, Unit 5				2 x 40 inL Glass Vials		Zero Headspace	125 - 500 mL Jar	7 Days / 14 Days
Ph: 519-886-6910	Burlington, ON	Ph: 905-331-3111	1	Alcohola	125 mL Amber Glass			125 - 500 ml. Jui	7 Days / 14 Days
Fax: 519-886-9047	L7L 8A4	Fax: 905-331-4667		Alkanolaminos (MEA, DEA, DIPA)	2 x 1 L Amber Glass			125 - 600 mL Jai	Unlimited / Unlimite
Ph: 519-589-0044			1	Dioxins and Furans	40 - 250 ml, Amber Glass	1:3 Nitric Acid (HNO ₃) to pH<2		125 - 500 mL Jar	6 months ¹⁵ / 28 Da
	London, CN			AOX		Ainmonium Chloride+Copper Suifate	Zero Headsonce	126 • 500 mL, Jar	7 Days / 5 Days
	309 Exeter Road, Unit #29			Farniaklehyde	2 × 40 mL Amber Glass Viols *	Administrating the state of the	Zelo Meanspace	126 - 500 mL Jar	7 Days / 14 Days
Ph: 905-507-8910	London, ON	Ph: 519-652-6044	TRACE	Glycols	2 x 40 mL Amber Glass Viols			125 - 500 mL Jar	14 Days / 14 Days
Fax: 906-607-6927	NOL 1C1	Fex: 519-852-0871	ORGANICS	Naphthanic Acids	2 x 250 mL Ambor Glass			128 - 500 mL Jar	Unionited / Unlimited
	Ottawa, ON		1	PGR	2 x 0.5 - 1 LAmbor Gless			125 - 500 mL Jar	14 Days / 14 Days
	190 Colonnade Road, Unit 7			Phanoice, Chlorinated and Non-Chlorinated	2 x 0.5 - 1 LAmber Glass	Ascorbic Acid & Sodium Bradifate 6		125 - 500 mL Jar	7 Days / 14 Days 1
Ph: 905-881-9887	Nepsen, ON	Ph: 813-225-8279		Priority Pollutants (EPA 625 list) or SVOCs	2 x 1 I. Amber Glass			125 mL Jac	14 Days / 14 Days
Fex: 905-881-8962	K2E 7J5	Fax: 813-225-2801	1	Realn Acids & Fally Acids	2 x 0 5 - 1 I.Amber Glass	Ascorbic Acid & NaOH		 	7 Days / 14 Days
	Whitehorse, YT			Sulfolene	2 x 0.5 - 1 L Amber Glass			126 mL Jer	
	12 - 151 Industrial Road			Cerbanate Pesticides	2 x 1 L Amber Glass	Potessium Dihydrogen Clirete	or ChlorAC butler	125 - 500 mL Jar	28 Days / 14 Days
Ph 867-873-5593	Whitehorse, YF	Ph 887-968-8689	1	Glyphosate / AMPA	2 x 1 L Amber Glass	Use Sodium Thiosulfate if chlorinated		125 - 500 mL Jar	14 Duya / 14 Duya
Fax: 887-920-4238	Y1A 2V3	Fax: 857-666-5684	PESTICIDE	Herbicides, Acidic	2 x 1 LAmbur Glass	Sodlum Bisulfate		125 - 500 mL Jur	14 Days / 14 Days
Ph. 887-448-5593	After Hours / Emergency	Ph. 887-335-5416	RESIDUES	Nonyiphenoi & Ethoxylatos	2 x 0.5 - 1 L Amber Glass	Sodium Bisulfeta	L	125 - 600 mL Jar	28 Days / 14 Days
				Organochtorino or Organophosphato Pesticides	2 x 1 L Amber Oless			125 - 600 ml. Jar	7 Days / 14 Days
			L	Soll Sterilant Scan	2 x 1 LAmber Glass	<u> </u>	<u> </u>	250 g Poly Gag	7 Days / 14 Days
			a⊯ Micro se	- 10 水色に 第二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十	大學 Tar and tar and tar and tar and tar and tar and tar and tar and tar and tar and tar and tar and tar and tar			表面部分省 医氯酚甲酚酚 阿伊司	W. P. N. WARRANCE WATER
			MICRO-	Coliforms-Focel, Total, G-coll & HI*C	109 - 300 mt, Sterlized Plastic	Sedium Thiesulfate		500 mt. Sterilized Jer	24-48 Hours 18 (24 - 11P)
			MICRO- BIÓLÓGICAL	Microlax	1 L Amber Glass		L	125-250 mL Jar or Bag	3 Days / 3 Days
				sivens with the same contener and preservation may be possible	a - consult the lab for details.	9. pH in water should be taken in the fit	id as per BC MoF, 4 Days noid	time for Ontario MISA and 28 Da	ys. NA HM 033

