

ENVIRONMENTAL DYNAMICS INC. ATTN: Meghan Marjanovic 2195 - 2nd Ave Whitehorse YT Y1A 3T8 Date Received: 21-APR-15 Report Date: 13-MAY-15 16:22 (MT) Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #:

Project P.O. #: Job Reference: C of C Numbers: Legal Site Desc: L1601926 NOT SUBMITTED MOUNT NANSEN 15-Y-0148

1

Comments: The bioassay analysis was subcontracted to Nautilus Environmental Ltd 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



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ALS ENVIRONMENTAL ANALYTICAL REPORT Version: FINAL Sample ID Description Sampled Date Sampled Time **Client ID** Grouping Analyte

L1601926 CONTD.... PAGE 2 of 3 13-MAY-15 16:22 (MT)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
** ALS test methods may inc	orporate mod	lifications from specified refe	rence 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:

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 dry 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: May 13, 2015 Work Order: 15343

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
L1601926-1	April 20, 2015 @ N/A	>100
0146-150420-003	r , , , , , ,	

Due to an insufficient number of viable fish, the 96-h rainbow trout toxicity testing was subcontracted to Integrated Resource Consultants. The test met performance criteria and there were no deviations from the test method. The results presented here relate only to the sample tested.

Yvonne Lam, B.Sc. Laboratory Biologist

Reviewed By: Julianna Kalocai, M.Sc., R.P.Bio QA Officer



Suite 160, 14480 River Road Richmond, BC, Canada V6V 1L4 Tel. 604-278-7714 Fax 604-278-7741 info@ircintegratedresource.com

FILE:NAUTILUS/1504135.RTL

DATE:	05 May 2015
DALL.	05 May 2015

REPORT TO: Mr. Josh Baker Nautilus Environmental 8664 Commerce Court Burnaby, B.C. V5A 4N7

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

1504135
L1601926-1 PO # 15343
N/A
20 April 2015
24 April 2015; 1425 hrs.
Grab
3 x 20 L plastic containers
Opaque, orange liquid
25 April 2015; 0915 hrs.
25 April 2015; 0915 hrs.
vas greater than 100% (v/v sample).

0% trout mortality in 100% concentration.

The LC_{50} is defined as the median lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated following the methods described in "Guidance Document on Statistical Methods for Environmental Toxicity Tests" EPS 1/RM/46 – March 2005 (with June 2007 amendments), using the software CETIS, ver 1.8.7E (2014).

The method used for this test was as per the IRC laboratory "Standard Operating Procedure for Rainbow Trout Holding and Testing" RTver5. This procedure follows the "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13, Second Edition – December 2000 (with May 2007 amendments). Test volume was 16 litres with 10 fish exposed per test vessel. Aeration was by forced air through airstones at a rate of approximately 6.5 ± 1 ml/L/min. The sample was not pH adjusted or filtered prior to testing

The initial dissolved oxygen level was 8.1 mg/L at 15.0° C, the conductivity was $1282 \ \mu$ S/cm and the initial pH was 6.7. After pre-aerating the sample for 30 minutes, the dissolved oxygen level was 9.0 mg/L. As the dissolved oxygen level was greater than 70% saturation and less than 100% saturation the test was initiated at this time. The test set-up technician was DB.

Please call should you have any questions.

IRC Integrated Resource Consultants Inc.

Darcie Blackall Laboratory Biologist b003.1 enclosure

FILE:NAUTILUS/1504135.RTL

RAW DATA:

