



EDI ENVIRONMENTAL DYNAMICS INC.
ATTN: Lyndsay Doetzel
2195 - 2nd Ave
Whitehorse YT Y1A 3T8

Date Received: 18-NOV-16
Report Date: 25-NOV-16 13:16 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1859859
Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 16Y0089
C of C Numbers:
Legal Site Desc:

Comments: LC50 Rainbow Trout analysis was performed by Nautilus Environmental located in Burnaby, BC. Refer to their report, appended, for detail.

Can Dang
Senior 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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1859859-1			
		Water			
		16-NOV-16			
		08:30			
		WQ-SEEP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)	1540			
	Hardness (as CaCO3) (mg/L)	874			
	pH (pH)	7.21			
	Total Suspended Solids (mg/L)	31.6			
	TDS (Calculated) (mg/L)	1240			
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	275			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	275			
	Ammonia, Total (as N) (mg/L)	6.72			
	Bromide (Br) (mg/L)	<0.50 ^{DLDS}			
	Chloride (Cl) (mg/L)	<5.0 ^{DLDS}			
	Fluoride (F) (mg/L)	<0.20 ^{DLDS}			
	Nitrate (as N) (mg/L)	0.980			
	Nitrite (as N) (mg/L)	0.025			
	Sulfate (SO4) (mg/L)	675			
	Anion Sum (meq/L)	19.6			
	Cation Sum (meq/L)	21.3			
	Cation - Anion Balance (%)	4.0			
	Cyanides	Cyanide, Weak Acid Diss (mg/L)	0.0080		
Cyanide, Total (mg/L)		0.0305			
Cyanate (mg/L)		0.33			
Thiocyanate (SCN) (mg/L)		6.43			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0176			
	Antimony (Sb)-Total (mg/L)	0.00049			
	Arsenic (As)-Total (mg/L)	0.0551			
	Barium (Ba)-Total (mg/L)	0.0722			
	Beryllium (Be)-Total (mg/L)	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.059			
	Cadmium (Cd)-Total (mg/L)	0.000385			
	Calcium (Ca)-Total (mg/L)	260			
	Chromium (Cr)-Total (mg/L)	0.00066			
	Cobalt (Co)-Total (mg/L)	0.00968			
	Copper (Cu)-Total (mg/L)	0.00293			
	Iron (Fe)-Total (mg/L)	16.3			
	Lead (Pb)-Total (mg/L)	<0.000050			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L1859859-1	Water	16-NOV-16	08:30	WQ-SEEP
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	<0.0010				
	Magnesium (Mg)-Total (mg/L)	56.3				
	Manganese (Mn)-Total (mg/L)	7.27				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	0.000992				
	Nickel (Ni)-Total (mg/L)	0.00357				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	7.16				
	Selenium (Se)-Total (mg/L)	0.000348				
	Silicon (Si)-Total (mg/L)	8.45				
	Silver (Ag)-Total (mg/L)	0.000020				
	Sodium (Na)-Total (mg/L)	45.1				
	Strontium (Sr)-Total (mg/L)	0.759				
	Sulfur (S)-Total (mg/L)	255				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	0.00124				
	Uranium (U)-Total (mg/L)	0.00184				
	Vanadium (V)-Total (mg/L)	0.00234				
	Zinc (Zn)-Total (mg/L)	0.0234				
	Zirconium (Zr)-Total (mg/L)	0.00073				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD				
	Dissolved Metals Filtration Location	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	0.0120				
	Antimony (Sb)-Dissolved (mg/L)	0.00049				
	Arsenic (As)-Dissolved (mg/L)	0.0486				
	Barium (Ba)-Dissolved (mg/L)	0.0734				
	Beryllium (Be)-Dissolved (mg/L)	<0.000020				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050				
	Boron (B)-Dissolved (mg/L)	0.056				
	Cadmium (Cd)-Dissolved (mg/L)	0.000346				
	Calcium (Ca)-Dissolved (mg/L)	257				
	Chromium (Cr)-Dissolved (mg/L)	0.00058				
	Cobalt (Co)-Dissolved (mg/L)	0.00966				
	Copper (Cu)-Dissolved (mg/L)	0.00195				
	Iron (Fe)-Dissolved (mg/L)	15.4				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1859859-1 Water 16-NOV-16 08:30 WQ-SEEP				
Grouping	Analyte					
WATER						
Dissolved Metals	Lithium (Li)-Dissolved (mg/L)	<0.0010				
	Magnesium (Mg)-Dissolved (mg/L)	56.6				
	Manganese (Mn)-Dissolved (mg/L)	7.48				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000938				
	Nickel (Ni)-Dissolved (mg/L)	0.00358				
	Phosphorus (P)-Dissolved (mg/L)	<0.050				
	Potassium (K)-Dissolved (mg/L)	7.48				
	Selenium (Se)-Dissolved (mg/L)	0.000399				
	Silicon (Si)-Dissolved (mg/L)	8.27				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	46.4				
	Strontium (Sr)-Dissolved (mg/L)	0.753				
	Sulfur (S)-Dissolved (mg/L)	247				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	0.00093				
	Uranium (U)-Dissolved (mg/L)	0.00168				
	Vanadium (V)-Dissolved (mg/L)	0.00203				
	Zinc (Zn)-Dissolved (mg/L)	0.0236				
	Zirconium (Zr)-Dissolved (mg/L)	0.00071				