1. Additional analysis with the same container and preservation may be possible - consult the lab for details.

- 2. The number of 40 mit, glass wate required (2 or 3) for BTEX & VOC varies by lab based on instrumentation. Consult the lab for details.
- 3. If CWS F2-F4 is required in addition to EPH or LEPH/HEPH, only 2 x 500 mL, Amber Glass containers are required. For Ontario Ministry of Environment (OMOE) CWS PHC F2-F4 + F4G, At 5 requires 2 x 600 mt, Amber Glass
- Use Sodium Thiosulfete Instead of Sodium Pisolitate if sample is chlorineted.
- No preservative is required for these analyses in Ontario.
- 6 Soil sampling options depend on soil location and condition of soil. Terra Core® sampling kill consists of Terra Core® sampler, two proweighted 40mL glass vials with methanol preservative and a 125 mt, soil jar for molature. Encore samplers and 125 mt, soil jars with zero headspace are officer options - contault the lab for details.
- 7. 4 Days hold time for Electrical Conductivity only as per Ontarto MISA.
- 8, 3 Days hold time for Dritish Columbia as per BC Ministry of fundronment (BC MoB), 4 Days hold time as per OMoB.

pH in water should be taken in the field as per DC MoE, 4 Days hold time for Ontario MISA and 28 Days hold time for QMoE. 30 Days hold time as received for pH in soil as per OMoE. Unlimited hold time once soil

- 10 3 Days hold time as per BC MoE, 5 Days hold time ap per Ontario MISA and 7 Days hold time as per OMoE. 11. 3 Days hold time until received. Unlimited hold time once self is dried.
- 12. 3 Days hold knot as per BC MoE and 7 Days hold time as per OMuE.
- 13. 40 Days hold time for field methanol preserved samples, 7 Days hold time for CCME CWS PHC F1 and 2 Days hold time for End
- 14 40 Days hold time as per QMolE.
- 15. 14 Days held time as per Ontario MISA
- 16, 14 Days hold time as per OMcE.
- 17, 14 Days hold time for water and 86 Days hold time for soli as per OMoE. 18, 30 Hours hold time as per BC Drinking Water Regulation and 48 Hours as per CMGE

Chain of Custody (COC) / Analytical Request Form



Canada Toll Free: 1 800 668 9878



eport To	Report Forms	t / Distribution	l	Selec	t Service	Level Belo	w (Rush Turn	around Time (TAT) is	not available 1	or all tests)	
ompany: AZIMUTH CONSULTING CAROUP	Select Report Format:	DF EXCEL EDD (DIGITAL)	R]				eccived by 3pm				
ontact: ERIC FRANZ	Quality Control (QC) Report with Re	port ☐ Yes ☐ No	P	Priority	(2-4 bus	iness days	if received by	3pm)			
218-2902 WEST BROADWAY VANCOUVER BY	Criteria on Report - provide details be	low if box checked	E [_			ays if received				
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ALS Sample # Sample Identification and/or Coordinates	Date	Time	8	정 2 2	1017×	<u>Ş</u>	Drss.	.1 1 1			
(lab use only) (This description will appear on the report)	(dd-mmm-yy)	(hh:mm) Sample Type	إ≃ا	W	15		15 O	, <u> </u>			
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Drinking Water (DW) Samples¹ (client use) Special is	structions / Specify Criteria to add on	report (client Use)			⊗SAM	LE CO		RECEIVED (la	b use only)	9007-9758(Car.90)	8038077 C
samples taken from a Regulated DW System?			Frozen		╚			bservations	Yes	No	
F Yes F No			Ice pack		Ш	No	Custo	dy seal intact	Yes 🔲	No	
samples for human drinking water use?				Initiated							
r Yes r No		ŀ	SWAT INHT	IAL COOLER	TEMPER	ATURES Y		FINAL COOL	ER TEMPERA	TURES *C. 32	8030 L. San en
SHIPMENT RELEASE (client use)	MANAGEMENT OF STREET	TON (Introduction of the Control of						2			
leased by: Date: Time: Received	by:	Date: Time:	Receive	ed by: Z	Millio FI	NAL SHI	PMENT RE	CEPTION (lab u	se only)	1.2% (1.5% C · · · ·	10 11 11
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FER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	WHIT	E - LABORATORY COPY YELLOW	- CLIEN	TOOPY		· <u>·</u>		NA FM-0320# v09 Fro	TI.		

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy. 1. If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form.



AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 24-SEP-15

Report Date: 30-SEP-15 14:08 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1678136
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: 1, 2

Legal Site Desc:

BJ Mak

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1678136 CONTD....

Version:

PAGE 2 of 6 30-SEP-15 14:08 (MT)

FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

L1678136-1 L1678136-2 L1678136-3 L1678136-4 L1678136-5 Sample ID Description Surface Water Surface Water Surface Water Surface Water Surface Water 18-SEP-15 18-SEP-15 18-SEP-15 18-SEP-15 19-SEP-15 Sampled Date Sampled Time WTN-05-S WTN-06-S WTS-05-S WTS-06-S NEM-05-S Client ID Grouping Analyte **WATER Physical Tests** Conductivity (uS/cm) 25.2 21.8 20.3 20.5 25.3 pH (pH) 6.75 7.05 6.81 6.75 6.76 Total Suspended Solids (mg/L) <1.0 <1.0 <1.0 <1.0 <1.0 Total Dissolved Solids (mg/L) 18.0 17.7 16.0 15.5 17.4 Turbidity (NTU) 0.32 0.35 0.34 0.35 0.21 Anions and Alkalinity, Bicarbonate (as CaCO3) (mg/L) 5.3 4.4 7.5 4.6 4.3 **Nutrients** Alkalinity, Carbonate (as CaCO3) (mg/L) <1.0 <1.0 <1.0 <1.0 <1.0 Alkalinity, Hydroxide (as CaCO3) (mg/L) <1.0 <1.0 <1.0 <1.0 <1.0 Alkalinity, Total (as CaCO3) (mg/L) 5.3 4.6 4.4 4.3 7.5 Bromide (Br) (mg/L) < 0.050 < 0.050 < 0.050 < 0.050 < 0.050 Chloride (CI) (mg/L) 2.99 2.38 2.11 2.10 0.53 Fluoride (F) (mg/L) 0.026 0.026 0.026 0.026 0.023 Nitrate (as N) (mg/L) < 0.0050 < 0.0050 < 0.0050 < 0.0050 < 0.0050 Nitrite (as N) (mg/L) < 0.0010 < 0.0010 < 0.0010 < 0.0010 < 0.0010 Orthophosphate-Dissolved (as P) (mg/L) < 0.0010 <0.0010 <0.0010 < 0.0010 < 0.0010 Phosphorus (P)-Total Dissolved (mg/L) < 0.0020 < 0.0020 <0.0020 <0.0020 < 0.0020 Silicate (as SiO2) (mg/L) 0.69 0.68 0.65 0.62 0.67 Sulfate (SO4) (mg/L) 1.49 1.32 1.32 3.22 1.37

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1678136 CONTD....

PAGE 3 of 6 30-SEP-15 14:08 (MT) Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L1678136-6 Surface Water 19-SEP-15 NEM-06-S	L1678136-7 Surface Water 19-SEP-15 MAM-05-S	L1678136-8 Surface Water 19-SEP-15 MAM-06-S	L1678136-9 Surface Water 20-SEP-15 C2-SEP	L1678136-10 Surface Water 20-SEP-15 C14-SEP
Analyte					
Conductivity (uS/cm)	25.4	25.7	25.5	23.8	24.4
рН (рН)					7.08
Total Suspended Solids (mg/L)					1.5
Total Dissolved Solids (mg/L)					19.4
Turbidity (NTU)					0.72
Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.2	5.2	5.1	5.7	8.9
Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (as CaCO3) (mg/L)	7.2	5.2	5.1	5.7	8.9
Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (CI) (mg/L)	0.54	2.59	2.58	0.51	0.55
Fluoride (F) (mg/L)	0.023	0.025	0.025	0.073	0.034
Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicate (as SiO2) (mg/L)	0.60	0.79	0.76	1.14	0.74
Sulfate (SO4) (mg/L)	3.19	2.24	2.24	3.97	1.55
	Description Sampled Date Sampled Time Client ID Analyte Conductivity (uS/cm) pH (pH) Total Suspended Solids (mg/L) Total Dissolved Solids (mg/L) Turbidity (NTU) Alkalinity, Bicarbonate (as CaCO3) (mg/L) Alkalinity, Carbonate (as CaCO3) (mg/L) Alkalinity, Hydroxide (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Bromide (Br) (mg/L) Chloride (Cl) (mg/L) Fluoride (F) (mg/L) Nitrate (as N) (mg/L) Nitrite (as N) (mg/L) Orthophosphate-Dissolved (as P) (mg/L) Phosphorus (P)-Total Dissolved (mg/L) Silicate (as SiO2) (mg/L)	Analyte Conductivity (uS/cm) pH (pH) Total Dissolved Solids (mg/L) Turbidity (NTU) Alkalinity, Bicarbonate (as CaCO3) (mg/L) Alkalinity, Hydroxide (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Alkalinity (Br) Alkalinity, Total (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Alkalinity (Br)	Description Sampled Date Sampled Time Client ID	Description Sampled Date Sampled Time Client ID	Description Sampled Date Sampled Time Client ID

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1678136 CONTD....

PAGE 4 of 6 30-SEP-15 14:08 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1678136-11 Surface Water 20-SEP-15 C17-SEP	L1678136-12 Surface Water 20-SEP-15 C20-SEP	L1678136-13 Surface Water 20-SEP-15 C41-SEP	L1678136-14 Surface Water 20-SEP-15 AMARUQ SEP DUP-1	L1678136-15 Surface Water 19-SEP-15 AMARUQ SEP EB-
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	22.9	21.7	25.2	21.4	<2.0
	рН (рН)	7.00	7.04	6.93	6.76	5.54
	Total Suspended Solids (mg/L)	<1.0	<1.0	9.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	18.6	14.4	20.4	17.0	<3.0
	Turbidity (NTU)	0.50	0.45	1.53	0.32	<0.10
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.7	7.5	6.7	4.3	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.7	7.5	6.7	4.3	<1.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (CI) (mg/L)	0.58	0.63	0.62	2.36	<0.10
	Fluoride (F) (mg/L)	0.048	0.037	0.054	0.026	<0.020
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0148	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0022	<0.0020	0.0022	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	0.97	<0.50	1.39	0.67	<0.50
	Sulfate (SO4) (mg/L)	1.52	1.63	3.26	1.37	<0.30

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1678136 CONTD.... PAGE 5 of 6

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	В	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Fluoride (F)	DLM	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrite (as N)	DLM	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrate (as N)	DLM	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
В	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**	
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity	

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-L-IC-N-VA Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-TD-COL-VA Water Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH

electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Silicate by Colourimetric analysis SILICATE-COL-VA Water APHA 4500-SiO2 E.