TEST	HOURS													
CONCENTRATION		0	1.0	2.0	4.0	24	48	72	96					
	Percent Survival	100%	100%	100%	100%	100%	100%	100%	100%					
	Dissolved Oxygen (mg/L)	9.0	10070	100/0		9.7	10.1	9.5	9.5					
	Temperature (°C)	15.0				15.5	15.5	15.5	15.5					
100%	pH	6.8				7.9	8.0	8.0	8.0					
10070	Conductivity (µS/cm)	1285						010	1319					
	Symptoms	1	2	2	2	2	2	2	2					
	Loading Density (g/L)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38					
	Percent Survival	100%	100%	100%	100%	100%	100%	100%	100%					
	Dissolved Oxygen (mg/L)	9.6			100	9.5	10.0	9.1	9.2					
	Temperature (°C)	15.5				15.5	15.5	15.5	15.5					
50%	pH	6.8				7.5	7.7	7.6	7.6					
	Conductivity (µS/cm)	723							746					
	Symptoms	1	2	2	2	2	2	2	2					
	Loading Density (g/L)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38					
		1000/	1000/	1000/	1000/	1000/	1000/	100%	100%					
	Percent Survival	100%	100%	100%	100%	100%	100%	9.0	8.9					
	Dissolved Oxygen (mg/L)	9.8				9.5	10.0	9.0	15.5					
25%	Temperature (°C)	15.5 6.8				15.5 7.2	15.5 7.3							
25%	pH					1.2	7.5	7.2	7.3					
	Conductivity (µS/cm)	408	2	2	2	2	2	2	420					
	Symptoms	0.38	2 0.38	2 0.38	2 0.38	0.38	0.38	0.38	0.38					
	Loading Density (g/L)	0.58	0.38	0.38	0.58	0.38	0.38	0.58	0.56					
	Percent Survival	100%	100%	100%	100%	100%	100%	100%	100%					
	Dissolved Oxygen (mg/L)	10.0				9.5	10.0	9.1	8.9					
	Temperature (°C)	15.5			- W	15.5	15.5	15.5	15.5					
12.5%	pH	6.8				7.3	7.2	7.1	7.2					
	Conductivity (µS/cm)	240							249					
	Symptoms	1	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
	Loading Density (g/L)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38					
		1000/	1000/	1000/	1000/	1000/	1000/	1000/	1000/					
	Percent Survival	100%	100%	100%	100%	100%	100%	100%	100%					
	Dissolved Oxygen (mg/L)	10.0	-			9.6	10.0	8.9	8.7					
	Temperature (°C)	15.5				15.5	15.5	15.5	15.5					
6.25%	pH	6.8				7.3	7.2	7.1	7.2					
	Conductivity (µS/cm)	140	1	-	1	4	1.0	1.0	147					
	Symptoms	1	1	1	1	1	1,2	1,2	1,2					
	Loading Density (g/L)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38					
	Percent Survival	100%	100%	100%	100%	100%	100%	100%	100%					
	Dissolved Oxygen (mg/L)	10.1	100/0	100/0	100/0	9.8	10.1	9.3	8.9					
	Temperature (°C)	15.5				15.5	15.5	15.5	15.5					
CONTROL	pH	6.9				7.5	7.3	7.3	7.3					
CONTROL	Conductivity (µS/cm)	40				1.5	1.5	1.5	42					
	Symptoms	1	1	1	1	1	1	1	1					
	Loading Density (g/L)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38					
		0.00	0.00	0.00	0.00	0.00								
	Technician	DB	DB	DB	DB	MH	RC	RC	RC					

KEY TO SYMPTOMS:

1 = no apparent effect 2 = fish showing signs of stress 3 = loss of equilibrium

FILE:NAUTILUS/1504135.RTL

TEST FISH STOCK INFORMATION:

Date received:	12 March 2	2015					
Source:	Aquafarms	3 JV					
Species:	Oncorhynchus mykiss (Rainbow Trout)						
Fork Length:	Mean:	41.6 mm ± 2.8 mm					
	Range:	36.0 mm – 45.0 mm					
Wet weight:	Mean:	0.62 g ± 0.15 g					
	Range:	0.38 g – 0.87 g					
Condition Factor (100xWt/length ³ cm):	0.85						

Acclimation History								
Acclimation temperature:	14.5 to 15.0 °CELSIUS							
Treatments:	None							
Water:	Dechlorinated tap water							
Feeding:	BioVita Starter #1 Crum							
Mortality:	0.08%							

