

Environment and Climate Change Canada Environnement et Changement climatique Canada

Report of Analysis

812-P3-Surrey EEP

Connor Fraleigh MOE BC Lower Mainland

Siute 200-10470 152 Street Surry, BC V3R 0Y3

Work Order: V18C031

Reported: 2018-03-23 Printed: 2018-03-23

J. Kiem

Authorization:

Lauretta Liem For Graham van Aggelen Manager, PYLET

The results reported pertain only to the samples submitted to and tested by the Environment and Climate Change Canada (ECCC) laboratory indicated in the report.

These ECCC laboratories are accredited by the Canadian Association for Laboratory Accreditation (CALA) to the standard ISO/IEC 17025 for each of the reported analytes, except where indicated by an asterisk (*). Please refer to the CALA website (<u>www.cala.ca</u>) to view the full Scope(s) of Accreditation.

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ABSTRACT

Sample Manager contact:

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Unit Description % by Volume Percent by volume Description Qualifier Non-Accredited Analysis/Analyte ND Not Detected at Reporting Limit (RL) NR Not Recoverable SAMPLE DESCRIPTION Sample Date Lab ID Client ID <u>Matrix</u> Date/Time Sampled Station ID **Received** <u>Type</u> 20180313-PR01 Water 2018-03-13 10:43 PAC 2018-03-15 Grab V18C031-01 Sampled By: Travis Kurinka

Method ID	Laboratory Method	Reference
V0501W	V_Trout_LC50FF	EPS 1/RM/9 or EPS 1/RM13 Second Edition (trout)
Toxicology Co	ontainers	Temperature °C

REFERENCES

LAB SAMPLE ID: V18C031-01

DESCRIPTION OF SAMPLE:

opaque brown liquid. odorous

DESCRIPTION OF TEST FACILITIES & CONDITIONS:

The fish were held at $15 \pm 2^{\circ}$ C for ≥ 2 weeks prior to the use in the test. Fish were not fed < 16 hours before the start of the test. Testing was started ≤ 5 days of sample collection. Tests were conducted in glass aquarium or plastic tanks lined with disposable polyethylene liners. Test solutions were randomly assigned to test locations. The height of the test solution was ≥ 15 cm. Aeration of oil-free compressed air was provided at a rate of 6.5 ± 1 ml/min.L through airstones. Photoperiod was 16 ± 1 hour light / 8 ± 1 hour dark with an intensity of 100-500 lux. All pH and conductivity measurements were performed using instruments that were automatically temperature compensated. Conductivity measurements are corrected for 25°C. Unless otherwise noted, all test conditions and validity criteria as specified by the Environment Canada test method were met.

pH Adjustment: Samples are normally tested without pH adjustment.

PROTOCOL USED:

Test was performed as prescribed in the laboratory's Standard Operating Procedure and the Environment Canada biological test method, Report EPS 1/RM/13 Second Edition 2000, amended May 2007 and February 2016.

TEST METHOD and/or SOP DEVIATIONS:

None

ANALYSIS TYPE: 96 hr (Static) LC50 Test Volume: 30 kg Replicates: 1 Fish / Vessel: 10 Temp. (°C): 15 ± 1

CONTROL/DILUTION WATER: Fresh Water (≤ 10 ‰) Source: PYLET well water

TEST ORGANISM:	Species: Rainbow Trout	Oncorhynchus mykiss	Batch ID: 180131T1/rbt-fw	Tank #: 1
	Source: Aqua Farms		Mortality for 7d immediately pr	eceding test: < 2 %

CONTROL FISH DATA: Control Fish Status: no mortality, normal behaviour

Fork Length (cm)	Mean: 4.7	Min.: 3.8	Max.: 5.1	
Weight (g)	Mean: 0.95	Min.: 0.51	Max.: 1.29	Loading Density (g/L): 0.3

WATER QUALITY @ PREPARATION:

Test Solution	D.O. (m	ıg/L %)	Temp. (°C)	pН	Conductivity (µS/cm)	Salinity (‰)	Hardness (mg/L CaCO ₃)
100 %	7.3	72.0	14.9	6.31	492	0.2	-

TEST CONDITIONS - WATER QUALITY

Start Date: 2018-03-16 Aeration Start Time: 14:12 Pre-aeration Time (min): 30 Test Start Time: 14:52

Conc. (%)		Control	10	18	32	56	100
D.O. (mg/L)	ng/L) Initial 10.1 10.0			9.7	9.4	8.9	7.5
	Final	10.1	10.0	9.7	1.1	0.7	0.7
Temp. (°C)	Initial	14.6	14.6	14.6	14.7	14.7	14.8
	Final	14.6	14.7	14.6	14.8	14.5	14.5
pН	Initial	7.88	7.48	7.23	6.96	6.71	6.33
	Final	8.06	7.97	7.86	7.15	7.10	6.89
Conductivity (µS/cm)	Initial	419	427	431	441	461	492

