



Report of Analysis

812-P3-Surrey EEP

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MOE
BC
Lower Mainland

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V3R 0Y3

Work Order: V18B060

Reported: 2018-03-06

Printed: 2018-03-06

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 (www.cala.ca) to view the full Scope(s) of Accreditation.*

ABSTRACT

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<u>Unit</u>	<u>Description</u>
% by Volume	Percent by volume

<u>Qualifier</u>	<u>Description</u>
*	Non-Accredited Analysis/Analyte
ND	Not Detected at Reporting Limit (RL)
NR	Not Recoverable

SAMPLE DESCRIPTION

<u>Lab ID</u>	<u>Client ID</u>	<u>Station ID</u>	<u>Matrix</u>	<u>Date/Time Sampled</u>	<u>Date Received</u>	<u>Sample Type</u>
V18B060-01	Effluent-01		Water	2018-02-22 10:56 PAC	2018-02-23	Grab

Sampled By: Connor Fraleigh

REFERENCES

<u>Method ID</u>	<u>Laboratory Method</u>	<u>Reference</u>
V0501W	V_Trout_LC50FF	EPS 1/RM/9 or EPS 1/RM13 Second Edition (trout)

<u>Toxicology Containers</u>	<u>Temperature °C</u>
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ACUTE LETHALITY TEST USING RAINBOW TROUT (96 HOUR LC50) - REPORT

LAB SAMPLE ID: V18B060-01

Analyst: CL2

DESCRIPTION OF SAMPLE:

-white opaque liquid; E219092

DESCRIPTION OF TEST FACILITIES & CONDITIONS:

The fish were held at 15 ± 2°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: 171227T6/rbt-fw Tank #: 6
 Source: Aqua Farms Mortality for 7d immediately preceding test: < 2 %

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

Fork Length (cm) Mean: 4.8 Min.: 4.2 Max.: 5.3
 Weight (g) Mean: 0.96 Min.: 0.53 Max.: 1.25 Loading Density (g/L): 0.3

WATER QUALITY @ PREPARATION:

Test Solution	D.O. (mg/L ‰)		Temp. (°C)	pH	Conductivity (µS/cm)	Salinity (‰)	Hardness (mg/L CaCO ₃)
100 %	8.8	85.9	14.6	7.04	744	0.3	-

TEST CONDITIONS - WATER QUALITY

Start Date: 2018-02-23 Aeration Start Time: 10:25 Pre-aeration Time (min): 30 Test Start Time: 10:55

Conc. (%)		Control	10	18	32	56	100
D.O. (mg/L)	Initial	10.3	10.3	10.3	10.0	9.6	9.4
	Final	10.1	10.0	9.3	9.4	9.4	0.4
Temp. (°C)	Initial	14.4	14.2	14.3	14.3	14.2	14.4
	Final	14.7	14.3	14.6	14.4	14.2	14.4
pH	Initial	7.94	7.88	7.73	7.53	7.34	7.05
	Final	7.92	7.98	7.83	7.90	7.98	7.03
Conductivity (µS/cm)	Initial	418	456	479	526	616	745

ACUTE LETHALITY TEST USING RAINBOW TROUT (96 HOUR LC50) - REPORT

LAB SAMPLE ID: V18B060-01

TEST CONDITIONS - CUMULATIVE MORTALITY / OBSERVATIONS †

Time Check	Concentration (%)											
	Control		10		18		32		56		100	
	mortality	obs.	mortality	obs.	mortality	obs.	mortality	obs.	mortality	obs.	mortality	obs.
0.08 hr (5 min)	0	N	0	N	0	N	0	N	0	N	0	N
1.33 hr (80 min)	0	N	0	N	0	N	0	N	0	N	0	N
24 hr	0	N	0	N	0	+	0	+	0	+	10	-
48 hr	0	N	0	N	0	N	0	+	0	+	10	-
72 hr	0	N	0	N	0	N	0	N	0	N	10	-
96 hr	0	N	0	N	0	N	0	N	0	N	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: 2018-02-23 96 hr (Static) LC50 = 8.6 mg/L 95% confidence limits: 8.0 & 9.3

Chemical: Phenol Geomean 96 hr LC50 = 10.7 mg/L 95% warning limits: 8.2 & 13.8 (n = 20)

ANALYSIS RESULTS:

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

96 hr (Static) LC50 = 74.83 % 95% confidence limits: 56 & 100

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:

ACUTE LETHALITY TEST USING RAINBOW TROUT (96 HOUR LC50) - REPORT

LAB SAMPLE ID: V18B060-01

CETIS Analytical Report

CETIS Analytical Report

Report Date: 05 Mar-18 11:44 (p 1 of 2)
 Test Code: V18B060 | 03-3950-3956

Fish 96-h Acute Lethality Test			PYLET
Analysis ID: 15-6953-0843	Endpoint: 96 h LC50	CETIS Version: CETISv1.9.2	
Analyzed: 05 Mar-18 11:43	Analysis: Binomial Method	Official Results: Yes	
Batch ID: 18-8215-8521	Test Type: Lethality-Fish (96h)	Analyst: Christopher Le	
Start Date: 01 Feb-18 11:46	Protocol: EC/EPS 1/RM/13	Diluent: Well Water	
Ending Date: 05 Feb-18 11:46	Species: Oncorhynchus mykiss	Brine:	
Duration: 96h	Source: Aqua Farms	Age:	
Sample ID: 16-7000-6164	Code: V18B060-01	Client:	
Sample Date: 22 Feb-18 10:56	Material: Unknown	Project: BC Env Routine Sample	
Receipt Date: 22 Feb-18 12:00	Source: Unknown		
Sample Age: n/a	Station:		

Binomial/Graphical Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	0.00%	1.874	0	74.83	56	100

