



ENVIRONMENTAL DYNAMICS INC.
ATTN: Meghan Marjanovic
2195 - 2nd Ave
Whitehorse YT Y1A 3T8

Date Received: 15-JUL-15
Report Date: 27-JUL-15 14:05 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1642758
Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 15-Y-0146
C of C Numbers: 1
Legal Site Desc:

Comments: Please note ALS identified sample L1642758-1 was sublet to Nautilus Environmental for 96 hour LC50 Rainbow Trout analysis.

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					
Grouping	Analyte				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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** 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
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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.

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
ATTN: Can Dang
Suite 100-8081 Lougheed Hwy.
Burnaby, BC
V5A 1W9

Report Date: July 24, 2015
Work Order: 15535

Data Report

Species: Rainbow trout (*Oncorhynchus mykiss*)
Protocol: EPS 1/RM/13 (Second Ed. with 2007 amendments)

Table 1. Results for the 96-h rainbow trout acute toxicity test.

Sample ID	Collection Date and Time	96-h LC50
L1642758-1 WQ-SEEP	July 15, 2015 @ N/A	>100

The test met performance criteria and there were no deviations from the test method. The results presented here relate only to the sample tested.

Josh Baker, M.Sc.
Environmental Chemist

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

Rainbow Trout Summary Sheet

Client: ACS

Start Date/Time: July 17/15 @ 0900h

Work Order No.: ISS35

Test Species: Oncorhynchus mykiss

Sample Information:

Sample ID: L1642758-1 WQR-SCEP

Sample Date: July 15/15

Date Received: July 17th 6/15

Sample Volume: 2x20L

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): 10

Alkalinity (mg/L CaCO₃): 8

Test Organism Information:

Batch No.: 061515

Source: Aqua Farms

No. Fish/Volume (L): 10/12L

Loading Density (g/L): 0.31

Mean Length ± SD (mm): 34 ± 2

Mean Weight ± SD (g): 0.37 ± 0.07

Range: ^{KL} ~~32-36~~ 31-39
Range: ~~0.30 - 0.44~~ ^{KL} ~~0.28 - 0.40~~ ^{KL} 0.28 - 0.51

^{Zn} ~~NaNO₂~~ Reference Toxicant Results:

Reference Toxicant ID: RTZn14

Stock Solution ID: ISZn04

Date Initiated: July 14/15

96-h LC50 (95% CL): 100.3 (71.6 - 149.9) µg/L Zn

Reference Toxicant Mean and Historical Range: 66.1 (42.9 - 101.7) µg/L Zn

Reference Toxicant CV (%): 24.1

Test Results: The 96-h LC50 is >100%

Reviewed by: 

Date reviewed: July 23/15

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS
 Sample I.D. L164 2758-4WQ - SEEP
 W.O. # 15535
 RBT Batch #: 06155
 Date Collected/Time: July 15/15 @ N/A
 Date Setup/Time: July 17/15 @ 0900h
 Sample Setup By: JAB/KL

Number Fish/Volume: 10/12 L
 7-d % Mortality: 0
 Total Pre-aeration Time (mins): 30
 Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

D.O. meter: DO-1/2
 pH meter: pH-1
 Cond. Meter: C-1/2

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	14.5	/	14.5
pH	6.9	/	7.2
D.O. (mg/L)	9.3	/	10.1
Cond. (µS/cm)	1634	/	1631

Concentration (% v/v)	# 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	96
Control				10	10	10	10	14.0	15.0	15.0	15.0	15.0	9.9	9.9	9.7	9.6	9.9	7.0	6.9	7.0	6.8	7.0	34	37
6-25				10	10	10	10	14.0	15.0	15.0	15.0	15.0	10.2	10.0	9.6	9.7	9.8	7.2	7.1	7.1	7.0	7.1	198	203
12.5				10	10	10	10	14.0	15.0	15.0	15.0	14.5	10.3	10.1	9.9	9.7	9.6	7.2	7.2	7.3	7.3	7.3	292	295
25				10	10	10	10	14.0	15.0	15.0	15.0	14.5	10.3	10.0	10.0	9.6	9.8	7.1	7.4	7.5	7.8	7.6	558	561
50				10	10	10	10	14.0	15.0	15.0	15.0	15.0	10.3	10.0	10.0	9.7	9.9	7.4	7.5	7.7	8.0	7.8	930	936
100				10	10	10	10	14.5	15.0	15.0	15.0	15.0	10.1	10.0	9.8	9.6	9.8	7.2	7.8	7.8	8.3	8.3	1631	1618
Initials																								