Analyst: LP

LAB SAMPLE ID: V18C031-01

TEST CONDITIONS - CUMULATIVE MORTALITY / OBSERVATIONS †

					С	oncentr	ration (%	6)				
Time Check	Cor	Control 10			1	8	3	2	5	6	100	
	mortality	obs.	mortality	obs.	mortality	obs.	mortality	obs.	mortality	obs.	mortality	obs.
0.08 hr (5 min)	0	Ν	0	N	0	Ν	0	U	0	U	0	U
0.16 hr (10 min)	0	Ν	0	N	0	N	0	U	0	U	0	U
0.67 hr (40 min)	0	Ν	0	N	0	U	0	U	0	U,0	0	U
1.33 hr (80 min)	0	Ν	0	N	0	U,0	0	U	0	U,0	0	U,T
26 hr	0	Ν	0	N	0	G,U	10	-	10	-	10	-
48 hr	0	Ν	0	N	0	G,U	10	-	10	-	10	-
72 hr	0	Ν	0	N	0	U	10	-	10	-	10	-
96 hr	0	Ν	0	N	0	U	10	-	10	-	10	-

⁺ Test observation Codes - EPS 1/RM/9 July 1990 amended May 1996 and 2007 Appendix E

** immediate stress, coughing & erratic swimming + behaviour cannot be observed Integument: A Shedding B Mucous C Hemorrhaging Pigmentation: D Light E Dark F Mottled General behavior: G Quiescent H Hyperexcitable I Irritated J Surfacing K Sounding L Twitching M Tetanic N Normal Δ Moribund

Swimming: O Ceased P Erratic Q Gyrating R Skittering S Inverted T On side Respiration: U Rapid V Slow W Coughing X Surface Z Irregular

QUALITY CONTROL: Reference Toxicant Test

 Test Date:
 2018-03-12
 96 hr (Static) LC50 = 10.1 mg/L
 95% confidence limits:
 8.9 & 11.4

Chemical: Phenol Geomean 96 hr LC50 = 10.6 mg/L 95% warning limits: 8.0 & 13.9 (n = 20)

ANALYSIS RESULTS:

Conc. (%)	Control	10	18	32	56	100
96 hr Mortality (%)	0	0	0	100	100	100

96 hr (Static) LC50 = 24 % 95% confidence limits: 18 & 32

Where the median lethal concentration (LC50) is the concentration of material in water that is calculated to be lethal to 50% of the test organisms over an exposure period of 96 hours.

Statistical Method used: Binomial/Graphical CETIS (Tidepool Scientific Software) was used to analyze test data.

RESULTS NOTES:

LAB SAMPLE ID: V18C031-01

CETIS Analytical Report

CETIS Ana							Test	Code:	V	18C031	00-1604-521
Fish 96-h Acu	te Lethality Te	est									PYLET
Analysis ID: Analyzed:	01-6827-9293 21 Mar-18 11		dpoint: alysis:	96 h LC50 Binomial Meth	od			IS Version: ial Results:	CETISv1 Yes	.9.2	
Batch ID: Start Date: Ending Date: Duration:	05-7946-8530 16 Mar-18 11: 20 Mar-18 11: 96h	35 Pr 35 Sp	st Type: otocol: ecles: ource:	Lethality-Fish EC/EPS 1/RM Oncorhynchus Aqua Farms	1/13		Anal Dilu Brin Age:	ent: Well	n Purdey Water		
Sample Date:	02-5993-1236 13 Mar-18 10: 15 Mar-18 12: 73h	40 Ma 00 So	de: aterial: urce: ation:	V18C031-01 Unknown Unknown			Clier Proj		Env Routine	e Sample	
	phical Estimat	tes Threshold	Trim	Mu	Sigmo		EC50	05% 1.01	0.5% (1)(2)		
Threshold Op Control Thresh	140.7 (B) 2 (B) 1	0	0.00%		Sigma 0		24	95% LCL 18	95% UCL 32	S.	
96 h LC50 Su		0	0.00 %	1.50		ulated Varia		10	52		
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	в
0	D	1	0.0000	0.0000	0.0000	0.0000	0.0000	1965-196-51	0.0%	0	10
10		1	0.0000	0.0000 0	0.0000	0.0000	0.0000		0.0%	0	10
18		1	0.0000	0.0000	0.0000	0.0000	0.0000		0.0%	0	10
32		1	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	10	10
56		1	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	10	10
100		1	1.0000	0 1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	10	10
96 h LC50 De	tail										
Conc-%	Code	Rep 1									
0	D	0.0000									
10		0.0000									
18		0.0000									
32		1.0000									
56		1.0000									
100		1.0000									
96 h LC50 Bir	omials										
Conc-%	Code	Rep 1									
0	D	0/10									
10		0/10									
18		0/10									
32		10/10									
56		10/10									
100		10/10									

007-759-398-7

CETIS™ v1.9.2.7

Analyst:_____ QA:_____

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LC50FF V2.12 Appendix 1b V1.0 Nov. 17, 2017

