



FIRST NATION HEALTH AUTHORITY

ATTN: [REDACTED]

[REDACTED]
Vancouver BC V6E 4S5

Date Received: 20-AUG-14

Report Date: 02-SEP-14 14:26 (MT)

Version: DRAFT

Client Phone: [REDACTED]

Certificate of Analysis

Lab Work Order #: L1505129
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: KA001
Legal Site Desc:

DRAFT

[REDACTED]
Senior Account Manager

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ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1505129-1 Salmon 19-AUG-14 12:30 SOCKEYE FROM KANAKA BAR- D4, FRASER RIVER	L1505129-2 Salmon 19-AUG-14 12:30 FROZEN SOCKEYE FROM KANAKA BAR- 04, FRASER RIVER	L1505129-3 Salmon 19-AUG-14 12:30 FROZEN SOCKEYE FROM FRASER RIVER NEAR CONFLUENCE WITH NAHATL	L1505129-4 SOCKEYE FROM KANAKA BAR- D4, FRASER RIVER GONAD	L1505129-5 SOCKEYE FROM KANAKA BAR- D4, FRASER RIVER LIVER
Grouping	Analyte						
TISSUE							
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.96	<0.40	1.40	<0.40	<0.40	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg wwt)	0.286	0.172	0.265	0.218	0.379	
	Barium (Ba)-Total (mg/kg wwt)	0.032	<0.010	0.033	0.010	<0.010	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0030	0.0024	0.0078	0.0104	0.513	
	Calcium (Ca)-Total (mg/kg wwt)	647	245	498	45.1	82.5	
	Cesium (Cs)-Total (mg/kg wwt)	0.0249	0.0228	0.0203	0.0133	0.0105	
	Chromium (Cr)-Total (mg/kg wwt)	0.049	0.012	0.050	0.197	0.040	
	Cobalt (Co)-Total (mg/kg wwt)	0.0051	<0.0040	0.0057	0.0225	0.0157	
	Copper (Cu)-Total (mg/kg wwt)	0.505	1.21	0.730	0.585	287	
	Iron (Fe)-Total (mg/kg wwt)	4.49	2.93	6.71	3.96	81.3	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg wwt)	317	314	286	196	179	
	Manganese (Mn)-Total (mg/kg wwt)	0.137	0.085	0.153	0.146	1.32	
	Mercury (Hg)-Total (mg/kg wwt)	0.0650	0.0245	0.0528	0.0189	0.0954	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0074	<0.0040	0.0086	0.0271	0.184	
	Nickel (Ni)-Total (mg/kg wwt)	0.052	<0.040	<0.040	0.122	<0.040	
	Phosphorus (P)-Total (mg/kg wwt)	3130	2710	2830	8940	3290	
	Potassium (K)-Total (mg/kg wwt)	4180	4090	4190	3730	4000	
	Rubidium (Rb)-Total (mg/kg wwt)	1.05	0.972	0.995	1.20	1.15	
	Selenium (Se)-Total (mg/kg wwt)	0.309	0.366	0.273	0.260	20.4	
	Sodium (Na)-Total (mg/kg wwt)	427	419	491	1040	795	
	Strontium (Sr)-Total (mg/kg wwt)	2.86	1.02	2.28	0.135	0.159	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg wwt)	0.00088	0.00050	0.00045	0.00152	0.00536	
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020	
	Uranium (U)-Total (mg/kg wwt)	0.00054	<0.00040	<0.00040	<0.00040	0.00046	
	Vanadium (V)-Total (mg/kg wwt)	0.027	<0.020	<0.020	0.098	0.332	
	Zinc (Zn)-Total (mg/kg wwt)	4.89	4.18	5.27	11.5	37.9	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1505129-6	L1505129-7		
		Description				
		Sampled Date				
		Sampled Time				
		Client ID				
Grouping	Analyte					
TISSUE						
Metals	Aluminum (Al)-Total (mg/kg wwt)		<0.40	<0.40		
	Antimony (Sb)-Total (mg/kg wwt)		0.0021	<0.0020		
	Arsenic (As)-Total (mg/kg wwt)		0.159	0.159		
	Barium (Ba)-Total (mg/kg wwt)		0.020	0.021		
	Beryllium (Be)-Total (mg/kg wwt)		<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg wwt)		<0.0020	<0.0020		
	Boron (B)-Total (mg/kg wwt)		<0.20	<0.20		
	Cadmium (Cd)-Total (mg/kg wwt)		0.0092	0.0085		
	Calcium (Ca)-Total (mg/kg wwt)		441	440		
	Cesium (Cs)-Total (mg/kg wwt)		0.0150	0.0146		
	Chromium (Cr)-Total (mg/kg wwt)		<0.010	<0.010		
	Cobalt (Co)-Total (mg/kg wwt)		0.0296	0.0305		
	Copper (Cu)-Total (mg/kg wwt)		79.1	78.9		
	Iron (Fe)-Total (mg/kg wwt)		28.2	29.6		
	Lead (Pb)-Total (mg/kg wwt)		<0.0040	<0.0040		
	Lithium (Li)-Total (mg/kg wwt)		<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg wwt)		565	568		
	Manganese (Mn)-Total (mg/kg wwt)		1.27	1.31		
	Mercury (Hg)-Total (mg/kg wwt)		0.0044	0.0047		
	Molybdenum (Mo)-Total (mg/kg wwt)		0.0084	0.0089		
	Nickel (Ni)-Total (mg/kg wwt)		<0.040	<0.040		
	Phosphorus (P)-Total (mg/kg wwt)		4110	4200		
	Potassium (K)-Total (mg/kg wwt)		2420	2450		
	Rubidium (Rb)-Total (mg/kg wwt)		0.609	0.607		
	Selenium (Se)-Total (mg/kg wwt)		4.47	4.55		
	Sodium (Na)-Total (mg/kg wwt)		522	533		
	Strontium (Sr)-Total (mg/kg wwt)		3.15	3.27		
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg wwt)		0.00136	0.00133		
	Tin (Sn)-Total (mg/kg wwt)		<0.020	<0.020		
	Uranium (U)-Total (mg/kg wwt)		0.00090	0.00090		
	Vanadium (V)-Total (mg/kg wwt)		<0.020	<0.020		
	Zinc (Zn)-Total (mg/kg wwt)		42.0	41.9		
	Zirconium (Zr)-Total (mg/kg wwt)		<0.040	<0.040		

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Zirconium (Zr)-Total	MB-LOR	L1505129-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7
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This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A
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This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

** 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:

KA001

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 ww - milligrams per kilogram based on wet weight of sample.

mg/kg lw - 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.