Reference Information

L1678136 CONTD....

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Version: FINAL

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

EPA 300.1 (mod)

SO4-IC-N-VA Water Sulfate in Water by IC

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

2

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATÉD, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

(ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#				_
	Page	1 of	_	2

Report To		Report F	ormat / Distri	oution		Sen	ice Rec	uested	(Rush for	routine a	nalysis s	ubject to availa	ability)
Company:	Azimuth Consulting Group	Standar	d 🔲 Other			_			rnaround Ti				
Contact:	Eric Franz	☑ PDF	Excel	☐ Digit	al 🗍 Fax	O Pi	riority (2-4	Business	Days) - 50%	Surcharg	ge - Contac	t ALS to Confirm	n TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azin	nuthgroup.ca		O E	mergency	(1-2 Bus. I	Days) - 100°	% Surchar	rge - Conta	ct ALS to Confir	m TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azir	mutingroup.ca		O S	ame Day o	r Weeken	d Emergency	/ - Contac	t ALS to C	onfirm TAT	
Phone:	604-730-1220 Fax:	Email 3:		en@agnicoeagle	e.com					ysis Re			
Invoice To	Same as Report ?	Client / P	roject Inform			Ple	ase indi	cate bel	ow Filtere	d, Pres	erved or	both (F, P, F	-/P)
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1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	vork Order # L16 78136	ALS Contact:	Brent Mack	Sampler:	Morgan Finley	tionals	w, TDS-Low		 [l l			rofC
Sample	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy	Time (hh:mm)	Sample Type	Conven	TSS-Low,		•	Short	!		Number of Containers
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ALS) Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#			
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Report To		Report Fo	rmat / Distribut	on		Serv	ice Re	quest	ed (Rusi	for routing	analys	sis subje	ct to ava	ailability)
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	Eric Franz	☑ PDF	☑ Excel	☐ Digital	☐ Fax	O Pr	iority (2	-4 Busine	ess Days)	- 50% Surch	arge - C	Contact Al	S to Conf	īrm TAT	
Address:	218-2902 West Broadway	Email 1:	efranz@azimuth	group.ca		() En	nergeno	y (1-2 Bo	ıs. Days)	100% Surc	harge - i	Contact A	LS to Cor	ifirm TA	٢
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Phone:	604-730-1220 Fax:	Email 3:	ryan.vanenge <u>n@</u>	<u>Dagnicoeagle.co</u>	<u>om</u>		-			Analysis I	₹eque	st			
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Primer in the contract of the	/ork Order #	ALS Contact:	Brent Mack	Sampler:	Morgan Finley	Conventionals**	w, TDS-Low								Number of Containers
Sample #	Sample Identification (This description will appear on the rep	oort)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conven	TSS-Low,		1	l. <u>l.</u>	10	1			Numbe
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**Conventiona	als includes: Alk Species, pH, EC, Turbidity, Conductivi	ity, Anions (F, NO2,	NO3, Br, SO4),	low-level Chloric	de, Silicate, TD-P,	and	Ortho-	PO4.							
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AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 24-SEP-15

Report Date: 05-OCT-15 15:12 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1678156
Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: Legal Site Desc:

B Mack

Brent Mack, B.Sc. Account Manager

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L1678156 CONTD....

PAGE 2 of 5 05-OCT-15 15:12 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1678156-1 Other 18-SEP-15 WTN-05-S	L1678156-2 Other 18-SEP-15 WTN-06-S	L1678156-3 Other 18-SEP-15 WTS-05-S	L1678156-4 Other 18-SEP-15 WTS-06-S	L1678156-5 Other 18-SEP-15 NEM-05-S
Grouping	Analyte						
FILTER							
	Chlorophyll a (ug/L)		0.769	0.934	0.822	0.884	0.526

L1678156 CONTD....

PAGE 3 of 5 05-OCT-15 15:12 (MT)

Version: FINAL

		Sample ID Description Sampled Date Sampled Time Client ID	L1678156-6 Other 18-SEP-15 NEM-06-S	L1678156-7 Other 18-SEP-15 MAM-05-S	L1678156-8 Other 18-SEP-15 MAM-06-S	L1678156-9 Other 18-SEP-15 C2-SEP	L1678156-10 Other 18-SEP-15 C14-SEP
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.500	0.801	0.704	0.608	1.50

L1678156 CONTD....