LAB SAMPLE ID: V18C031-01

CETIS Analytical Report

alytical Report			Report Date: Test Code:	21 Mar-18 11:19 (p 2 of 2) V18C031 00-1604-5212
ite Lethality Test				PYLET
01-6827-9293 21 Mar-18 11:19	Endpoint: Analysis:	96 h LC50 Binomial Method	CETIS Version: Official Results:	CETISv1.9.2 Yes
		1 1 1 1 1 1 1		
	te Lethality Test 01-6827-9293 21 Mar-18 11:19	te Lethality Test 01-6827-9293 Endpoint: 21 Mar-18 11:19 Analysis:	te Lethality Test 01-6827-9293 Endpoint: 96 h LC50 21 Mar-18 11:19 Analysis: Binomial Method	Test Code: tte Lethality Test 01-6827-9293 Endpoint: 96 h LC50 CETIS Version: 21 Mar-18 11:19 Analysis: Binomial Method Official Results:

007-759-398-7

CETIS™ v1.9.2.7

Analyst:_____ QA:_____

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LC50FF V2.12 Appendix 1b V1.0 Nov. 17, 2017

Environment and Climate Change Canada Environment et Changement climatique Canada

ESTL SAMPLE SUBMISSION FORM FORMULAIRE DE SOUMISSION D'ÉCHANTILLONS DU LEST

Laboratory / Laboratoire:

	E_BC	Client /Project No No du projet (NNNN) 812-Surrey Region	Work Order No Numéro de der	maride d	fanalyse		M	ate/Time	Rec'd	- Date/H	eure de	réceptio		Temp	erature	on Arrival - Température à l'arriv	vée (°C) E	NVIRODAT subr	nitter ID - Ide	ntification ENVIROD	DAT du cli	ent	Page1 of/de1
Sample	ed by - Echa	ntillonné par (F.Name, L.Name / sumom, prénom)	Client Project Manager/Gestionnair			- 20	Submi	itter- Exp	oéditeur	(F-Nam	ne, L-Na	me / sun	nom, pr	énom)	Su	bmitter Email -Courriel de l'expé	diteur Submitter	Tal. No - No de tél	de l'expéditeur		5	1	
Sample No.		Kurinka, Travis	Connor Fraleigh (604	4-582	-5367)				avis, I		ıka	-			travis.kurinka@gov.bc.ca) 751 - 1			e /) a c	Remarks, Site Description, Sample Description
0	No. of ontainers	Client / Field Sample No.	Client / Field Sample Alias No.					An	alyses	Request	ed					ENVIRODAT Station ID	Sam Date	Time/Heure			Sample Type / Type d'échantill	Preservative / Agent de conservation	Preservation Comments, etc. / Remarques Description du site, Description de l'échantillo Commentaires sur le conservation etc.
u laboratoire	Nmbr de récipients	No d'échantillon du client	No d'échantillon alias du client (Alias)					An	alyses o	lemandé	05					No de station ENVIRODAT			Fuseeu horaire		Samp	Prese	Commentaires sur le conservation etc.
				LC50 Test																			
	(1-N)	(Required / Requis)	(Optional / Optionnel)	Toxicity L(ŵ	(X)	8	ŝ	8	ŝ	(X)	×	ŵ	Â	(X)	(LLNNLLNNNN)	(YYYY-MM-DD) (AAAA-MM-JJ)	(hh:mm)	e.g: EST	e.g; Water∷Eau	NN	Yes/No Oui/Nor	
0	5	20180313 - PROI		x												N/A	2018-03-13	10:43	PST	Water	1	No	Sample is suspected
		· · · · ·													-			<i>N</i> .13					to be freshwater
								a.														-	
														_								-	
											_			_							1		
																				,			
																					-		
3									_												-		
Metals Ex		Metals in water/Métaux dans l'eau:	Metals in water/Métaux dans l'eau:		Me			étaux d	lans l'e	au;						d/Métaux dans solide:	Met	als in solid/Mét	aux dans so	Dide;		letals in s	olid/Métaux dans solide:
Extraction d Return/Ret		Dissolved/Dissous	Extractable/Extractible plete/Collectera l'échantillon après l'anal	_	l nplétée		Total/T	Totaux		Samp	les are	non-ha age 1 o			-	able/Extractible disposed after analysis comp	□ Total	Recoverable/To	otaux récup	érable 📙	1		Total/Totaux

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äbene)	Fax: 604-903-4408 V2H 18h V2H 18h PYLET PY	emonion Paul Houle Paul Houle Paula Sta Straet Bar, 780-435-7335 Bar, 780-435-7335 Fent Feax: 780-435-7368	rulngion Sharon Cartier Sharon Cartier Birdigon, ON Padigon, ON P	Сан Вгомя Сан Вгомп ESTS 335 Кумег Коаd VIANB, 013ava, ОЧ KTA 0133 KTA 0133 Fax: 613-991-9495	Fax: 514-283-1719 Terrifo Europola H2Y 257 105 McGill LEEQ LEEQ 105 McGill LEED 1250 1	Concton biene Harpet LET Moncton, NB F1A 658 F1A 658 F1A 658 F18 505-651-6608
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Sample Type Code/Code du type d'échantillon