96 h LC50 Summary

Conc-%	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	% Effect	A	B
0	D	1	0.0000	0.0000	0.0000	0.0000	0.0000		0.0%	0	10
10		1	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000		0.0%	0	10
56		1	0.0000	0.0000	0.0000	0.0000	0.0000		0.0%	0	10
100		1	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	10	10

96 h LC50 Detail

Conc-%	Code	Rep 1
0	D	0.0000
10		0.0000
18		0.0000
32		0.0000
56		0.0000
100		1.0000

96 h LC50 Binomials

Conc-%	Code	Rep 1
0	D	0/10
10		0/10
18		0/10
32		0/10
56		0/10
100		10/10

ACUTE LETHALITY TEST USING RAINBOW TROUT (96 HOUR LC50) - REPORT

LAB SAMPLE ID: V18B060-01

CETIS Analytical Report

CETIS Analytical Report

Report Date: 05 Mar-18 11:44 (p 2 of 2)
 Test Code: V18B060 | 03-3950-3956

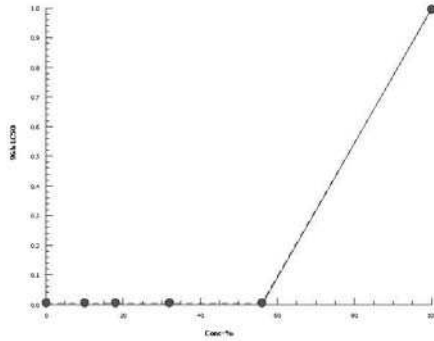
Fish 96-h Acute Lethality Test

PYLET

Analysis ID: 15-6953-0843 Endpoint: 96 h LC50
 Analyzed: 05 Mar-18 11:43 Analysis: Binomial Method

CETIS Version: CETISv1.9.2
 Official Results: Yes

Graphics



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

Laboratory / Laboratoire:

ELEMENT Client / Project No. - No du projet (NNNN) MOE-BC 812 - Surrey Region		Work Order No. - Numéro de demande d'analyse V18B060		Date/Time Rec'd - Date/Heure de réception Feb 23 2018 (NF)		Temperature on Arrival - Température à l'arrivée (°C) ---		ENVIRODAT submitter ID - Identification ENVIRODAT du client				Remarks, Site Description, Sample Descriptions, Preservation Comments, etc. / Remarques, Description du site, Description de l'échantillon, Commentaires sur le conservation etc.											
Sampled by - Échantillonné par (F. Name, L. Name / surname, prénom) Connor, Fraleigh		Client Project Manager/Gestionnaire de projet (Client) Connor Fraleigh		Submitter: Expéditeur (F. Name, L. Name / surname, prénom) Connor, Fraleigh		Submitter Email - Courriel de l'expéditeur Connor.Fraleigh@gov.bc.ca		Submitter Tel No - No de tél de l'expéditeur (604) 842-1360															
Lab Sample No. No du laboratoire	No of containers Nbr de récipients	Client / Field Sample No. No d'échantillon du client	Client / Field Sample Alias No. No d'échantillon alias du client (Alias)	Analyses Requested Analyses demandées												ENVIRODAT Station ID No de station ENVIRODAT	Sampled / Échantillonné			Matrix / Matrice	Sample Type / Type d'échantillon	Preservative / Agent de conservation	
	(1-N)	(Required / Requis)	(Optional / Optionnel)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	(LLNNLNNNN)	Date (YYYY-MM-DD) (AAAA-MM-JJ)	Time/Heure (hh:mm)	Time Zone e.g. EST	Matrix / Matrice e.g. Water/Eau	Sample Type / Type d'échantillon NN	Preservative / Agent de conservation Yes/No Oui/Non	(Optional / Optionnel)
01	4	Effluent -01		X	X	X	X	X	X	X	X	X	X	X	X		2018-02-22	10:56M	PST	Water	01	NO	

Metals Extraction/ Extraction des métaux:	Metals in water/Métaux dans l'eau: Dissolved/Dissous <input type="checkbox"/>	Metals in water/Métaux dans l'eau: Extractable/Extractible <input type="checkbox"/>	Metals in water/Métaux dans l'eau: Total/Totaux <input type="checkbox"/>	Metals in solid/Métaux dans solide: Extractable/Extractible <input type="checkbox"/>	Metals in solid/Métaux dans solide: Total Recoverable/Totaux récupérable <input type="checkbox"/>	Metals in solid/Métaux dans solide: Total/Totaux <input type="checkbox"/>
Sample Return/Retour d'échantillon:	Will pick up sample after analysis complete/Collectera l'échantillon après l'analyse complétée <input type="checkbox"/>			Samples are non-hazardous and may be disposed after analysis completed / Les échantillons sont non-dangereux et peuvent-être jetés après l'analyse complétée. <input type="checkbox"/>		

(CNF)
2/23/18

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• Specific Conductivity Reading = 1335 $\mu\text{S}/\text{cm}$
 • Freshwater only, no marine water inputs into effluent

Sample Type Code/Code du type d'échantillon

#	ENVIRODAT	Element
01	Discrete Sample	Grab: Instantané
02	Duplicate Sample	Duplicate::Duplicate
03	Triplicate Sample	Triplicate::Triplacata
04	Composite Sample	Composite::Composite
05	Trip Blank	Trip Blank: Blanc transport
06	Matrix Spike	Matrix Spike: Matrice enrichie
07	Matrix Spike	Matrix Spike: Matrice enrichie
08	Field Blank	Field Blank: Blanc terrain
09	Field Spike	Field Spike: Enrichi terrain
10	Trip Spike	Trip Spike: Enrichi transport

LABORATORY USE ONLY / À USAGE DU LABORATOIRE SEULEMENT

Lab Contacts / Contacts des laboratoires

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