PAGE 4 of 5 05-OCT-15 15:12 (MT)

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT	ALS	ENVIRONMENTAL	. ANALYTICAL	REPORT
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		Sample ID Description Sampled Date Sampled Time Client ID	L1678156-11 Other 18-SEP-15 C17-SEP	L1678156-12 Other 18-SEP-15 C20-SEP	L1678156-13 Other 18-SEP-15 C41-SEP	L1678156-14 Other 18-SEP-15 AMARUQ SEP DUP-1	
Grouping	Analyte						
FILTER							
Plant Pigments	Chlorophyll a (ug/L)		0.791	0.556	2.30	0.847	

L1678156 CONTD.... PAGE 5 of 5

05-OCT-15 15:12 (MT) Version:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CHLOROA-F-VA	Filter	Chlorophyll a by Fluorometer (Filter)	EPA 445.0
This analysis is done using	nrocedures	modified from EPA Method 445 0. Chlorophyll-a is dete	rmined by a routine acetone extraction followed with

analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Short Holding Time



Rush Processing

Chain of Custody / Analytic: Canada Toll Free: 1 80 www.alsglobal.c



COC#

Page	1 of	2

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Company:	Azimuth Consulting Group	☑ Standar	d 🗌 Other			R R	egular (S	itandard	Turnarou	ınd Tim	nes - Bus	siness Days	;)			
Contact:	Eric Franz	☑ POF		Digital	☐ Fax	O Pr	iority (2-	4 Busine	ss Days)	- 50%	Surchar	ge - Contac	ct ALS to	Confirm	n TAT	
Address:	218-2902 West Broadway	Email 1:	efranz@azimu	thgroup.ca		() Er	nergency	(1-2 Bu	ıs. Days)	- 100%	o Surcha	irge - Conta	act ALS t	o Confir	m TAT	
	Vancouver, BC V6K2G8	Email 2:	gmann@azimu	uthgroup.ca		O Sa	me Day	or Week	end Eme	rgency	- Contac	ct ALS to Co	onfirm T	'AT'		
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanenger	@agnicoeagle.	<u>com</u>					Analy	sis Re	equest				
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Contact: Eric Franz PDF Excel Digital Fax Priority (2-4 Business Days) - 50% Surcharge - Cont. Address: 218-2902 West Broadway Email 1: efranz@azimuthgroup.ca Email 2: gmann@azimuthgroup.ca Same Day or Weekend Emergency - Contact ALS to Phone: 604-730-1220 Fax: Email 3: ryan.vanengen@agnicoeagle.com Analysis Request Invoice To Same as Report? Yes No Dob #: Amaruq Surfacewater Please indicate below Filtered, Preserved of Hardcopy of Invoice with Report? Yes No Job #: Amaruq Surfacewater PO / AFE: Contact: LSD: Address: Phone: Fax: Quote #: Q39503 Fax: Sampler: Morgan Finley To Please Indicate Surface Portion of the poor	act ALS to Confirm TAT act ALS to Confirm TAT Confirm TAT
Address: 218-2902 West Broadway Vancouver, BC V6K2GB Email 1: efranz@azimuthgroup.ca Vancouver, BC V6K2GB Email 2: gmann@azimuthgroup.ca O Same Day or Weekend Emergency - Contact ALS to Description Fax: Email 3: ryan.vanengen@agnicoeagle.com Hardcopy of Invoice with Report? Yes No Job #: Amaruq Surfacewater Company: Contact: Address: Phone: Fax: Quote #: Q39503 ALS Brent Mack: Sampler: Morgan Finley Perserved of Alls Report (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Description Surcharge - Contact ALS to Description Same Day or Weekend Emergency - Contact ALS to Description Analysis Request Analysis Request Analysis Request Analysis Request Lab Work Order #	r both (F, P, F/P)
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Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Del	ails
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.	
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common a SHIPMENT RELEASE (client use). SHIPMENT VERIFICATION (lab use only)	-
SHIPMENT RELEASE (client use) SHIPMENT RECEPTION (lab use only) SHIPMENT VERIFICATION	ouse only) Observations
My can find. Date (ad-minim-yy) Time (in-mini) Received by: Date: 13 oc 13	Yes / No ?



AZIMUTH CONSULTING GROUP INC.

ATTN: Eric Franz

218 - 2902 West Broadway Vancouver BC V6K 2G8 Date Received: 28-SEP-15

Report Date: 07-OCT-15 13:41 (MT)

Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1679751

Project P.O. #: NOT SUBMITTED

Job Reference: AMARUQ SURFACEWATER

C of C Numbers: 1, 2

Legal Site Desc:

BJ Mack

Brent Mack, B.Sc. Account Manager

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L1679751 CONTD.... PAGE 2 of 13

07-OCT-15 13:41 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-1 Surface Water 18-SEP-15 WTN-05-S	L1679751-2 Surface Water 18-SEP-15 WTN-06-S	L1679751-3 Surface Water 18-SEP-15 WTS-05-S	L1679751-4 Surface Water 18-SEP-15 WTS-06-S	L1679751-5 Surface Water 19-SEP-15 NEM-05-S
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	8.63	7.76	7.30	7.30	9.63
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.116	0.118	0.120	0.129	0.123
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0031	0.0023	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.81	1.74	1.74	1.76	1.44
	Total Organic Carbon (mg/L)	1.70	1.77	1.77	1.74	1.34
Total Metals	Aluminum (Al)-Total (mg/L)	0.0116	0.0120	0.0107	0.0111	0.0032
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00019	0.00018	0.00017	0.00017	0.00031
	Barium (Ba)-Total (mg/L)	0.00410	0.00372	0.00354	0.00347	0.00384
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Calcium (Ca)-Total (mg/L)	2.15	1.95	1.77	1.78	2.14
	Chromium (Cr)-Total (mg/L)	0.00014	0.00011	0.00012	0.00011	0.00011
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.021	0.024	0.024	0.022	0.011
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.71	0.70	0.66	0.66	0.98
	Manganese (Mn)-Total (mg/L)	0.00365	0.00294	0.00256	0.00249	0.00248
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000059	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00060	0.00061	0.00052	0.00050	0.00053
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.39	0.38	0.37	0.36	0.56
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.247	0.263	0.256	0.255	0.210
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.526	0.546	0.531	0.536	0.485
	Strontium (Sr)-Total (mg/L)	0.0145	0.0128	0.0113	0.0115	0.00945
	Sulfur (S)-Total (mg/L)	0.54	0.53	<0.50	0.50	1.12