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

Sample Description/Comments: Orange, cloudy/turbid

Fish Description at 96 h Fish look okay Number of Stressed Fish at 96 h 0

Other Observations: _____

Reviewed by: [Signature]

Date Reviewed: July 23/15



Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL

8664 COMMERCE COURT
BURNABY, BC V5A 4N7

NOTES: Please reference on final report and invoice: PO# L1642758
ALS requires QC data to be provided with your final results.
Rainbow Trout LC50 - WO # 15535

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

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L1642758-1 WQ-SEEP	Special Request- Nautilus Environmental (SPECIAL REQUEST-NL 14)	7/15/2015	
		7/22/2015	

Subcontract Info Contact: Dorota Jamro (604) 253-4188
Analysis and reporting info contact: Can Dang
8081 LOUGHEED HWY
SUITE 100
BURNABY, BC V5A 1W9
Phone: (604) 253-4188 Email: can.dang@alsglobal.com

Please email confirmation of receipt to: can.dang@alsglobal.com

Shipped By: _____ Date Shipped: _____
Received By: Nautilus Date Received: July 16/15 @ 10:50
Verified By: NY - Nari Yamamoto Date Verified: _____
Temperature: 6.4°C - 2x20L

Sample Integrity Issues: _____



L1642758-COFC

Report To			Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																																															
Company: EDI			Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)																																															
Contact: Meghan Marjanovic			Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT																																															
Address: 2195 - 2nd Avenue Whitehorse, YT Y1A 3T8			<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT																																															
Phone: 867-393-4882			Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge																																															
			Email 1 or Fax: mmarjanovic@edynamics.com			Specify Date Required for E2, E or P:																																															
			Email 2: erik.pit@gov.yk.ca																																																		
			Email 3: Emilie.Hamm@gov.yk.ca																																																		
Invoice To			Invoice Distribution			Analysis Request																																															
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																															
Copy of Invoice with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Email 1 or Fax: sjenner@edynamics.com			<table border="1" style="width:100%; height: 300px;"> <tr><td colspan="12">Rainbow Trout LC50</td></tr> <tr><td colspan="12" style="text-align: center;">Number of Containers</td></tr> <tr><td colspan="12" style="text-align: center;">2</td></tr> </table>												Rainbow Trout LC50												Number of Containers												2											
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Company: EDI			Email 2: mmarjanovic@edynamics.com																																																		
Contact: S Jenner																																																					
Project Information			Oil and Gas Required Fields (client use)																																																		
ALS Quote #: Q49310			Approver ID:			Cost Center:																																															
Job #: MOUNT NANSEN 15-Y-0146			GL Account:			Routing Code:																																															
PO / AFE:			Activity Code:																																																		
LSD:			Location:																																																		
ALS Lab Work Order # (lab use only)			ALS Contact: Sean Sluggett			Sampler: LD/DH																																															
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	R						2																																									
	0146-1605 - WQ-SEEP		15 JUN 2015	08:00	Water																																																
Drinking Water (DW) Samples¹ (client use)			Special Instructions / Specify Criteria to add on report (client Use)			SAMPLE CONDITION AS RECEIVED (lab use only)																																															
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input type="checkbox"/> No						Frozen: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> SIF Observations: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																															
Are samples for human drinking water use? <input type="checkbox"/> Yes <input type="checkbox"/> No						Ice packs: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Custody seal intact: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																															
						Cooling initiated: <input checked="" type="checkbox"/>																																															
						INITIAL COOLER TEMPERATURES °C																																															
						FINAL COOLER TEMPERATURES °C																																															
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																																															
Released by:	Date: 15 Jun 2015	Time: 12:17	Received by:	Date: 15 Jun 2015	Time: 12:17	Received by:	Date:	Time:																																													