* 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)
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1859859-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1859859-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1859859-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1859859-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L1859859-1
Matrix Spike	Cadmium (Cd)-Dissolved	MS-B	L1859859-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1859859-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1859859-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1859859-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1859859-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1859859-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1859859-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L1859859-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1859859-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1859859-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1859859-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1859859-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1859859-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1859859-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1859859-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1859859-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1859859-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1859859-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1859859-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1859859-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1859859-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1859859-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1859859-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1859859-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1859859-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1859859-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1859859-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1859859-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1859859-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1859859-1
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1859859-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
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.			
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.			

Reference Information

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.

CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-CNO-WT Water Cyanate APHA 4500-CN-L
 This analysis is carried out using procedures adapted from APHA method 4500-CN "Cyanide". Cyanate is determined by the Cyanate hydrolysis method using an ammonia selective electrode

CN-SCN-VA Water Thiocyanate by Colour APHA 4500-CN CYANIDE
 This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate colourimetric method.

CN-T-CFA-VA Water 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.

CN-WAD-CFA-VA Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE
 This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

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.

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.

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

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-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.

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

Reference Information

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.			
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.			
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.			
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-CALC-VA	Water	TDS (Calculated)	APHA 1030E (20TH EDITION)
This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses". The Total Dissolved Solids result is calculated from measured concentrations of anions and cations in the sample.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
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. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			

** 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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.



Acute Toxicity Test Results

Sample collected November 16, 2016

Final Report

November 25, 2016

Submitted to: **ALS Environmental**
Burnaby, BC

SAMPLE INFORMATION

Sample ID	Dates		Rainbow trout test initiation	Receipt temperature
	Collected	Received		
L1859859-1 WQ-SEEP	15-Nov-16 at N/A	18-Nov-16 at 1445h	19-Nov-16 at 1130h	2.7°C

N/A = Not Available.

TESTS

- Rainbow trout 96-h LC50 test

RESULTS
Toxicity test results

Sample ID	96-h LC50 (% v/v)
L1859859-1 WQ-SEEP	> 100

QA/QC

QA/QC summary	Rainbow trout
Reference toxicant LC50 (95% CI)	40.6 (34.1 – 48.4) µg/L Zn ¹
Reference toxicant historical mean (2 SD range)	60.8 (22.0 – 167.6) µg/L Zn
Reference toxicant CV	66%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

¹ Test date: November 14, 2016



Report By:
Yvonne Lam, B.Sc.
Laboratory Biologist



Reviewed By:
Edmund Canaria, R.P.Bio
Senior Analyst

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) LC50 test.

Test species	<i>Oncorhynchus mykiss</i>
Organism source	Hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	20-L glass aquarium
Test volume	10 to 20 L (depending on size of fish)
Test solution depth	≥15 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tapwater
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	CETIS Version 1.8.7
Test endpoints	Survival (96-hour LC50)
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Zinc (added as ZnCl ₂)

APPENDIX B – Toxicity test data

Rainbow Trout Summary Sheet

Client: ALS

Start Date/Time: Nov 19 11:30h

Work Order No.: 161267

Test Species: Oncorhynchus mykiss

Sample Information:

Sample ID: L1859859-1 WQ-SEEP
Sample Date: Nov 16 / 16
Date Received: Nov 18 / 16
Sample Volume: 2 X 20L
Other: /

Test Validity Criteria:

≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L CaCO₃): 8
Alkalinity (mg/L CaCO₃): 4

Test Organism Information:

Batch No.: 110116
Source: Vancouver Island Trout Hatchery
No. Fish/Volume (L): 10/10L
Loading Density (g/L): 0.30
Mean Length ± SD (mm): 29 ± 1 Range: 27-31
Mean Weight ± SD (g): 0.30 ± 0.05 Range: 0.22-0.39

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZn54
Stock Solution ID: 16Zn02
Date Initiated: Nov 14 16
96-h LC50 (95% CL): 40.6 (34.1-48.4) mg/L

Reference Toxicant Mean and Historical Range: 60.8 (22.0-167.6) mg/L Zn
Reference Toxicant CV (%): 66.1%

Test Results: The 96h LC50 is estimated to be >100% (v/v).

Reviewed by: [Signature]

Date reviewed: Nov 24, 2016

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Number Fish/Volume: 0 / 10 L
 Sample I.D. L1859859 - 1-WQ-SEEP 7-d % Mortality: 0
 W.O. # 161267 Total Pre-aeration Time (mins): 30
 RBT Batch #: 110116 Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Yes
 Date Collected/Time: Nov 14/16 R N/A
 Date Setup/Time: Nov 19/16 @ 11:30 h
 Sample Setup By: AS

Thermometer: Temp-2 D.O. meter: DO-2
 Cond./Salinity: C-2 pH meter: pH-1

Parameters	Uncultured Sample WQ	
	Initial WQ	Adjustment
Temp °C	14.0	14.2
D.O. (mg/L)	9.8, 6.8	7.5
pH	6.6	6.2
Cond. (µS/cm)	1588	1591
Salinity (ppt)	0.8	0.8

Concentration	# Survivors								Temperature (°C)								Dissolved Oxygen (mg/L)								pH								Conductivity (µS/cm)	
	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96					
(% V/V)																																		
Control				10	10	10	10	14.0	14.0	15.0	15.0	15.0	9.8	9.8	10.0	9.8	9.8	6.9	7.1	7.0	7.0	7.0	26					26	43					
6.25				10	10	10	10	14.0	14.0	15.0	15.0	15.0	9.9	9.9	9.9	9.9	9.9	6.9	7.4	7.5	7.5	7.3	147					147	149					
25				10	10	10	10	14.0	14.0	15.0	15.0	15.0	9.9	9.9	9.9	9.9	9.9	6.8	7.5	7.6	7.6	7.5	300					300	308					
50				10	10	10	10	14.0	14.0	15.0	15.0	15.0	9.8	9.8	9.8	9.8	9.9	6.8	7.5	7.8	7.7	7.7	449					449	450					
100				8	8	8	7	14.0	14.0	15.0	15.0	15.0	8.9	8.8	8.9	8.9	8.9	6.2	5.1	8.1	8.0	8.1	872					872	882					
Initials				A	EL	EL	EL																											

Sample Description/Comments: orange - opaque - odorous - no particulates
 Fish Description at 96 h: All surviving fish appear normal Number of Stressed Fish at 96 h: 7
 Other Observations:
 Reviewed by: [Signature] Date Reviewed: Nov. 24, 2016

APPENDIX C – Chain-of-custody form



L1859859

VANCOUVER

Rush

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL

8664 COMMERCE COURT
BURNABY, BC V5A 4N7

NOTES: Please reference on final report and invoice: PO# L1859859
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 2 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
L1859859-1 WQ-SEEP	Trout Bloassay LC50 (96 Hour) - Nautilus (TROUT-LC50-96HR-NL 1)	11/16/2016 11/25/2016	P

Subcontract Info Contact: Walter Lin (604) 253-4188
 Analysis and reporting info contact: Shane Ramos
 8081 LOUGHEED HWY
 SUITE 100
 BURNABY, BC V5A 1W9
 Phone: (604) 253-4188 Email: Shane.Ramos@ALSGlobal.com

Please email confirmation of receipt to: **Shane.Ramos@ALSGlobal.com**

Shipped By: _____ Date Shipped: _____
 Received By: Nautilus Date Received: _____
 Verified By: N.Y. Nan Yamamoto Date Verified: Nov 18/16 @ 14:45
 Temperature: 2.7°C
 Sample Integrity Issues: 2x20L

wo # 161267 - Rbt LC50

END OF REPORT