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1679751 CONTD.... PAGE 3 of 13

07-OCT-15 13:41 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-6 Surface Water 19-SEP-15 NEM-06-S	L1679751-7 Surface Water 19-SEP-15 MAM-05-S	L1679751-8 Surface Water 19-SEP-15 MAM-06-S	L1679751-9 Surface Water 20-SEP-15 C2-SEP	L1679751-10 Surface Water 20-SEP-15 C14-SEP
Grouping	Analyte	-				
WATER	•					
Physical Tests	Hardness (as CaCO3) (mg/L)	9.61	9.18	9.21	9.21	10.3
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.115	0.135	0.131	0.125	0.188
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0031	<0.0020	0.0042
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.22	1.46	1.54	1.47	2.34
	Total Organic Carbon (mg/L)	1.55	1.60	1.62	1.50	2.36
Total Metals	Aluminum (AI)-Total (mg/L)	0.0043	0.0062	0.0080	0.0091	0.0338
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00032	0.00040	0.00041	0.00018	0.00042
	Barium (Ba)-Total (mg/L)	0.00391	0.00457	0.00464	0.00343	0.00372
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000050	<0.0000050	0.0000056	<0.0000050	0.0000064
	Calcium (Ca)-Total (mg/L)	2.14	2.33	2.41	2.26	2.84
	Chromium (Cr)-Total (mg/L)	0.00011	0.00012	0.00013	<0.00010	0.00023
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00077	0.00073
	Iron (Fe)-Total (mg/L)	0.010	0.016	0.019	0.039	0.108
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.000086	<0.000050	0.000109
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.97	0.77	0.79	0.84	0.75
	Manganese (Mn)-Total (mg/L)	0.00266	0.00220	0.00245	0.00106	0.00912
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.0000050	<0.0000050	0.0000080	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00053	0.00057	0.00061	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.53	0.48	0.49	0.30	0.35
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.209	0.288	0.300	0.464	0.345
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.490	0.537	0.552	0.536	0.533
	Strontium (Sr)-Total (mg/L)	0.00945	0.0133	0.0134	0.0119	0.0150
	Sulfur (S)-Total (mg/L)	1.11	0.79	0.86	1.39	0.61

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1679751 CONTD....

PAGE 4 of 13 07-OCT-15 13:41 (MT)

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-11 Surface Water 20-SEP-15 C17-SEP	L1679751-12 Surface Water 20-SEP-15 C20-SEP	L1679751-13 Surface Water 20-SEP-15 C41-SEP	L1679751-14 Surface Water 20-SEP-15 AMARUQ SEP DUP-1	L1679751-15 Surface Water 19-SEP-15 AMARUQ SEP EB- 1
Grouping	Analyte					
WATER	,					
Physical Tests	Hardness (as CaCO3) (mg/L)	9.40	8.83	9.88	8.09	<0.50
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	0.0051	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.160	0.234	0.203	0.121	<0.050
	Phosphorus (P)-Total (mg/L)	0.0026	0.0072	0.0071	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.69	1.41	1.88	1.79	<0.50
	Total Organic Carbon (mg/L)	2.65	2.12	1.91	1.87	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0156	0.0099	0.0647	0.0112	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00029	0.00017	0.00027	0.00018	<0.00010
	Barium (Ba)-Total (mg/L)	0.00243	0.00190	0.00592	0.00374	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000093	0.0000082	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.43	2.17	2.18	1.93	<0.050
	Chromium (Cr)-Total (mg/L)	0.00018	0.00010	0.00079	0.00017	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	0.00013	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00070	<0.00050	0.00107	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.078	0.021	0.336	0.021	<0.010
	Lead (Pb)-Total (mg/L)	<0.000050	0.000372	0.000317	<0.000050	0.000190
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.79	0.75	1.20	0.70	<0.10
	Manganese (Mn)-Total (mg/L)	0.00762	0.00131	0.00591	0.00262	<0.00010
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	0.000078	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00052	<0.00050	0.00462	0.00057	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.35	0.30	0.33	0.36	<0.10
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.404	0.164	0.722	0.259	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.560	0.487	0.555	0.522	<0.050
	Strontium (Sr)-Total (mg/L)	0.0128	0.00905	0.0107	0.0126	<0.00020
	Sulfur (S)-Total (mg/L)	0.58	0.58	1.18	<0.50	<0.50