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date (y/m/d)			LC50 (mg/L)	95% Confidence Interval
13.11.21	13.12.05	Phenol	9.02	7.42 to 10.65
13.12.12	13.12.30	**	14.10	12.06 to 16.42
13.12.23	14.01.14	**	10.66	9.60 to 11.82
14.01.20	14.02.04	66	11.07	9.34 to 12.45
14.02.05	14.02.19	cc .	8.94	7.96 to 10.04
14.02.25	14.03.11	ec.	14.10	11.86 to 16.57
14.03.11	14.03.25	**	11.07	9.84 to 12.45
14.04.01	14.04.10		10.16	8.41 to 12.08
14.04.04	14.04.18	**	10.15	8.87 to 11.61
14.04.28	14.05.06	**	8.94	7.96 to 10.04
14.05.13	14.05.25	**	10.20	9.45 to 11.02
14.05.29	14.06.12	**	9.96	8.19 to 11.89
14.06.12	14.07.09	cc.	9.02	7.42 to 10.65
14.06.24	14.07.18	**	9.58	9.14 to 10.05
14.07.16	14.08.06	**	12.00	10.56 to 13.64
14.07.30	14.08.14	**	10.20	9.45 to 11.02
14.08.14	14.09.09	cc.	11.57	9.40 to 13.98
14.09.01	14.09.05	ec-	10.59	9.54 to 11.74
14.09.24	14.10.08	66	11.52	10.16 to 13.07
14.10.10	14.10.24		10.22	9.45 to 11.05
14.10.22	14.11.12	**	10.66	8.74 to 12.55
14.11.30	14.12.19	**	9.80	8.00 to 12.00
14.12.21	15.01.19	**	9.80	8.00 to 12.00
15.01.25	15.02.10	**	12.50	11.02 to 14.17
15.02.01	15.02.17	<u>ec</u>	11.52	10.16 to 13.07
15.02.15	15.03.03	ee.	10.63	9.59 to 11.77
15.03.12	15.03.26		10.63	9.59 to 11.77
LAB GEOMETRIC ME	EAN ± 2 standard deviation	ns:		10.82 mg/L ± 3.76
Warning Limits:				7.05 mg/L to 14.58 mg/L

CONTROL/DILUTION WATER QUALITY: Hardness: 20 mg/L Total Residual Chlorine: 10 μg/L

6

Nautilus Environmental

í i **BRITISH COLUMBIA** 8664 Commerce Court Burnaby British Columbia Canada VSA 4N7 Phone 604.420.8773

Chain of Custody

					Final 604.357.136					Date	ə			_ Pag	e	of				
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Additional costs may be required for sample disposal or storage. Net 30 unless otherwise contracted.

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator



VANCOUVER

L1601926

Subcontract Request Form

Subcontract To:

NOTES: Please reference on final report ar		huimber Trout urs monitoring. (NY =	LCSO and LTSO
ALS requires QC data to be provid	led with your final result	ivo# 15	5343
Please see enclosed <u>1</u> sample(s) in	n <u>3</u> Container(s)		
SAMPLE NUMBER ANALYTICAL REQU	JIRED	DATE SAMPLED DUE DATE	Priority Flag
L1601926-1 0146-150420-003 Special Request- Na REQUEST-NL 14)	utilus Environmental (SPEC)	4/ 20/ 2015 AL 4/29/2015	e.
Analysis and reporting info contact: Can Da 8081 LG SUITE BURNA	DUGHEED HWY	Email:can.dang@alsglobal.	com
Please email confirmation of receipt to: Shipped By:	can.dang@alsg Date Shipped: <u>AMAM0</u> Bate Received:	APRIL 24/2 Apr 24/15 @ 11	:05
Verified By:	Date Verified: Temperature:	6.2 (2x20L) 8.4 (1×20L) blue jug.	

Subcontracted to IRC



Chain of Custody (COC) / Analytical **Request Form**

Canada Toll Free: 1 800 668 9878



COC Number: 14 -

Page (____

	www.alsglobal.com																		
Report To		Report Format /								, k	w (Rusi	h Turna	round Ti	ime (TAT	i) is not	t availab	le for all	tests)	
Company:	EDI	Select Report Format: PDF EXCEL EDD (DIGITAL)						Regular (Standard TAT if received by 3 pm - business days)											
Contact:	Meghan Marjanovic	Quality Control (QC) Report with Report					P Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address:	2195 - 2nd Avenue	Criteria on Re	eport - provide details bek	ow If box checked		E	Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
	Whitehorse, YT Y1A 3T8	Select Distribu	ution: 🚺 EM/	ATL 🗌 MATL	🔲 FAX	E2	🛄 Sai	Same day or weekend emergency - contact ALS to confirm TAT and surcharge											
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ALS Lab Wo	ork Order#((lab use only))	ALS Contact:	: Sean Sluggett	Sampler:		Trout LC50	/ Trout LT50											2	
ALS Sample #	Sample Identification and/or C	Coordinates	Date	Time		ğ	ğ												
(lab use only)	(This description will appear on	(the report)	(dd-mmm-yy)	(hh:mm)	Sample Type	Rainbow	Rainbow												
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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-03254 v09 Front Q4 January 2014

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.