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-1 Surface Water 18-SEP-15 WTN-05-S	L1679751-2 Surface Water 18-SEP-15 WTN-06-S	L1679751-3 Surface Water 18-SEP-15 WTS-05-S	L1679751-4 Surface Water 18-SEP-15 WTS-06-S	L1679751-5 Surface Water 19-SEP-15 NEM-05-S
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.00010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000032	0.000035	0.000035	0.000035	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0035	0.0038	0.0033	0.0033	0.0024
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00017	0.00017	0.00014	0.00013	0.00026
	Barium (Ba)-Dissolved (mg/L)	0.00423	0.00373	0.00339	0.00340	0.00395
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.24	1.96	1.82	1.82	2.19
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00034	0.00031	0.00033	0.00031	0.00026
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.00050	<0.000050	0.000053	<0.000050	0.000556
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.74	0.70	0.67	0.67	1.01
	Manganese (Mn)-Dissolved (mg/L)	0.00135	0.00084	0.00057	0.00065	0.00057
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.0000050	<0.000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00061	0.00053	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.41	0.39	0.36	0.37	0.56
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.245	0.246	0.241	0.239	0.205
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.534	0.532	0.515	0.518	0.478
	Strontium (Sr)-Dissolved (mg/L)	0.0150	0.0128	0.0116	0.0115	0.00939
	Sulfur (S)-Dissolved (mg/L)	0.53	<0.50	<0.50	<0.50	1.08

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-6 Surface Water 19-SEP-15 NEM-06-S	L1679751-7 Surface Water 19-SEP-15 MAM-05-S	L1679751-8 Surface Water 19-SEP-15 MAM-06-S	L1679751-9 Surface Water 20-SEP-15 C2-SEP	L1679751-10 Surface Water 20-SEP-15 C14-SEP
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00010	<0.00030	<0.00030	<0.00010	0.00096
	Uranium (U)-Total (mg/L)	<0.000010	0.000022	0.000024	0.000036	0.000040
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0025	0.0033	0.0033	0.0053
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00028	0.00034	0.00036	0.00014	0.00029
	Barium (Ba)-Dissolved (mg/L)	0.00391	0.00432	0.00436	0.00309	0.00338
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.19	2.38	2.40	2.29	2.89
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00021	0.00037	0.00054	0.00070	0.00060
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	0.013	0.019
	Lead (Pb)-Dissolved (mg/L)	0.000104	0.000270	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.01	0.78	0.78	0.85	0.76
	Manganese (Mn)-Dissolved (mg/L)	0.00052	0.00068	0.00074	0.00081	0.00358
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	0.0000063	0.0000055	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00051	0.00056	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.56	0.49	0.49	0.31	0.34
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.210	0.278	0.276	0.457	0.290
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.477	0.527	0.523	0.527	0.517
	Strontium (Sr)-Dissolved (mg/L)	0.00941	0.0130	0.0130	0.0121	0.0147
	Sulfur (S)-Dissolved (mg/L)	1.08	0.78	0.79	1.36	0.57

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-11 Surface Water 20-SEP-15 C17-SEP	L1679751-12 Surface Water 20-SEP-15 C20-SEP	L1679751-13 Surface Water 20-SEP-15 C41-SEP	L1679751-14 Surface Water 20-SEP-15 AMARUQ SEP DUP-1	L1679751-15 Surface Water 19-SEP-15 AMARUQ SEP EB
Grouping	Analyte					
WATER						
Total Metals	Thallium (TI)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	0.00134	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000041	0.000022	0.000060	0.000035	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0049	0.0086	0.0053	0.0037	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00027	0.00015	0.00011	0.00017	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00228	0.00196	0.00477	0.00380	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.00020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000067	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.45	2.25	2.10	2.06	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00064	0.00041	0.00068	0.00033	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.036	0.014	0.030	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000098	<0.00050	<0.00050	0.000069
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.80	0.78	1.13	0.71	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.00630	0.00077	0.00169	0.00085	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	0.000000	<0.00077	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	0.000104	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00329	0.00051	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.36	0.35	0.33	0.37	<0.10
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.00050
	Silicon (Si)-Dissolved (mg/L)	0.383	0.163	0.606	0.243	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.00010	<0.000010	<0.00010	<0.000010	<0.00010
	Sodium (Na)-Dissolved (mg/L)	0.554	0.481	0.565	0.523	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.0124	0.461	0.565	0.523	<0.000
	Sulfur (S)-Dissolved (mg/L)	0.0124	0.00917	1.11	<0.50	<0.00020

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

L1679751-1 L1679751-2 L1679751-3 L1679751-4 Sample ID L1679751-5 Surface Water Surface Water Surface Water Description Surface Water Surface Water 18-SEP-15 18-SEP-15 18-SEP-15 18-SEP-15 19-SEP-15 Sampled Date Sampled Time WTN-05-S WTN-06-S WTS-05-S WTS-06-S NEM-05-S Client ID Grouping **Analyte WATER Dissolved Metals** Thallium (TI)-Dissolved (mg/L) < 0.000010 <0.000010 < 0.000010 < 0.000010 < 0.000010 Tin (Sn)-Dissolved (mg/L) < 0.00010 < 0.00010 < 0.00010 < 0.00010 <0.00010 Titanium (Ti)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030 < 0.00030 Uranium (U)-Dissolved (mg/L) 0.000028 0.000028 0.000028 0.000029 < 0.000010 Vanadium (V)-Dissolved (mg/L) < 0.00050 < 0.00050 <0.00050 < 0.00050 <0.00050 Zinc (Zn)-Dissolved (mg/L) < 0.0010 < 0.0010 <0.0010 <0.0010 0.0011 Zirconium (Zr)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030 < 0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-6 Surface Water 19-SEP-15 NEM-06-S	L1679751-7 Surface Water 19-SEP-15 MAM-05-S	L1679751-8 Surface Water 19-SEP-15 MAM-06-S	L1679751-9 Surface Water 20-SEP-15 C2-SEP	L1679751-10 Surface Water 20-SEP-15 C14-SEP
Grouping	Analyte					
WATER						
Dissolved Metals	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000017	0.000017	0.000030	0.000026
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

L1679751-12 L1679751-13 Sample ID L1679751-11 L1679751-14 L1679751-15 Surface Water Description Surface Water Surface Water Surface Water Surface Water 20-SEP-15 20-SEP-15 20-SEP-15 20-SEP-15 19-SEP-15 Sampled Date Sampled Time C17-SEP C20-SEP C41-SEP AMARUQ SEP AMARUQ SEP EB-Client ID DUP-1 Grouping **Analyte WATER Dissolved Metals** Thallium (TI)-Dissolved (mg/L) < 0.000010 <0.000010 < 0.000010 < 0.000010 < 0.000010 Tin (Sn)-Dissolved (mg/L) < 0.00010 < 0.00010 < 0.00010 < 0.00010 <0.00010 Titanium (Ti)-Dissolved (mg/L) < 0.00030 0.00034 < 0.00030 < 0.00030 < 0.00030 Uranium (U)-Dissolved (mg/L) 0.000035 0.000021 0.000025 0.000027 < 0.000010 Vanadium (V)-Dissolved (mg/L) < 0.00050 < 0.00050 <0.00050 < 0.00050 < 0.00050 Zinc (Zn)-Dissolved (mg/L) < 0.0010 < 0.0010 <0.0010 0.0060 <0.0010 Zirconium (Zr)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00030 < 0.00030

^{*} Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Calcium (Ca)-Total	В	L1679751-1, -2
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1679751-1, -2, -3, -4
Matrix Spike	Phosphorus (P)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, 7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1679751-14, -15
Matrix Spike	Barium (Ba)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -3, -4, -5, -6, -7, -8, 9
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -3, -4, -5, -6, -7, -8, 9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -3, -4, -5, -6, -7, -8, 9

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Qualifier	Description
В	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Total Be (Low) in Water by CRC ICPMS **BE-T-L-CCMS-VA** Water EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Reference Information

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Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are

determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA

APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

Total organic carbon by combustion

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

HARDNESS-CALC-VA Water Hardness APHA 2340E

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

S-DIS-ICP-VA Water Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

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This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA

Water

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

TKN-F-VA

Water

TKN in Water by Fluorescence

APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code

Laboratory Location

Chain of Custody Numbers:

2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#			
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Report To		Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)											
Company:	Azimuth Consulting Group	☑ Standard ☐ Other			Regular (Standard Turnaround Times - Business Days)												
Contact:	Eric Franz	☑ PDF	☑ PDF ☑ Excel ☐ Digital ☐ Fax				O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT										
Address:	218-2902 West Broadway	Email 1:	Email 1: efranz@azimuthgroup.ca				O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT										
	Vancouver, BC V6K2G8	Email 2:					Same Day or Weekend Emergency - Contact ALS to Confirm TAT										
Phone:	604-730-1220 Fax:	Email 3:	Email 3: ryan.vanengen@agnicoeagle.com				Analysis Request										
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Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

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	Page	1 of	2

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MEMORANDUM

TO Azimuth Consulting: Gary Mann and Maggie McConnell

DATE 10 December 2015

CC Dionne Filiatrault, Jen Range

FROM Colleen Prather

PROJECT No. Doc 030-1524321.1010.1011

AMARUQ STREAM WATER QUALITY PROGRAM

Methods:

Sample summary

- Field measurements were recorded at 16 tributaries during the August sampling program (Table 1).
- One set of water quality grab samples were collected at 11 tributaries during the August sampling program (Table 1); two quality control samples (travel blank and a duplicate from A8-A7) were also collected.
- One set of water quality grab samples were collected at 6 tributaries during the September sampling program; one quality control sample (duplicate from A1-DS1) was also collected.

Field measurements

- In situ physico-chemical measurements of specific conductivity, dissolved oxygen (concentration and percent saturation), pH, and water temperature were collected using a submersible YSI Pro Plus multisensor probe system (Table 2).
- Measurements were taken below the water surface in an area of flow.
- Additional field notes are provided in Table 3.
- Laboratory water quality samples
 - Water samples were collected at a depth of 0.3 m (30 cm), unless water depth was less than 0.3 m.
 - If water depth was less than 0.3 m, water samples were collected at 0.1 m.
 - The actual sampling depth was recorded on the field data sheet.
 - Sample bottles were filled directly in the field.
 - Samples were processed (i.e., filtered and/or preserved) according to the instructions provided by ALS Environmental (ALS).
 - Samples requiring filtration were filtered through a 0.45 micron (µm) Millipore filter in a Nalgene filter tower.
 - Samples were submitted to ALS as soon as possible after sample collection for analysis of a suite of parameters including:

